CAS SciFinder

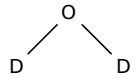
Task History

Initiating Search

February 21, 2025, 4:06 PM

Substances:

Filtered By:



Structure Match: **As Drawn**

Search Tasks

Task	Search Type	View
Returned Substance Results + Filters (1,728)	Substances	View Results
Exported: Retrieved Related Reaction Results + Filters (1,107)	Reactions	View Results

Filtered By:

Substance Role: **Reagent, Solvent**

Catalyst: [(1,2,5,6-η)-1,5-Cyclooctadiene]hydroxyrhodium, (1,2-Bis((*S*,*S*)-2,5-diethyl-1-phospholidinyl)benzene)(1,5-cyclooctadiene)rhodium(1+) trifluoromethanesulfonate, [(2,3,5,6-η)-Bicyclo[2.2.1]hepta-2,5-diene]bis[1,1',1''-(phosphinidyne-κ*P*)tris[methanol]]rhodium(1+), [(3a,4,5,6,6a-η)-(13c*R*)-2,8-Bis[[(1,1-dimethylethyl)diphenylsilyl]oxy]-3,7-dihydro-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinaphthalen-3a-yl]bis(η^2-ethene)rhodium, Acetic acid, rhodium(2+) salt, (Acetato-κ*O*)(acetato-κ*O*,κ*O*')[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium, Bis[1,1'-(1*S*)-[1,1'-binaphthalene]-2,2'-diylbis[1,1-diphenylphosphine-κ*P*]]di-μ-hydroxydirhodium, Bis[(1,2,3,4,5-η)-1,4-bis(1,1-dimethylethyl)-2-(2,2-dimethylpropyl)-2,4-cyclopentadien-1-yl]di-μ-iododiiododirhodium, Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydirhodium, Bis[2,6-bis(1-methylethyl)phenyl (2,3,5,6-η)-(1*R*,4*R*,7*R*)-5-methyl-7-(1-methylethyl)bicyclo[2.2.2]octa-2,5-diene-2-carboxylate]di-μ-chlorodirhodium, Bis(η^2-ethene)(2,4-pentanedionato-κ*O*,κ*O*')rhodium, Bis(η^2-ethene) [(8a,9,10,11,11a-η)-(2a*R*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6]cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-

8a(12*H*)-yl]rhodium, Bis(η^2-ethene)[(8a,9,10,11,11a-η)-(2a*S*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6]cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-8a(12*H*)-yl]rhodium, Bis(acetato-κ*O*)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium, Bis(acetato-κ*O*)aqua[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium, Bis[μ-(acetato-κ*O*:κ*O'*)]bis(acetato-κ*O*)bis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Carbonylchlorobis(triphenylphosphine)rhodium, Carbonylhydridotris(triphenylphosphine)rhodium, Chloro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl][2-[1-[(2*E*)-2-(1-phenylethylidene)hydrazinylidene-κ*N*^{1}]ethyl]phenyl-κ*C*]rhodium, Cobalt, compd. with rhodium (2:2), Dicarbonylrhodium acetylacetonate, Dichloro[(1,2,5,6-η)-1,5-cyclooctadiene]rhodate(1-), Di-μ-chlorobis[1,1''-[(2,3,9,10-η)-(1*R*,4*R*)-5,6,7,8-tetrafluoro-1,4-dihydro-1,4-ethenonaphthalene-2,9-diyl]bis[ferrocene]]dirhodium, Di-μ-chlorobis[1,1''-[(2,3,9,10-η)-(1*S*,4*S*)-5,6,7,8-tetrafluoro-1,4-dihydro-1,4-ethenonaphthalene-2,9-diyl]bis[ferrocene]]dirhodium, Di-μ-chlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium, Di-μ-chlorobis[(1,2,5,6-η)-1,3,5,7-cyclooctatetraene]dirhodium, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium, Di-μ-chlorobis[(2,3,9,10-η)-(1*R*,4*R*)-5,6,7,8-tetrafluoro-1,4-dihydro-2,9-diphenyl-1,4-ethenonaphthalene]dirhodium, Di-μ-chlorodichlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodate(2-), Di-μ-chlorodichlorobis[(1,2,3,4,5-η)-1,2,3,4-tetramethyl-5-(1-methylethyl)-2,4-cyclopentadien-1-yl]dirhodium, Di-μ-chlorodichlorobis[(3a,4,5,6,6a-η)-(3a*R*,13b*R*)-3,7-dihydro-2,8-bis(methylenemethyl)-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a'*]dinaphthalen-3a-yl]dirhodium, Di-μ-chlorodichlorobis(η^5-2,4-cyclopentadien-1-yl)dirhodium, Di-μ-chlorotetrakis[(1,2-η)-cyclooctene]dirhodium, Di-μ-chlorotetrakis(η^2-ethene)dirhodium, Dirhodium tetraacetate, Rhodamine 6G, Rhodamine B, Rhodate(3-), chlorotris[3-(diphenylphosphino-κ*P*)benzenesulfonato]-, sodium (1:3), (*SP*-4-2)-, Rhodate(9-), chlorotris[[3,3',3''-(phosphinidyne-κ*P*)tris[benzenesulfonato]](3-)]-, nonasodium, nonahydrate, (*SP*-4-2)-, Rhodate(9-), chlorotris[[3,3',3''-(phosphinidyne-κ*P*)tris[benzenesulfonato]](3-)]-, sodium (1:9), (*SP*-4-2)-, Rhodium, Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][1,1'-(1,2-ethanediyl)bis(1,1-dimethylphosphine-κ*P*)]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][1,3-dihydro-1-[(1-phenyl-1*H*-1,2,3-triazol-4-yl-κ*N*^{3})methyl]-3-(2,4,6-trimethylphenyl)-2*H*-imidazol-2-ylidene-κ*C*]-, tetraphenylborate(1-) (1:1), Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][(1*R*,1'*R*)-1,1'-(1,2-ethanediyl)bis[1-(2-methoxyphenyl)phenylphosphine-κ*P*]]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-

κ*N*^{1},κ*N*$^{1'}$]chloro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, chloride (1:1), Rhodium(1+), aqua-d_2-bis(trimethylphosphine)-, sodium hexakis[μ-[[*N*,*N*'-1,5-naphthalenediylbis[2,3-di(hydroxy-κ*O*)benzamidato]](4-)]]tetragallate(12-) (1:11:1), Rhodium(1+), aqua-d_2-bis(trimethylphosphine)-, tetrafluoroborate(1-) (1:1), Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, 1,1,1-trifluoromethanesulfonate (1:1), Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, salt with 1,1,1-trifluoro-*N*-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1), Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), bis[(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), bis(acetonitrile)[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), bis(acetonitrile)bis[2-[5-(1,1-dimethylethyl)-2-benzothiazolyl-κ*N*^{3}]phenyl-κ*C*]-, (*OC*-6-13)-, hexafluorophosphate(1-) (1:1), Rhodium(1+), bis(acetonitrile)bis[2-[5-(1,1-dimethylethyl)-2-benzoxazolyl-κ*N*^{3}]-3',5'-bis(trifluoromethyl)[1,1'-biphenyl]-3-yl-κ*C*]-, (*OC*-6-13-Λ)-, hexafluorophosphate(1-) (1:1), Rhodium(1+), bis(acetonitrile)bis[2-[6-(1,1-dimethylethyl)-2*H*-indazol-2-yl-κ*N*^{1}]phenyl-κ*C*]-, (*OC*-6-13-Λ)-, hexafluorophosphate(1-) (1:1), Rhodium(1+), tris[μ-[4-(1,1-dimethylethyl)benzenemethanethioato]]bis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]di-, chloride (1:1), Rhodium(1+), tris[μ-(benzeneethanethiolato)]bis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]di-, chloride (1:1), Rhodium(1+), tris[μ-(benzenemethanethiolato)]bis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]di-, chloride (1:1), Rhodium(2+), aqua([2,2'-bipyridine]-4,4'-diol-κ*N*^{1},κ*N*$^{1'}$)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, sulfate (1:1), Rhodium(2+), diaquabis[4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-κ*N*^{1},κ*N*$^{1'}$]bis[μ-(4-methylbenzenesulfonato-κ*O*:κ*O*')]bis(2-methyl-2-phenylpropyl)di-, stereoisomer, tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-) (1:2), Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2), Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, tetrafluoroborate(1-) (1:2), Rhodium, [(3a,4,5,6,6a-η)-(13b*R*)-2,8-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,7-dihydro-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinaphthalen-3a-yl][(1,2,5,6-η)-1,5-cyclooctadiene]-, stereoisomer, Rhodium, bis[μ-[α,α,α',α'-tetramethyl-1,3-benzenedipropanoato(2-)-κ*O*^{1},κ*O*'^{3}:κ*O*^{3},κ*O*'^{1}]]di-, (*Rh*-*Rh*), Rhodium, dicarbonylchloro[*N*-[4-(diphenylphosphino-κ*P*)benzoyl]-L-leucyl-L-lysyl-L-lysyl-L-leucyl-L-leucyl-L-lysyl-L-leucyl-L-leucyl-L-lysyl-L-lysyl-L-leucyl-L-leucyl-L-lysyl-L-leucinamide]-, (*SP*-4-3)-, Rhodium, di-μ-chlorobis[(2,3,5,6-η)-(1*S*,4*S*)-2,5-diphenylbicyclo[2.2.2]octa-2,5-diene]di-, Rhodium, di-μ-chlorodichlorobis[(3a,4,5,6,6a-η)-(13b*R*)-2,8-

diphenyl-3a*H*-cyclopenta[*b*]dinaphtho[2,1-*e*:1',2'-*g*][1,4]dioxocin-3a-yl]di-, Rhodium, di-μ-iododiiodobis[(3a,4,5,6,6a-η)-(13b*R*)-4,5,6-trimethyl-3a*H*-cyclopenta[*b*]dinaphtho[2,1-*e*:1',2'-*g*][1,4]dioxocin-3a-yl]di-, Rhodium, tetracarbonyldi-μ-chlorodi-, Rhodium, tetrakis[(1,2,5,6-η)-1,5-cyclooctadiene]tetra-μ-hydrotetra-, *tetrahedro*, Rhodium, tetrakis[μ-[2-ethyl-3-methyl-2-(1-methylethyl)butanoato-κ*O*:κ*O*']]di-, (*Rh*-*Rh*), Rhodium, tetrakis[μ-(acetato-κ*O*:κ*O*')][1,3-bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]di-, (*Rh*-*Rh*), Rhodium, tetrakis[μ-(acetato-κ*O*:κ*O*')]bis[tris(1,1-dimethylethyl)phosphine]di-, (*Rh*-*Rh*), Rhodium, tetrakis[μ-(α,α-diphenylbenzeneacetato-κ*O*:κ*O*')]di-, (*Rh*-*Rh*), Rhodium, tetrakis[μ-(octanoato-κ*O*:κ*O*')]di-, (*Rh*-*Rh*), Rhodium, tri-μ-carbonylnonacarbonyltetra-, *tetrahedro*, Rhodium trichloride, Rhodium trichloride hydrate, Rhodium trichloride trihydrate, Ruthenium(3+), bis[4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-κN^{1},κ$N^{1'}$][chloro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium][μ-(dipyrido[3,2-5,6:3',2'-5,6]quinoxalino[2,3-*f*][1,10]phenanthroline-κN^{4},κN^{5}:κN^{13},κN^{14})]-, chloride hexafluorophosphate(1-) (1:1:2), (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, (*SP*-5-31)-Methyl[5,10,15,20-tetrakis(4-methylphenyl)-21*H*,23*H*-porphinato(2-)-κN^{21},κN^{22},κN^{23},κN^{24}]rhodium, (*SP*-5-52)-[1,3-Bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]chlorohydro(8-quinolinolato-κN^{1},κO^{8})rhodium, stereoisomer of Bis[(1,2,3,4,5-η)-1,3-bis(1,1-dimethylethyl)-2,4-cyclopentadien-1-yl]di-μ-chlorodichlorodirhodium, Stereoisomer of bis[(3a,4,5,6,6a-η)-(13b*R*)-3,7-dihydro-2,8-bis[[tris(1-methylethyl)silyl]oxy]-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinaphthalen-3a-yl]di-μ-iododiiododirhodium, Stereoisomer of bis[μ-(benzeneethanethiolato)]dichlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium, Stereoisomer of bis[μ-(benzenemethanethiolato)]dichlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium, Tetrakis[(1,2-η)-cyclooctene]di-μ-hydroxydirhodium, Tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium(2+)

Document Type:	Journal
Language:	English

CAS SciFinder

Reactions (500)

View in CAS SciFinder

Scheme 1 (1 Reaction)

Steps: **1** Yield: **100%**

31-614-CAS-36927684

Steps: **1** Yield: **100%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Silver hexafluoroantimonate, stereoisomer of Bis[(1,2,3,4,5-η)-1,3-bis(1,1-dimethylethyl)-2,4-cyclopentadien-1-yl] di-μ-chlorodichlorodirhodium
Solvents: 1,2-Dimethoxyethane; 12 h, 130 °C

Experimental Protocols

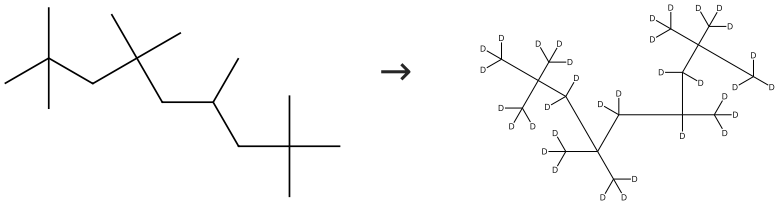
Regio- and Chemoselective Formal (4+1) Carbocyclization of Chalcones with Internal Alkynes via Rhodium(III) Catalysis

By: Song, Shuaishuai; et al

Angewandte Chemie, International Edition (2023), 62(30), e202305983.

Scheme 2 (2 Reactions)

Steps: **1** Yield: **60-100%**



Suppliers (63)

31-116-CAS-9328666

Steps: **1** Yield: **100%**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: 2-Propan-*1,1,1,2,3,3,3*-d_7-ol-*d*; 24 h, 120 °C

Experimental Protocols

Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

31-116-CAS-13803975

Steps: **1** Yield: **60%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 - 24 h, 160 °C

Experimental Protocols

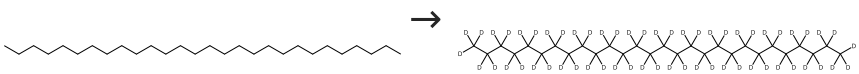
Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 3 (1 Reaction)

Steps: **1** Yield: **100%**



Suppliers (81)

Suppliers (27)

31-116-CAS-13510642 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 h, 160 °C

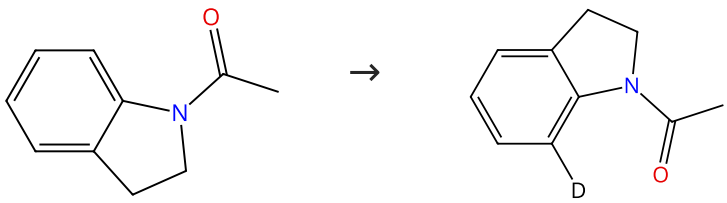
Experimental Protocols

Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 4 (2 Reactions) Steps: **1** Yield: **98-99%**



Suppliers (79)

31-116-CAS-18340907 Steps: **1** Yield: **99%**

1.1 **Reagents:** Acetic acid, Water-d_2
Catalysts: Silver acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 120 °C

Experimental Protocols

Rhodium-catalyzed C7-alkylation of indolines with maleimides

By: Pan, Changduo; et al

Organic & Biomolecular Chemistry (2018), 16(5), 693-697.

31-116-CAS-19986667 Steps: **1** Yield: **98%**

1.1 **Reagents:** Acetic acid, Iodobenzene diacetate, Water-d_2
Catalysts: Silver acetate, Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 16 h, 100 °C

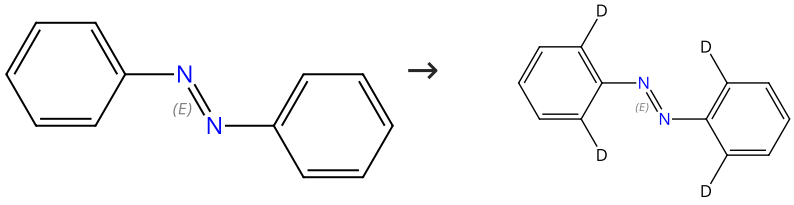
Experimental Protocols

Rhodium(III)-catalyzed direct C-7 sulfonamidation and amination of indolines with arylsulfonamides and trifluoro acetamide

By: Dong, Yaqun; et al

Tetrahedron Letters (2019), 60(20), 1349-1352.

Scheme 5 (3 Reactions) Steps: **1** Yield: **99%**



Double bond geometry shown

Double bond geometry shown

Suppliers (19)

31-116-CAS-8550156 Steps: **1** Yield: **99%**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane, Water-d_2; 36 h, 85 °C; 85 °C → rt

Experimental Protocols

Rhodium-Catalyzed Direct ortho C-N Bond Formation of Aromatic Azo Compounds with Azides

By: Wang, Hao; et al

Journal of Organic Chemistry (2014), 79(7), 3279-3288.

31-116-CAS-18610131 Steps: **1**

1.1 **Reagents:** Water-d_2, Silver tetrafluoroborate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 24 h, 120 °C

Experimental Protocols

Rhodium(III)-Catalyzed Thiolation of Azobenzenes

By: Yang, Jun; et al

Asian Journal of Organic Chemistry (2018), 7(2), 439-443.

31-116-CAS-19922109 Steps: **1**

1.1 **Reagents:** Propanoic acid, 2,2-dimethyl-, sodium salt (1:1), Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 24 h, 120 °C

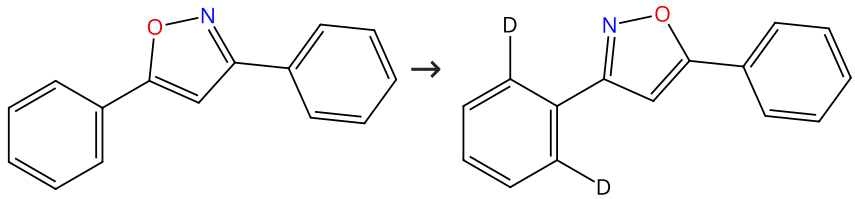
Experimental Protocols

Rh(III)-Catalyzed C-H Amination of Azobenzenes with Anthranils

By: Fu, Ting; et al

Asian Journal of Organic Chemistry (2018), 7(9), 1844-1848.

Scheme 6 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (21)

31-614-CAS-31161102 Steps: **1** Yield: **99%**

1.1 **Reagents:** Zinc acetate, Water-d_2, Zinc triflate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 1 h, 100 °C

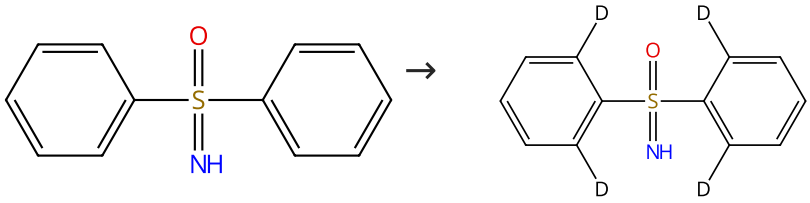
Experimental Protocols

An Approach to Vinylidenequinazolines from Isoxazoles and Dioxazolones

By: Liao, Xian-Zhang; et al

Journal of Organic Chemistry (2022), 87(5), 3741-3750.

Scheme 7 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (46)

31-116-CAS-20252934 Steps: **1** Yield: **99%**

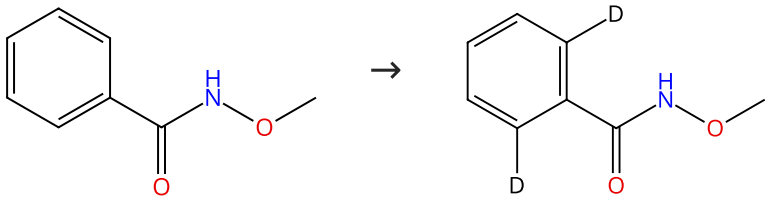
1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Toluene; 4 h, 100 °C

Rh(III)-Catalyzed Oxidative Annulation of Sulfoximines with Arylalkynyl Silanes via Desily lation

By: Hanchate, Vinayak; et al

Journal of Organic Chemistry (2019), 84(12), 8248-8255.

Scheme 8 (11 Reactions) Steps: **1** Yield: **43-99%**



Suppliers (49)

31-614-CAS-24825449 Steps: **1** Yield: **99%**

1.1 **Reagents:** Sodium bicarbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 h, 80 °C

Experimental Protocols

Mild Synthesis of 3,4-Dihydroisoquinolin-1(2H)-ones via Rh(III) -Catalyzed Tandem C-H-Allylation/N-Alkylation Annulation with 2-Methylidenetrimethylene Carbonate

By: Xie, Hui; et al

Journal of Organic Chemistry (2021), 86(23), 17063-17070.

31-116-CAS-16275025 Steps: **1** Yield: **97%**

1.1 **Reagents:** Water-d_2, Acetic acid, 2,2,2-trichloro-, cesium salt (1: 1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 30 min, 80 °C

Experimental Protocols

Rh-Catalyzed annulations of N-methoxybenzamides with ketenimines: synthesis of 3-aminoisoindolinones and 3-diarylmethyleneisoindolinones with strong aggregation induced emission properties

By: Zhou, Xiaorong; et al

Chemical Communications (Cambridge, United Kingdom) (2016), 52(70), 10676-10679.

31-614-CAS-31489257 Steps: **1** Yield: **91%**

1.1 **Reagents:** Tripotassium phosphate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,2,2-Tetrachloroethane; 12 h, 50 °C

Experimental Protocols

Rhodium-catalyzed formal [4+3] annulation reaction of N-methoxybenzamides with gem-difluorocyclopropenes: A combination of experimental and theoretical studies

By: He, Yimiao; et al

Chinese Chemical Letters (2022), 33(6), 2987-2992.

31-116-CAS-21890718 Steps: **1** Yield: **87%**

1.1 **Reagents:** (4-Bromophenyl)acetic acid, Water-d_2
Catalysts: Quinone, Cesium acetate, Bis(η^2-ethene)[(8a,9,10, 11,11a-η)-(2a*S*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6]cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-8a(12*H*)-yl]rhodium
Solvents: Acetone, 1,4-Dioxane; 36 h, 0 °C

Rhodium(III)-Catalyzed Asymmetric C-H Activation of N-Methoxybenzamide with Quinone and Its Applic ation in the Asymmetric Synthesis of a

By: Yan, Xiaoqiang; et al

Organic Letters (2020), 22(8), 3219-3223.

31-614-CAS-24060309 Steps: **1** Yield: **43%**

1.1 **Reagents:** Benzoic acid, Water-d_2
Catalysts: Silver acetate, Bis[dichloro[η^5-(pentamethylcyclope ntadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 30 min, 25 °C

Experimental Protocols

Rhodium(III)-Catalyzed Sequential C-H Activation and Cycliz ation from N-Methoxyarylamides and 3-Diazooxindoles for the Synthesis of Isochromenoindolones

By: Ko, Gi Hoon; et al

Chemistry - An Asian Journal (2021), 16(20), 3179-3187.

31-614-CAS-39394871 Steps: **1**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 1 h, 100 °C

Experimental Protocols

Rh(III)-Catalyzed [4 + 1] Annulation of Benzamides with Vinyl Cyclic Carbonates for the Synthesis of Isoindolinones

By: Li, Xiang; et al

Organic Letters (2024), 26(7), 1304-1309.

31-614-CAS-33764001 Steps: **1**

1.1 **Reagents:** Potassium carbonate, Water-d_2, Silver hexafluoro antimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile; 12 h, 80 °C

Synthesis of Isoquinolone, 1,2-Benzothiazine, and Naphtho[1', 2':4,5]imidazo[1,2-a]pyridine Derivatives via Rhodium(III)-Catalyzed (4 + 2) Annulation

By: Zhu, Yueyue; et al

Journal of Organic Chemistry (2022), 87(17), 11722-11734.

31-116-CAS-21670660 Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene; 12 h, 80 °C

Experimental Protocols

Rh(III)-Catalyzed Redox-Neutral [4+2] Annulation for Direct Assembly of 3-Acyl Isoquinolin-1(2H)-ones as Potent Antitumor Agents

By: Bian, Mengyao; et al

ChemPlusChem (2020), 85(3), 405-410.

31-116-CAS-19829443 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Potassium acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Acetonitrile; 1 h, 25 °C

Experimental Protocols

Rh(III)-Catalyzed Synthesis of 3-Amino-4-arylisoquinolinones from 4-Diazoisochroman-3-imines and N-Methoxybenzamides

By: Li, Zhenmin; et al

Organic Letters (2019), 21(5), 1497-1501.

31-116-CAS-19948698 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Tetrahydrofuran; 12 h, 100 °C

Cp*Rh(III)-Catalyzed annulation of N-methoxybenzamide with 1,4,2-bisoxazol-5-one toward 2-aryl quinazolin-4(3H)-one derivatives

By: Xiong, Hao; et al

Organic Chemistry Frontiers (2018), 5(19), 2880-2884.

31-116-CAS-16979380 Steps: **1**

1.1 **Reagents:** Cesium carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 30 min, 80 °C

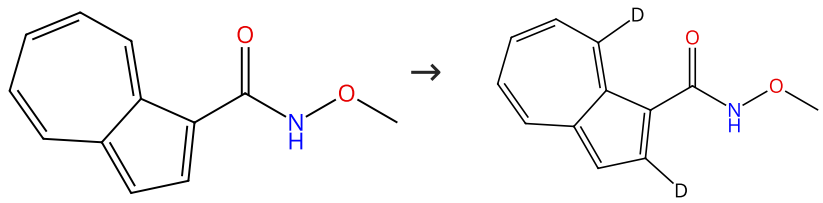
Experimental Protocols

Rh-Catalyzed Annulations of N-Methoxybenzamides and Ketenimines: Sterically and Electronically Controlled Synthesis of Isoquinolinones and Isoindolinones

By: Zhou, Xiaorong; et al

Journal of Organic Chemistry (2017), 82(7), 3787-3797.

Scheme 9 (1 Reaction) Steps: **1** Yield: **99%**



31-116-CAS-23034199 Steps: **1** Yield: **99%**

1.1 **Reagents:** Pivalic acid, Potassium acetate, Water-d_2
Catalysts: Tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium(2+)
Solvents: Toluene; 12 h, 100 °C

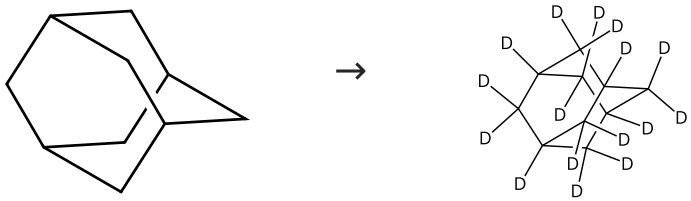
Experimental Protocols

Regioselective and Chemodivergent Synthesis of Azulenolactones and Azulenolactams from Rhodium(III)-Catalyzed Reactions of Azulenecarboxamides with Sulfoxonium Ylides

By: Lee, Seung Cheol; et al

Advanced Synthesis & Catalysis (2021), 363(2), 512-524.

Scheme 10 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (113) Suppliers (38)

31-116-CAS-9783276 Steps: **1** Yield: **99%**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: 2-Propan-*1,1,1,2,3,3,3*-d_7-ol-*d*; 24 h, 120 °C

Experimental Protocols

Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

Scheme 11 (2 Reactions) Steps: **1** Yield: **78-99%**

Suppliers (59)

31-116-CAS-15190928 Steps: **1** Yield: **99%**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: 2-Propan-*1,1,1,2,3,3,3*-d_7-ol-*d*; 24 h, 120 °C

Experimental Protocols

Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

31-116-CAS-4663105 Steps: **1** Yield: **78%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 - 24 h, 160 °C

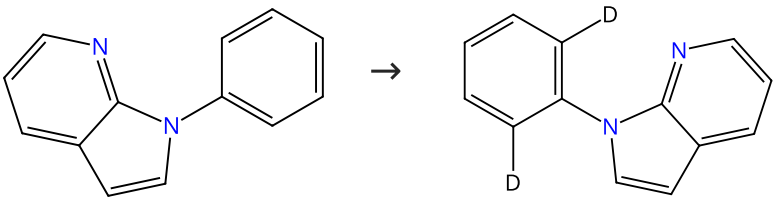
Experimental Protocols

Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 12 (5 Reactions) Steps: **1** Yield: **70-99%**



Suppliers (6)

31-116-CAS-17942527 Steps: **1** Yield: **99%**

1.1 **Catalysts:** Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 15 min, 40 °C; 40 °C → rt

1.2 **Reagents:** Water-d_2; 15 min, 40 °C

1.3 **Reagents:** Sodium bicarbonate
Solvents: Water

Experimental Protocols

Rhodium-Catalyzed sp^2 C-H Acetoxylation of N-Aryl Azaindoles/N-Heteroaryl Indolines

By: Mishra, Aniket; et al

Journal of Organic Chemistry (2017), 82(23), 12406-12415.

31-116-CAS-15926965 Steps: **1** Yield: **96%**

1.1 **Reagents:** Potassium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dimethoxyethane; 14 h, 145 °C

Experimental Protocols

A unique annulation of 7-azaindoles with alkenyl esters to produce π-conjugated 7-azaindole derivatives

By: Li, Shuai-Shuai; et al

Organic & Biomolecular Chemistry (2016), 14(23), 5214-5218.

31-116-CAS-13869648 Steps: **1** Yield: **96%**

1.1 **Reagents:** Cupric acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 2 h, 120 °C

1.2 **Reagents:** Water-d_2; 2 h

Rhodium(III)-Catalyzed Oxidative Annulation of 7-Azaindoles and Alkynes via Double C-H Activation

By: Li, Shuai-Shuai; et al

Organic Letters (2015), 17(12), 3018-3021.

31-116-CAS-18799909 Steps: **1** Yield: **74%**

1.1 **Reagents:** Silver carbonate
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,4-Dioxane; 2 h, 110 °C; 110 °C → rt

1.2 **Reagents:** Water-d_2; 2 h, 110 °C

Experimental Protocols

Rhodium-Catalyzed Direct and Selective ortho C-H Chalcogenation of N-(Hetero)aryl-7-azaindoles

By: Vats, Tripta Kumari; et al

Advanced Synthesis & Catalysis (2018), 360(12), 2291-2296.

31-614-CAS-36530983 Steps: **1** Yield: **70%**

1.1 **Reagents:** Silver oxide (Ag_2O), Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Methanol; 2 h, 120 °C

1.2 **Reagents:** Water-d_2

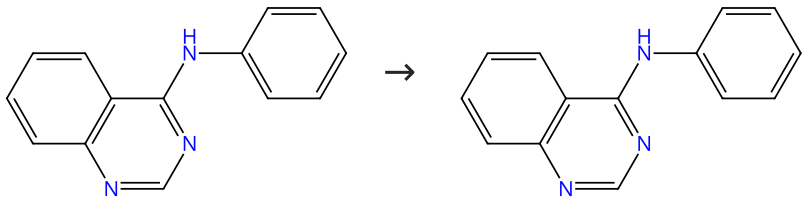
Experimental Protocols

Rh(III)-Catalyzed Cross Dehydrogenative Coupling of N-Phenyl Substituent with Thiophenes

By: Wei, Wen-Yi; et al

European Journal of Organic Chemistry (2023), 26(19), e202300294.

Scheme 13 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (14)

31-614-CAS-29446019 Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydroxypivalic acid, Water-d_2
Catalysts: Silver carbonate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 4 h, 120 °C

Experimental Protocols

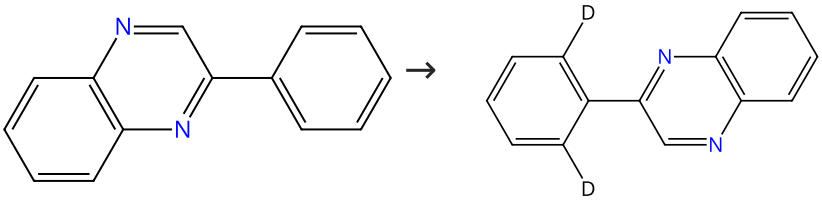
Synthesis of Fused Polycyclic 4-Anilinoquinazolines and N-Quinazoline-Indoles via Selective C-H Bond Activation

By: Liu, Xin-Yang; et al

Advanced Synthesis & Catalysis (2020), 362(24), 5645-5652.

Scheme 14 (2 Reactions)

Steps: **1** Yield: **97-99%**



Suppliers (33)

31-614-CAS-42520848

Steps: **1** Yield: **99%**

1.1 **Reagents:** Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]; 4 h, 90 °C

Experimental Protocols

Copper(II)/Rhodium(III)-Catalyzed Three-Component Sequential Annulation-Olefination of 2-Arylquinoxalines

By: Chen, Yifan; et al

European Journal of Organic Chemistry (2024), 27(44), e202400717.

31-116-CAS-23821935

Steps: **1** Yield: **97%**

1.1 **Reagents:** Cupric acetate, Silver carbonate, Water-d_2, Silver tetrafluoroborate
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 14 h, 130 °C

Experimental Protocols

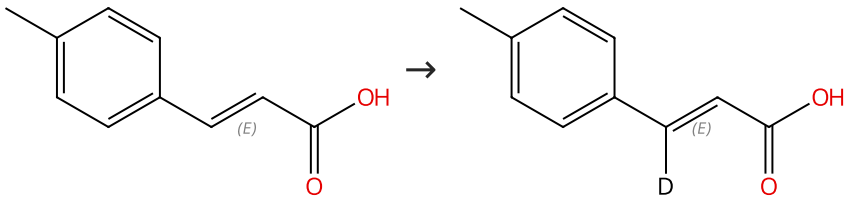
Rh-Catalyzed tandem C-C/C-N bond formation of quinoxalines with alkynes leading to heterocyclic ammonium salts

By: Talukdar, Kangkan; et al

Organic & Biomolecular Chemistry (2019), 17(8), 2148-2152.

Scheme 15 (1 Reaction)

Steps: **1** Yield: **99%**



Double bond geometry shown

Double bond geometry shown

Suppliers (49)

31-116-CAS-20659799

Steps: **1** Yield: **99%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Methanol-d_4; 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

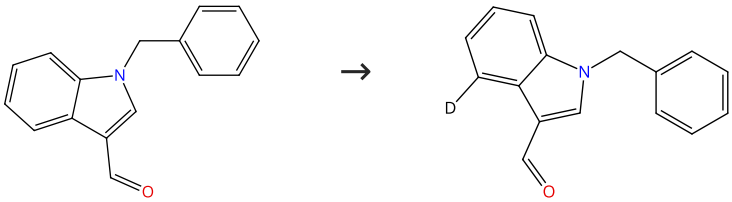
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 16 (1 Reaction)

Steps: **1** Yield: **98%**



Suppliers (73)

31-116-CAS-21761225 Steps: **1** Yield: **98%**

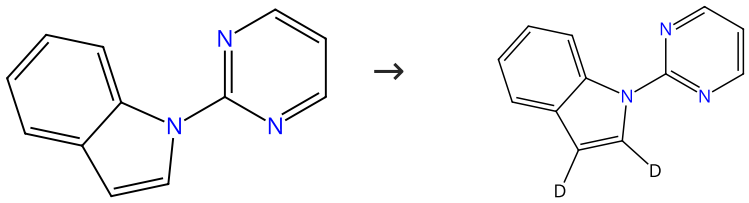
1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 55 °C

Weak Coordinating Carbonyl-Directed Rhodium(III)-Catalyzed C-H Activation at the C4-Position of Indole with Allyl Alcohols

By: Sherikar, Mahadev Sharanappa; et al

Journal of Organic Chemistry (2020), 85(8), 5516-5524.

Scheme 17 (3 Reactions) Steps: **1** Yield: **90-98%**



Suppliers (59)

31-614-CAS-24319952 Steps: **1** Yield: **98%**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1)
Solvents: 1,4-Dioxane; 3 h, 100 °C

Experimental Protocols

Rhodium-Catalyzed Additive-Free C-H Ethoxycarbonylation of (Hetero)Arenes with Diethyl Dicarbonate as a CO Surrogate

By: Suzuki, Hirotsugu; et al

European Journal of Organic Chemistry (2021), 2021(35), 4938-4942.

31-614-CAS-39948008 Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Potassium iodide, Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: Tetrahydrofuran; 18 h, 80 °C

Experimental Protocols

Rhodium-catalysed additive-free alkoxycarbonylation of indoles: 2,4,6-trimethylbenzoic acid-based carbonate anhydrides as a versatile alkoxycarboxyl source

By: Suzuki, Hirotsugu; et al

Organic & Biomolecular Chemistry (2024), 22(16), 3209-3214.

31-116-CAS-1257279 Steps: **1**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: 1,4-Dioxane; 1 h, 80 °C

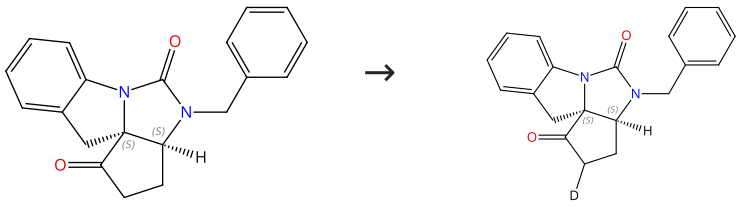
Experimental Protocols

Rhodium(III)-catalyzed C-H activation and intermolecular annulation with terminal alkynes: from indoles to carbazoles

By: Jia, Jinlong; et al

Chemical Communications (Cambridge, United Kingdom) (2015), 51(14), 2925-2928.

Scheme 18 (1 Reaction) Steps: **1** Yield: **98%**



Relative stereochemistry shown

Relative stereochemistry shown

31-116-CAS-21580335 Steps: **1** Yield: **98%**

1.1 **Reagents:** Carbon monoxide, Water-d_2
Catalysts: 4-(Dimethylamino)benzoic acid, Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, 1,1,1-trifluoromethanesulfonate (1:1)
Solvents: 1,2-Dichlorobenzene; 24 h, 130 °C

Experimental Protocols

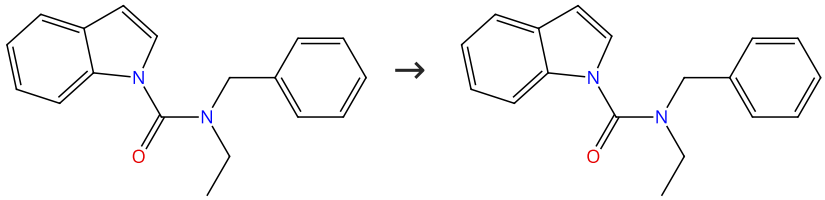
Rhodacyclopentanones as Linchpins for the Atom Economical Assembly of Diverse Polyheterocycles

By: Wang, Gang-Wei; et al

Journal of the American Chemical Society (2020), 142(4), 1740-1745.

Scheme 19 (1 Reaction)

Steps: **1** Yield: **98%**



31-614-CAS-24975119

Steps: **1** Yield: **98%**

1.1 **Reagents:** Carbon monoxide, Water-d_2
Catalysts: 4-(Dimethylamino)benzoic acid, Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, 1,1,1-trifluoromethanesulfonate (1:1)
Solvents: 1,2-Dichlorobenzene; 24 h, 130 °C

Experimental Protocols

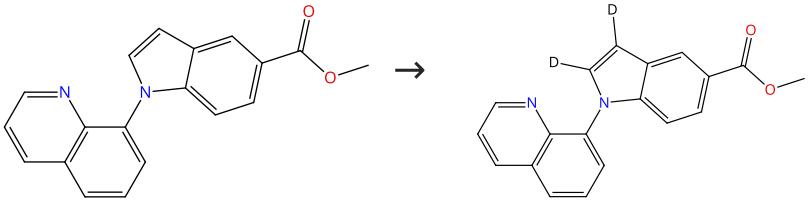
Rhodacyclopentanones as Linchpins for the Atom Economical Assembly of Diverse Polyheterocycles

By: Wang, Gang-Wei; et al

Journal of the American Chemical Society (2020), 142(4), 1740-1745.

Scheme 20 (1 Reaction)

Steps: **1** Yield: **98%**



31-116-CAS-23754027

Steps: **1** Yield: **98%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 100 °C

Experimental Protocols

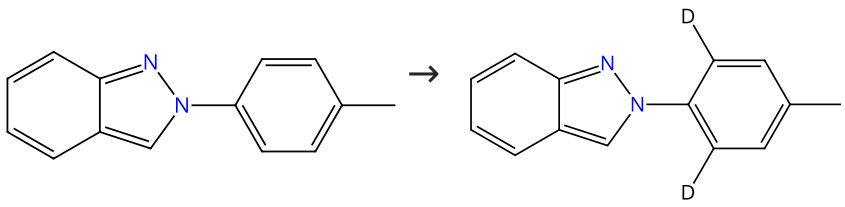
Access to the C2 C-H olefination, alkylation and deuteration of indoles by rhodium(III) catalysis: an opportunity for diverse syntheses

By: Wu, Jiaping; et al

Organic Chemistry Frontiers (2021), 8(12), 3032-3040.

Scheme 21 (2 Reactions)

Steps: **1** Yield: **92-98%**



Suppliers (10)

31-116-CAS-23004696

Steps: **1** Yield: **98%**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 min, rt

1.2 **Reagents:** Water-d_2; 3 h, 100 °C

Experimental Protocols

Rhodium-Catalyzed Directed C(sp^2)-H Bond Addition of 2-Arylindazoles to N-Sulfonylformaldimines and Activated Aldehydes

By: Ghosh, Asim Kumar; et al

Journal of Organic Chemistry (2020), 85(23), 15752-15759.

31-116-CAS-21823107 Steps: **1** Yield: **92%**

1.1 **Reagents:** Acetic acid
Catalysts: Silver acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 min, rt

1.2 **Reagents:** Water-d_2; 5 h, 110 °C

Experimental Protocols

Regioselective hydroarylation and arylation of maleimides with indazoles via a Rh(III)-catalyzed C-H activation

By: Ghosh, Asim Kumar; et al

Organic & Biomolecular Chemistry (2020), 18(16), 3093-3097.

Scheme 22 (10 Reactions) Steps: **1** Yield: **72-98%**

Suppliers (69) Supplier (1)

31-614-CAS-23995355 Steps: **1** Yield: **98%**

1.1 **Reagents:** Cupric acetate, Acetic acid-d, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2); 60 h, 100 °C

Experimental Protocols

Rh^{III}-Catalyzed Direct Heteroarylation of C(sp^3)-H and C(sp^2)-H Bonds in Heterocycles with N-Heteroaromatic Boronates

By: Wang, Huai-Wei; et al

Organic Letters (2021), 23(18), 7177-7182.

31-116-CAS-20936903 Steps: **1** Yield: **96%**

1.1 **Reagents:** Acetic acid-d, Oxygen
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Water-d_2; 20 h, 100 °C

Palladium(II)-catalyzed oxidative C(sp^3)-P bond formation via C(sp^3)-H bond activation

By: Chen, Lijin; et al

Chemical Communications (Cambridge, United Kingdom) (2019), 55(91), 13693-13696.

31-116-CAS-16993017 Steps: **1** Yield: **96%**

1.1 **Reagents:** Cupric acetate, Acetic acid-d, Oxygen
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Water-d_2; 20 h, 100 °C

Experimental Protocols

Cp*Rh(III)-catalyzed C(sp^3)-H alkylation of 8-methylquinolines in aqueous media

By: Kim, Saegun; et al

Chemical Communications (Cambridge, United Kingdom) (2017), 53(21), 3006-3009.

31-116-CAS-20305785 Steps: **1** Yield: **95%**

1.1 **Reagents:** Acetic acid-d_4, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]; rt; 20 h, 100 °C

Rh(III)-Catalyzed straightforward arylation of 8-methyl/formylquinolines using diazo compounds

By: Ghosh, Bidhan; et al

Chemical Communications (Cambridge, United Kingdom) (2019), 55(48), 6886-6889.

31-614-CAS-43092720 Steps: **1** Yield: **90%**

1.1 **Reagents:** Cupric acetate, Acetic acid-d, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]; 20 h, 100 °C

Experimental Protocols

Palladium catalyzed C(sp^3)-H alkylation of 8-methylquinolines with aziridines: access to functionalized γ-quinolinylpropylamines

By: Sahoo, Anita; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(99), 14818-14821.

31-614-CAS-36225712 Steps: **1** Yield: **90%**

1.1 **Reagents:** Acetic acid-*d*, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 0.5 h, 80 °C; 80 °C → rt

1.2 **Reagents:** Ethyl acetate, Sodium hydroxide
Solvents: Water

Experimental Protocols

Rh(III)-Catalyzed Alkylation of 8-Methylquinolines with Oxabenzonorbornadienes

By: Sarthi; et al

Organic Letters (2023), 25(15), 2627-2631.

31-614-CAS-34877447 Steps: **1** Yield: **72%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 h, 80 °C

Experimental Protocols

Regioselective C(sp^3)-H amidation of 8-methylquinolines with N-hydroxyphthalimides

By: Kumar, Rohit; et al

Chemical Communications (Cambridge, United Kingdom) (2022), 58(94), 13151-13154.

31-614-CAS-34344493 Steps: **1**

1.1 **Reagents:** Cupric acetate, Acetic acid-*d*, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichlorobenzene; 36 h, 110 °C

Experimental Protocols

Palladium-Catalyzed C(sp^3)-H Biarylation of 8-Methyl Quinolines with Cyclic Diaryliodonium Salts to Access Functionalized Biaryls and Fluorene Derivatives

By: Maurya, Naveen Kumar; et al

Journal of Organic Chemistry (2022), 87(21), 13744-13749.

31-614-CAS-24142159 Steps: **1**

1.1 **Reagents:** Cupric acetate, Acetic acid-d_4
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Water-d_2; rt; 20 h, 100 °C

Experimental Protocols

Cp*Rh(III)-Catalyzed Regioselective C(sp^3)-H Electrophilic Trifluoromethylthiolation of 8-Methylquinolines

By: Sumit; et al

Journal of Organic Chemistry (2021), 86(19), 13754-13761.

31-116-CAS-20966839 Steps: **1**

1.1 **Reagents:** Cupric acetate, Acetic acid-d_4, Oxygen
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Water-d_2; rt; 20 h, 100 °C

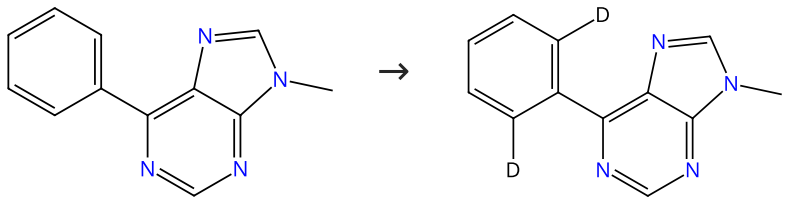
Experimental Protocols

Cp*Rh(III)-Catalyzed Regioselective C(sp^3)-H Methylation of 8-Methylquinolines with Organoborons

By: Kumar, Rakesh; et al

Organic Letters (2020), 22(1), 305-309.

Scheme 23 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (7)

31-614-CAS-33527671 Steps: **1** Yield: **98%**

1.1 **Reagents:** Cupric acetate, Water-d_2, Zinc triflate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 25 °C

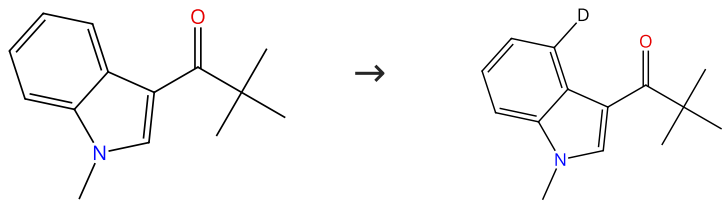
Rhodium(III)-Catalyzed Synthesis of Diverse Fluorescent Polycyclic Purinium Salts from 6-Arylpurine Nucleosides and Alkynes

By: Yang, Qi-Liang; et al

Organic Letters (2022), 24(23), 4234-4239.

Scheme 24 (3 Reactions)

Steps: **1** Yield: **83-97%**



Suppliers (32)

31-614-CAS-32736441

Steps: **1** Yield: **97%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 18 h, 0 °C

Experimental Protocols

Rhodium(III)-catalyzed regioselective C(sp^2)-H activation of indoles at the C4-position with iodonium ylides

By: Wu, Fuhai; et al

Organic & Biomolecular Chemistry (2022), 20(25), 5055-5059.

31-614-CAS-24624351

Steps: **1** Yield: **96%**

1.1 **Reagents:** Pivalic acid, Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 3 h, 100 °C

Experimental Protocols

Rhodium(III)-Catalyzed Regioselective C-H Allylation and Prenylation of Indoles at C4-Position

By: Zhang, Shang-Shi; et al

Advanced Synthesis & Catalysis (2022), 364(1), 64-70.

31-614-CAS-32736443

Steps: **1** Yield: **83%**

1.1 **Reagents:** Water-d_2, Propanoic acid, 2,2-dimethyl-, cesium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 1.5 h, 70 °C

Experimental Protocols

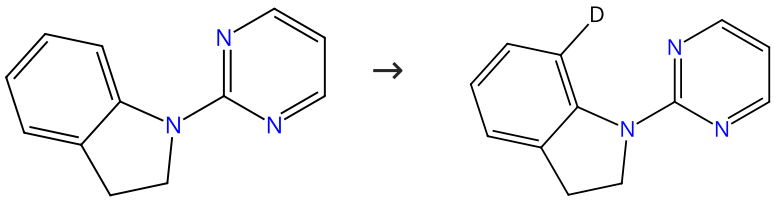
Rhodium(III)-catalyzed regioselective C(sp^2)-H activation of indoles at the C4-position with iodonium ylides

By: Wu, Fuhai; et al

Organic & Biomolecular Chemistry (2022), 20(25), 5055-5059.

Scheme 25 (12 Reactions)

Steps: **1** Yield: **74-97%**



Suppliers (10)

31-614-CAS-35378174

Steps: **1** Yield: **97%**

1.1 **Reagents:** Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dimethoxyethane; 20 h, 25 °C

Rh(III)-Catalyzed Stereoselective C-H Homoallylation of Indolines with 4-Vinyl-1,3-dioxan-2-ones

By: Zhang, Zhou; et al

Synthesis (2023), 55(21), 3617-3624.

31-614-CAS-37156969

Steps: **1** Yield: **97%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 12 h, 130 °C

Pd-Catalyzed C-7 Arylation of Indolines with Aryltriazenes under Mild Conditions

By: Gao, Jianan; et al

Journal of Organic Chemistry (2023), 88(15), 11056-11068.

31-614-CAS-31691507 Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: 1,2-Dichloroethane; 18 h, 130 °C

Experimental Protocols

Rhodium-catalysed decarbonylative C(sp^2)-H alkylation of indolines with alkyl carboxylic acids and carboxylic anhydrides under redox-neutral conditions

By: Suzuki, Hirotsugu; et al

Organic & Biomolecular Chemistry (2022), 20(14), 2808-2812.

31-614-CAS-39024098 Steps: **1** Yield: **94%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 12 h, 130 °C

Experimental Protocols

Cobalt Catalysis: C7 Alkynylation of Indolines with a Bromoalkyne

By: Manisha, Manisha; et al

Synthesis (2024), 56(5), 751-757.

31-614-CAS-31174826 Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Carbonylchlorobis(triphenylphosphine)rhodium
Solvents: Acetonitrile; rt; 18 h, 100 °C

Experimental Protocols

Rhodium-Catalyzed C(sp^2)-H Alkoxycarbonylation/Acylation of Indolines with Anhydrides as a Carbonyl Source

By: Suzuki, Hirotsugu; et al

Organic Letters (2022), 24(5), 1141-1145.

31-614-CAS-40185018 Steps: **1** Yield: **74%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Toluene; 20 h, 100 °C

Experimental Protocols

Rh(III)-catalyzed C(7)-H formylmethylation of indoline with vinylene carbonate

By: Zhang, Yanbo; et al

Youji Huaxue (2023), 43(8), 2905-2912.

31-614-CAS-39311653 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 12 h, 130 °C

Experimental Protocols

Pd-Catalyzed Direct C7 Trifluoromethylation of Indolines with Umemoto's Reagent

By: Song, Qinglang; et al

Organic Letters (2024), 26(18), 3685-3690.

31-614-CAS-37488096 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 12 h, 130 °C

Experimental Protocols

Experimental and Computational Studies on Ru^{II}-Catalyzed C7-Allylation of Indolines with Allyl Bromide

By: Gupta, Shiv Shankar; et al

Chemistry - A European Journal (2023), 29(50), e202301360.

31-614-CAS-24847503 Steps: **1**

1.1 **Reagents:** Silver carbonate, Silver triflate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 12 h, 130 °C

Experimental Protocols

Rh(III)-Catalyzed Selective C7 Halogenation of Indolines

By: Manisha; et al

European Journal of Organic Chemistry (2021), 2021(39), 5443-5448.

31-116-CAS-23233409 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 12 h, 130 °C

Palladium-Catalyzed Direct and Specific C-7 Acylation of Indolines with 1,2-Diketones

By: Xie, Guilin; et al

Organic Letters (2021), 23(2), 410-415.

31-116-CAS-19136235 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Silver fluoride (AgF_2), Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Acetic anhydride; 6 h, 30 °C

Experimental Protocols

Rh^{III}-Catalyzed Directed Selective C7-Hydroxylation and Acetoxylation of Indolines

By: Zhai, Wenchao; et al

ChemistrySelect (2018), 3(28), 8035-8039.

31-116-CAS-7116309 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 12 h, 130 °C

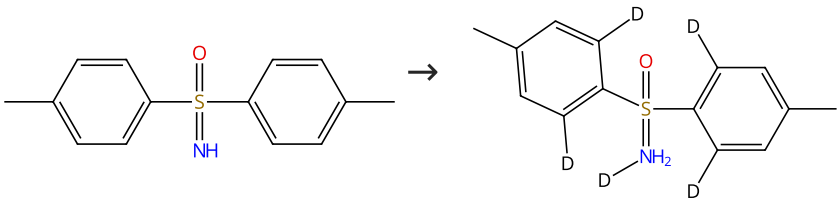
Experimental Protocols

Rh(III)-Catalyzed C7-Thiolation and Selenation of Indolines

By: Xie, Wucheng; et al

Journal of Organic Chemistry (2016), 81(2), 396-403.

Scheme 26 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (2)

31-614-CAS-43601205 Steps: **1** Yield: **97%**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Toluene; 4 h, 100 °C

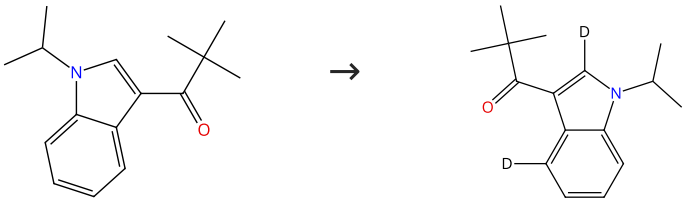
Experimental Protocols

Synthesis of Spirocyclic-1,2-Benzisothiazoles by Rh(III)-Catalyzed [4+1] Annulation of Sulfoximines with Maleimides

By: Kumar, Anil; et al

Asian Journal of Organic Chemistry (2025), 14(1), e202400537.

Scheme 27 (1 Reaction) Steps: **1** Yield: **97%**



31-116-CAS-21823447 Steps: **1** Yield: **97%**

1.1 **Reagents:** Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 24 h, 40 °C

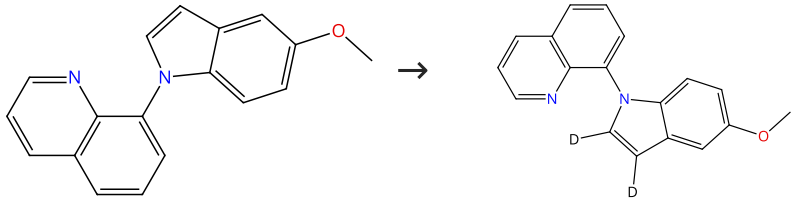
Experimental Protocols

Rh(III)-Catalyzed regioselective C4 alkylation of indoles with allylic alcohols: direct access to β-indolyl ketones

By: Pan, Changduo; et al

Organic & Biomolecular Chemistry (2020), 18(16), 3038-3042.

Scheme 28 (1 Reaction) Steps: **1** Yield: **97%**



31-116-CAS-23755906 Steps: **1** Yield: **97%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 100 °C

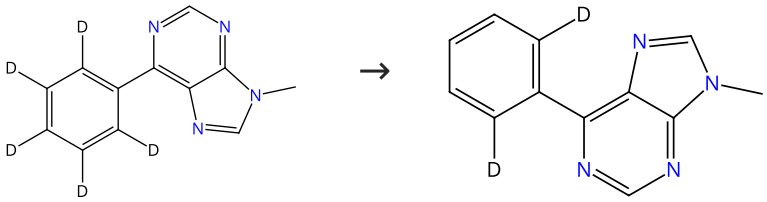
Experimental Protocols

Access to the C2 C-H olefination, alkylation and deuteration of indoles by rhodium(III) catalysis: an opportunity for diverse syntheses

By: Wu, Jiaping; et al

Organic Chemistry Frontiers (2021), 8(12), 3032-3040.

Scheme 29 (1 Reaction) Steps: **1** Yield: **97%**



31-614-CAS-33527672 Steps: **1** Yield: **97%**

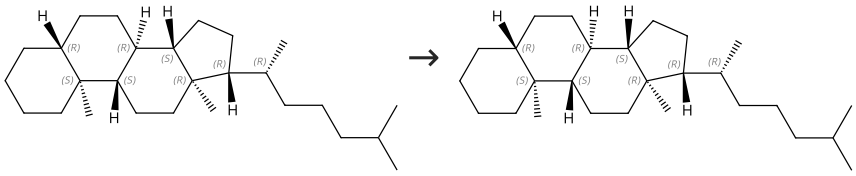
1.1 **Reagents:** Cupric acetate, Water-d_2, Zinc triflate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 25 °C

Rhodium(III)-Catalyzed Synthesis of Diverse Fluorescent Polycyclic Purinium Salts from 6-Arylpurine Nucleosides and Alkynes

By: Yang, Qi-Liang; et al

Organic Letters (2022), 24(23), 4234-4239.

Scheme 30 (1 Reaction) Steps: **1** Yield: **97%**



Absolute stereochemistry shown Absolute stereochemistry shown

Suppliers (61)

31-614-CAS-28537002 Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 - 24 h, 160 °C

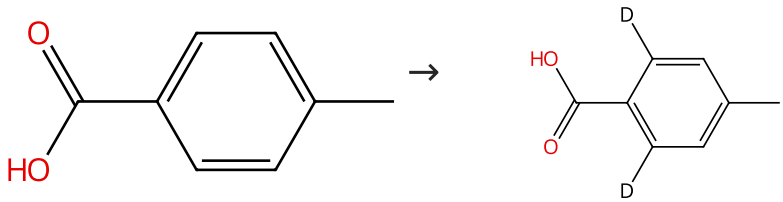
Experimental Protocols

Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 31 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (103)

31-116-CAS-20659784 Steps: **1** Yield: **97%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

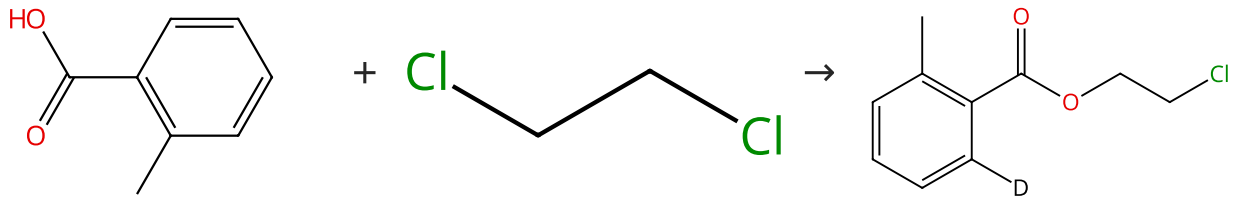
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 32 (1 Reaction) Steps: **1** Yield: **96%**



Suppliers (92) Suppliers (181)

31-017-CAS-22021326 Steps: **1** Yield: **96%**

1.1 **Reagents:** Potassium carbonate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 24 h, 100 °C

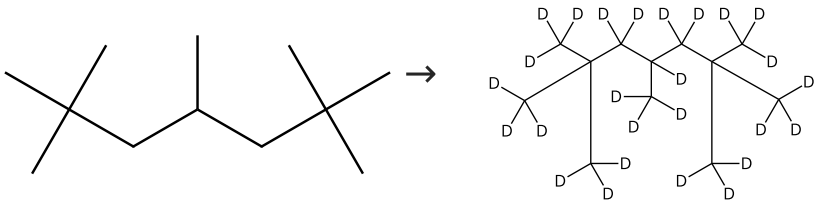
Experimental Protocols

Rh(III)-Catalyzed Selective ortho-C-H Amination of Benzoic Acids with Anthranils: A Facile Access to Anthranilic Acid Derivatives (AAs)

By: Gao, Yang; et al

ChemCatChem (2020), 12(10), 2721-2725.

Scheme 33 (1 Reaction) Steps: **1** Yield: **96%**



Suppliers (66)

31-116-CAS-11674069 Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 - 24 h, 160 °C

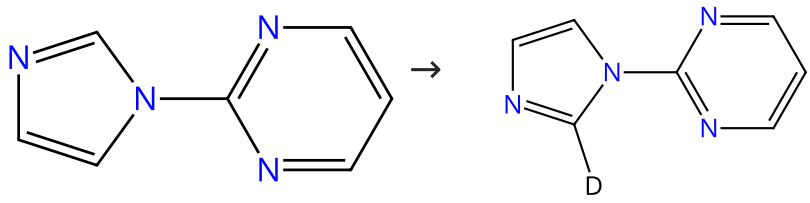
Experimental Protocols

Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 34 (1 Reaction) Steps: **1** Yield: **96%**



Suppliers (12)

31-614-CAS-32465930 Steps: **1** Yield: **96%**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-, Bis[2-(diphenylphosphino)phenyl] ether
Solvents: 1,4-Dioxane; 18 h, 140 °C

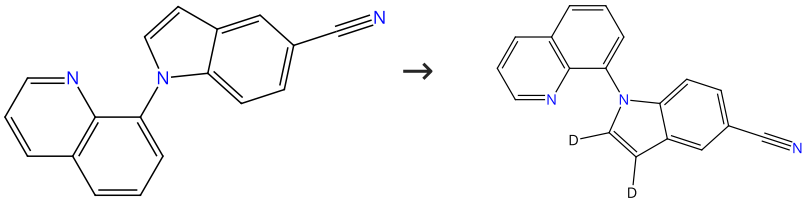
Experimental Protocols

Ligand-Promoted Rh^{I}-Catalyzed C2-Selective C-H Alkenylation and Polyenylation of Imidazoles with Alkenyl Carboxylic Acids

By: Zhao, Haoqiang; et al

Chemistry - A European Journal (2022), 28(36), e202200441.

Scheme 35 (1 Reaction) Steps: **1** Yield: **96%**



31-116-CAS-23754832 Steps: **1** Yield: **96%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 100 °C

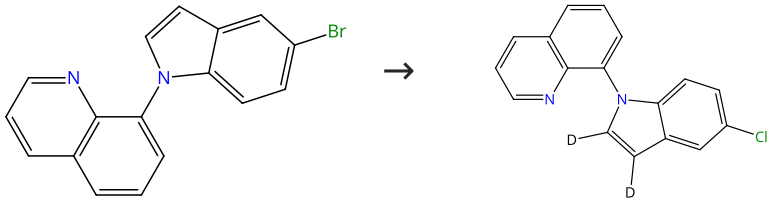
Experimental Protocols

Access to the C2 C-H olefination, alkylation and deuteration of indoles by rhodium(III) catalysis: an opportunity for diverse syntheses

By: Wu, Jiaping; et al

Organic Chemistry Frontiers (2021), 8(12), 3032-3040.

Scheme 36 (1 Reaction) Steps: **1** Yield: **96%**



31-116-CAS-23753038 Steps: **1** Yield: **96%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 100 °C

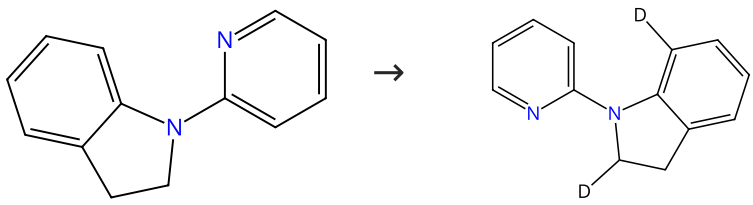
Experimental Protocols

Access to the C2 C-H olefination, alkylation and deuteration of indoles by rhodium(III) catalysis: an opportunity for diverse syntheses

By: Wu, Jiaping; et al

Organic Chemistry Frontiers (2021), 8(12), 3032-3040.

Scheme 37 (1 Reaction) Steps: **1** Yield: **96%**



Suppliers (7)

31-116-CAS-22315059 Steps: **1** Yield: **96%**

1.1 **Reagents:** Silver carbonate, Silver triflate, Oxygen, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene; 12 h, 130 °C

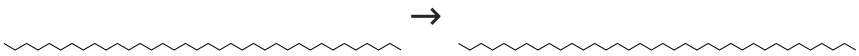
Iron-Catalyzed C(sp^2)-H Alkylation of Indolines and Benzo[h] quinoline with Unactivated Alkyl Chlorides through Chelation Assistance

By: Jagtap, Rahul A.; et al

ACS Catalysis (2020), 10(13), 7312-7321.

Scheme 38 (1 Reaction)

Steps: **1** Yield: **96%**



Suppliers (81)

31-614-CAS-25199145

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Cyclohexane, Water-d_2; 24 h, 160 °C

Experimental Protocols

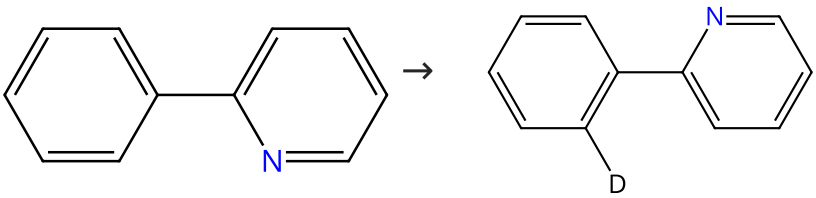
Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 39 (2 Reactions)

Steps: **1** Yield: **95%**



Suppliers (94)

Suppliers (6)

31-116-CAS-9656075

Steps: **1** Yield: **95%**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Water-d_2; 10 min, 60 °C

Experimental Protocols

[RhCp*Cl_2]$_2$-Catalyzed Directed N-Boc Amidation of Arenes "on Water"

By: Ali, Ashif Md.; et al

Organic Letters (2015), 17(6), 1513-1516.

31-614-CAS-24542175

Steps: **1**

1.1 **Reagents:** Water-d_2, Potassium hexafluorophosphate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 3.5 h, 35 °C

Experimental Protocols

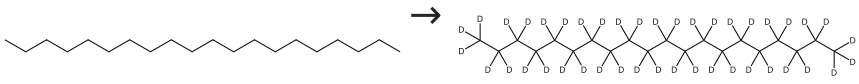
Electrochemically enabled rhodium-catalyzed [4+2] annulations of arenes with alkynes

By: Wang, Zi-Chen; et al

Green Chemistry (2021), 23(23), 9515-9522.

Scheme 40 (2 Reactions)

Steps: **1** Yield: **93-95%**



Suppliers (93)

Suppliers (32)

31-116-CAS-9988804 Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: 2-Propan-*1,1,1,2,3,3,3*-d_7-ol-*d*; 24 h, 120 °C

Experimental Protocols

Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

31-116-CAS-11492376 Steps: **1** Yield: **93%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 h, 160 °C

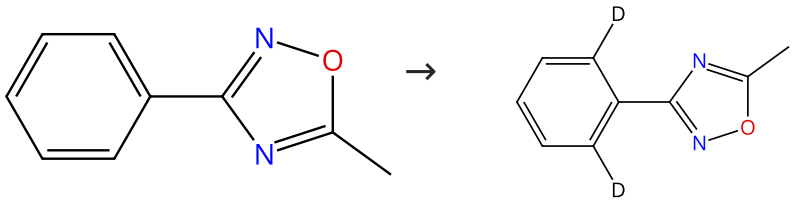
Experimental Protocols

Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 41 (2 Reactions) Steps: **1** Yield: **92-95%**



Suppliers (52)

31-614-CAS-37170994 Steps: **1** Yield: **95%**

1.1 **Reagents:** Zinc acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver tetrafluoroborate
Solvents: 1,2-Dichloroethane; 2 h, 60 °C

Experimental Protocols

Direct Assembly of Vinyl Fluorinated Isoquinolines Via Rh(III)-Catalyzed [4 + 2] Annulation

By: Luo, Yi; et al

Journal of Organic Chemistry (2023), 88(15), 10789-10800.

31-614-CAS-31532357 Steps: **1** Yield: **92%**

1.1 **Reagents:** 1-Adamantanecarboxylic acid, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 3 h, 100 °C

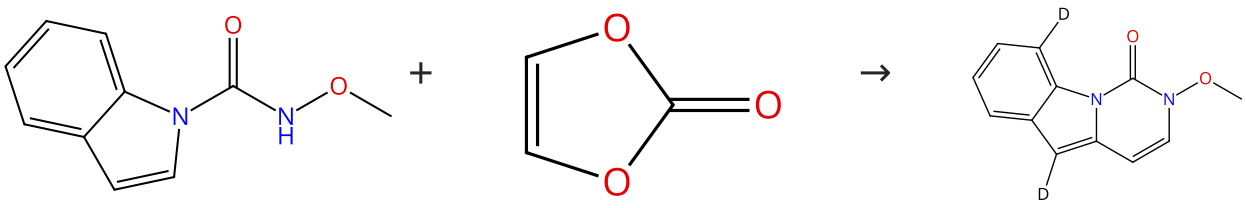
Experimental Protocols

Rh(III)-catalyzed cascade annulation to produce an N-acetyl chain of spiropyrroloisoquinoline derivatives

By: He, Yuan; et al

Organic & Biomolecular Chemistry (2022), 20(11), 2293-2299.

Scheme 42 (1 Reaction) Steps: **1** Yield: **95%**



Supplier (1) Suppliers (74)

31-614-CAS-37741583 Steps: **1** Yield: **95%**

1.1 **Reagents:** Sodium acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane, Water-d_2; 5 h, rt

Experimental Protocols

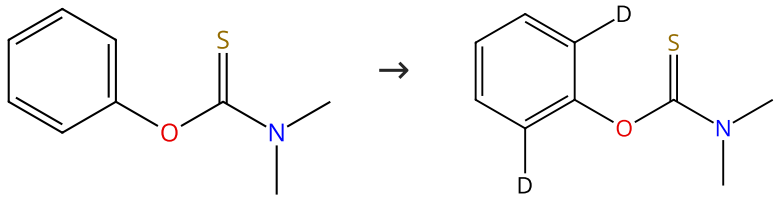
Rhodium(III)-Catalyzed C-H/N-H Activation for Direct Synthesis of Pyrimidoindolones under Mild Conditions

By: Kumar, Vikash; et al

Chemistry - An Asian Journal (2023), 18(19), e202300675.

Scheme 43 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (6)

31-116-CAS-20583323

Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 18 h, 80 °C

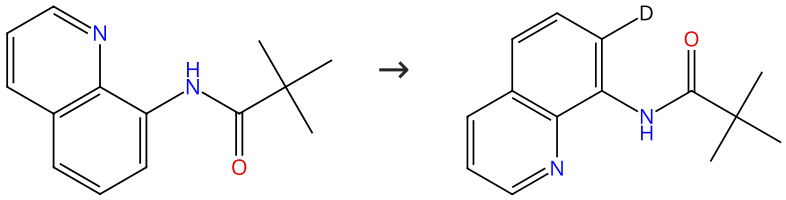
Thiocarbamate-Directed ortho C-H Bond Alkylation with Diazo Compounds

By: Jin, Shengnan; et al

Advanced Synthesis & Catalysis (2019), 361(20), 4674-4678.

Scheme 44 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (4)

31-614-CAS-31692929

Steps: **1** Yield: **95%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 4 h, 60 °C

Experimental Protocols

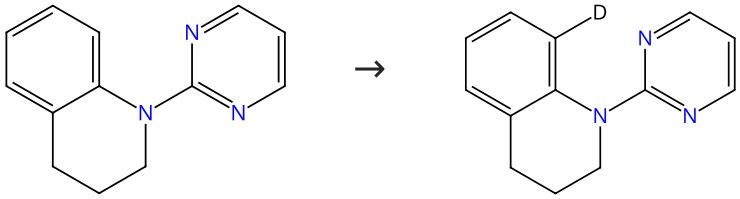
Rh(III)-Catalyzed C(7)-H Alkylation of Quinolines in the Synthesis of Angular π-Extended Pyrroloquinolines for Single-Component White-Light Emission

By: Khot, Nandkishor Prakash; et al

Organic Letters (2022), 24(11), 2186-2191.

Scheme 45 (3 Reactions)

Steps: **1** Yield: **90-95%**



Supplier (1)

31-614-CAS-39744505

Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Dicarbonylrhodium acetylacetonate
Solvents: 1,4-Dioxane; 1.5 h, 250 psi, 140 °C

Experimental Protocols

Microwave-assisted Rhodium(I)-Catalyzed C8-Regioselective C-H Alkenylation and Arylation of 1,2,3,4-Tetrahydro quinolines with Alkenyl and Aryl Carboxylic Acids

By: Zhao, Haoqiang; et al

Advanced Synthesis & Catalysis (2024), 366(8), 1820-1826.

31-614-CAS-36175402 Steps: **1** Yield: **95%**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 8 h, 1 atm, 130 °C

Experimental Protocols

Rhodium(III-Catalyzed C8-Selective C-H Alkenylation and Alkylation of 1, 2, 3, 4-Tetrahydroquinolines with Styrenes and Allylic Alcohols

By: Yang, Ji; et al

Advanced Synthesis & Catalysis (2023), 365(7), 1027-1035.

31-116-CAS-19370887 Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2, Silver oxide (Ag_2O)
Catalysts: Tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium(2+)
Solvents: 1,2-Dichloroethane; 24 h, 120 °C

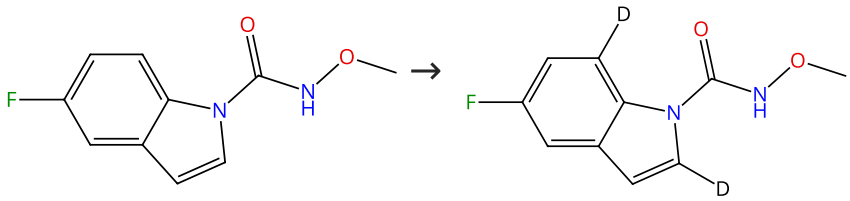
Experimental Protocols

Ruthenium(II)-Catalyzed Regioselective C-8 Hydroxylation of 1, 2,3,4-Tetrahydroquinolines

By: Chen, Changjun; et al

Organic Letters (2018), 20(21), 6799-6803.

Scheme 46 (1 Reaction) Steps: **1** Yield: **95%**



31-116-CAS-22543033 Steps: **1** Yield: **95%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 47 (1 Reaction) Steps: **1** Yield: **95%**

31-116-CAS-20469718 Steps: **1** Yield: **95%**

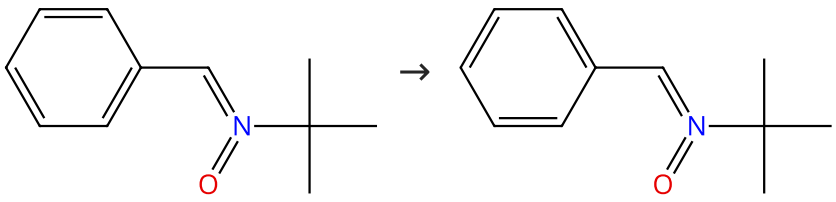
1.1 **Reagents:** Water-d_2, Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Dichloromethane; 20 h, rt

Three-Component Synthesis of Isoquinoline Derivatives by a Relay Catalysis with a Single Rhodium(III) Catalyst

By: Zhou, Chao; et al

Organic Letters (2019), 21(13), 4971-4975.

Scheme 48 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (82)

31-614-CAS-27042304 Steps: **1** Yield: **95%**

1.1 **Reagents:** Oxygen
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 2,2,2-Trifluoroethanol, Water-d_2; 24 h, 80 °C

Experimental Protocols

Rhodium(III)-Catalyzed C-H Activation of Nitrones and Annulative Coupling with Nitroalkenes

By: Bai, Dachang; et al

Journal of Organic Chemistry (2017), 82(18), 9877-9884.

Scheme 49 (1 Reaction) Steps: **1** Yield: **95%**

Suppliers (10)

31-614-CAS-41581909 Steps: **1** Yield: **95%**

1.1 **Reagents:** Zinc acetate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: Chlorobenzene; 2 h, 100 °C

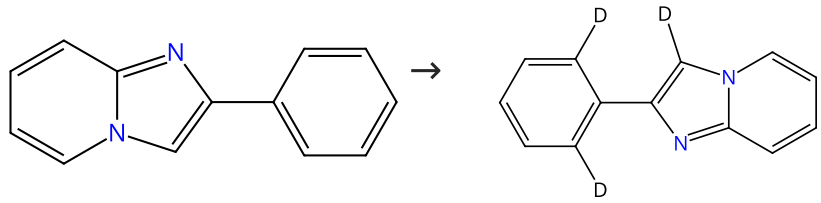
Experimental Protocols

The Construction of Novel Spirocyclic Frameworks with Cyclobutane through Rh(III)-Catalyzed [3 + 2]-Annulation between Quinoxalines and Alkynylcyclobutanols

By: Gang, Yi-Chi; et al

Journal of Organic Chemistry (2024), 89(18), 12912-12923.

Scheme 50 (3 Reactions) Steps: **1** Yield: **87-95%**



Suppliers (83)

31-116-CAS-20292365 Steps: **1** Yield: **95%**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 min, rt

1.2 **Reagents:** Water-d_2; 5 h, 110 °C

Rhodium-Catalyzed Directed C-H Amidation of Imidazohet erocycles with Dioxazolones

By: Samanta, Sadhanendu; et al

Organic Letters (2019), 21(12), 4905-4909.

31-116-CAS-9469319 Steps: **1** Yield: **88%**

1.1 **Reagents:** Cupric acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: Toluene; 12 h, 110 °C

Experimental Protocols

Rhodium-catalyzed annulation between 2-arylimidazo[1,2-a] pyridines and alkynes leading to pyrido [1,2-a]benzimidazole derivatives

By: Peng, Haibo; et al

Organic & Biomolecular Chemistry (2015), 13(19), 5354-5357.

31-614-CAS-37556010 Steps: **1** Yield: **87%**

1.1 **Reagents:** *p*-Toluenesulfonic acid, Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dimethylacetamide; 24 h, 120 °C

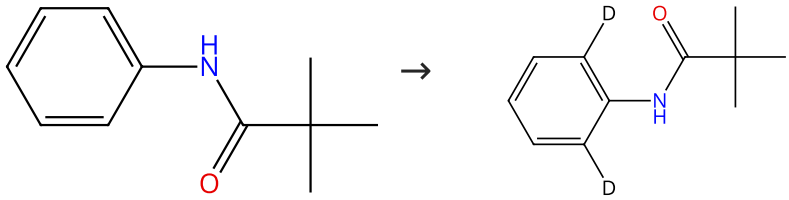
Experimental Protocols

Catalyst-Controlled Regiodivergent Oxidative Annulation of 2-Arylimidazo[1,2-a]pyridines with Cinnamaldehyde Derivatives for Construction of Fused N-Heterocyclic Frameworks

By: Meena, Neha; et al

Journal of Organic Chemistry (2023), 88(18), 12902-12913.

Scheme 51 (3 Reactions) Steps: **1** Yield: **35-95%**



Suppliers (78)

31-116-CAS-16408197 Steps: **1** Yield: **95%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2-Methyl-2-butanol; 12 h, 110 °C

Experimental Protocols

Rhodium-Catalyzed Oxidative Benzannulation of N-Pivaloyl anilines with Internal Alkynes through Dual C-H Bond Activation: Synthesis of Highly Substituted Naphthalenes

By: Zhang, Xuan; et al

Chemistry - An Asian Journal (2016), 11(22), 3241-3250.

31-116-CAS-18998648 Steps: **1** Yield: **35%**

1.1 **Reagents:** Silver carbonate, Trifluoroacetic acid-*d*, Water-d_2
Catalysts: Copper fluoride (CuF_2), Rhodium trichloride
Solvents: Toluene; 2 h, 150 °C; cooled

Oxidative C-H/C-H Cross-Coupling Reactions between N-Acylanilines and Benzamides Enabled by a Cp*- Free $RhCl_3$/TFA Catalytic System

By: Shi, Yang; et al

Angewandte Chemie, International Edition (2018), 57(29), 9108-9112.

31-614-CAS-37044776 Steps: **1**

1.1 **Reagents:** Acetic anhydride, Silver acetate
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; rt; rt → 95 °C; 10 h, 95 °C

1.2 **Reagents:** Water-d_2

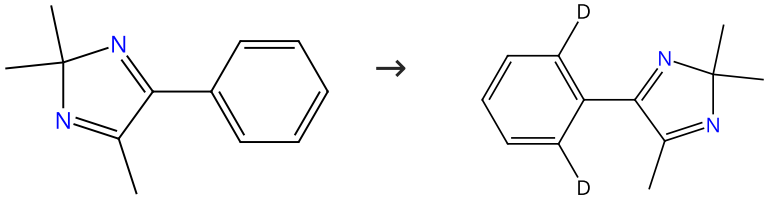
Experimental Protocols

Construction of Benzoxazinones from Anilines and Their Derivatives

By: Zhao, Teng-Fei; et al

Organic Letters (2023), 25(27), 4968-4973.

Scheme 52 (2 Reactions) Steps: **1** Yield: **85-95%**



31-614-CAS-26828760 Steps: **1** Yield: **95%**

1.1 **Reagents:** Manganese triacetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 2 h, 100 °C

Rh(III)-Catalyzed [3 + 2] Spirocyclization of 2H-Imidazoles with 1,3-Diynes for the Synthesis of Spiro-[imidazole-indene] Derivatives

By: Luo, Yi; et al

Organic Letters (2020), 22(19), 7604-7608.

31-614-CAS-37045215 Steps: **1** Yield: **85%**

1.1 **Reagents:** Zinc acetate dihydrate, [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol, Water-d_2; 2 h, 100 °C

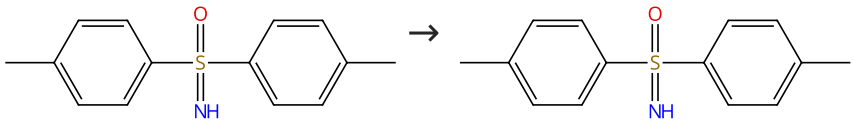
Experimental Protocols

The Construction of Multifarious Monofluoroalkene Derivatives from 2H-imidazoles via a Three-Component Coupling

By: Luo, Yi; et al

Advanced Synthesis & Catalysis (2023), 365(13), 2225-2229.

Scheme 53 (1 Reaction) Steps: **1** Yield: **94%**



Suppliers (2)

31-614-CAS-43024808 Steps: **1** Yield: **94%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Silver triflate, Rhodium, di-μ-iododiiodobis[(3a,4,5,6,6a-η)-(13b*R*)-4,5,6-trimethyl-3a*H*-cyclopenta[*b*]dinaphtho[2,1-*e*:1',2'-*g*][1,4]dioxocin-3a-yl]di-
Solvents: Methanol-d_4; 6 - 8 h, rt

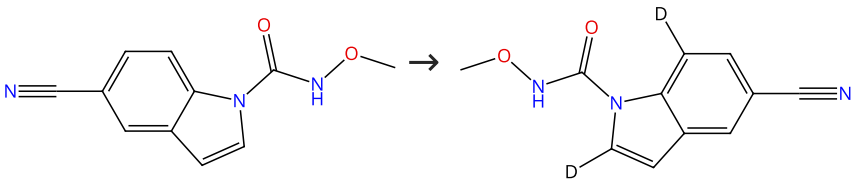
Experimental Protocols

Chiral Cp^{x}Rh^{III}-catalyzed enantioselective C-H annulation to access fused tricyclic sulfur-stereogenic and medium-sized aza-heterocycles

By: Xiong, Yuping; et al

Organic Chemistry Frontiers (2025), 12(2), 614-622.

Scheme 54 (1 Reaction) Steps: **1** Yield: **94%**



31-116-CAS-22543037 Steps: **1** Yield: **94%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 25 °C

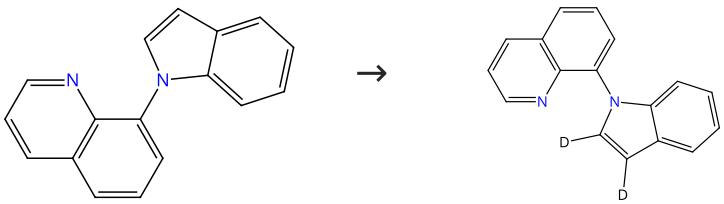
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 55 (1 Reaction)

Steps: **1** Yield: **93%**



31-116-CAS-23754600

Steps: **1** Yield: **93%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 100 °C

Experimental Protocols

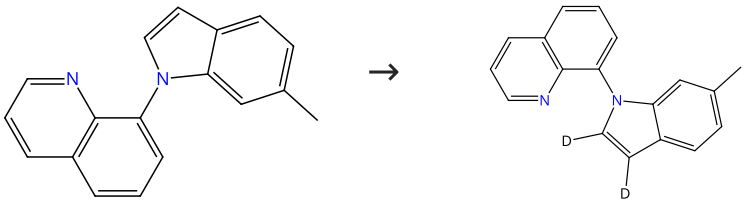
Access to the C2 C-H olefination, alkylation and deuteration of indoles by rhodium(III) catalysis: an opportunity for diverse syntheses

By: Wu, Jiaping; et al

Organic Chemistry Frontiers (2021), 8(12), 3032-3040.

Scheme 56 (1 Reaction)

Steps: **1** Yield: **94%**



31-116-CAS-23755391

Steps: **1** Yield: **94%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 100 °C

Experimental Protocols

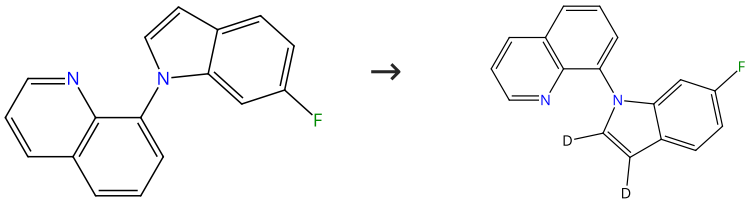
Access to the C2 C-H olefination, alkylation and deuteration of indoles by rhodium(III) catalysis: an opportunity for diverse syntheses

By: Wu, Jiaping; et al

Organic Chemistry Frontiers (2021), 8(12), 3032-3040.

Scheme 57 (1 Reaction)

Steps: **1** Yield: **94%**



31-116-CAS-23754895

Steps: **1** Yield: **94%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 100 °C

Experimental Protocols

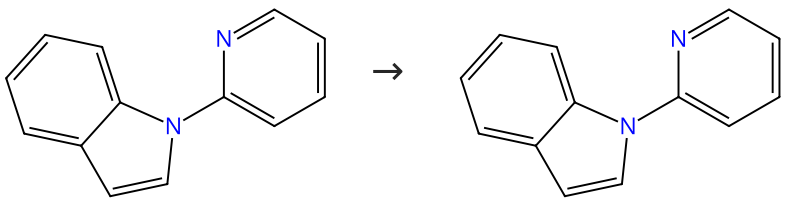
Access to the C2 C-H olefination, alkylation and deuteration of indoles by rhodium(III) catalysis: an opportunity for diverse syntheses

By: Wu, Jiaping; et al

Organic Chemistry Frontiers (2021), 8(12), 3032-3040.

Scheme 58 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (36)

31-614-CAS-36612474 Steps: **1** Yield: **94%**

1.1 **Reagents:** Potassium persulfate, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Tetrahydrofuran; 12 h, 80 °C

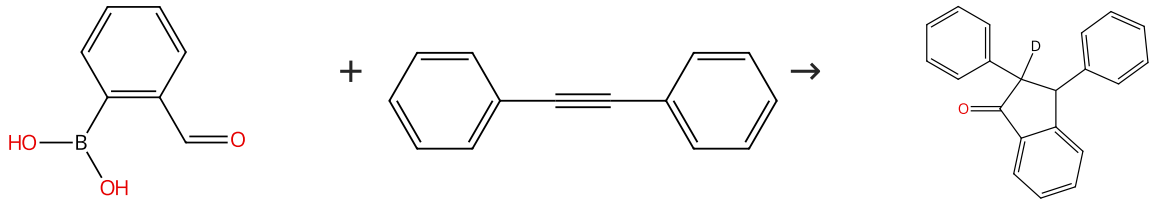
Experimental Protocols

Rh(III)-Catalyzed Double C-H Functionalization of Indoles with Cyclopropenones via Sequential C-H/C-C/C-H Bond Activation

By: Zhang, Yan-Bo; et al

Organic Letters (2023), 25(21), 3922-3926.

Scheme 59 (1 Reaction) Steps: **1** Yield: **94%**



Suppliers (109) Suppliers (88)

31-614-CAS-32259088 Steps: **1** Yield: **94%**

1.1 **Reagents:** Triethylamine, Water-d_2
Catalysts: Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium; 16 h, 80 °C

Experimental Protocols

One-Pot Synthesis of 2,3-Disubstituted Indanone Derivatives in Water under Exogenous Ligand-Free and Mild Conditions

By: Zhu, Anqiao; et al

Journal of Organic Chemistry (2022), 87(12), 7884-7894.

Scheme 60 (1 Reaction) Steps: **1** Yield: **94%**

Suppliers (3)

31-116-CAS-23351611 Steps: **1** Yield: **94%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

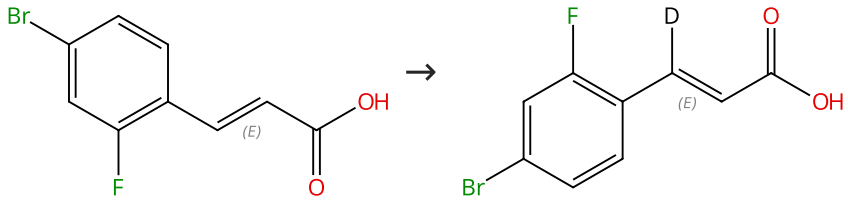
Experimental Protocols

Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 61 (1 Reaction) Steps: **1** Yield: **94%**



Double bond geometry shown Double bond geometry shown

Suppliers (34)

31-116-CAS-20659798 Steps: **1** Yield: **94%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: Methanol-d_4; 24 h, 90 °C

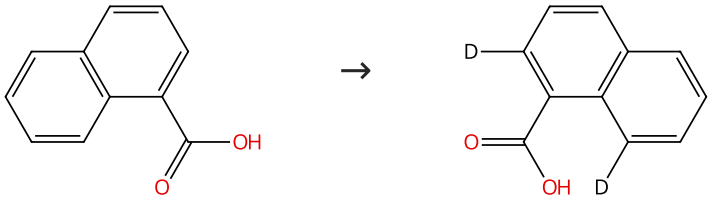
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 62 (1 Reaction) Steps: **1** Yield: **94%**



Suppliers (91)

31-116-CAS-20659783 Steps: **1** Yield: **94%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

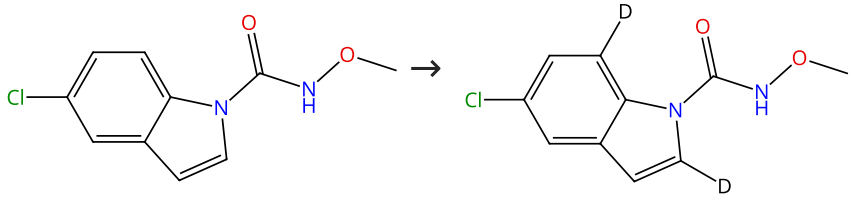
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 63 (1 Reaction) Steps: **1** Yield: **93%**



31-116-CAS-22543034 Steps: **1** Yield: **93%**

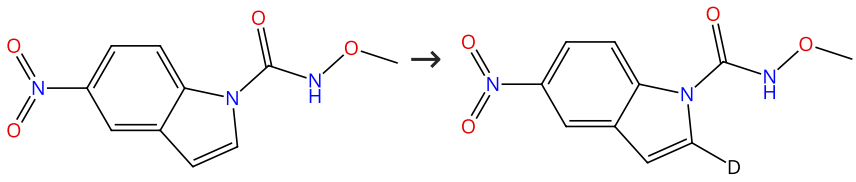
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 64 (1 Reaction) Steps: **1** Yield: **93%**



31-116-CAS-22543022 Steps: **1** Yield: **93%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 25 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 65 (1 Reaction) Steps: **1** Yield: **93%**

Suppliers (68)

31-116-CAS-20659787 Steps: **1** Yield: **93%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

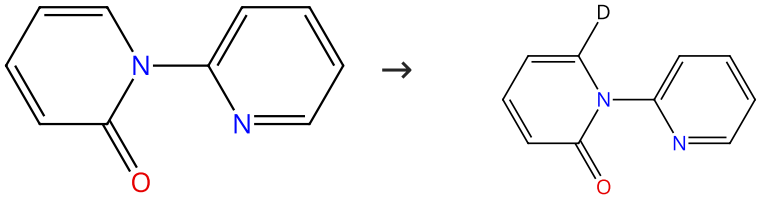
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 66 (3 Reactions) Steps: **1** Yield: **92-93%**



Suppliers (8)

31-116-CAS-21949639 Steps: **1** Yield: **93%**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: 1,4-Dioxane; 1 h, 130 °C

Experimental Protocols

Rh(I)-Catalyzed C6-Selective Decarbonylative Alkylation of 2-Pyridones with Alkyl Carboxylic Acids and Anhydrides

By: Zhao, Haoqiang; et al

Organic Letters (2020), 22(11), 4228-4234.

31-116-CAS-24231259 Steps: **1** Yield: **92%**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: 1,4-Dioxane; 1 h, rt

Experimental Protocols

Rh(I)-Catalyzed Direct C6-H Arylation of 2-Pyridones with Aryl Carboxylic Acids

By: Zhao, Haoqiang; et al

Advanced Synthesis & Catalysis (2021), 363(16), 3995-4001.

31-116-CAS-20867165 Steps: **1** Yield: **92%**

1.1 **Reagents:** Water-d_2, Di-*tert*-butyl dicarbonate
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: 1,4-Dioxane; 1 h, 130 °C

Experimental Protocols

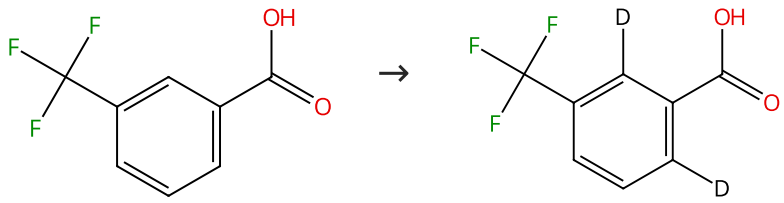
Rhodium(I)-catalyzed C6-selective C-H alkenylation and polyenylation of 2-pyridones with alkenyl and conjugated polyenyl carboxylic acids

By: Zhao, Haoqiang; et al

Chemical Science (2019), 10(43), 10089-10096.

Scheme 67 (1 Reaction)

Steps: **1** Yield: **93%**



Suppliers (96)

31-116-CAS-20659772

Steps: **1** Yield: **93%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

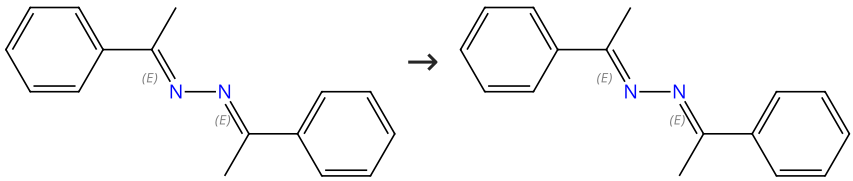
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 68 (2 Reactions)

Steps: **1** Yield: **82-93%**



Double bond geometry shown

Double bond geometry shown

Suppliers (7)

31-614-CAS-31854899

Steps: **1** Yield: **93%**

1.1 **Reagents:** Potassium carbonate, Water-d_2, Boric acid (H_3BO_3)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Dichloromethane; 8 h, 90 °C

Rhodium-Catalyzed Azine-Directed C-H Amidation with N-Methoxyamides

By: Ban, Tao; et al

Journal of Organic Chemistry (2022), 87(9), 5543-5555.

31-614-CAS-25750868

Steps: **1** Yield: **82%**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 12 h, rt

Experimental Protocols

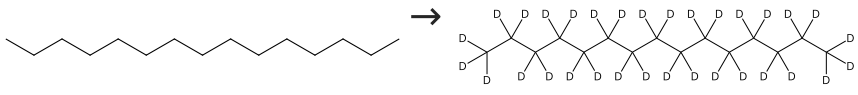
Rhodium(III)-catalyzed coupling of aromatic ketazines or oximes with 2-vinyloxirane via C-H activation

By: Wen, Jing; et al

Tetrahedron Letters (2015), 56(41), 5512-5516.

Scheme 69 (2 Reactions)

Steps: **1** Yield: **92-93%**



Suppliers (96)

Suppliers (32)

31-116-CAS-9263355 Steps: **1** Yield: **93%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 h, 160 °C

Experimental Protocols

Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

31-116-CAS-10326577 Steps: **1** Yield: **92%**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: 2-Propan-*1,1,1,2,3,3,3*-d_7-ol-*d*; 24 h, 120 °C

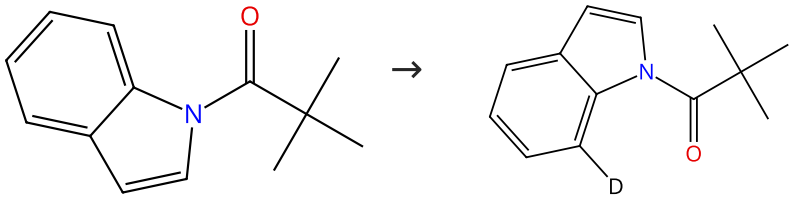
Experimental Protocols

Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

Scheme 70 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (8)

31-614-CAS-24837408 Steps: **1** Yield: **93%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Copper(II) triflate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 120 °C

1.2 **Reagents:** Ethyl acetate, Water

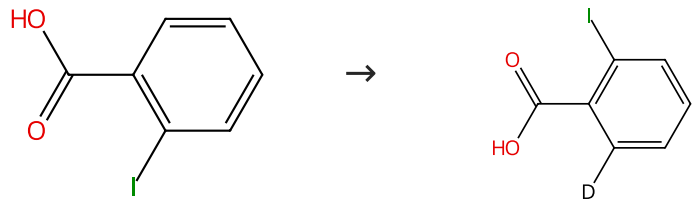
Experimental Protocols

Rhodium(III)-Catalyzed Direct C7-Selective Alkenylation and Alkylation of Indoles with Maleimides

By: Sheng, Yaoguang; et al

Advanced Synthesis & Catalysis (2022), 364(2), 307-313.

Scheme 71 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (100)

31-116-CAS-20659778 Steps: **1** Yield: **93%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

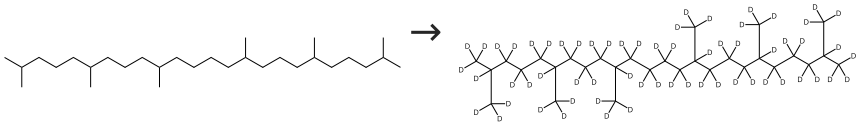
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 72 (1 Reaction)

Steps: **1** Yield: **92%**



Suppliers (88)

Suppliers (27)

31-116-CAS-366833

Steps: **1** Yield: **92%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 - 24 h, 160 °C

Experimental Protocols

Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 73 (1 Reaction)

Steps: **1** Yield: **92%**

Suppliers (109)

Supplier (1)

31-116-CAS-21520719

Steps: **1** Yield: **92%**

1.1 **Reagents:** Silver carbonate, Lithium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Ethyl acetate; 16 h, 100 °C

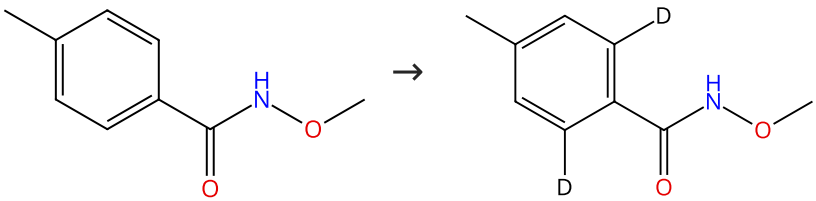
Rhodium(III)-Catalyzed C-H Activation: A Cascade Approach for the Regioselective Synthesis of Fused Heterocyclic Lactone Scaffolds

By: Kumar, Anil; et al

Journal of Organic Chemistry (2020), 85(5), 3548-3559.

Scheme 74 (1 Reaction)

Steps: **1** Yield: **92%**



Suppliers (22)

31-116-CAS-23364877

Steps: **1** Yield: **92%**

1.1 **Reagents:** Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Acetone; 12 h, 85 °C

Experimental Protocols

Harnessing hypervalent iodonium ylides as carbene precursors: C-H activation of N-methoxybenzamides with a Rh(III)-catalyst

By: Mayakrishnan, Sivakalai; et al

Chemical Communications (Cambridge, United Kingdom) (2020), 56(98), 15462-15465.

Scheme 75 (1 Reaction)

Steps: **1** Yield: **92%**

Suppliers (4)

31-614-CAS-27357408

Steps: **1** Yield: **92%**

1.1 **Reagents:** Water-d_2, Propanoic acid, 2-methyl-, silver(1+) salt (1:1)
Catalysts: [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver, Bis(η^2-ethene)[(8a,9,10,11,11a-η)-(2a*R*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6]cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-8a(12*H*)-yl]rhodium
Solvents: 1,2-Dichloroethane; 24 h, 70 °C

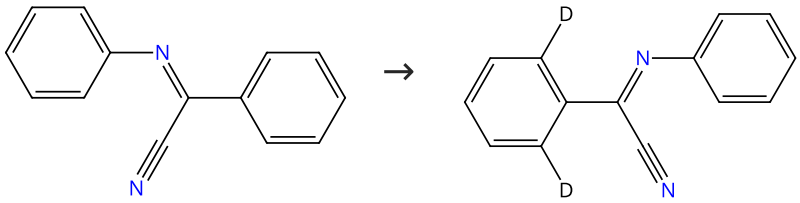
Enantioselective Synthesis of C-N Axially Chiral N-Aryloxindoles by Asymmetric Rhodium-Catalyzed Dual C-H Activation

By: Li, Honghe; et al

Angewandte Chemie, International Edition (2019), 58(20), 6732-6736.

Scheme 76 (1 Reaction)

Steps: **1** Yield: **92%**



Suppliers (6)

31-116-CAS-19208834

Steps: **1** Yield: **92%**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 6 h, 130 °C

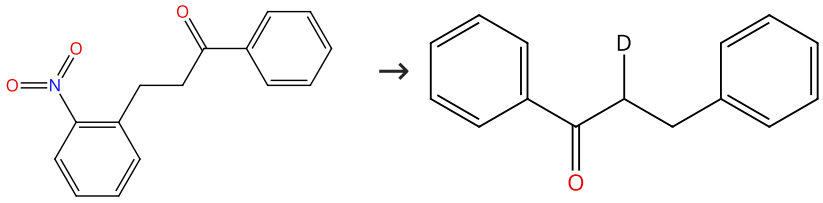
Rhodium(III)-Catalyzed C-H Activation of α-Iminonitriles or α-Imino Esters and Cyclization with Acrylates to 2H-Isoindoles

By: Li, Yazhou; et al

Journal of Organic Chemistry (2018), 83(19), 11736-11746.

Scheme 77 (1 Reaction)

Steps: **1** Yield: **92%**



Suppliers (3)

31-116-CAS-19428763

Steps: **1** Yield: **92%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Rhodium, tetrakis[μ-(acetato-κ*O*:κ*O'*)]bis[tris(1,1-dimethylethyl)phosphine]di-, (*Rh*-*Rh*)
Solvents: Toluene, Water-d_2; -196 °C → rt; 4 h, 90 °C

Experimental Protocols

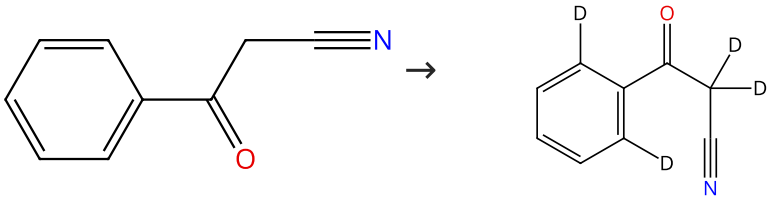
Dirhodium(II)/P(t-Bu)$_3$ catalyzed tandem reaction of α,β-unsaturated aldehydes with arylboronic acids

By: Ma, Ziling; et al

Organic & Biomolecular Chemistry (2018), 16(40), 7470-7476.

Scheme 78 (2 Reactions)

Steps: **1** Yield: **83-92%**



Suppliers (99)

31-614-CAS-37548216

Steps: **1** Yield: **92%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 24 h, 80 °C

Experimental Protocols

Rh(III)-catalyzed C-H/C-C activation of benzoylacetonitriles and cyclization with CF_3-imidoyl sulfoxonium ylides to 3-trifluoromethyl-isoquinolones

By: Yang, Zuguang; et al

Journal of Catalysis (2023), 427, 115098.

31-116-CAS-18890503

Steps: **1** Yield: **83%**

1.1 **Reagents:** Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; overnight, rt

Experimental Protocols

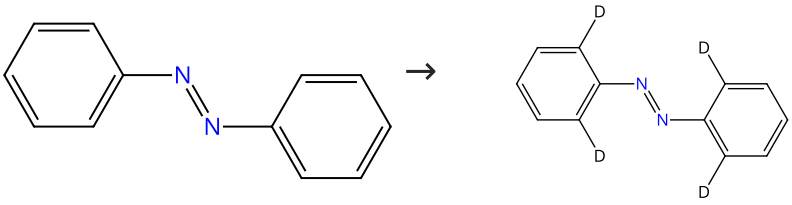
Rhodium(III)-catalyzed C-H activation of benzoylacetonitriles and cyclization with sulfoxonium ylides to naphthols

By: Zhou, Chaofan; et al

Advanced Synthesis & Catalysis (2018), 360(13), 2546-2551.

Scheme 79 (1 Reaction)

Steps: **1** Yield: **91%**



Suppliers (76)

31-116-CAS-13291940

Steps: **1** Yield: **91%**

1.1 **Reagents:** Sodium acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane, Water-d_2; 24 h, 130 °C

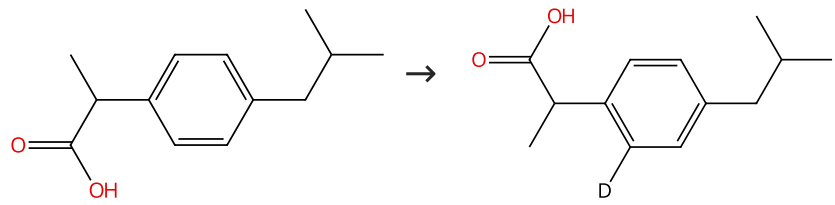
Rhodium-catalyzed ortho-cyanation of symmetrical azobenzenes with N-cyano-N-phenyl-p-toluenesulfonamide

By: Han, Jie; et al

Organic & Biomolecular Chemistry (2014), 12(43), 8603-8606.

Scheme 80 (1 Reaction)

Steps: **1** Yield: **91%**



Suppliers (157)

31-116-CAS-20659805 Steps: **1** Yield: **91%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

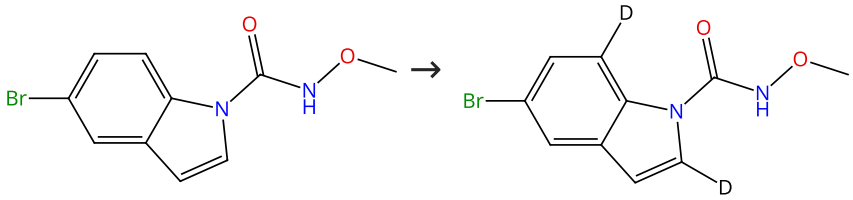
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 81 (1 Reaction) Steps: **1** Yield: **91%**



Supplier (1)

31-116-CAS-22543035 Steps: **1** Yield: **91%**

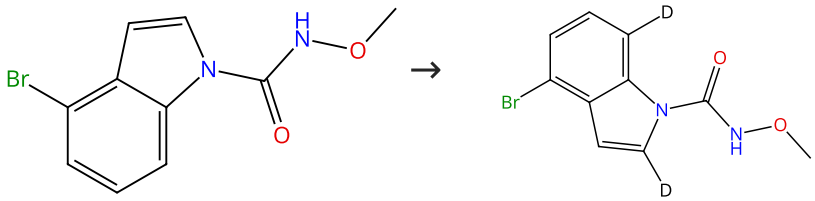
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 82 (1 Reaction) Steps: **1** Yield: **91%**



31-116-CAS-22543030 Steps: **1** Yield: **91%**

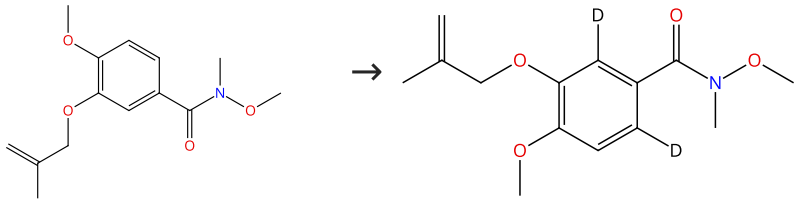
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 83 (1 Reaction) Steps: **1** Yield: **91%**



31-614-CAS-31490568 Steps: **1** Yield: **91%**

1.1 **Reagents:** Copper diacetate monohydrate, Water-d_2
Catalysts: Silver hexafluoroantimonate, Rhodium, [(3a,4,5,6,6a-η)-(13b*R*)-2,8-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,7-dihydro-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinaphthalen-3a-yl][(1,2,5,6-η)-1,5-cyclooctadiene]-, stereoisomer
Solvents: 1,2-Dichloroethane; 1 h, 70 °C

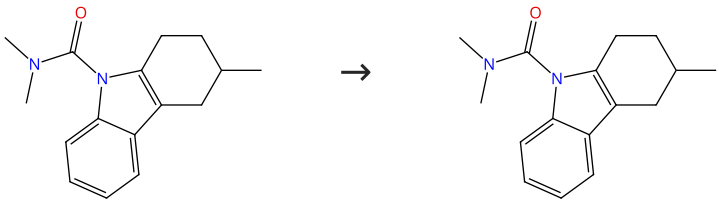
Experimental Protocols

Rhodium(III)-Catalyzed Asymmetric 1,2-Carboamidation of Alkenes Enables Access to Chiral 2,3-Dihydro-3-benzofuranmethanamides

By: Yu, Wenwen; et al

Organic Letters (2022), 24(9), 1762-1767.

Scheme 84 (1 Reaction) Steps: **1** Yield: **91%**



31-614-CAS-28999820 Steps: **1** Yield: **91%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

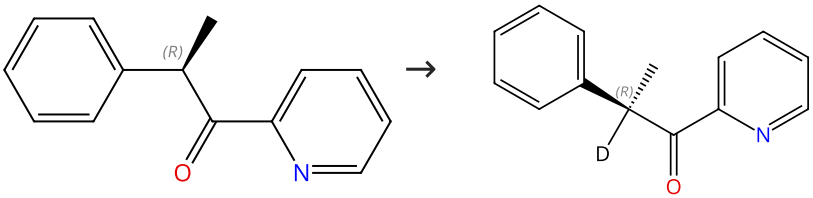
Experimental Protocols

Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 85 (1 Reaction) Steps: **1** Yield: **91%**



Absolute stereochemistry shown, Rotation (-)

Absolute stereochemistry shown

31-614-CAS-31727977 Steps: **1** Yield: **91%**

1.1 **Reagents:** *N*-Phenylpiperidine, Water-d_2
Catalysts: Rhodium(1+), bis(acetonitrile)bis[2-[6-(1,1-dimethylethyl)-2*H*-indazol-2-yl-κN^1]phenyl-κ*C*]-, (*OC*-6-13-Λ)-, hexafluorophosphate(1-) (1:1)
Solvents: Acetone; 30 h

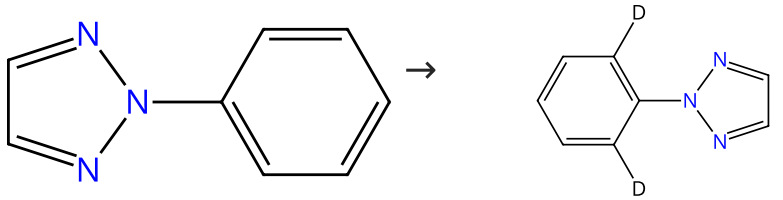
Experimental Protocols

Catalytic α-Deracemization of Ketones Enabled by Photoredox Deprotonation and Enantioselective Protonation

By: Zhang, Chenhao; et al

Journal of the American Chemical Society (2021), 143(33), 13393-13400.

Scheme 86 (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (48)

31-116-CAS-19330860 Steps: **1** Yield: **91%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 1 h, 100 °C

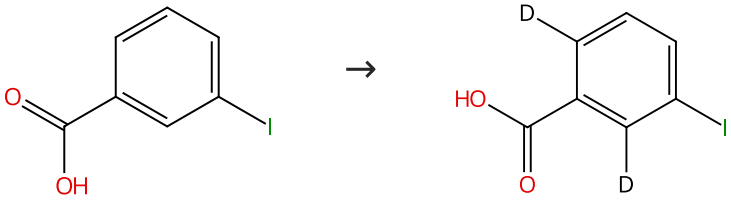
Experimental Protocols

Rh(III)-catalyzed, 1,2,3-triazole-assisted directed C-H coupling with diazo diphosphonates

By: Yu, Zhu-Jun; et al

Tetrahedron Letters (2018), 59(29), 2816-2819.

Scheme 87 (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (95)

31-116-CAS-20659779 Steps: **1** Yield: **91%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 88 (1 Reaction) Steps: **1** Yield: **91%**

Suppliers (3)

31-614-CAS-29227631 Steps: **1** Yield: **91%**

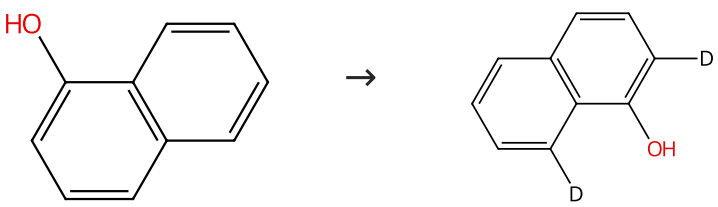
1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 6 h, 100 °C

Weak Coordination Enabled Switchable C4-Alkenylation and Alkylation of Indoles with Allyl Alcohols

By: Pradhan, Sourav; et al

Organic Letters (2020), 22(5), 1720-1725.

Scheme 89 (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (133)

31-614-CAS-31759843 Steps: **1** Yield: **91%**

1.1 **Reagents:** Water-d_2, Propanoic acid, 2,2-dimethyl-, potassium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2-Methyl-2-butanol; 8 h, 100 °C

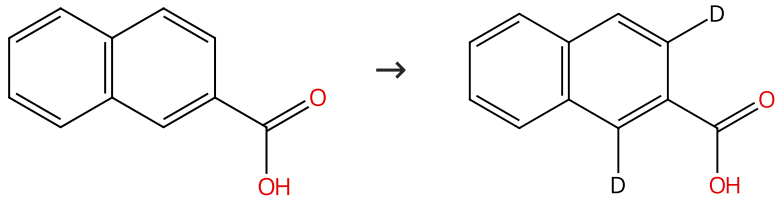
Experimental Protocols

Rhodaelectro-Catalyzed peri-Selective Direct Alkenylations with Weak O-Coordination Enabled by the Hydrogen Evolution Reaction (HER)

By: Sadowski, Bartlomiej; et al

Angewandte Chemie, International Edition (2022), 61(20), e202117188.

Scheme 90 (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (105)

31-116-CAS-20659782 Steps: **1** Yield: **91%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

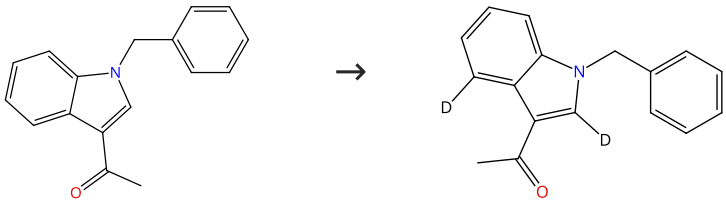
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 91 (2 Reactions) Steps: **1** Yield: **91%**



Suppliers (29)

31-116-CAS-20859184 Steps: **1** Yield: **91%**

1.1 **Reagents:** Cupric acetate, Water-d_2, Silver hexafluoro antimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,4-Dioxane; 14 h, 120 °C

Experimental Protocols

Weak Coordination-Guided Regioselective Direct Redox-Neutral C4 Allylation of Indoles with Morita- Baylis-Hillman Adducts

By: Pradhan, Sourav; et al

Organic Letters (2019), 21(24), 9898-9903.

31-614-CAS-37740141 Steps: **1**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 14 h, 120 °C

Experimental Protocols

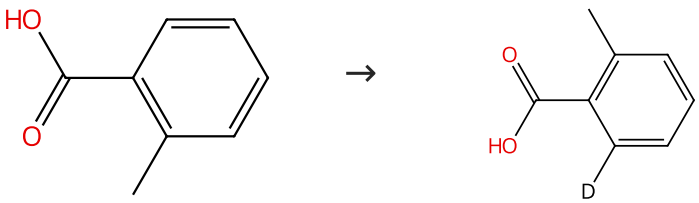
A redox-neutral weak carbonyl chelation assisted C4-H allylation of indoles with vinylcyclopropanes

By: Basak, Shubhajit; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(77), 11568-11571.

Scheme 92 (3 Reactions)

Steps: **1** Yield: **30-90%**



Suppliers (92)

Suppliers (3)

31-116-CAS-20659786

Steps: **1** Yield: **90%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

31-614-CAS-24853016

Steps: **1** Yield: **85%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

Experimental Protocols

Late-Stage Amination of Drug-Like Benzoic Acids: Access to Anilines and Drug Conjugates through Directed Iridium-Catalyzed C-H Activation

By: Weis, Erik; et al

Chemistry - A European Journal (2021), 27(72), 18188-18200.

31-116-CAS-23722727

Steps: **1** Yield: **30%**

1.1 **Reagents:** Platinum, Water-d_2, Tetrabutylammonium acetate
Catalysts: Rhodium trichloride
Solvents: Dimethylformamide; 5 h, 80 °C

Experimental Protocols

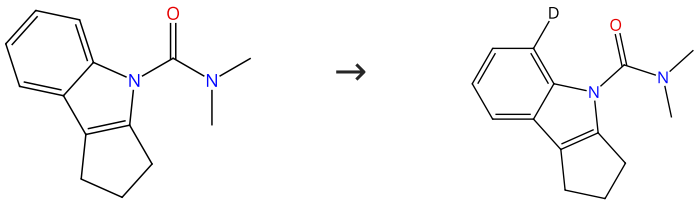
2,2'-Biaryldicarboxylate Synthesis via Electrocatalytic Dehydrogenative C-H/C-H Coupling of Benzoic Acids

By: Zeng, Zhongyi; et al

ACS Catalysis (2021), 11(11), 6626-6632.

Scheme 93 (1 Reaction)

Steps: **1** Yield: **90%**



31-116-CAS-23350837

Steps: **1** Yield: **90%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

Experimental Protocols

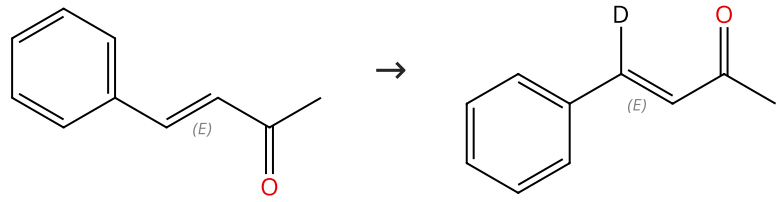
Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 94 (1 Reaction)

Steps: **1** Yield: **90%**



Double bond geometry shown

Double bond geometry shown

Suppliers (84)

31-614-CAS-23951488

Steps: **1** Yield: **90%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Dichloromethane; 48 h, 90 °C

Experimental Protocols

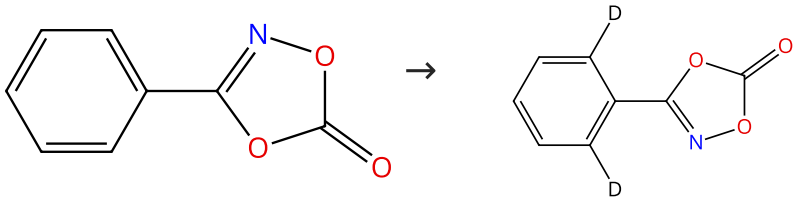
Rhodium(III)-catalyzed synthesis of trisubstituted furans via vinylic C-H bond activation

By: Sherikar, Mahadev Sharanappa; et al

Organic & Biomolecular Chemistry (2021), 19(34), 7470-7474.

Scheme 95 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (41)

31-116-CAS-17695411

Steps: **1** Yield: **90%**

1.1 **Reagents:** Silver acetate, 1-Adamantanecarboxylic acid
Catalysts: Di-μ-chlorodichlorobis(η^5-2,4-cyclopentadien-1-yl) dirhodium
Solvents: 1,2-Dichloroethane; 2 h, 120 °C

1.2 **Reagents:** Water-d_2; 2 h, 120 °C

Experimental Protocols

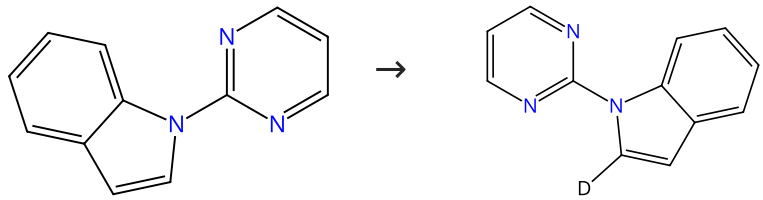
Synthesis of Polycyclic Amides via Tandem Rh ^{III}-Catalyzed C-H Activation and Annulation from Dioxazolones and Alkynes

By: Zhang, Guo-Tai; et al

Asian Journal of Organic Chemistry (2017), 6(7), 812-816.

Scheme 96 (3 Reactions)

Steps: **1** Yield: **28-90%**



Suppliers (59)

Suppliers (3)

31-116-CAS-23500617

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Cyclopentanecarboxylic acid, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Tricyclo[3.3.1.1^{3,7}] decane-1-carboxylic acid, sodium salt (1:1)
Solvents: 1,4-Dioxane; overnight, 95 °C

Experimental Protocols

Rhodaelectro-catalyzed chemo-divergent C-H activations with alkylidenecyclopropanes for selective cycloprop ylations

By: Shen, Zhigao; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(30), 3668-3671.

31-116-CAS-22768883 Steps: **1** Yield: **28%**

1.1 **Reagents:** Sodium carbonate, Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: *m*-Xylene; 12 h, 140 °C

Experimental Protocols

Rhodium-catalyzed coupling of arenes and fluori nated α-diazo diketones: synthesis of chromones

By: Yao, Jiayi; et al

Chemical Communications (Cambridge, United Kingdom) (2020), 56(86), 13169-13172.

31-116-CAS-19387086 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate

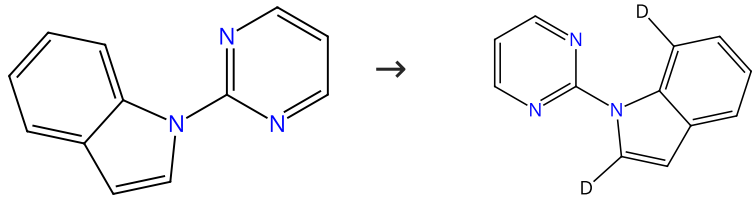
Experimental Protocols

Rhodium(III)-catalyzed C-H alkylation of heterocycles with allylic alcohols in water: A reusable catalytic system for the synthesis of β-aryl ketones

By: Li, Xiang; et al

Tetrahedron (2018), 74(51), 7364-7371.

Scheme 97 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (59)

31-116-CAS-23574679 Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: 1,4-Dioxane; 1 h, 130 °C

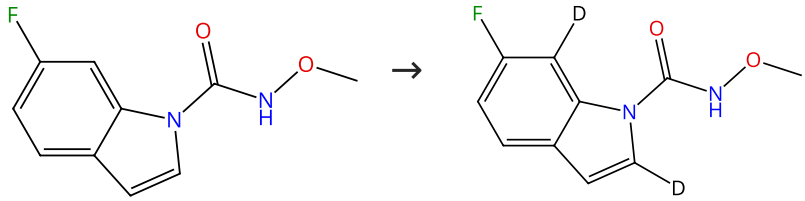
Experimental Protocols

Rhodium(I)-Catalyzed C2-Selective Decarbonylative C-H Alkylation of Indoles with Alkyl Carboxylic Acids and Anhydrides

By: Yu, Haiyang; et al

Asian Journal of Organic Chemistry (2021), 10(4), 879-885.

Scheme 98 (1 Reaction) Steps: **1** Yield: **90%**



31-116-CAS-22543038 Steps: **1** Yield: **90%**

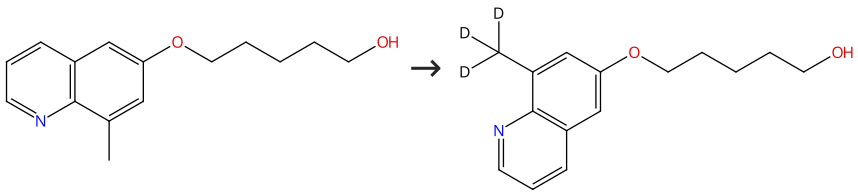
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 99 (1 Reaction) Steps: **1** Yield: **90%**



31-614-CAS-25051375 Steps: **1** Yield: **90%**

1.1 **Reagents:** Acetic acid-d_4
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Water-d_2; rt; 20 h, 100 °C

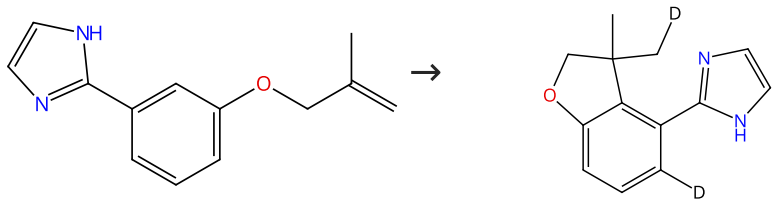
Experimental Protocols

Rh(III)-Catalyzed mild straightforward synthesis of quinoline-braced cyclophane macrocycles via migratory insertion

By: Ghosh, Bidhan; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(97), 13134-13137.

Scheme 100 (1 Reaction) Steps: **1** Yield: **90%**



31-614-CAS-36906792 Steps: **1** Yield: **90%**

1.1 **Reagents:** Methanol-d_4, Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]; 3 h, 60 °C

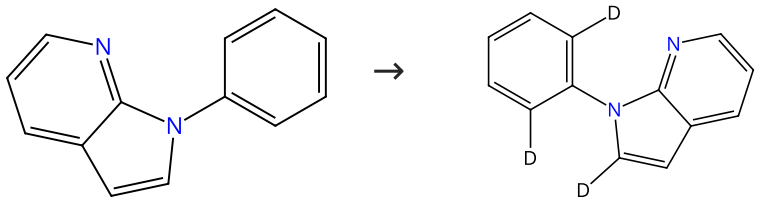
Experimental Protocols

Intramolecular Hydroarylation of Arenes via Imidazole-Directed C-H Activation in Aqueous Methanol Using Rhodium (III) as the Catalyst and Mechanistic Study

By: Sinha, Nilotpal; et al

Journal of Organic Chemistry (2023), 88(13), 8969-8983.

Scheme 101 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (6)

31-116-CAS-23500371 Steps: **1** Yield: **90%**

1.1 **Catalysts:** Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene, Water-d_2; 4 h, 120 °C

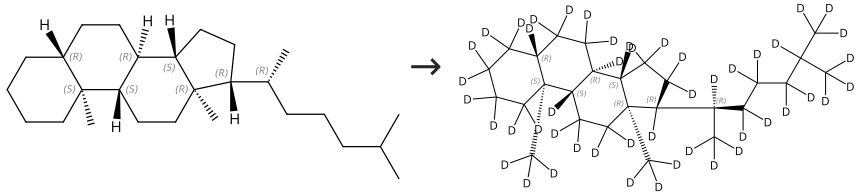
Experimental Protocols

Copper-catalyzed ortho-selective direct sulfenylation of N-aryl-7-azaindoles with disulfides

By: Yu, Ru-Jian; et al

Organic & Biomolecular Chemistry (2021), 19(13), 2901-2906.

Scheme 102 (1 Reaction) Steps: **1** Yield: **90%**



Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (61)

31-614-CAS-26108852 Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: Cyclohexane, 2-Propan-*1,1,1,2,3,3,3*-d_7-ol-*d*; 24 h, 120 °C

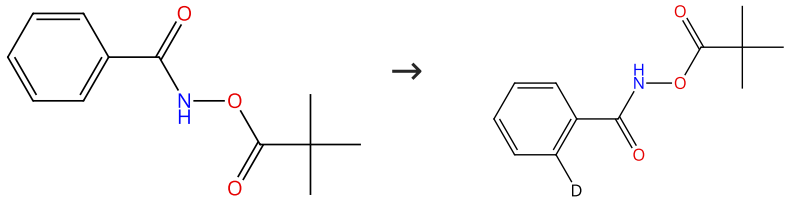
Experimental Protocols

Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

Scheme 103 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (14)

31-116-CAS-22825487 Steps: **1** Yield: **90%**

1.1 **Reagents:** Sodium bicarbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 3 h, rt

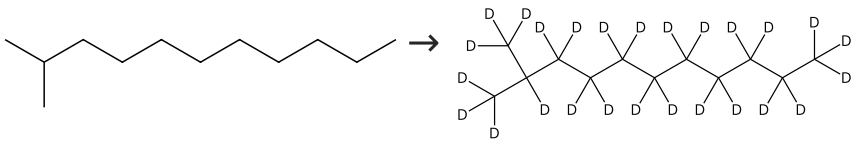
Experimental Protocols

Regio- and Stereoselective Synthesis of the Core Structure of Hexahydrobenzo[c]phenanthridine Alkaloids via Redox-Neutral Cp*Rh(III)-Catalyzed C-H/N-H Annulation of Cyclic Alkenes with Benzamides

By: Das Adhikari, Gopal Krushna; et al

ACS Omega (2020), 5(37), 24033-24044.

Scheme 104 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (37)

31-116-CAS-9535547 Steps: **1** Yield: **90%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 - 24 h, 160 °C

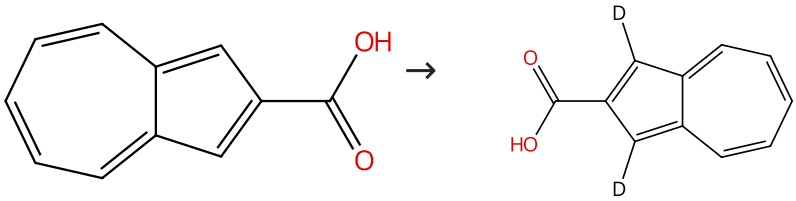
Experimental Protocols

Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 105 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (3)

31-116-CAS-21520795 Steps: **1** Yield: **90%**

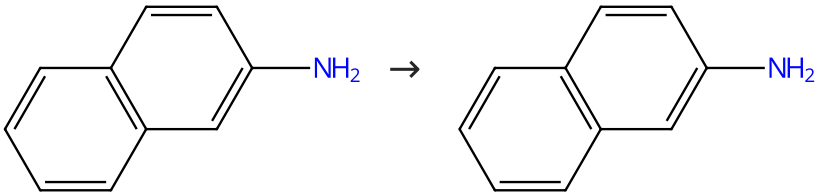
1.1 **Reagents:** Silver carbonate, Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 8 h, 80 °C

Expansion of Azulenes as Nonbenzenoid Aromatic Compounds for C-H Activation: Rhodium- and Iridium-Catalyzed Oxidative Cyclization of Azulene Carboxylic Acids with Alkynes for the Synthesis of Azulenolactones and Benzoazulenes

By: Maeng, Chanyoung; et al

Journal of Organic Chemistry (2020), 85(5), 3824-3837.

Scheme 106 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (62)

31-614-CAS-24691496 Steps: **1** Yield: **90%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: Dimethylformamide; 30 min, 140 °C

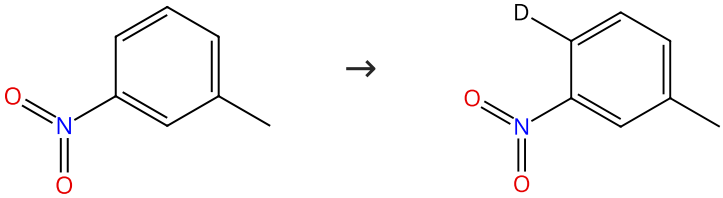
Experimental Protocols

Rhodium-Catalyzed C-H Annulation of Free Anilines with Vinylene Carbonate as a Bifunctional Synthon

By: Nan, Jiang; et al

Organic Letters (2021), 23(22), 8910-8915.

Scheme 107 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (59)

31-614-CAS-37172260 Steps: **1** Yield: **90%**

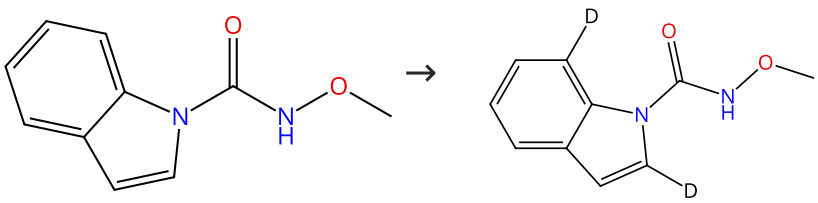
1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 150 °C

Cp*Rh(III)-Catalyzed ortho-Alkylation/Alkenylation of Nitroa renes

By: Xiao, Lin; et al

Organic Letters (2023), 25(28), 5185-5190.

Scheme 108 (1 Reaction) Steps: **1** Yield: **89%**



Supplier (1)

31-116-CAS-22543027 Steps: **1** Yield: **89%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 109 (1 Reaction) Steps: **1** Yield: **89%**

31-116-CAS-22543079 Steps: **1** Yield: **89%**

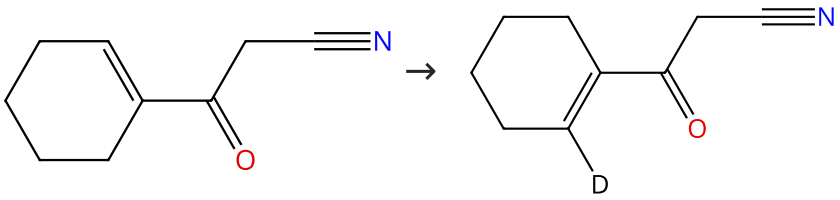
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 110 (1 Reaction) Steps: **1** Yield: **89%**



31-116-CAS-23430267 Steps: **1** Yield: **89%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 12 h, 100 °C

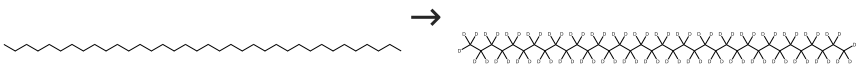
Experimental Protocols

Synthesis of Polysubstituted Phenols by Rhodium-Catalyzed C-H/Diazo Coupling and Tandem Annulation

By: Liu, Min; et al

Advanced Synthesis & Catalysis (2021), 363(7), 1855-1860.

Scheme 111 (1 Reaction) Steps: **1** Yield: **89%**



Suppliers (81) Suppliers (34)

31-116-CAS-5392283 Steps: **1** Yield: **89%**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: 2-Propan-*1,1,1,2,3,3,3*-d_7-ol-*d*; 24 h, 120 °C

Experimental Protocols

Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

Scheme 112 (1 Reaction)

Steps: **1** Yield: **89%**

Suppliers (29)

31-614-CAS-27615347

Steps: **1** Yield: **89%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 6 h, 100 °C

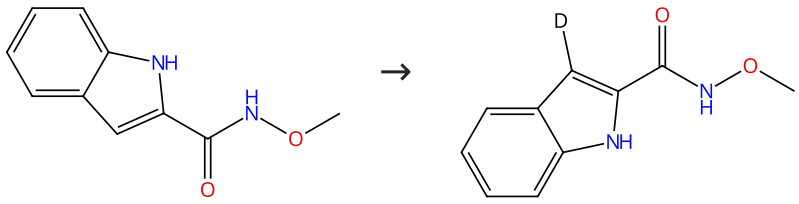
Weak Coordination Enabled Switchable C4-Alkenylation and Alkylation of Indoles with Allyl Alcohols

By: Pradhan, Sourav; et al

Organic Letters (2020), 22(5), 1720-1725.

Scheme 113 (1 Reaction)

Steps: **1** Yield: **89%**



Suppliers (8)

31-116-CAS-22543071

Steps: **1** Yield: **89%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

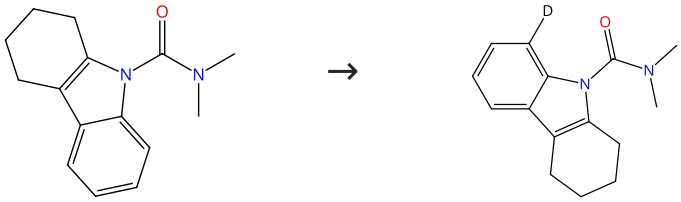
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 114 (1 Reaction)

Steps: **1** Yield: **88%**



Supplier (1)

31-116-CAS-23353104

Steps: **1** Yield: **88%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

Experimental Protocols

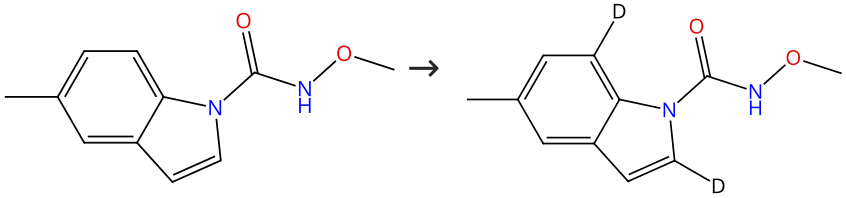
Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 115 (1 Reaction)

Steps: **1** Yield: **88%**



Supplier (1)

31-116-CAS-22543031

Steps: **1** Yield: **88%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

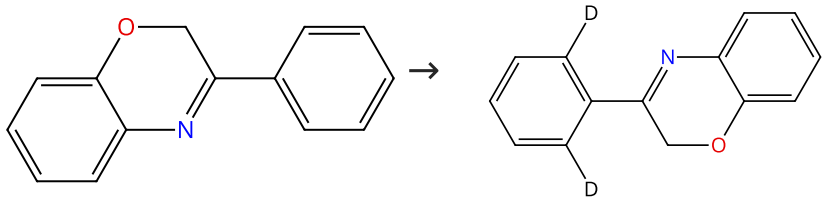
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 116 (3 Reactions)

Steps: **1** Yield: **56-88%**



Suppliers (10)

31-614-CAS-33034674

Steps: **1** Yield: **88%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 24 h, 40 °C

Experimental Protocols

Regio- and Diastereoselective [3 + 2]-Spiroannulation of Benzoxazines with Chalcones: A Rh(III)-Catalyzed Redox-Neutral Approach to α-Aroyl Spiro-Indanamines

By: Sarkar, Writhabrata; et al

Journal of Organic Chemistry (2022), 87(15), 9988-10002.

31-614-CAS-37693688

Steps: **1** Yield: **56%**

1.1 **Reagents:** Zinc acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetone; 24 h, 50 °C

Experimental Protocols

Rhodium(III)-catalyzed intermolecular [3+3] annulation of benzoxazines with quinone compounds: access to spiro-heterocyclic scaffolds

By: Wei, Qing-Yi; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(77), 11520-11523.

31-614-CAS-37230967

Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene; 24 h, 80 °C

Experimental Protocols

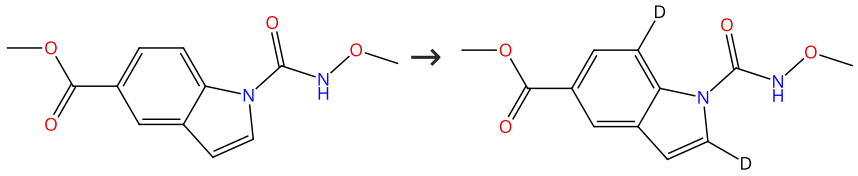
Rh(III)-catalyzed [3 + 2] spiroann ulation of 2,3-dihydro-1,4-benzoxazines with 4-hydroxy-2-alkynoates through ortho-C-H bond functionalization

By: Nagesh, Kommu; et al

Organic & Biomolecular Chemistry (2023), 21(30), 6169-6173.

Scheme 117 (1 Reaction)

Steps: **1** Yield: **88%**



31-116-CAS-22543036

Steps: **1** Yield: **88%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

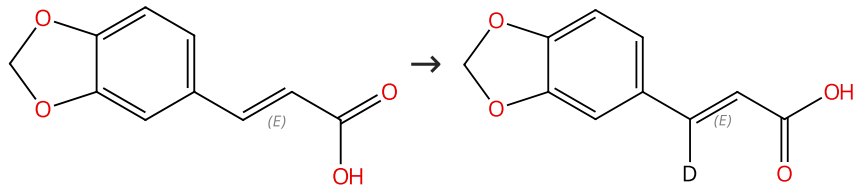
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 118 (1 Reaction)

Steps: **1** Yield: **88%**



Double bond geometry shown

Double bond geometry shown

Suppliers (63)

31-116-CAS-20659801

Steps: **1** Yield: **88%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: Methanol-d_4; 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

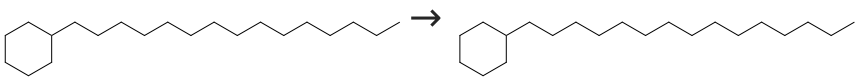
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 119 (1 Reaction)

Steps: **1** Yield: **88%**



Suppliers (44)

31-614-CAS-27746756

Steps: **1** Yield: **88%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 - 24 h, 160 °C

Experimental Protocols

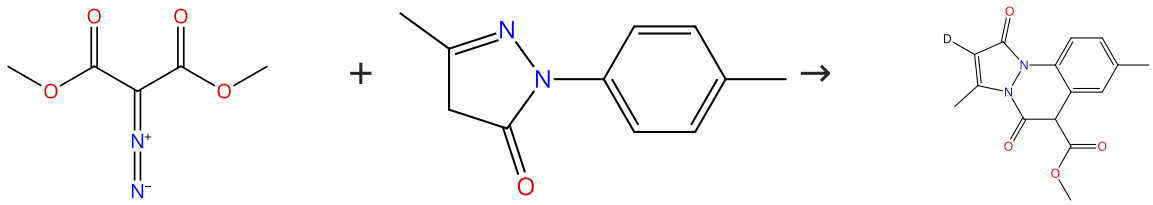
Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 120 (1 Reaction)

Steps: **1** Yield: **88%**



Suppliers (30)

Suppliers (73)

31-614-CAS-31725982

Steps: **1** Yield: **88%**

1.1 **Reagents:** Water-d_2
Catalysts: Cesium acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 1 h, 70 °C

Experimental Protocols

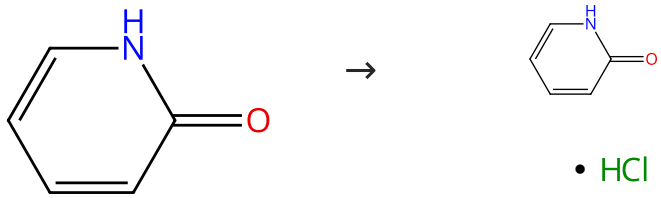
Rhodium-Catalyzed [4+2] Annulation of N-Aryl Pyrazolones with Diazo Compounds To Access Pyrazolone-Fused Cinnolines

By: Lin, Chih-Yu; et al

European Journal of Organic Chemistry (2021), 2021(35), 4984-4992.

Scheme 121 (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (151)

31-614-CAS-24961850

Steps: **1** Yield: **87%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Rhodium
Solvents: Water-d_2; 2 h, 150 °C; 150 °C → rt

1.2 **Reagents:** Hydrochloric acid
Solvents: Water; rt

Experimental Protocols

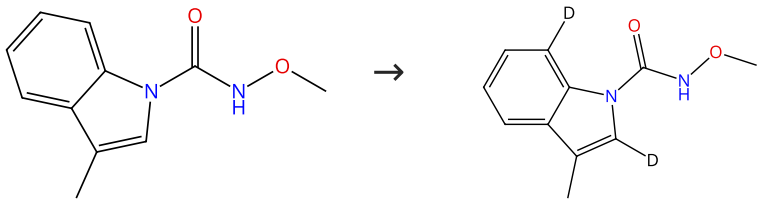
Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 122 (1 Reaction)

Steps: **1** Yield: **87%**



Supplier (1)

31-116-CAS-22543028

Steps: **1** Yield: **87%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

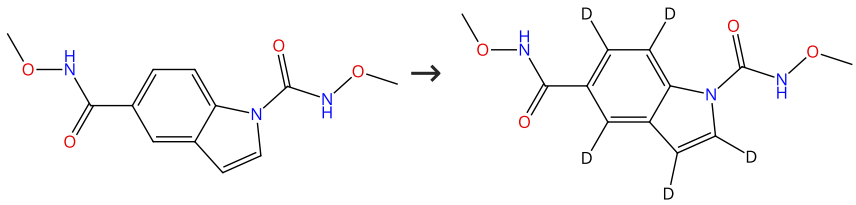
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 123 (1 Reaction)

Steps: **1** Yield: **87%**



31-116-CAS-22543077

Steps: **1** Yield: **87%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 90 °C

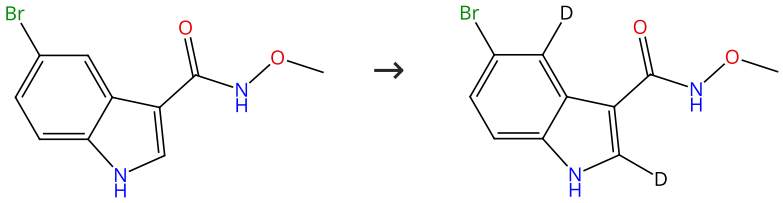
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 124 (1 Reaction)

Steps: **1** Yield: **87%**



31-116-CAS-22543081

Steps: **1** Yield: **87%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

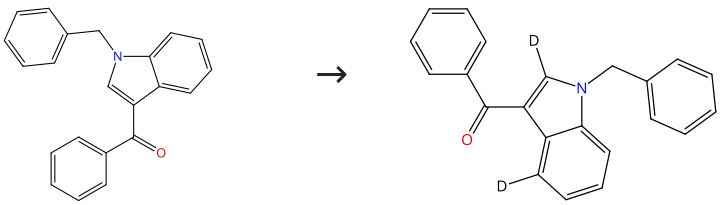
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 125 (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (3)

31-614-CAS-29438546

Steps: **1** Yield: **87%**

1.1 **Reagents:** Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 14 h, 120 °C

Experimental Protocols

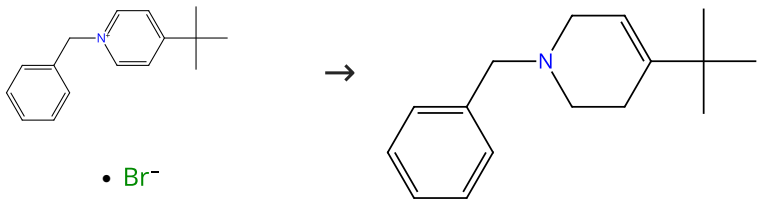
Palladium-Catalyzed 2-fold C-H Activation/C-C Coupling for C4-Arylation of Indoles Using Weak Chelation

By: Basak, Shubhajit; et al

Organic Letters (2022), 24(2), 554-558.

Scheme 126 (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (2)

Suppliers (16)

31-614-CAS-34565219 Steps: **1** Yield: **87%**

1.1 **Reagents:** Formic acid, (+)-Phenylethylamine; rt; 10 min, rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 22 h, 40 °C; 40 °C → rt

1.3 **Reagents:** Potassium hydroxide
Solvents: Water; rt

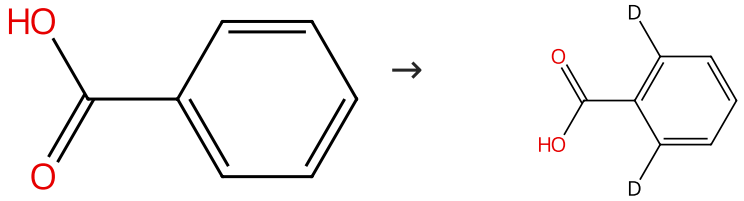
Experimental Protocols

Synthesis of chiral piperidines from pyridinium salts via rhodium-catalyzed transfer hydrogenation

By: Wu, Jianjun; et al

Nature Catalysis (2022), 5(11), 982-992.

Scheme 127 (3 Reactions) Steps: **1** Yield: **75-87%**



Suppliers (193) Suppliers (6)

31-116-CAS-20817718 Steps: **1** Yield: **87%**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Benzonitrile; 5 h, 80 °C

Experimental Protocols

Divergent Synthesis of Isoquinolone and Isocoumarin Derivatives by the Annulation of Benzoic Acid with N- Vinyl Amide

By: Sun, Rui; et al

Organic Letters (2019), 21(23), 9425-9429.

31-614-CAS-39430268 Steps: **1** Yield: **75%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 18 h, 110 °C

Experimental Protocols

Green method for constructing phthalides via oxidative coupling of aromatic acids and acrylates in neat water and air

By: Wei, Wenting; et al

Youji Huaxue (2023), 43(3), 1177-1186.

31-116-CAS-21897037 Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 8 h, 80 °C

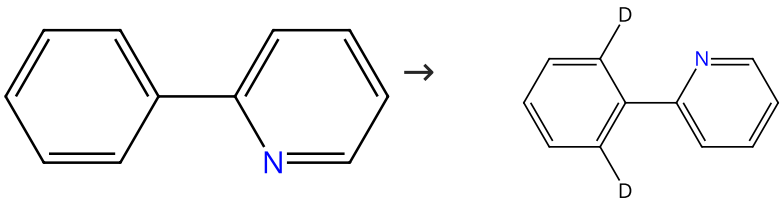
Experimental Protocols

Directing-Group-Controlled Ring-Opening Addition and Hydroarylation of Oxa/azabenzonorbornadienes with Arenes via C-H Activation

By: Zhang, Keyang; et al

Organic Letters (2020), 22(9), 3339-3344.

Scheme 128 (8 Reactions) Steps: **1** Yield: **75-86%**



Suppliers (94) Supplier (1)

31-116-CAS-16456556 Steps: **1** Yield: **86%**

1.1 **Reagents:** Oxygen, Water-d_2, Sodium tetrafluoroborate
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, tetrafluoroborate(1-) (1:2); 16 h, 1 atm, 110 °C

Experimental Protocols

Rhodium-Catalyzed Regioselective Synthesis of Isoindolium Salts from 2-Arylpyridines and Alkenes in Aqueous Medium under Oxygen

By: Upadhyay, Nitinkumar Satyadev; et al

Advanced Synthesis & Catalysis (2016), 358(21), 3381-3386.

31-614-CAS-32632356 Steps: **1** Yield: **84%**

1.1 **Reagents:** Water-d_2
Catalysts: 3-Nitrobenzoic acid, Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydirhodium, 1,1'-(9,9-Dimethyl-9*H*-xanthene-4,5-diyl)bis[1,1-diphenylphosphine]; 8 h, 120 °C

Experimental Protocols

Rhodium-Catalyzed Deuterated Tsuji-Wilkinson Decarbonylation of Aldehydes with Deuterium Oxide

By: Min, Xiang-Ting; et al

Journal of the American Chemical Society (2022), 144(25), 11081-11087.

31-116-CAS-112200 Steps: **1** Yield: **80%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 min, rt; 1 h, 140 °C

Experimental Protocols

Rhodium or ruthenium-catalyzed oxidative C-H/C-H cross-coupling: direct access to extended π-conjugated systems

By: Dong, Jiaxing; et al

Angewandte Chemie, International Edition (2013), 52(2), 580-584.

31-116-CAS-489685 Steps: **1** Yield: **75%**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Water-d_2; 6 h, 110 °C; 110 °C → rt

Experimental Protocols

[RhCp*Cl$_2$]$_2$-Catalyzed Directed N-Boc Amidation of Arenes "on Water"

By: Ali, Ashif Md.; et al

Organic Letters (2015), 17(6), 1513-1516.

31-614-CAS-43626875 Steps: **1**

1.1 **Reagents:** Acetic acid, Cupric acetate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 0.5 h, 120 °C

Experimental Protocols

Condition-Controlled Rh(III)-Catalyzed Chemodivergent Cyclization of 2-Arylpyridines with CF$_3$-Imidoyl Sulfoxonium Ylides via Triple C-H Activation

By: Gao, Xiaoyang; et al

Organic Letters (2025), 27(2), 657-662.

31-116-CAS-20201625 Steps: **1**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Water; 2 h, rt

Group 9 [Cp*M^{III}] complex-catalyzed C-H olefination of arenes in water at room temperature: a study on the catalytic activity

By: Zhang, Hailong; et al

Organic Chemistry Frontiers (2019), 6(7), 967-971.

31-116-CAS-19235903 Steps: **1**

1.1 **Reagents:** Water-d_2, Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1-Butyl-3-methylimidazolium tetrafluoroborate; 1 h, 25 °C

Experimental Protocols

[Cp*Rh^{III}]/Ionic Liquid as a Highly Efficient and Recyclable Catalytic Medium for C-H Amidation

By: Ma, Qiang; et al

ChemSusChem (2018), 11(20), 3672-3678.

31-116-CAS-13133090 Steps: **1**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Sodium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate
Solvents: Water-d_2; 10 min, 110 °C

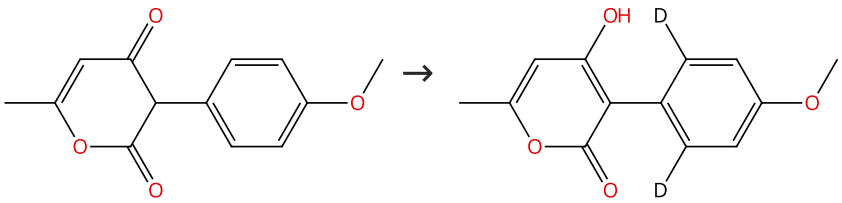
Rhodium-Catalyzed Selective Mono- and Diamination of Arenes with Single Directing Site "On Water"

By: Ali, Ashif Md; et al

Organic Letters (2016), 18(6), 1386-1389.

Scheme 129 (1 Reaction)

Steps: **1** Yield: **86%**



31-116-CAS-10098542

Steps: **1** Yield: **86%**

1.1 **Reagents:** Cupric acetate
Catalysts: [(3a,4,5,6,6a-η)-(13c*R*)-2,8-Bis[[(1,1-dimethylethyl)diphenylsilyl]oxy]-3,7-dihydro-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinaphthalen-3a-yl]bis(η^2-ethene)rhodium
Solvents: Dimethylformamide, Water-d_2; 4 h, 50 °C

Experimental Protocols

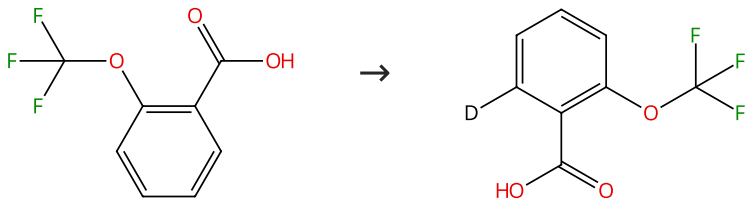
Enantioselective Synthesis of Spiroindenes by Enol-Directed Rhodium(III)-Catalyzed C-H Functionalization and Spiroannulation

By: Reddy Chidipudi, Suresh; et al

Angewandte Chemie, International Edition (2015), 54(47), 13975-13979.

Scheme 130 (1 Reaction)

Steps: **1** Yield: **86%**



Suppliers (82)

31-116-CAS-20659789

Steps: **1** Yield: **86%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

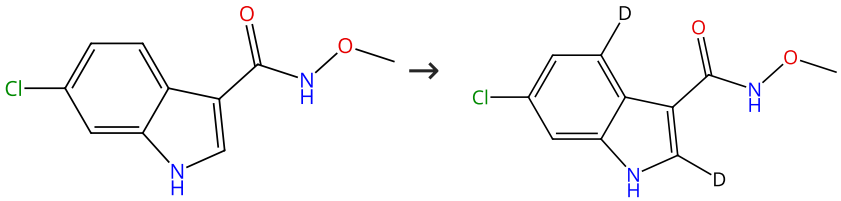
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 131 (1 Reaction)

Steps: **1** Yield: **86%**



31-116-CAS-22543082

Steps: **1** Yield: **86%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

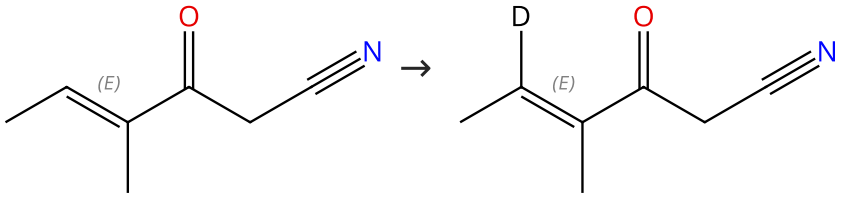
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 132 (2 Reactions)

Steps: **1** Yield: **83-86%**



Double bond geometry shown

Double bond geometry shown

31-116-CAS-23429684

Steps: **1** Yield: **86%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 12 h, 100 °C

Experimental Protocols

Synthesis of Polysubstituted Phenols by Rhodium-Catalyzed C-H/Diazo Coupling and Tandem Annulation

By: Liu, Min; et al

Advanced Synthesis & Catalysis (2021), 363(7), 1855-1860.

31-614-CAS-40343996

Steps: **1** Yield: **83%**

1.1 **Reagents:** Cupric acetate, Manganese triacetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

Experimental Protocols

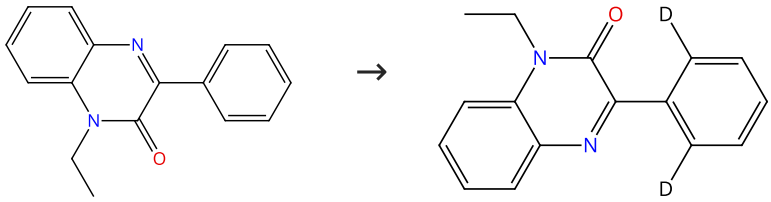
Rhodium-Catalyzed Regioselective C-O and C-C Bonds Formation of 3-Oxopent-4-enenitriles with Alkynes for the Synthesis of Polysubstituted 2H-Pyrans

By: Yan, Kelu; et al

Chinese Journal of Chemistry (2024), 42(17), 1986-1992.

Scheme 133 (1 Reaction)

Steps: **1** Yield: **86%**



Suppliers (3)

31-614-CAS-36224940

Steps: **1** Yield: **86%**

1.1 **Reagents:** Silver carbonate, Water-d_2, [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*] silver
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 24 h, 110 °C

Experimental Protocols

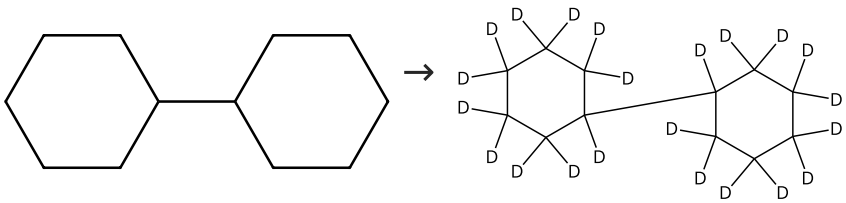
Rhodium-catalyzed selenylation and sulfenylation of quinoxalinones 'on water'

By: Lalji, Ram Sunil Kumar; et al

RSC Advances (2023), 13(9), 6191-6198.

Scheme 134 (1 Reaction)

Steps: **1** Yield: **86%**



Suppliers (71)

31-116-CAS-827469 Steps: **1** Yield: **86%**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: 2-Propan-*1,1,1,2,3,3,3*-d_7-ol-*d*; 24 h, 120 °C

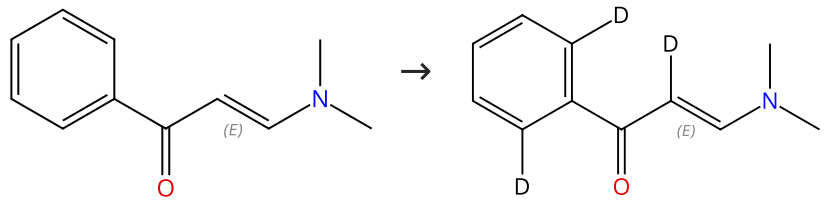
Experimental Protocols

Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

Scheme 135 (1 Reaction) Steps: **1** Yield: **85%**



Double bond geometry shown

Double bond geometry shown

Suppliers (49)

31-614-CAS-38946589 Steps: **1** Yield: **85%**

1.1 **Reagents:** Cupric acetate, Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 90 °C

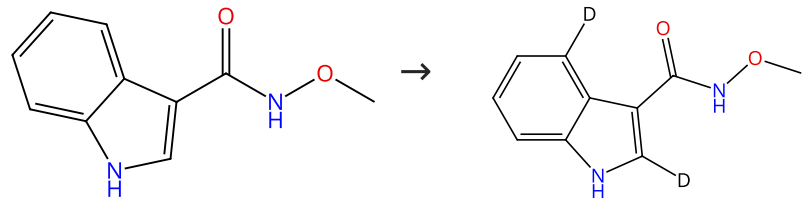
Experimental Protocols

Rh-Catalyzed Annulation of Enaminones with Maleimides for Functionalized Aza-spiro α-Tetralones and Benzo[e]isoindoles via C-H Activation/C=C Bond Cleavage

By: Roy, Prasanta; et al

Organic Letters (2024), 26(1), 142-147.

Scheme 136 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (4)

31-116-CAS-22543072 Steps: **1** Yield: **85%**

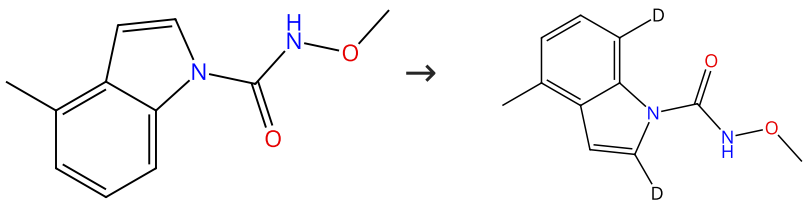
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 137 (1 Reaction) Steps: **1** Yield: **85%**



31-116-CAS-22543029 Steps: **1** Yield: **85%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

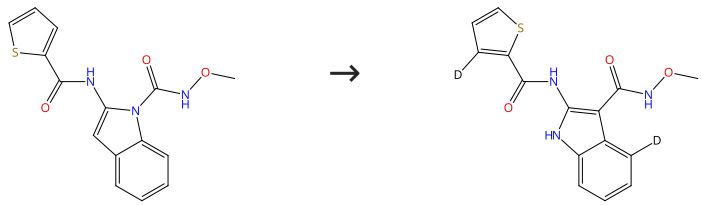
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 138 (1 Reaction)

Steps: **1** Yield: **85%**



31-116-CAS-22543061

Steps: **1** Yield: **85%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

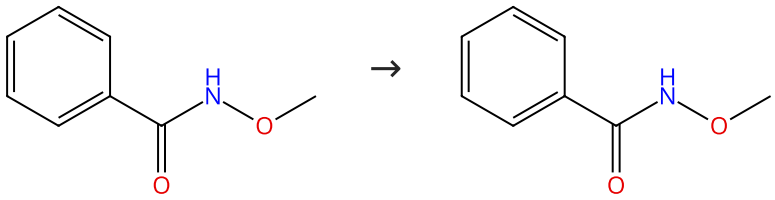
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 139 (1 Reaction)

Steps: **1** Yield: **85%**



Suppliers (49)

31-614-CAS-31902018

Steps: **1** Yield: **85%**

1.1 **Reagents:** Cesium acetate, Water-d_2, Silver hexafluoro antimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 5 h, 100 °C

Experimental Protocols

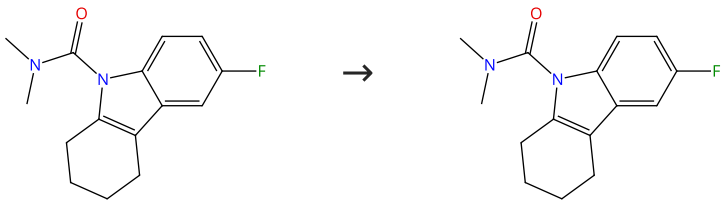
Rh(III)-Catalyzed Tandem [4+2] Annulation To Construct Functional Dihydroisoquinolinones

By: Yang, Jia-Hui; et al

Synthesis (2022), 54(14), 3271-3281.

Scheme 140 (1 Reaction)

Steps: **1** Yield: **85%**



31-614-CAS-25792110

Steps: **1** Yield: **85%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

Experimental Protocols

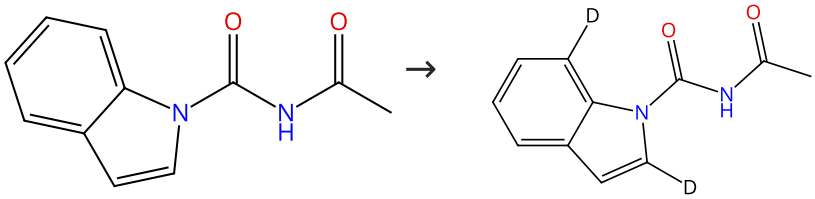
Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 141 (1 Reaction)

Steps: **1** Yield: **85%**



31-614-CAS-36214891

Steps: **1** Yield: **85%**

1.1 **Reagents:** Sodium acetate, Water-d_2, Silver hexafluoro antimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 60 °C

Experimental Protocols

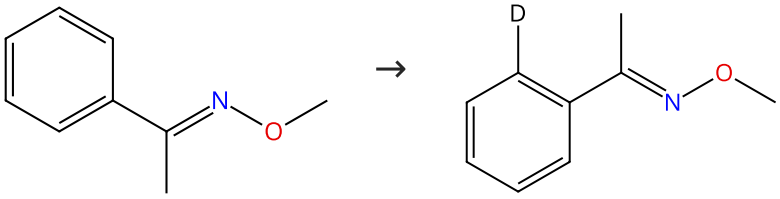
Rh(III)-catalyzed regioselective versatile indole derivatization: delivering potential of rare β-(1H-indol-2-yl)-β-amino acids in one pot

By: Zhang, Shuaizhong; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(33), 4978-4981.

Scheme 142 (1 Reaction)

Steps: **1** Yield: **85%**



Suppliers (4)

31-116-CAS-13878772

Steps: **1** Yield: **85%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Acetic acid, 2,2,2-trifluoro-, copper(2+) salt (2:1), Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 min, rt; 1 h, 150 °C

Experimental Protocols

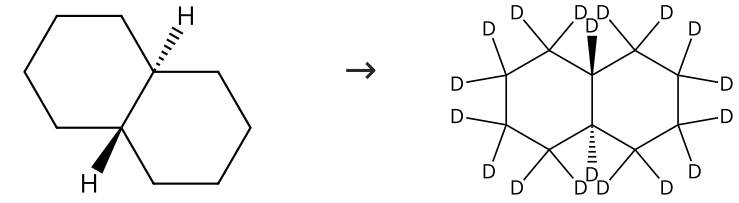
Rh(III)-catalyzed oxime ether-directed heteroarylation of arene through oxidative C-H/C-H cross-coupling

By: Qin, Dekun; et al

Chemical Communications (Cambridge, United Kingdom) (2015), 51(28), 6190-6193.

Scheme 143 (1 Reaction)

Steps: **1** Yield: **85%**



Relative stereochemistry shown

Relative stereochemistry shown

Suppliers (48)

31-116-CAS-993514

Steps: **1** Yield: **85%**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: 2-Propan-*1,1,1,2,3,3,3-*d_7-ol-*d*; 24 h, 120 °C

Experimental Protocols

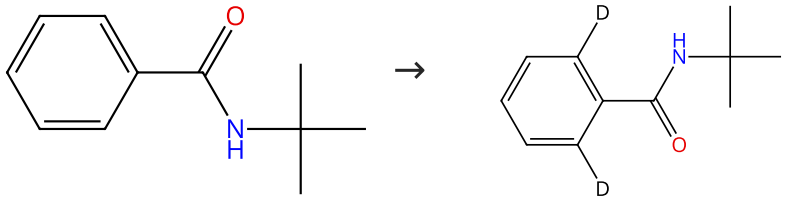
Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

Scheme 144 (1 Reaction)

Steps: **1** Yield: **85%**



Suppliers (55)

31-614-CAS-31592810

Steps: **1** Yield: **85%**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Zinc triflate
Solvents: Tetrahydrofuran, 1,1,1,3,3,3-Hexafluoro-2-propanol; 3 h, 110 °C

Experimental Protocols

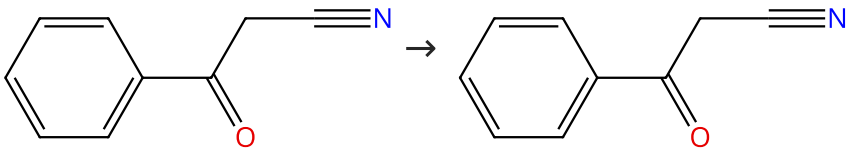
Insight into Regioselective Control in Aerobic Oxidative C-H/C-H Coupling for C3-Arylation of Benzothiophenes: Toward Structurally Nontraditional OLED Materials

By: Shi, Yang; et al

Journal of the American Chemical Society (2021), 143(49), 21066-21076.

Scheme 145 (1 Reaction)

Steps: **1** Yield: **85%**



Suppliers (99)

31-614-CAS-26152750

Steps: **1** Yield: **85%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; overnight, rt

Experimental Protocols

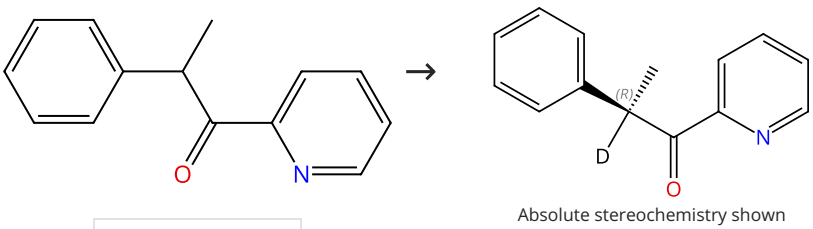
Rh(III)-Catalyzed C-H Activation of Benzoylacetonitriles and Tandem Cyclization with Diazo Compounds to Substituted Benzo[de]chromenes

By: Fang, Feifei; et al

Organic Letters (2018), 20(7), 1720-1724.

Scheme 146 (1 Reaction)

Steps: **1** Yield: **85%**



Absolute stereochemistry shown

Suppliers (3)

31-614-CAS-31727976

Steps: **1** Yield: **85%**

1.1 **Reagents:** *N*-Phenylpiperidine, Water-d_2
Catalysts: Rhodium(1+), bis(acetonitrile)bis[2-[6-(1,1-dimethylethyl)-2*H*-indazol-2-yl-κN^1]phenyl-κ*C*]-, (*OC*-6-13-Λ)-, hexafluorophosphate(1-) (1:1)
Solvents: Acetone; 30 h

Experimental Protocols

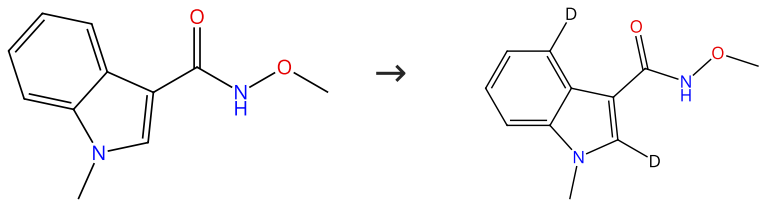
Catalytic α-Deracemization of Ketones Enabled by Photoredox Deprotonation and Enantioselective Protonation

By: Zhang, Chenhao; et al

Journal of the American Chemical Society (2021), 143(33), 13393-13400.

Scheme 147 (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (5)

31-116-CAS-22543078

Steps: **1** Yield: **84%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

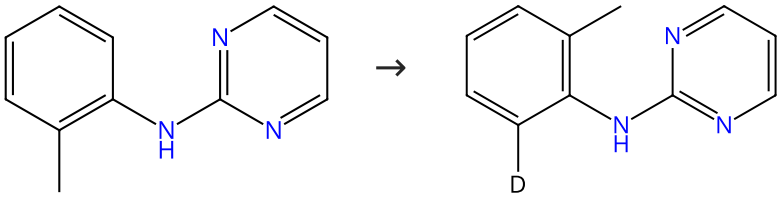
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 148 (3 Reactions)

Steps: **1** Yield: **70-84%**



Suppliers (8)

31-116-CAS-21846125

Steps: **1** Yield: **84%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 8 h, 100 °C

The Direct Rh(III)-Catalyzed C-H Amidation of Aniline Derivatives Using a Pyrimidine Directing Group: The Selective Solvent Controlled Synthesis of 1,2-Diaminobenzenes and Benzimidazoles

By: Khake, Shrikant M.; et al

Organic Letters (2020), 22(9), 3655-3660.

31-614-CAS-31738582

Steps: **1** Yield: **70%**

1.1 **Reagents:** Water-d_2, Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 8 h, 100 °C

Experimental Protocols

Rhodium(III)-Catalyzed Oxidative C-H Alkylation of Aniline Derivatives with Allylic Alcohols To Produce β-Aryl Ketones

By: Khake, Shrikant M.; et al

ACS Catalysis (2022), 12(8), 4394-4401.

31-614-CAS-24212576

Steps: **1** Yield: **70%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 8 h, 100 °C

Experimental Protocols

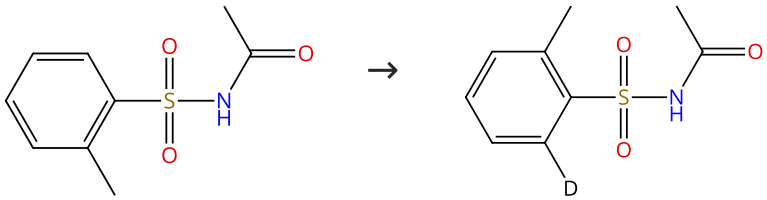
Rh(III)-Catalyzed [3 + 2] Annulation of Aniline Derivatives with Vinylsilanes via C-H Activation/Alkene Cyclization: Access to Highly Regioselective Indoline Derivatives

By: Khake, Shrikant M.; et al

ACS Catalysis (2021), 11(19), 12375-12383.

Scheme 149 (2 Reactions)

Steps: **1** Yield: **81-84%**



Suppliers (5)

31-116-CAS-19072844

Steps: **1** Yield: **84%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 24 h, 110 °C

Experimental Protocols

$RhCl_3$-Catalyzed Oxidative C-H/C-H Cross-Coupling of (Hetero)aromatic Sulfonamides with (Hetero)arenes

By: Ran, You; et al

ACS Catalysis (2018), 8(3), 1796-1801.

31-116-CAS-20022239

Steps: **1** Yield: **81%**

1.1 **Reagents:** Sodium acetate, Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 24 h, 110 °C

Experimental Protocols

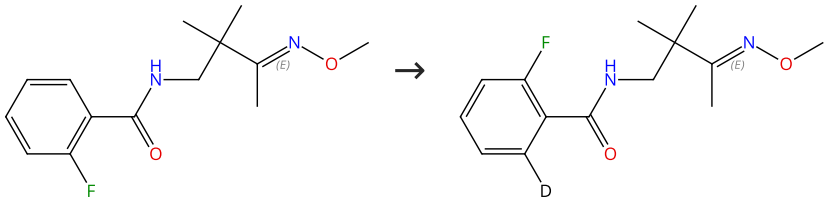
Rhodium-catalyzed direct C-H bond alkynylation of aryl sulfonamides with bromoalkynes

By: Hou, Hongcen; et al

Organic & Biomolecular Chemistry (2019), 17(11), 2948-2953.

Scheme 150 (1 Reaction)

Steps: **1** Yield: **84%**



Double bond geometry shown

Double bond geometry shown

Supplier (1)

31-614-CAS-34876404

Steps: **1** Yield: **84%**

1.1 **Reagents:** Water-d_2
Catalysts: Silver carbonate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 80 °C

Experimental Protocols

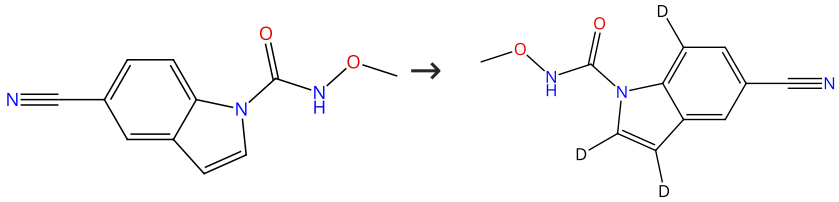
Multicomponent coupling and macrocyclization enabled by Rh(III)-catalyzed dual C-H activation: Macrocyclic oxime inhibitor of influenza H1N1

By: Wang, Hao; et al

Chem (2023), 9(3), 607-623.

Scheme 151 (1 Reaction)

Steps: **1** Yield: **83%**



31-116-CAS-22543050 Steps: **1** Yield: **83%**

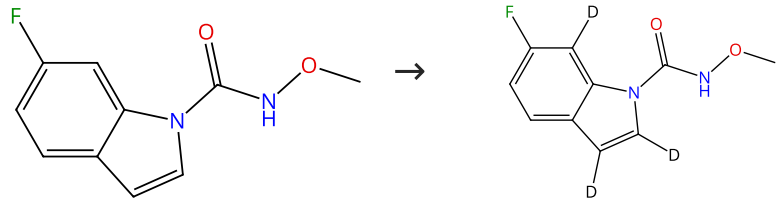
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 152 (1 Reaction) Steps: **1** Yield: **83%**



31-116-CAS-22543053 Steps: **1** Yield: **83%**

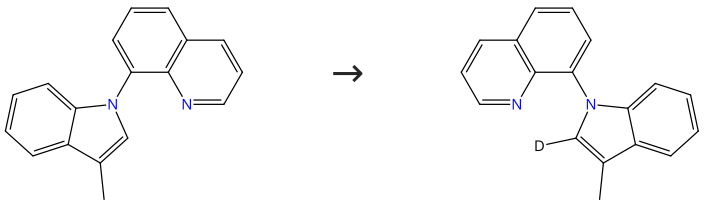
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 153 (1 Reaction) Steps: **1** Yield: **83%**



31-116-CAS-23751843 Steps: **1** Yield: **83%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 100 °C

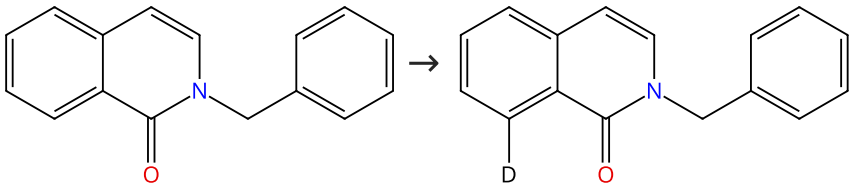
Experimental Protocols

Access to the C2 C-H olefination, alkylation and deuteration of indoles by rhodium(III) catalysis: an opportunity for diverse syntheses

By: Wu, Jiaping; et al

Organic Chemistry Frontiers (2021), 8(12), 3032-3040.

Scheme 154 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (4)

31-614-CAS-37149901 Steps: **1** Yield: **83%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 1 h, 120 °C

Experimental Protocols

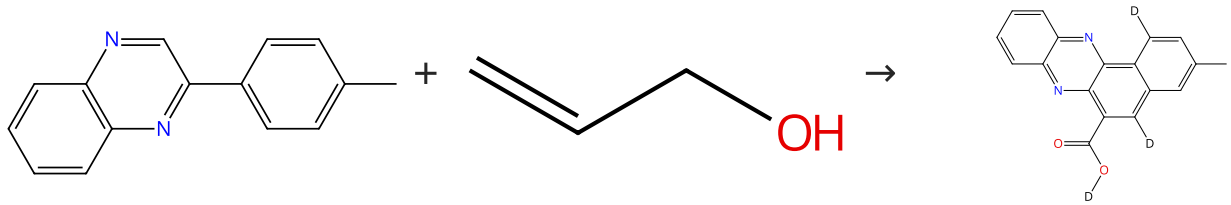
Rhodium-Catalyzed C8-Alkenylation of Isoquinolones with Maleimides

By: Manisha; et al

European Journal of Organic Chemistry (2023), 26(30), e202300411.

Scheme 155 (1 Reaction)

Steps: **1** Yield: **82%**



Suppliers (17)

Suppliers (46)

31-614-CAS-38718618

Steps: **1** Yield: **82%**

1.1 **Reagents:** 1-Adamantanecarboxylic acid, Copper diacetate monohydrate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 100 °C

Experimental Protocols

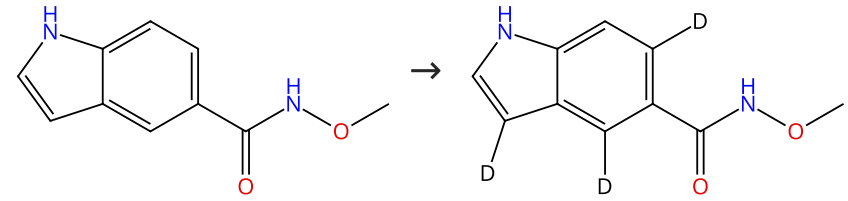
Rh(III)-catalyzed oxidative [4+2] annulation of 2-arylquinoxalines and 2-aryl-2H-indazoles with allyl alcohols

By: Nipate, Dhananjay S.; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(3), 344-347.

Scheme 156 (1 Reaction)

Steps: **1** Yield: **82%**



Suppliers (5)

31-116-CAS-22543074

Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

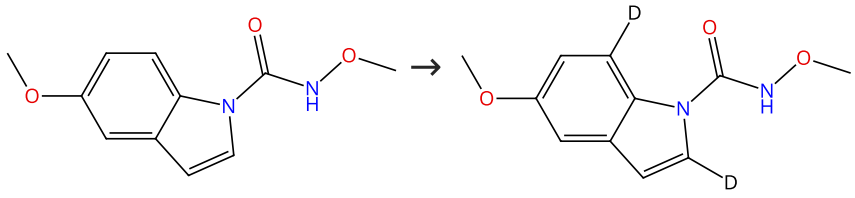
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 157 (1 Reaction)

Steps: **1** Yield: **82%**



Supplier (1)

31-116-CAS-22543032

Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

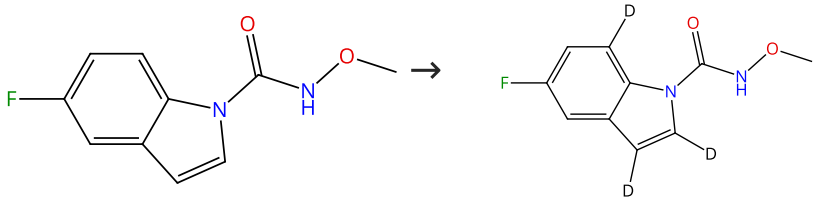
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 158 (1 Reaction)

Steps: **1** Yield: **82%**



31-116-CAS-22543046

Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

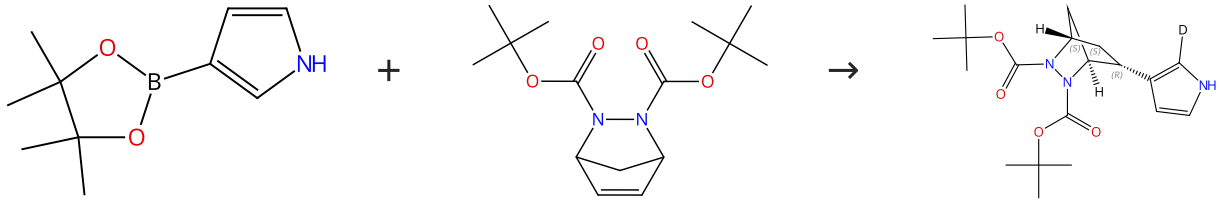
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 159 (1 Reaction)

Steps: **1** Yield: **82%**



Suppliers (59)

Suppliers (9)

Relative stereochemistry shown

31-116-CAS-8312995

Steps: **1** Yield: **82%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydi rhodium, (2*R*)-1-[(1*R*)-1-[Bis(1,1-dimethylethyl)phosphino] ethyl]-2-(diphenylphosphino)ferrocene
Solvents: Tetrahydrofuran, Water-d_2; 15 - 20 min, rt

1.2 **Solvents:** Tetrahydrofuran; 16 h, rt

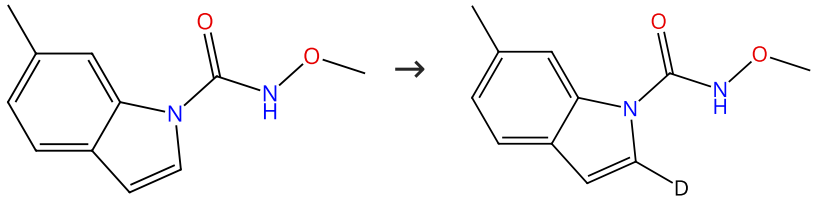
Ligand control in enantioselective desymmetrization of bicyclic hydrazines: Rhodium(I)-catalyzed ring-opening versus hydroarylation

By: Panteleev, Jane; et al

Advanced Synthesis & Catalysis (2008), 350(18), 2893-2902.

Scheme 160 (1 Reaction)

Steps: **1** Yield: **82%**



31-116-CAS-22543024

Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

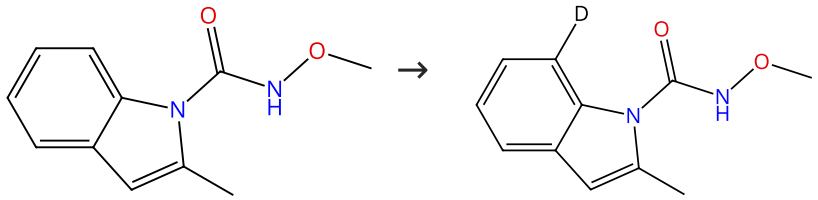
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 161 (1 Reaction)

Steps: **1** Yield: **82%**



31-116-CAS-22543039 Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 162 (1 Reaction) Steps: **1** Yield: **82%**

31-614-CAS-30741607 Steps: **1** Yield: **82%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

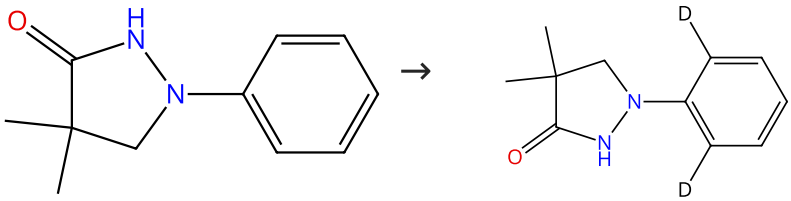
Experimental Protocols

Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 163 (5 Reactions) Steps: **1** Yield: **78-82%**



Suppliers (25)

31-614-CAS-35443110 Steps: **1** Yield: **82%**

1.1 **Reagents:** Water-d_2, Propanoic acid, 2,2-dimethyl-, cesium salt (1:1)
Catalysts: Tris(dibenzylideneacetone)dipalladium, Rhodium (2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Acetonitrile; 4 h, 80 °C

Experimental Protocols

Construction of Vinyl-Substituted N-Heterocycles via Rh(III)-Catalyzed C-H Functionalization/Annulation of Pyrazolidinones

By: Zhang, Shurui; et al

Advanced Synthesis & Catalysis (2023), 365(2), 238-243.

31-614-CAS-24207850 Steps: **1** Yield: **78%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile; 4 h, 60 °C

Experimental Protocols

Catalytic System-Controlled Divergent Reaction Strategies for the Construction of Diversified Spiropyrazolone Skeletons from Pyrazolidinones and Diazopyrazolones

By: Fang, Feifei; et al

Angewandte Chemie, International Edition (2021), 60(39), 21327-21333.

31-614-CAS-32275381 Steps: **1**

1.1 **Reagents:** Acetic acid, Zinc acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 4 h, rt → 100 °C

Experimental Protocols

Rhodium-Catalyzed C-H Activation/Annulation of N-Aryl-pyrazolidinones with Vinylene Carbonate

By: Huang, Gao; et al

European Journal of Organic Chemistry (2022), 2022(19), e202200279.

31-614-CAS-31639182 Steps: **1**

1.1 **Reagents:** Triethylamine, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 9 h, 110 °C

Experimental Protocols

Divergent synthesis of fused N-heterocycles via rhodium-catalysed [4+2] cyclization of pyrazolidinones with iodonium ylides

By: Li, Run; et al

Organic Chemistry Frontiers (2022), 9(8), 2181-2186.

31-116-CAS-23803164 Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 2 h, 60 °C

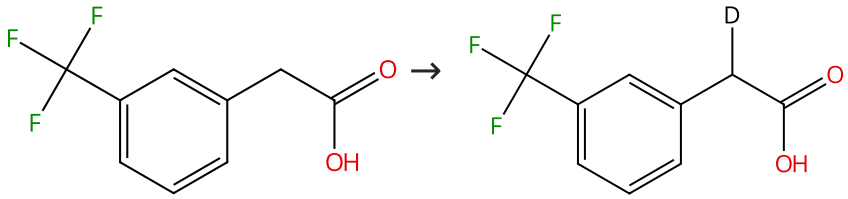
Experimental Protocols

Synthesis of Pyrazolo[1,2-a]cinnolines via Rhodium(III)-Catalyzed [4+2] Annulation Reactions of Pyrazolidinones with Sulfoxonium Ylides

By: Hu, Shulei; et al

Advanced Synthesis & Catalysis (2021), 363(13), 3311-3317.

Scheme 164 (1 Reaction) Steps: **1** Yield: **82%**



Suppliers (92)

31-116-CAS-20659804 Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 165 (1 Reaction) Steps: **1** Yield: **82%**

Suppliers (93)

31-116-CAS-20659774 Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: Methanol-d_4; 24 h, 90 °C

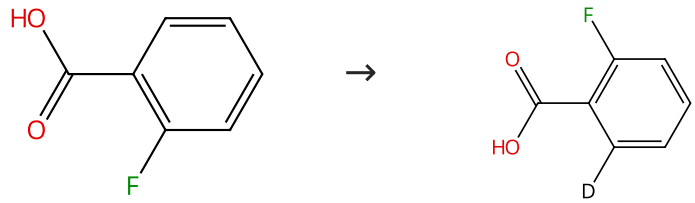
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 166 (1 Reaction) Steps: **1** Yield: **82%**



Suppliers (98)

31-614-CAS-24853007 Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

Experimental Protocols

Late-Stage Amination of Drug-Like Benzoic Acids: Access to Anilines and Drug Conjugates through Directed Iridium-Catalyzed C-H Activation

By: Weis, Erik; et al

Chemistry - A European Journal (2021), 27(72), 18188-18200.

Scheme 167 (1 Reaction) Steps: **1** Yield: **81%**

31-116-CAS-23352816 Steps: **1** Yield: **81%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

Experimental Protocols

Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 168 (1 Reaction) Steps: **1** Yield: **81%**

31-614-CAS-30599384 Steps: **1** Yield: **81%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

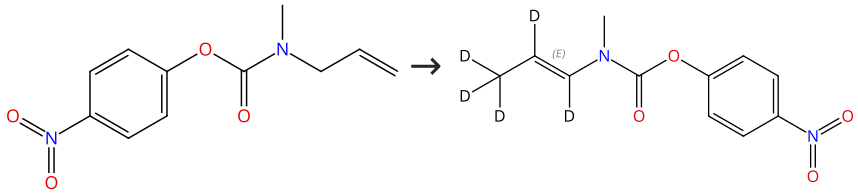
Experimental Protocols

Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 169 (1 Reaction) Steps: **1** Yield: **81%**



Double bond geometry shown

31-614-CAS-41580117 Steps: **1** Yield: **81%**

1.1 **Reagents:** Water-d_2
Catalysts: Carbonylhydridotris(triphenylphosphine)rhodium
Solvents: 1,4-Dioxane; 24 h, 100 °C

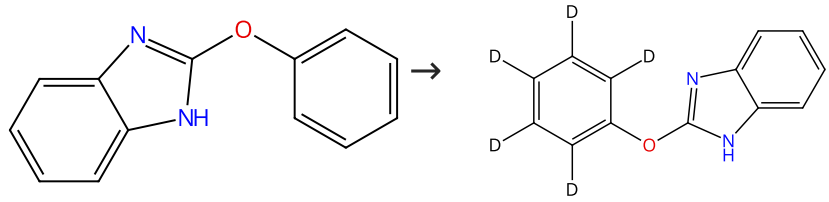
Experimental Protocols

Intramolecular Nucleophilic Vinylic Substitution (S_NV) by Carbon Nucleophiles: Conformationally Directed Formation of Dienes from N,N'-Diallyl Ureas

By: van Veen, Branca C.; et al

Chemistry - A European Journal (2024), 30(52), e202402352.

Scheme 170 (1 Reaction) Steps: **1** Yield: **81%**



Suppliers (5)

31-116-CAS-23714363 Steps: **1** Yield: **81%**

1.1 **Reagents:** Zinc acetate, Water-d_2, [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 2 h, 100 °C

Experimental Protocols

Rh(III)-Catalyzed multi-site-selective C-H bond functionalization: condition-controlled synthesis of diverse fused polycyclic benzimidazole derivatives

By: Wang, Ying-Ying; et al

Organic Chemistry Frontiers (2021), 8(11), 2487-2493.

Scheme 171 (1 Reaction) Steps: **1** Yield: **81%**

Suppliers (113)

31-116-CAS-20659790 Steps: **1** Yield: **81%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

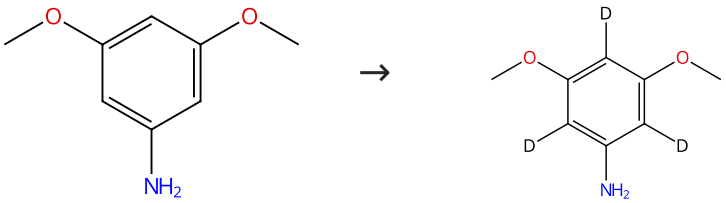
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 172 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (115)

31-116-CAS-15231412 Steps: **1** Yield: **80%**

1.1 **Reagents:** Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 h, 50 °C

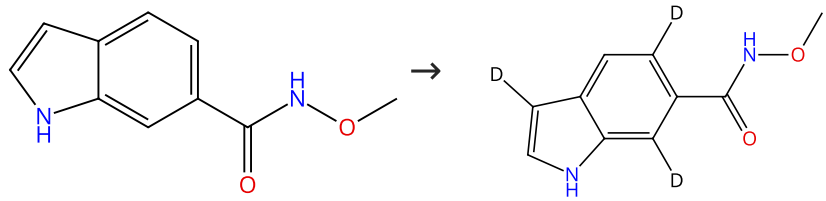
Experimental Protocols

Rhodium-catalyzed ortho C-H bond activation of arylamines for the synthesis of quinoline carboxylates

By: Gadakh, Sunita K.; et al

Organic & Biomolecular Chemistry (2016), 14(10), 2969-2977.

Scheme 173 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (4)

31-116-CAS-22543075 Steps: **1** Yield: **80%**

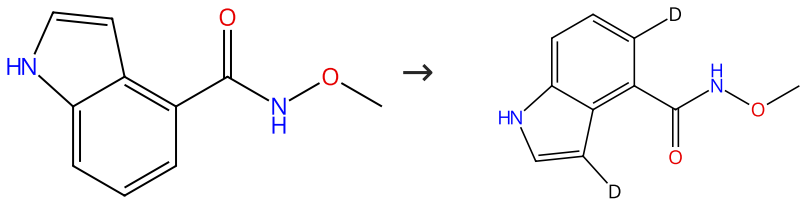
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 174 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (4)

31-116-CAS-22543073 Steps: **1** Yield: **80%**

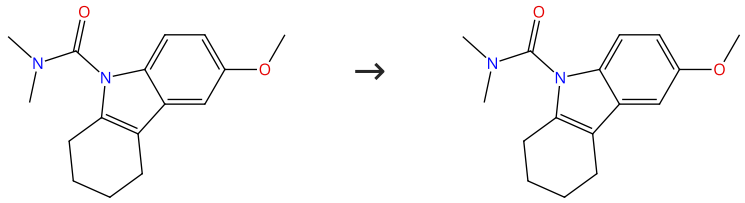
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 175 (1 Reaction) Steps: **1** Yield: **80%**



Supplier (1)

31-614-CAS-30056372 Steps: **1** Yield: **80%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

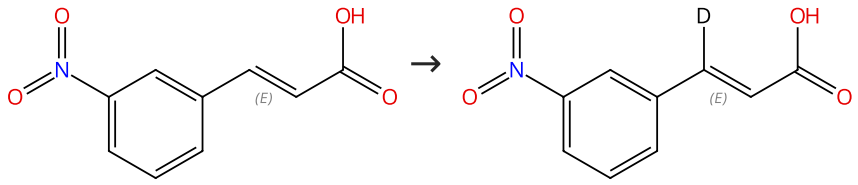
Experimental Protocols

Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 176 (1 Reaction) Steps: **1** Yield: **80%**



Double bond geometry shown

Double bond geometry shown

Suppliers (67)

31-116-CAS-20659797 Steps: **1** Yield: **80%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

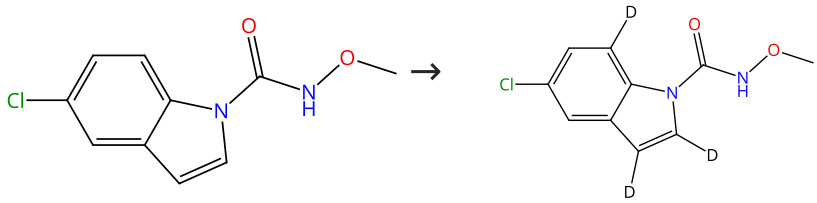
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 177 (1 Reaction) Steps: **1** Yield: **80%**



31-116-CAS-22543047 Steps: **1** Yield: **80%**

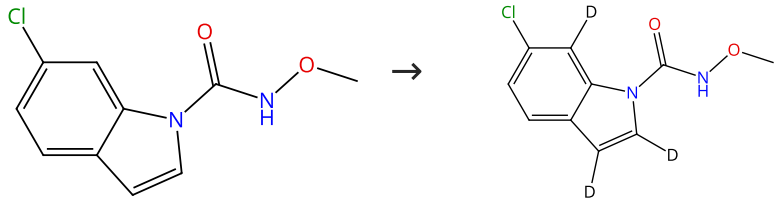
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 178 (1 Reaction) Steps: **1** Yield: **80%**



31-116-CAS-22543054 Steps: **1** Yield: **80%**

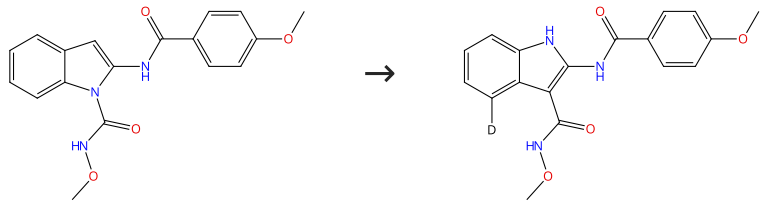
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 179 (1 Reaction) Steps: **1** Yield: **80%**



31-116-CAS-22543058 Steps: **1** Yield: **80%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

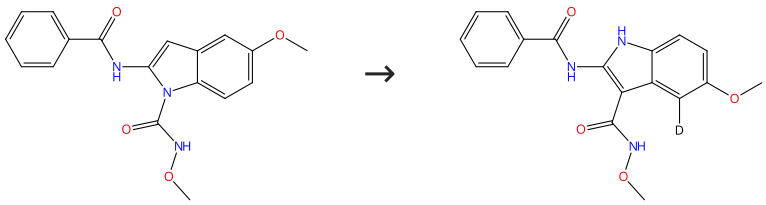
1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 180 (1 Reaction) Steps: **1** Yield: **80%**



31-116-CAS-22543063 Steps: **1** Yield: **80%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

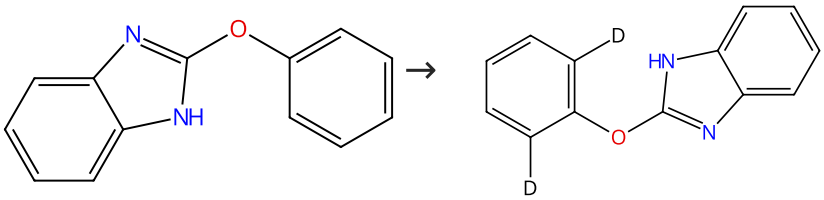
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 181 (3 Reactions)

Steps: **1** Yield: **80%**



Suppliers (5)

31-614-CAS-39429531

Steps: **1** Yield: **80%**

1.1 **Reagents:** Sodium acetate, Water-d_2, Manganese (III) acetate dihydrate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 2,2,2-Trifluoroethanol; 2 h, 80 °C

Experimental Protocols

Rh(III)-catalyzed [5+1] spirocyclization to produce novel benzimidazole-incorporated spirosuccinimides

By: Pu, Wei-Yi; et al

Green Synthesis and Catalysis (2023), 4(4), 338-341.

31-614-CAS-36819539

Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Solvents: 2,2,2-Trifluoroethanol; 15 min, 60 °C

Experimental Protocols

Synthesis of unsymmetrical diaryl oxindoles/isoquinolinediones using 2-phenoxy-1H-benzo[d]imidazole as an integrated diarylating reagent

By: Xu, Guiqing; et al

Organic Chemistry Frontiers (2023), 10(11), 2728-2733.

31-614-CAS-34565243

Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 2,2,2-Trifluoroethanol; 2 h, 100 °C

Experimental Protocols

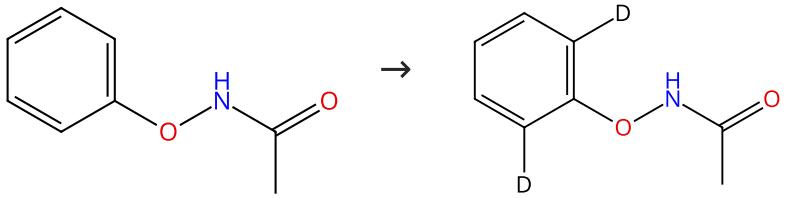
Synthesis of 1,3-benzooxazine spirosuccinimides through the cascade reaction of 2-phenoxy-1H-benzo[d]imidazoles with maleimides

By: Wang, Yue; et al

Tetrahedron Letters (2022), 110, 154182.

Scheme 182 (5 Reactions)

Steps: **1** Yield: **80%**



Suppliers (11)

31-116-CAS-17730622

Steps: **1** Yield: **80%**

1.1 **Reagents:** Silver acetate, Acetic acid-d_4
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Dichloromethane, Water-d_2; 3 h, 60 °C

Experimental Protocols

Synthesis of 3-Arylbenzofuran-2-ylphosphines via Rhodium-Catalyzed Redox-Neutral C-H Activation and Their Applications in Palladium-Catalyzed Cross-Coupling of Aryl Chlorides

By: Wang, Huanan; et al

Journal of Organic Chemistry (2017), 82(18), 9560-9569.

31-614-CAS-33445494 Steps: **1**

1.1 **Reagents:** Cesium acetate, Tripotassium phosphate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 1 h, 50 °C; 50 °C → rt

1.2 **Solvents:** Water; rt

Experimental Protocols

Coupling partner-dependent unsymmetrical C-H functiona lization of N-phenoxyacetamides leading to sophisticated spirocyclic scaffolds

By: Song, Xia; et al

Organic Chemistry Frontiers (2022), 9(17), 4583-4590.

31-614-CAS-24079862 Steps: **1**

1.1 **Reagents:** Water-d_2, Propanoic acid, 2,2-dimethyl-, potassium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 0.5 h, 100 °C

Experimental Protocols

Rh(III)-Catalyzed and synergistic dual directing group-enabled redox-neutral [3+3] annulation of N-phenoxyacetamides with α-allenols

By: Chen, Fangyuan; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(73), 9284-9287.

31-116-CAS-20415321 Steps: **1**

1.1 **Reagents:** Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrafluoroethylene; 1.5 h, 60 °C

Stereoselective β-F Elimination Enabled Redox-Neutral [4 + 1] Annulation via Rh(III)-Catalyzed C-H Activation: Access to Z-Monofluoroalkenyl Dihydrobenzo[d]isoxazole Framework

By: Gao, Hui; et al

Organic Letters (2019), 21(13), 5229-5233.

31-116-CAS-899700 Steps: **1**

1.1 **Reagents:** Pivalic acid, Silver carbonate, Water-d_2, Propanoic acid, 2,2-dimethyl-, cesium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Dimethylformamide; 0.5 h, 140 °C

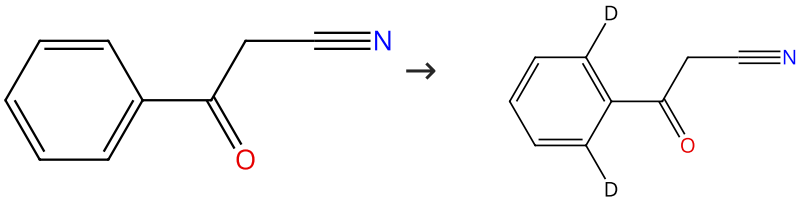
Experimental Protocols

Rhodium(III)-Catalyzed ortho-Heteroarylation of Phenols through Internal Oxidative C-H Activation: Rapid Screening of Single-Molecular White-Light-Emitting Materials

By: Li, Bijin; et al

Angewandte Chemie, International Edition (2015), 54(47), 14008-14012.

Scheme 183 (2 Reactions) Steps: **1** Yield: **80%**



Suppliers (99)

31-116-CAS-18665549 Steps: **1** Yield: **80%**

1.1 **Reagents:** Water-d_2
Catalysts: Silver acetate, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium
Solvents: 1,2-Dichloroethane; 12 h, 80 °C

Experimental Protocols

Construction of (Dihydro)naphtho[1,8-bc]pyrans via Rh(III)-Catalyzed Twofold C-H Activation of Benzoylacetonitriles

By: Hu, Panjie; et al

Organic Letters (2018), 20(8), 2160-2163.

31-116-CAS-20877409 Steps: **1**

1.1 **Reagents:** Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

Experimental Protocols

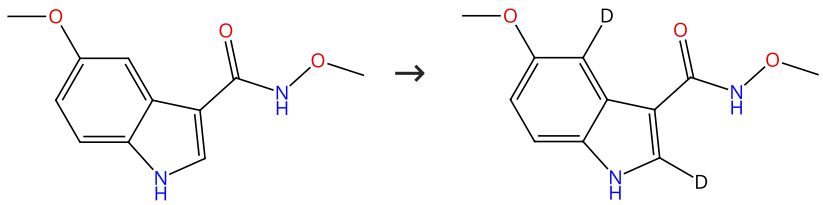
A Complementary C-H Functionalization Mode of Benzoyl acetonitriles: Computer-Augmented Study of a Regio- and Stereoselective Synthesis of Functionalized Benzofulvenes

By: Song, Xia; et al

Organic Letters (2020), 22(1), 46-51.

Scheme 184 (1 Reaction)

Steps: **1** Yield: **79%**



31-116-CAS-22543080

Steps: **1** Yield: **79%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 36 h, 90 °C

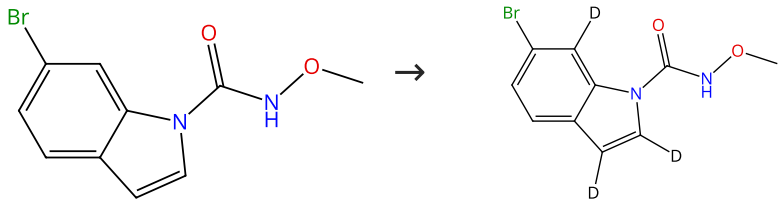
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 185 (1 Reaction)

Steps: **1** Yield: **79%**



31-116-CAS-22543055

Steps: **1** Yield: **79%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

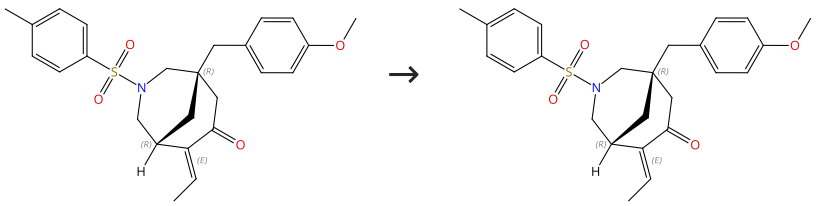
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 186 (1 Reaction)

Steps: **1** Yield: **79%**



Absolute stereochemistry shown,
Rotation (-)
Double bond geometry shown

Absolute stereochemistry shown
Double bond geometry shown

31-614-CAS-25998293

Steps: **1** Yield: **79%**

1.1 **Reagents:** Water-d_2
Catalysts: 1,1'-(4*R*)-[4,4'-Bi-1,3-benzodioxole]-5,5'-diylbis[1,1-bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]phosphine, Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, salt with 1,1,1-trifluoro-*N*-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1)
Solvents: 1,4-Difluorobenzene; 48 h, 120 °C

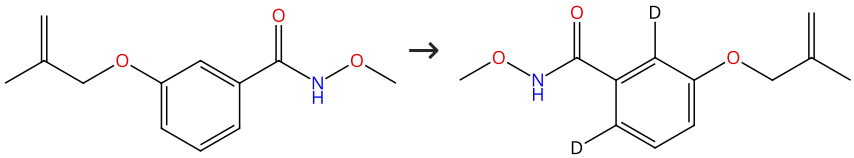
Enantioselective Type II Cycloaddition of Alkynes via C-C Activation of Cyclobutanones: Rapid and Asymmetric Constr uction of [3.3.1] Bridged Bicycles

By: Hou, Si-Hua; et al

Journal of the American Chemical Society (2020), 142(30), 13180-13189.

Scheme 187 (1 Reaction)

Steps: **1** Yield: **79%**



31-116-CAS-22929300 Steps: **1** Yield: **79%**

1.1 **Reagents:** Water-d_2, Methyl-1,4,2-dioxazol-5-one
Catalysts: Lithium acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 10 min, 70 °C

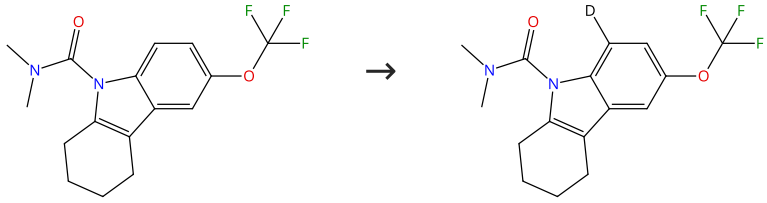
Experimental Protocols

Rh(III)-catalyzed tandem annulative redox-neutral arylation/amidation of aromatic tethered alkenes

By: Chen, Chao; et al

Chemical Science (2020), 11(44), 12124-12129.

Scheme 188 (1 Reaction) Steps: **1** Yield: **79%**



31-116-CAS-23349970 Steps: **1** Yield: **79%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

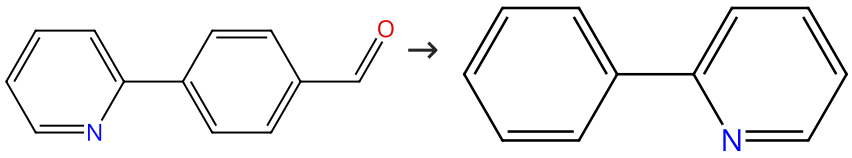
Experimental Protocols

Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 189 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (105)

31-614-CAS-32632335 Steps: **1** Yield: **78%**

1.1 **Reagents:** Water-d_2
Catalysts: 3-Nitrobenzoic acid, Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydirhodium, 1,1'-(9,9-Dimethyl-9*H*-xanthene-4,5-diyl)bis[1,1-diphenylphosphine]; 8 h, 120 °C

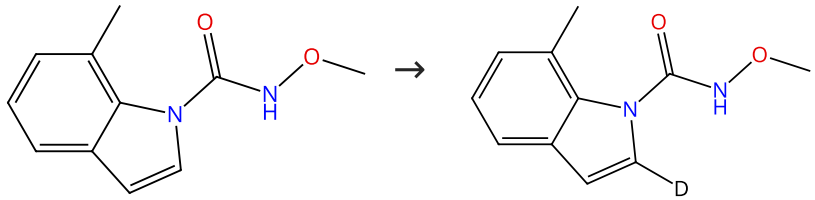
Experimental Protocols

Rhodium-Catalyzed Deuterated Tsuji-Wilkinson Decarbonylation of Aldehydes with Deuterium Oxide

By: Min, Xiang-Ting; et al

Journal of the American Chemical Society (2022), 144(25), 11081-11087.

Scheme 190 (1 Reaction) Steps: **1** Yield: **78%**



31-116-CAS-22543025 Steps: **1** Yield: **78%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Carbonyldiiodo[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]cobalt
Solvents: 1,2-Dichloroethane; 36 h, 25 °C

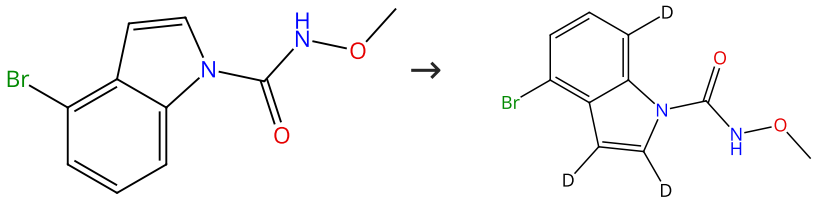
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 191 (1 Reaction)

Steps: **1** Yield: **78%**



31-116-CAS-22543042

Steps: **1** Yield: **78%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 192 (1 Reaction)

Steps: **1** Yield: **78%**

31-116-CAS-23350342

Steps: **1** Yield: **78%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

Experimental Protocols

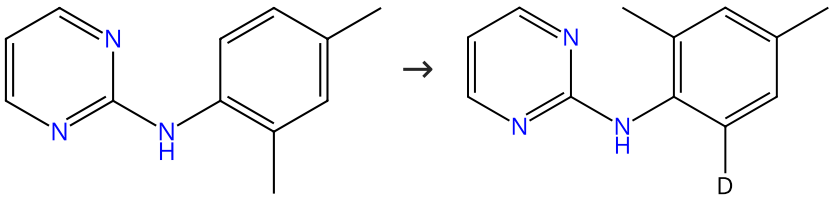
Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 193 (1 Reaction)

Steps: **1** Yield: **78%**



Suppliers (5)

31-614-CAS-35037132

Steps: **1** Yield: **78%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Acetylglycine, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 2 h, 80 °C

Experimental Protocols

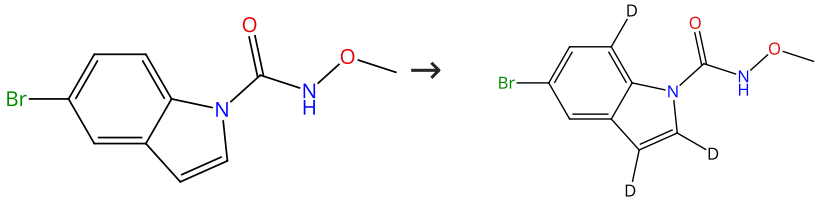
Catalyst-Controlled Chemodivergent Reactivity of Vinyl Cyclopropanes: A Selective Approach toward Indoles and Aniline Derivatives

By: Keshri, Santosh Kumar; et al

Organic Letters (2022), 24(49), 9043-9048.

Scheme 194 (1 Reaction)

Steps: **1** Yield: **77%**



Supplier (1)

31-116-CAS-22543048

Steps: **1** Yield: **77%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

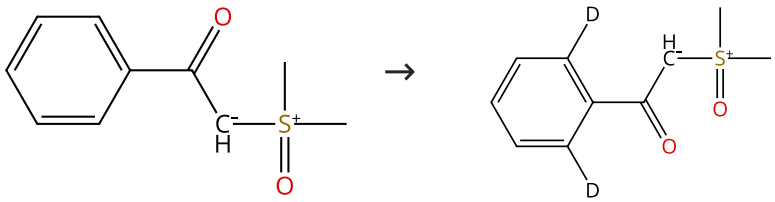
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 195 (1 Reaction)

Steps: **1** Yield: **77%**



Suppliers (38)

31-614-CAS-42505923

Steps: **1** Yield: **77%**

1.1 **Reagents:** Acetic acid, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 2,2,2-Trifluoroethanol; 1 h, 90 °C

Experimental Protocols

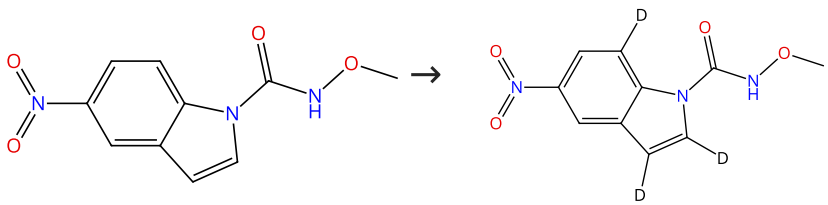
Controlled Ru (II) & Rh (III) Catalyzed [4+2] & [4+1] Carbo-Annulations via C-H Activation Using Sulfoxonium Ylide and Maleimide: Facile Access to Fused Benzoisoindole & Spiroin danone

By: Vaggu, Raju; et al

European Journal of Organic Chemistry (2024), 27(47), e202400885.

Scheme 196 (1 Reaction)

Steps: **1** Yield: **77%**



31-116-CAS-22543051

Steps: **1** Yield: **77%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

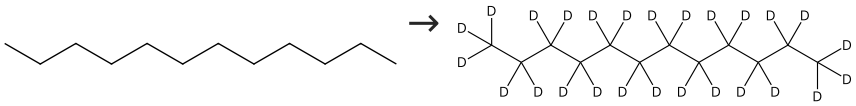
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 197 (3 Reactions)

Steps: **1** Yield: **76%**



Suppliers (114)

Suppliers (40)

31-116-CAS-14816786

Steps: **1** Yield: **76%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 h, 160 °C

Experimental Protocols

Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

31-116-CAS-15237085

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Platinum, Rhodium
Solvents: 2-Propan-*1,1,1,2,3,3,3-*d_7-ol-*d*; 24 h, 120 °C

Experimental Protocols

Multiple deuteration of alkanes synergistically-catalyzed by platinum and rhodium on carbon as a mixed catalytic system

By: Yamada, Tsuyoshi; et al

RSC Advances (2015), 5(18), 13727-13732.

31-116-CAS-7116953

Steps: **1 Failed**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 h, 160 °C

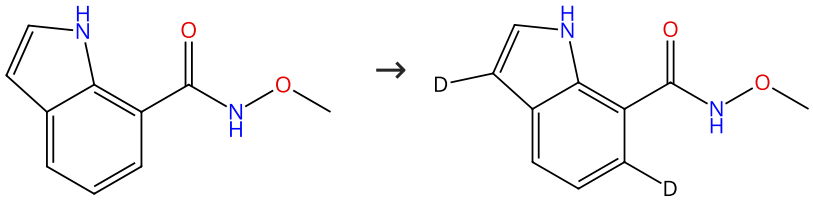
Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 198 (1 Reaction)

Steps: **1** Yield: **76%**



Suppliers (4)

31-116-CAS-22543076

Steps: **1** Yield: **76%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 90 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 199 (1 Reaction)

Steps: **1** Yield: **76%**

Supplier (1)

31-116-CAS-23354531

Steps: **1** Yield: **76%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver; 12 h, 80 °C

Experimental Protocols

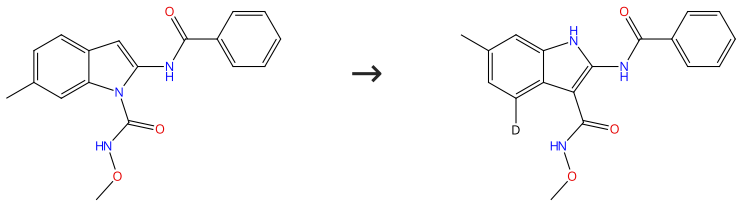
Rhodium(III) catalyzed olefination and deuteration of tetrahydrocarbazole

By: Peng, Wan; et al

RSC Advances (2021), 11(14), 8356-8361.

Scheme 200 (1 Reaction)

Steps: **1** Yield: **76%**



31-116-CAS-22543066

Steps: **1** Yield: **76%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

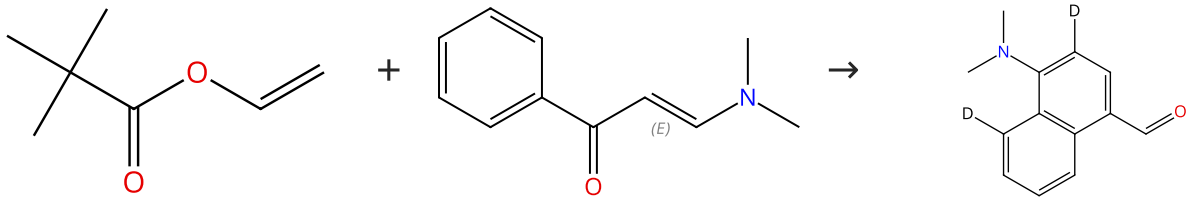
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 201 (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (45)

Double bond geometry shown

Suppliers (49)

31-116-CAS-19407699

Steps: **1** Yield: **75%**

1.1 **Reagents:** Potassium acetate, Cupric acetate, Lithium hydroxide, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 72 h, 125 °C

Experimental Protocols

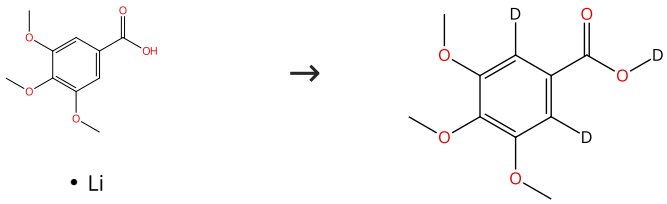
Synthesis of Polyaromatic Rings: Rh(III)-Catalyzed [5 + 1] Annulation of Enaminones with Vinyl Esters through C-H Bond Functionalization

By: Liang, Gaohui; et al

Organic Letters (2018), 20(22), 7326-7331.

Scheme 202 (1 Reaction)

Steps: **1** Yield: **75%**



• Li

Supplier (1)

31-116-CAS-20277457

Steps: **1** Yield: **75%**

1.1 **Reagents:** Cupric acetate, Water-d_2, Silver tetrafluoroborate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 3 h, 120 °C

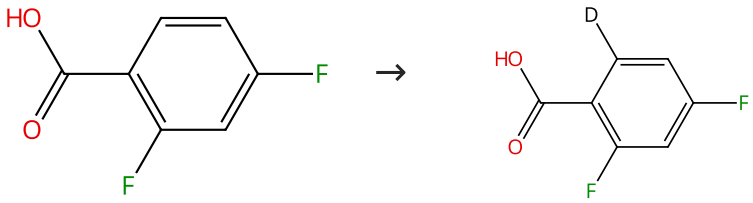
Weak Coordinating Carboxylate Directed Rhodium(III)-Catalyzed C-H Activation: Switchable Decarboxylative Heck-Type and [4 + 1] Annulation Reactions with Maleimides

By: Sherikar, Mahadev Sharanappa; et al

Organic Letters (2019), 21(12), 4525-4530.

Scheme 203 (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (99)

31-116-CAS-20659776

Steps: **1** Yield: **75%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

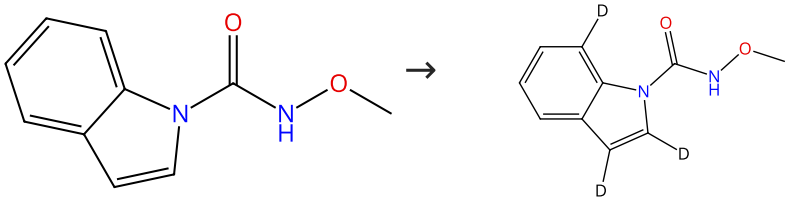
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 204 (3 Reactions)

Steps: **1** Yield: **73-75%**



Supplier (1)

31-116-CAS-22543040

Steps: **1** Yield: **75%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

31-614-CAS-36218327 Steps: **1** Yield: **73%**

1.1 **Reagents:** Cupric acetate, 2,4,6-Trimethylbenzoic acid, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,4-Dioxane; 1 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Water; rt

Experimental Protocols

Condition-Controlled Divergent Synthesis of Imidazoindolone Spiroisoquinolinones from N-Alkoxycarboxamide Indoles and Diazo Homophthalimides

By: Wang, Manqing; et al

Advanced Synthesis & Catalysis (2023), 365(8), 1255-1261.

31-614-CAS-41430461 Steps: **1**

1.1 **Reagents:** Sodium acetate, Zinc acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 1 h, 100 °C

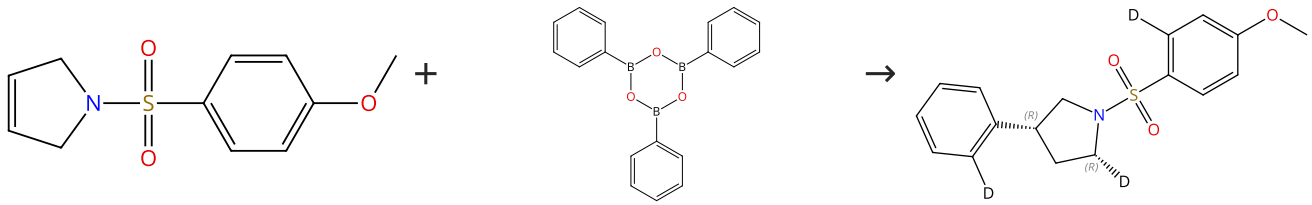
Experimental Protocols

Cp*Rh(III)-Catalyzed Divergent Synthesis of N-Heterocycles with N-Methoxyindoleamides and Isoxazolones

By: Shen, Dan-Ting; et al

Advanced Synthesis & Catalysis (2024), 366(19), 4089-4094.

Scheme 205 (1 Reaction) Steps: **1** Yield: **75%**



Suppliers (36) Suppliers (71)

Absolute stereochemistry shown

31-116-CAS-12285432 Steps: **1** Yield: **75%**

1.1 **Catalysts:** (+)-BINAP, Tetrakis[(1,2-η)-cyclooctene]di-μ-hydroxydirhodium
Solvents: Tetrahydrofuran; 1 min, rt

1.2 **Reagents:** Water-d_2; 16 h, 60 °C

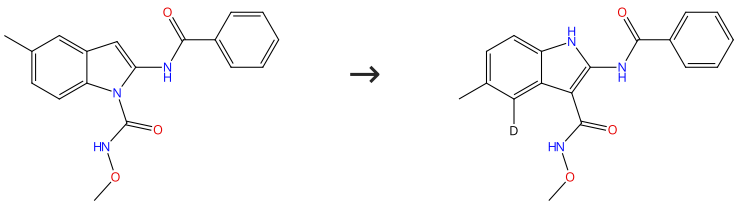
Experimental Protocols

Rhodium-Catalyzed Asymmetric Hydroarylation of 3-Pyrrolines Giving 3-Arylpyrrolidines: Protonation as a Key Step

By: So, Chau Ming; et al

Journal of the American Chemical Society (2013), 135(30), 10990-10993.

Scheme 206 (1 Reaction) Steps: **1** Yield: **75%**



31-116-CAS-22543062 Steps: **1** Yield: **75%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

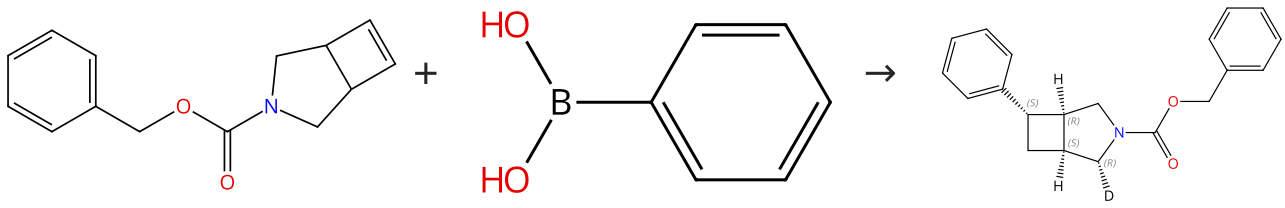
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 207 (1 Reaction)

Steps: **1** Yield: **75%**



Absolute stereochemistry shown, Rotation (+)

Suppliers (143)

31-614-CAS-23949091

Steps: **1** Yield: **75%**

1.1 **Catalysts:** Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydi rhodium, 1,1'-[(4*S*)-[4,4'-Bi-1,3-benzodioxole]-5,5'-diyl]bis[1,1-diphenylphosphine]
Solvents: 1,4-Dioxane; 30 min, 60 °C; 5 - 10 min, 60 °C → 23 °C

1.2 **Reagents:** Water-d_2
Solvents: Toluene; 16 h, 23 °C

Experimental Protocols

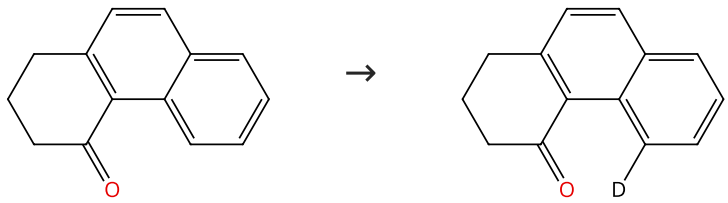
A catalytic asymmetric cross-coupling approach to the synthesis of cyclobutanes

By: Goetzke, F. Wieland; et al

Nature Chemistry (2021), 13(9), 880-886.

Scheme 208 (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (57)

31-614-CAS-36904694

Steps: **1** Yield: **75%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 min, rt; 15 min, rt → 130 °C; 3 h, 130 °C

Experimental Protocols

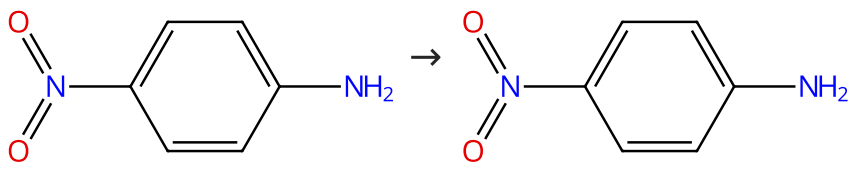
Annulative π-Extension by Rhodium(III)-Catalyzed Ketone-Directed C-H Activation: Rapid Access to Pyrenes and Related Polycyclic Aromatic Hydrocarbons (PAHs)

By: Sk, Raja Md; et al

Angewandte Chemie, International Edition (2023), 62(30), e202305258.

Scheme 209 (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (92)

31-614-CAS-27789675

Steps: **1** Yield: **74%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Rhodium
Solvents: Water-d_2; 2 h, 150 °C

Experimental Protocols

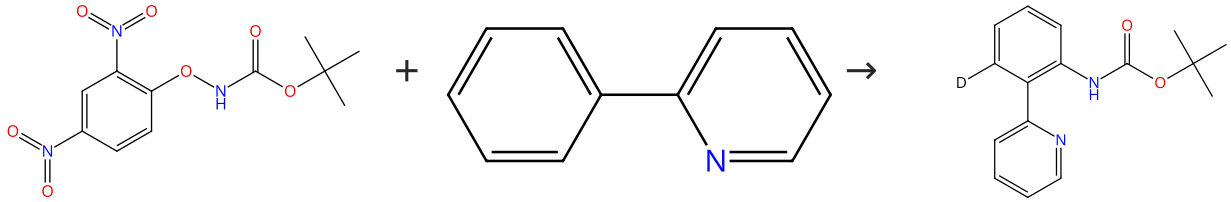
Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 210 (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (6)

Suppliers (94)

31-080-CAS-11785090

Steps: **1** Yield: **74%**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Water-d_2; 10 min, 60 °C; 60 °C → rt

Experimental Protocols

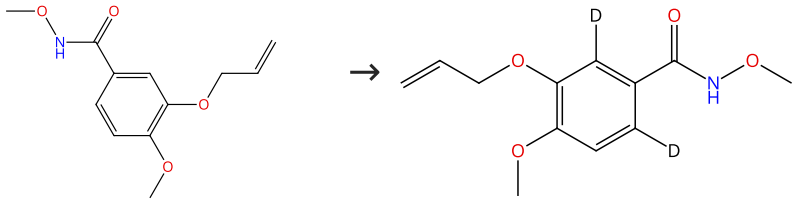
[RhCp*Cl$_2$]$_2$-Catalyzed Directed N-Boc Amidation of Arenes "on Water"

By: Ali, Ashif Md.; et al

Organic Letters (2015), 17(6), 1513-1516.

Scheme 211 (1 Reaction)

Steps: **1** Yield: **74%**



31-614-CAS-34278961

Steps: **1** Yield: **74%**

1.1 **Reagents:** Cupric acetate, Water-d_2, Silver hexafluoroanti monate, Methyl-1,4,2-dioxazol-5-one
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 10 min, rt

Experimental Protocols

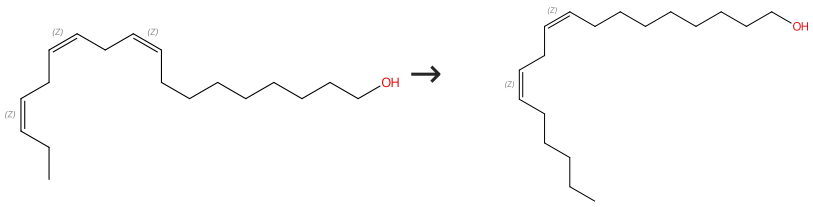
Rh(III)-catalyzed twofold unsymmetrical C-H alkenylation-annulation/amidation reaction enabled delivery of diverse furoquinazolinones

By: Chen, Chao; et al

Tetrahedron Letters (2022), 108, 154141.

Scheme 212 (1 Reaction)

Steps: **1** Yield: **74%**



Double bond geometry shown

Double bond geometry shown

Suppliers (34)

Suppliers (86)

31-242-CAS-20522911

Steps: **1** Yield: **74%**

1.1 **Reagents:** Hydrogen
Catalysts: Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][1,1'-(1, 2-ethanediyl)bis(1,1-dimethylphosphine-κ*P*)]-, tetrafluo roborate(1-) (1:1), 2374202-84-1
Solvents: Water-d_2; 2 min, rt; 20 h, rt

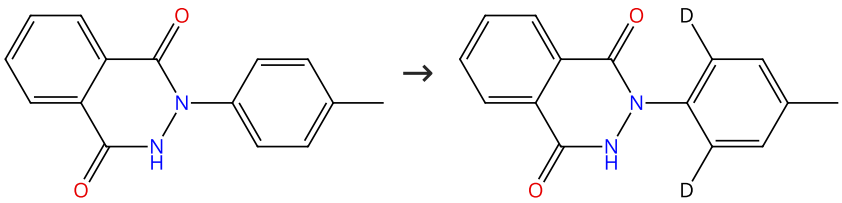
A Supramolecular Strategy for Selective Catalytic Hydrogenation Independent of Remote Chain Length

By: Bender, Trandon A.; et al

Journal of the American Chemical Society (2019), 141(30), 11806-11810.

Scheme 213 (1 Reaction)

Steps: **1** Yield: **72%**



Suppliers (3)

31-614-CAS-42503945

Steps: **1** Yield: **72%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 4 h, 60 °C; 60 °C → rt

1.2 **Reagents:** Water

Experimental Protocols

Rhodium-Catalyzed Functionalization and Annulation of N-Aryl Phthalazinediones with Allyl Alcohols

By: Naharwal, Sushma; et al

Chemistry - An Asian Journal (2024), 19(23), e202400711.

Scheme 214 (1 Reaction)

Steps: **1** Yield: **72%**

Suppliers (4)

31-116-CAS-11735310

Steps: **1** Yield: **72%**

1.1 **Reagents:** Formic acid, Water-d_2
Catalysts: Dirhodium tetraacetate; 6 h, 50 °C

Experimental Protocols

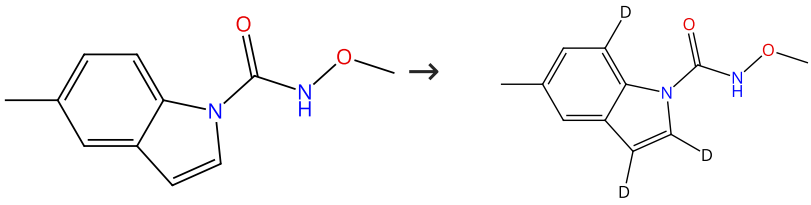
Rhodium-catalyzed ortho C-H bond activation of arylamines for the synthesis of quinoline carboxylates

By: Gadakh, Sunita K.; et al

Organic & Biomolecular Chemistry (2016), 14(10), 2969-2977.

Scheme 215 (1 Reaction)

Steps: **1** Yield: **72%**



Supplier (1)

31-116-CAS-22543043

Steps: **1** Yield: **72%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

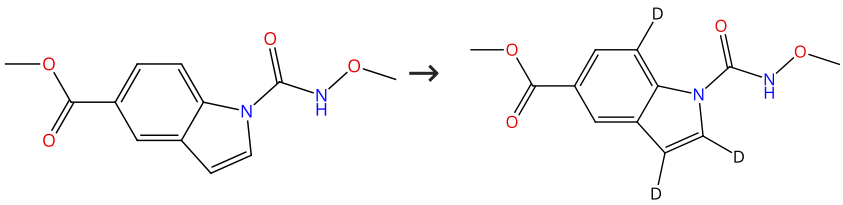
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 216 (1 Reaction)

Steps: **1** Yield: **72%**



31-116-CAS-22543049

Steps: **1** Yield: **72%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

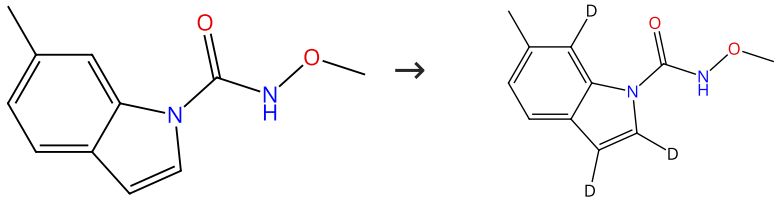
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 217 (1 Reaction)

Steps: **1** Yield: **72%**



31-116-CAS-22543052

Steps: **1** Yield: **72%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 218 (1 Reaction)

Steps: **1** Yield: **72%**

31-116-CAS-22543057

Steps: **1** Yield: **72%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

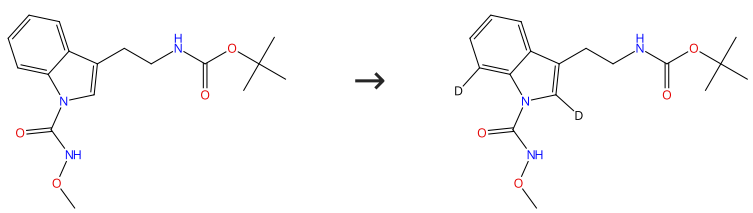
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 219 (1 Reaction)

Steps: **1** Yield: **72%**



31-116-CAS-22543056 Steps: **1** Yield: **72%**

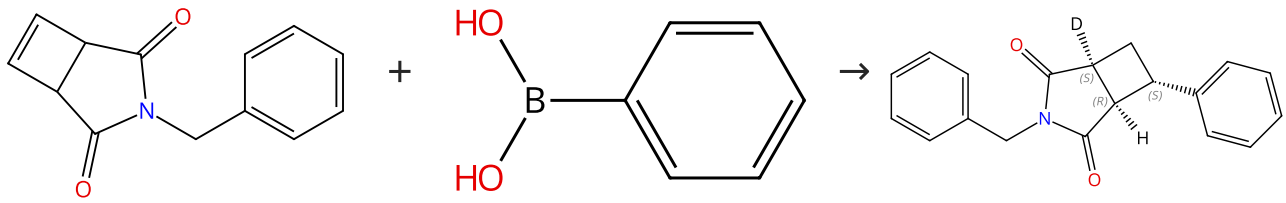
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 220 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (143)

Absolute stereochemistry shown, Rotation (+)

31-614-CAS-23949090 Steps: **1** Yield: **72%**

1.1 **Catalysts:** Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydi rhodium, 1,1'-(4*S*)-[4,4'-Bi-1,3-benzodioxole]-5,5'-diylbis[1,1-bis[3,5-bis(1,1-dimethylethyl)-4-methoxyphenyl]phosphine]
Solvents: 1,4-Dioxane; 30 min, 60 °C

1.2 **Reagents:** Water-d_2
Solvents: Toluene; 4 h, 60 °C

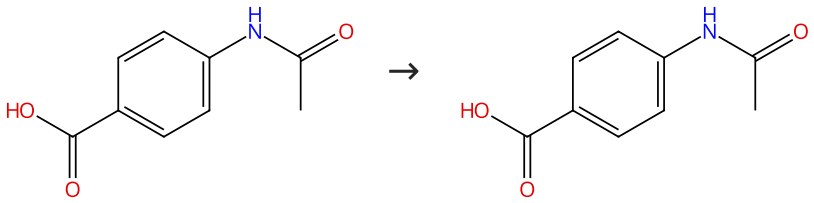
Experimental Protocols

A catalytic asymmetric cross-coupling approach to the synthesis of cyclobutanes

By: Goetzke, F. Wieland; et al

Nature Chemistry (2021), 13(9), 880-886.

Scheme 221 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (87)

31-614-CAS-25543620 Steps: **1** Yield: **72%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

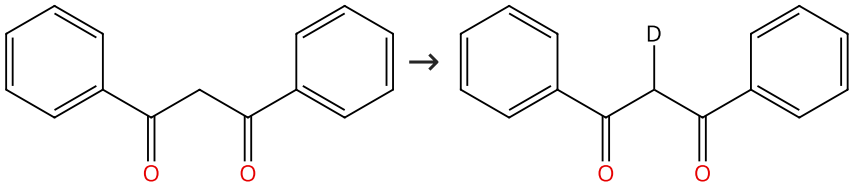
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 222 (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (100)

31-116-CAS-23614520 Steps: **1** Yield: **71%**

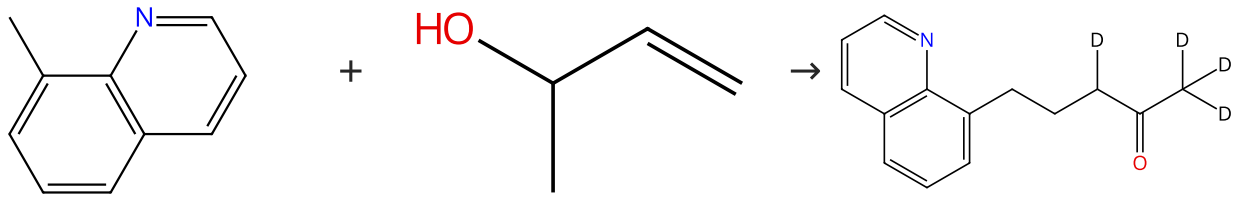
1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 h, rt → 80 °C

Rh(III)-Catalyzed Cascade Nucleophilic Addition/Annulation of 2-Diazo-1,3-diketones with 1,3-Dicarbonyl Compounds To Access 6,7-Dihydrobenzofuran-4(5H)-ones

By: Wu, Yinsong; et al

Journal of Organic Chemistry (2021), 86(11), 7370-7380.

Scheme 223 (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (69) Suppliers (70)

31-116-CAS-16993018 Steps: **1** Yield: **71%**

1.1 **Reagents:** Cupric acetate, Acetic acid-*d*, Oxygen
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Water-d_2; 0.5 h, 100 °C

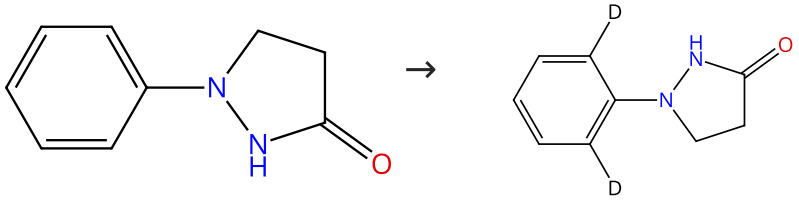
Experimental Protocols

Cp*Rh(III)-catalyzed C(sp^3)-H alkylation of 8-methylquinolines in aqueous media

By: Kim, Saegun; et al

Chemical Communications (Cambridge, United Kingdom) (2017), 53(21), 3006-3009.

Scheme 224 (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (92)

31-614-CAS-31375591 Steps: **1** Yield: **71%**

1.1 **Reagents:** Zinc acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 80 °C

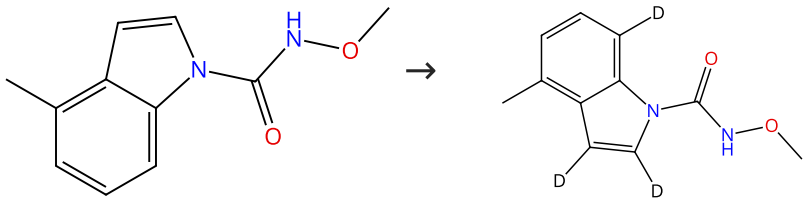
Experimental Protocols

Rh(III)-Catalysed Switchable and Chemoselective Synthesis of Difluorinated Pyrazolo[1,2-a]indazolone and Indole Frameworks

By: Lin, Shuang; et al

Asian Journal of Organic Chemistry (2022), 11(2), e202200019.

Scheme 225 (1 Reaction) Steps: **1** Yield: **70%**



31-116-CAS-22543041 Steps: **1** Yield: **70%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 226 (1 Reaction)

Steps: **1** Yield: **70%**

31-116-CAS-22543067

Steps: **1** Yield: **70%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]; 12 h, 90 °C

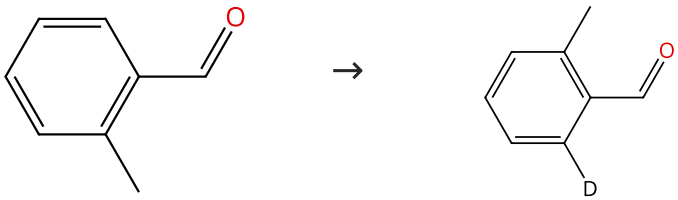
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 227 (1 Reaction)

Steps: **1** Yield: **70%**



Suppliers (94)

31-116-CAS-22267693

Steps: **1** Yield: **70%**

1.1 **Reagents:** Benzylamine, Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]; 15 min, rt; 24 h, 110 °C

Experimental Protocols

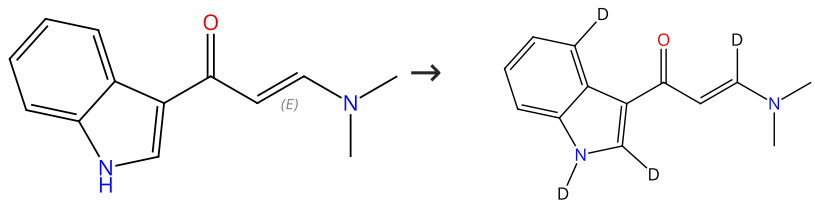
Transient directing ligand- and solvent-controlled C-H/C-H cross-coupling/quaternization cyclization/dequaternization of benzaldehydes with thiophenes

By: Sun, Denan; et al

Chemical Communications (Cambridge, United Kingdom) (2019), 55(52), 7518-7521.

Scheme 228 (1 Reaction)

Steps: **1** Yield: **70%**



Double bond geometry shown

Suppliers (20)

31-116-CAS-23631305

Steps: **1** Yield: **70%**

1.1 **Reagents:** Succinic acid, Water-d_2
Catalysts: Silver trifluoroacetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,4-Dioxane; 2 h, rt

Experimental Protocols

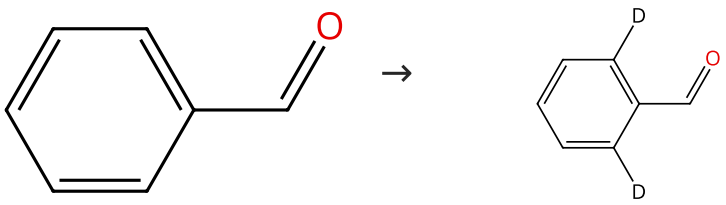
Rh(III)-Catalyzed [5+1] Annulation of Indole-enaminones with Diazo Compounds To Form Highly Functionalized Carbazoles

By: Jiang, Zhidong; et al

Organic Letters (2021), 23(11), 4406-4410.

Scheme 229 (1 Reaction)

Steps: **1** Yield: **69%**



Suppliers (80)

31-116-CAS-21551867

Steps: **1** Yield: **69%**

1.1 **Reagents:** Water-d_2
Catalysts: Manganese triacetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 16 h, 130 °C

Aldehyde as a Traceless Directing Group for Regiose lective C-H Alkylation Catalyzed by Rhodium(III) in Air

By: Chen, Si-Qi; et al

Organic Letters (2020), 22(4), 1259-1264.

Scheme 230 (1 Reaction)

Steps: **1** Yield: **69%**

Suppliers (57)

Supplier (1)

31-116-CAS-12935721

Steps: **1** Yield: **69%**

1.1 **Reagents:** Water-d_2
Catalysts: BINAP, Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, 1,1,1-trifluoromethanesulfonate (1:1)
Solvents: Chlorobenzene; 1 h, 135 °C

Experimental Protocols

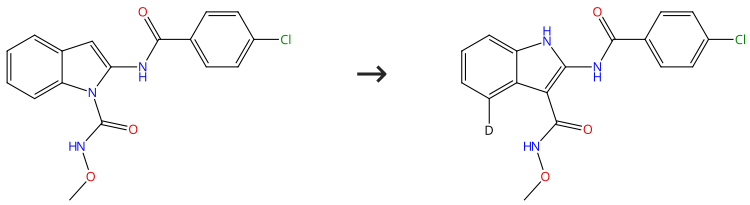
Directed C-H Alkenylation of Quinoline N-Oxides at the C-8 Position Using a Cationic Rhodium(I) Catalyst

By: Shibata, Takanori; et al

Advanced Synthesis & Catalysis (2014), 356(7), 1516-1520.

Scheme 231 (1 Reaction)

Steps: **1** Yield: **69%**



31-116-CAS-22543060

Steps: **1** Yield: **69%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]; 12 h, 90 °C

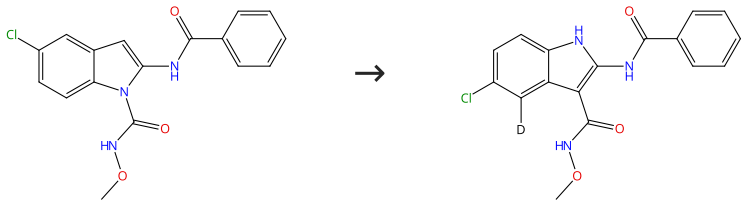
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 232 (1 Reaction)

Steps: **1** Yield: **69%**



31-116-CAS-22543065

Steps: **1** Yield: **69%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

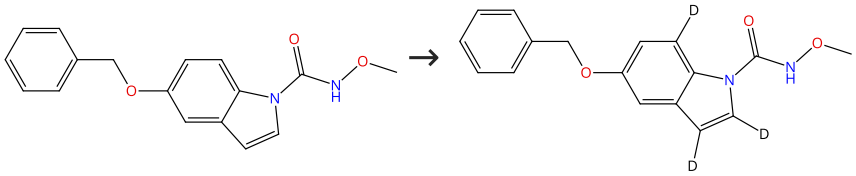
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 233 (1 Reaction)

Steps: **1** Yield: **69%**



31-116-CAS-22543045

Steps: **1** Yield: **69%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

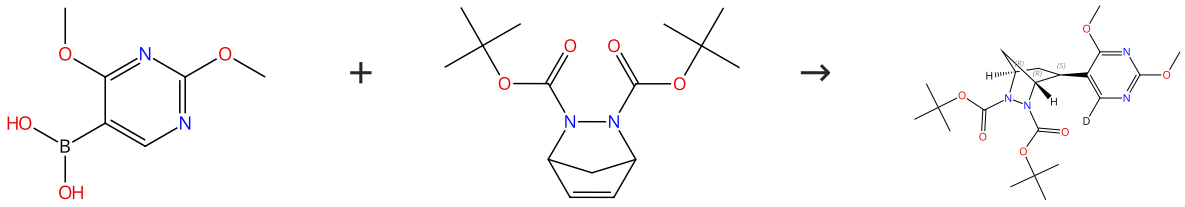
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 234 (1 Reaction)

Steps: **1** Yield: **69%**



Absolute stereochemistry shown

Suppliers (89)

Suppliers (9)

31-116-CAS-12208765

Steps: **1** Yield: **69%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydi rhodium, (2*R*)-1-[(1*R*)-1-(Dicyclohexylphosphino)ethyl]-2-(diphenylphosphino)ferrocene
Solvents: Tetrahydrofuran, Water-d_2; 16 h, rt

Experimental Protocols

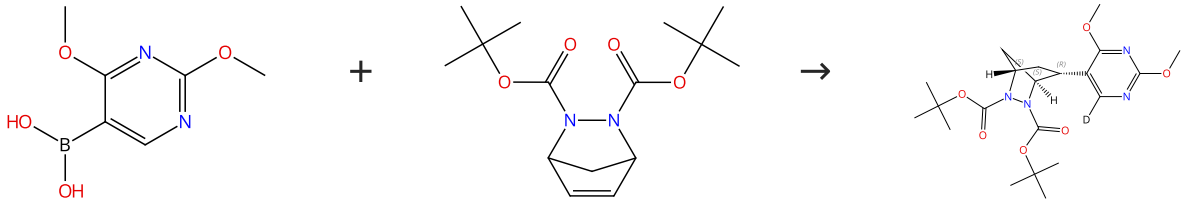
Chemodivergence in enantioselective desymmetrization of diazabicycles: ring-opening versus reductive arylation

By: Menard, Frederic; et al

Angewandte Chemie, International Edition (2008), 47(11), 2085-2088.

Scheme 235 (1 Reaction)

Steps: **1** Yield: **69%**



Suppliers (89)

Suppliers (9)

Relative stereochemistry shown

31-116-CAS-11091968

Steps: **1** Yield: **69%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydi rhodium, (2*R*)-1-[(1*R*)-1-[Bis(1,1-dimethylethyl)phosphino] ethyl]-2-(diphenylphosphino)ferrocene
Solvents: Tetrahydrofuran, Water-d_2; 15 - 20 min, rt

1.2 **Solvents:** Tetrahydrofuran; 16 h, rt

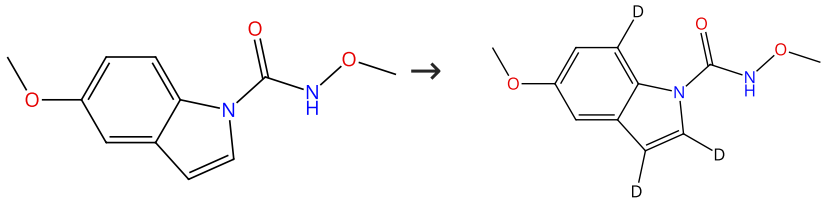
Ligand control in enantioselective desymmetrization of bicyclic hydrazines: Rhodium(I)-catalyzed ring-opening versus hydroarylation

By: Panteleev, Jane; et al

Advanced Synthesis & Catalysis (2008), 350(18), 2893-2902.

Scheme 236 (1 Reaction)

Steps: **1** Yield: **68%**



Supplier (1)

31-116-CAS-22543044

Steps: **1** Yield: **68%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

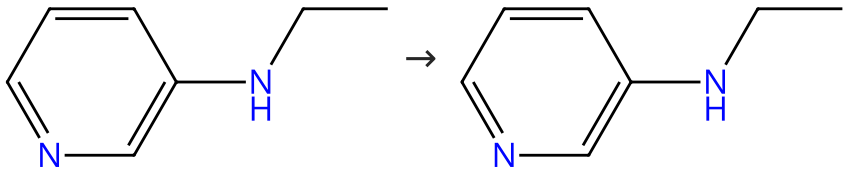
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 237 (1 Reaction)

Steps: **1** Yield: **68%**



Suppliers (58)

Suppliers (3)

31-614-CAS-27544425

Steps: **1** Yield: **68%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Rhodium
Solvents: Water-d_2; 2 h, 150 °C

Experimental Protocols

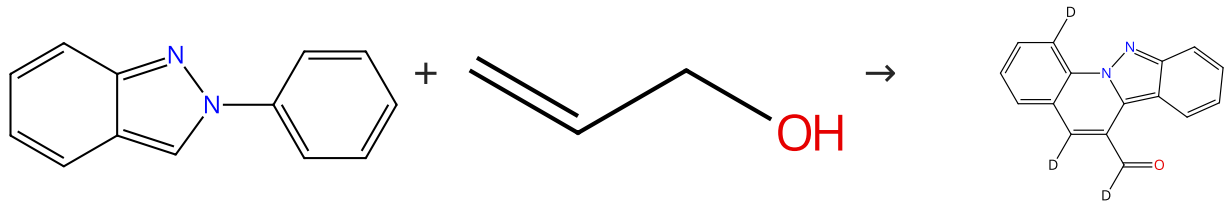
Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 238 (1 Reaction)

Steps: **1** Yield: **67%**



Suppliers (36)

Suppliers (46)

31-614-CAS-38718610

Steps: **1** Yield: **67%**

1.1 **Reagents:** 1-Adamantanecarboxylic acid, Copper diacetate monohydrate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 16 h, 80 °C

Experimental Protocols

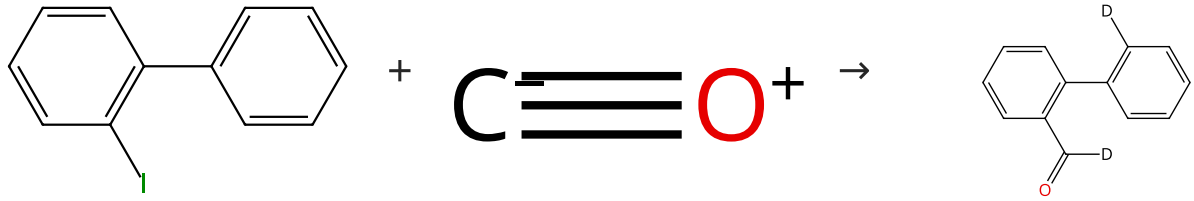
Rh(III)-catalyzed oxidative [4+2] annulation of 2-arylquinoxalines and 2-aryl-2H-indazoles with allyl alcohols

By: Nipate, Dhananjay S.; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(3), 344-347.

Scheme 239 (1 Reaction)

Steps: **1** Yield: **67%**



Suppliers (84)

Suppliers (17)

31-116-CAS-19074737

Steps: **1** Yield: **67%**

1.1 **Reagents:** *N*,*N*,*N*′,*N*′-Tetramethylethylenediamine, Water-d_2
Catalysts: Palladium chloride, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium, 4,4'-Dimethoxy-2,2'-bipyridine
Solvents: Dimethylformamide; 24 h, 25 bar, 85 °C

Experimental Protocols

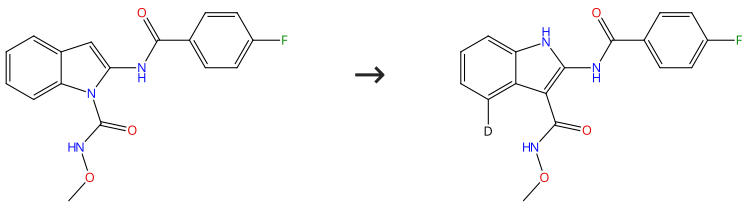
Palladium/Rhodium Cooperative Catalysis for the Production of Aryl Aldehydes and Their Deuterated Analogues Using the Water-Gas Shift Reaction

By: Ibrahim, Malek Y. S.; et al

Angewandte Chemie, International Edition (2018), 57(32), 10362-10367.

Scheme 240 (1 Reaction)

Steps: **1** Yield: **67%**



31-116-CAS-22543059

Steps: **1** Yield: **67%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 241 (1 Reaction)

Steps: **1** Yield: **67%**

31-116-CAS-22543086

Steps: **1** Yield: **67%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, 1,2-Dichloroethane; 36 h, 130 °C

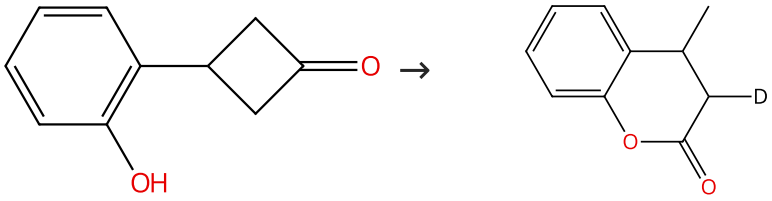
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 242 (1 Reaction)

Steps: **1** Yield: **67%**



Suppliers (9)

31-116-CAS-3911315

Steps: **1** Yield: **67%**

1.1 **Catalysts:** Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydi rhodium, BINAP
Solvents: Tetrahydrofuran, Water-d_2; 13 h, rt

Experimental Protocols

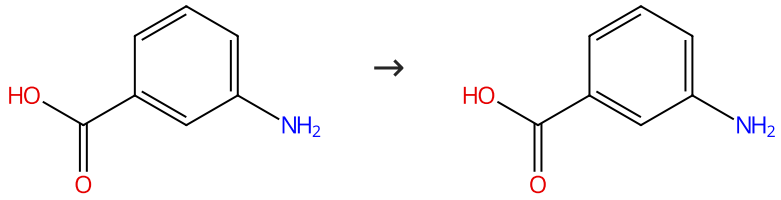
Asymmetric synthesis of 3,4-dihydrocoumarins by rhodium-catalyzed reaction of 3-(2-hydroxyphenyl)cyclobutanones

By: Matsuda, Takanori; et al

Journal of the American Chemical Society (2007), 129(40), 12086-12087.

Scheme 243 (1 Reaction)

Steps: **1** Yield: **67%**



Suppliers (105)

31-614-CAS-29278992

Steps: **1** Yield: **67%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Rhodium
Solvents: Water-d_2; 2 h, 150 °C

Experimental Protocols

Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 244 (1 Reaction)

Steps: **1** Yield: **66%**

Suppliers (58)

Suppliers (2)

31-116-CAS-2534805

Steps: **1** Yield: **66%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Rhodium
Solvents: Water-d_2; 12 - 24 h, 160 °C

Experimental Protocols

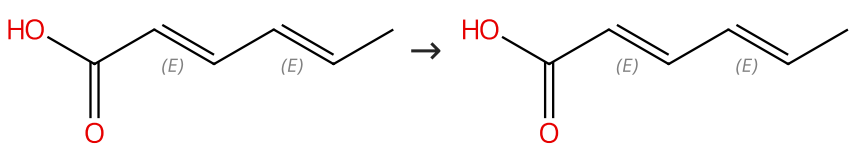
Mild and efficient H/D exchange of alkanes based on C-H activation catalyzed by rhodium on charcoal

By: Maegawa, Tomohiro; et al

Angewandte Chemie, International Edition (2008), 47(29), 5394-5397.

Scheme 245 (1 Reaction)

Steps: **1** Yield: **65%**



Double bond geometry shown

Double bond geometry shown

Suppliers (142)

31-614-CAS-28827581

Steps: **1** Yield: **65%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

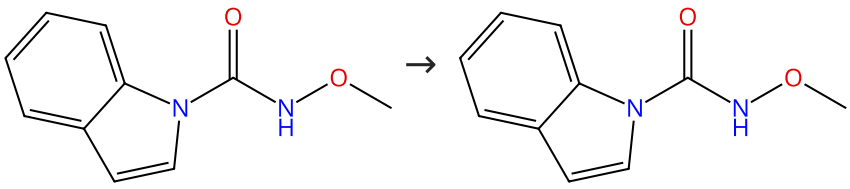
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 246 (1 Reaction)

Steps: **1** Yield: **65%**



Supplier (1)

31-614-CAS-24478348

Steps: **1** Yield: **65%**

1.1 **Reagents:** Lithium carbonate (Li_2CO_3), Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Chlorobenzene; 12 h, 80 °C

Experimental Protocols

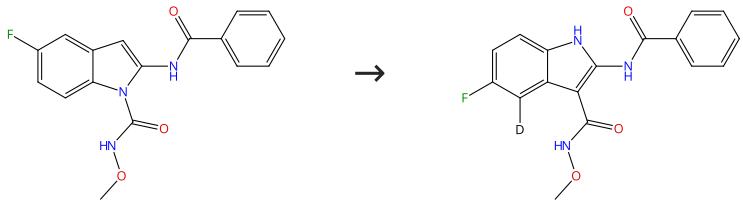
Rh(III)-Catalyzed tandem C(sp^2)-H allylation/N-alkylation annulation of arene amides with 2-alkylidenetrimethylene carbonates

By: Xie, Hui; et al

Organic Chemistry Frontiers (2021), 8(23), 6585-6590.

Scheme 247 (1 Reaction)

Steps: **1** Yield: **65%**



31-116-CAS-22543064

Steps: **1** Yield: **65%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

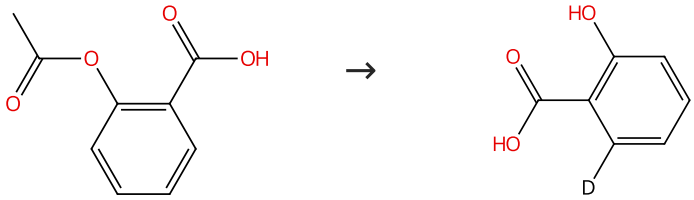
Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 248 (1 Reaction)

Steps: **1** Yield: **65%**



Suppliers (126)

31-116-CAS-20659806

Steps: **1** Yield: **65%**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

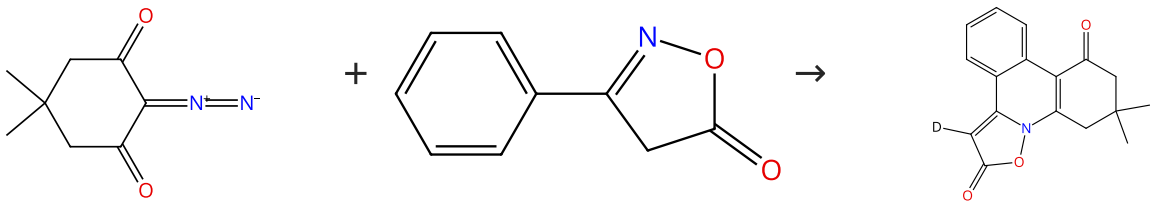
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 249 (1 Reaction)

Steps: **1** Yield: **64%**



Suppliers (22)

Suppliers (50)

31-614-CAS-28036249

Steps: **1** Yield: **64%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene; 8 h, rt → 110 °C

Experimental Protocols

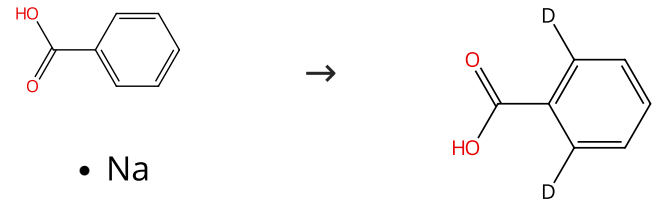
Construction of isoxazolone-fused phenanthridines via Rh-catalyzed cascade C-H activation/cyclization of 3-arylisox azolones with cyclic 2-diazo-1,3-diketones

By: Hu, Wangcheng; et al

Organic & Biomolecular Chemistry (2021), 19(3), 552-556.

Scheme 250 (2 Reactions)

Steps: **1** Yield: **64%**



Suppliers (132)

Suppliers (6)

31-116-CAS-8417091

Steps: **1** Yield: **64%**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium trichloride
Solvents: Dimethylformamide, Water-d_2; 18 h, reflux

Experimental Protocols

Enzyme-catalyzed synthesis and reactions of benzene oxide/oxepine derivatives of methyl benzoates

By: Boyd, Derek R.; et al

Organic & Biomolecular Chemistry (2008), 6(7), 1251-1259.

31-116-CAS-19371855

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium trichloride
Solvents: Dimethylformamide; 18 h, reflux

1.2 **Reagents:** Hydrochloric acid
Solvents: Water; neutralized

Experimental Protocols

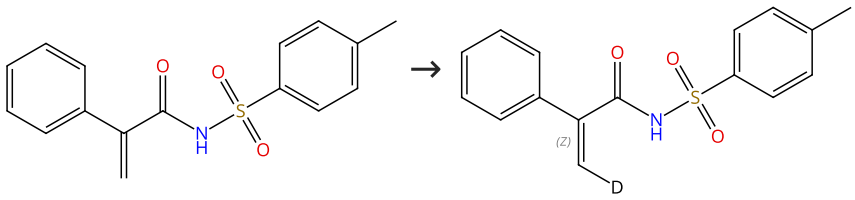
Rh(III)-Catalyzed [4 + 2] Self-Annulation of N-Vinylarylamides

By: Sun, Rui; et al

Organic Letters (2018), 20(21), 6755-6759.

Scheme 251 (1 Reaction)

Steps: **1** Yield: **62%**



Double bond geometry shown

31-116-CAS-19340706

Steps: **1** Yield: **62%**

1.1 **Reagents:** Water-d_2
Catalysts: Cupric acetate, Silver carbonate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Dimethylformamide; 2 h, 80 °C

Experimental Protocols

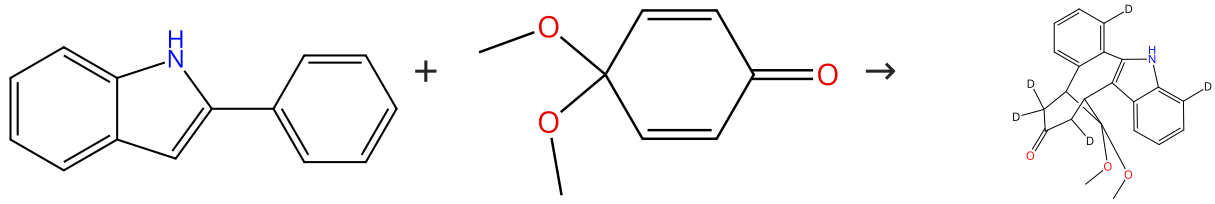
Highly Regioselective Rh^{III}-Catalyzed Thiolation of N-Tosyl Acrylamides: General Access to (Z)-β-Alkenyl Sulfides

By: Liu, Can; et al

Organic Letters (2018), 20(19), 6112-6116.

Scheme 252 (1 Reaction)

Steps: **1** Yield: **62%**



Suppliers (88)

Suppliers (17)

31-085-CAS-21622153 Steps: **1** Yield: **62%**

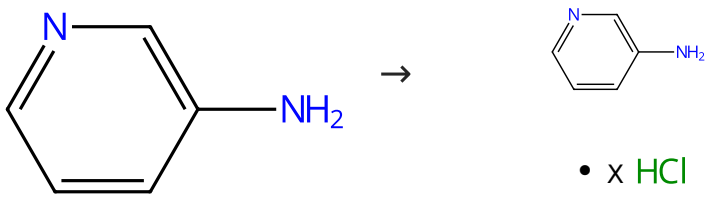
1.1 **Reagents:** Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene; 48 h, 70 °C

Access to [4,3,1]-Bridged Carbocycles via Rhodium(III)-Catalyzed C-H Activation of 2-Arylindols and Annulation with Quinone Monoacetals

By: Zheng, Guangfan; et al

Journal of Organic Chemistry (2020), 85(6), 4543-4552.

Scheme 253 (1 Reaction) Steps: **1** Yield: **61%**



Suppliers (78)

31-614-CAS-26754317 Steps: **1** Yield: **61%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Rhodium
Solvents: Water-d_2; 2 h, 150 °C; 150 °C → rt

1.2 **Reagents:** Hydrochloric acid
Solvents: Water; rt

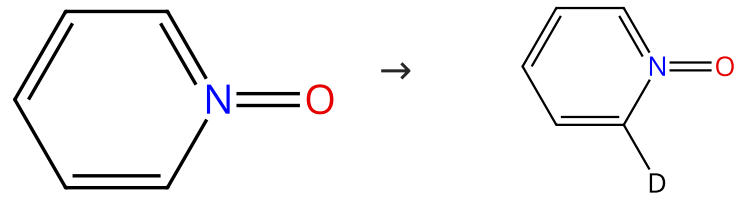
Experimental Protocols

Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 254 (1 Reaction) Steps: **1** Yield: **60%**



Suppliers (73)

31-116-CAS-3460081 Steps: **1** Yield: **60%**

1.1 **Reagents:** Water-d_2
Catalysts: BINAP, Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, 1,1,1-trifluoromethanesulfonate (1:1)
Solvents: Chlorobenzene; 1 h, 135 °C

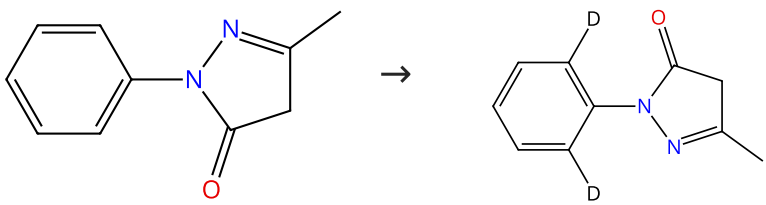
Experimental Protocols

Directed C-H Alkenylation of Quinoline N-Oxides at the C-8 Position Using a Cationic Rhodium(I) Catalyst

By: Shibata, Takanori; et al

Advanced Synthesis & Catalysis (2014), 356(7), 1516-1520.

Scheme 255 (1 Reaction) Steps: **1** Yield: **60%**



Suppliers (132)

31-614-CAS-35835445 Steps: **1** Yield: **60%**

1.1 **Reagents:** Acetic acid, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 8 h, 70 °C

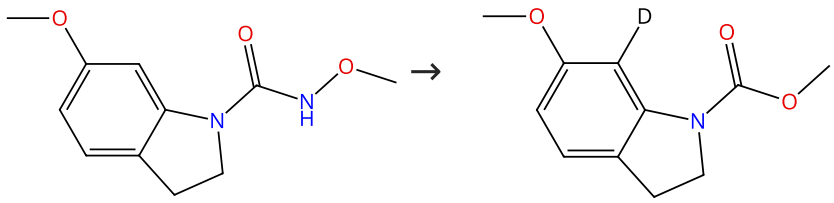
Experimental Protocols

Rh(III)-Catalyzed Switchable [4 + 1] and [4 + 2] Annulation of N-Aryl Pyrazolones with Maleimides: An Access to Spiro Pyrazolo[1,2-a]indazole-pyrrolidine and Fused Pyrazolo pyrrolo Cinnolines

By: Lin, Chih-Yu; et al

Journal of Organic Chemistry (2023), 88(6), 3424-3435.

Scheme 256 (1 Reaction) Steps: **1** Yield: **59%**



31-614-CAS-28601380 Steps: **1** Yield: **59%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Tetrahydrofuran; 2 h, 50 °C

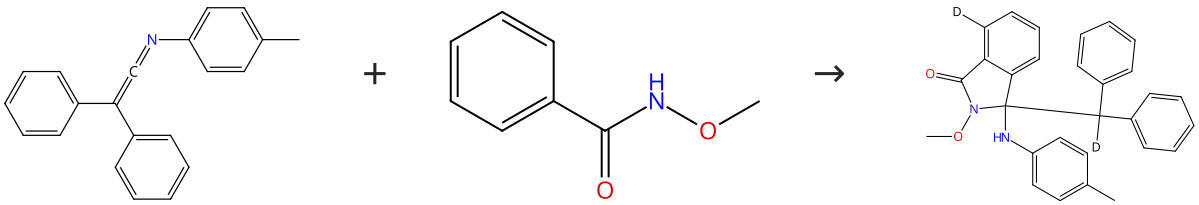
Experimental Protocols

Rh(III)-catalyzed selective C7-H functionalization of indolines with 1,3-enynes enables access to six-membered 1,7-fused indolines

By: Shi, Yunkai; et al

Tetrahedron Letters (2021), 72, 153065.

Scheme 257 (1 Reaction) Steps: **1** Yield: **59%**



Suppliers (5) Suppliers (49)

31-085-CAS-16275028 Steps: **1** Yield: **59%**

1.1 **Reagents:** Water-d_2, Acetic acid, 2,2,2-trichloro-, cesium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 10 h, 80 °C

Experimental Protocols

Rh-Catalyzed annulations of N-methoxybenzamides with ketenimines: synthesis of 3-aminoisoindolinones and 3-diarylmethyleneisoindolinones with strong aggregation induced emission properties

By: Zhou, Xiaorong; et al

Chemical Communications (Cambridge, United Kingdom) (2016), 52(70), 10676-10679.

Scheme 258 (2 Reactions) Steps: **1** Yield: **59%**

Suppliers (108)

31-116-CAS-23746496 Steps: **1** Yield: **59%**

1.1 **Reagents:** Silver acetate, Tripotassium phosphate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile; 2 h, 80 °C; 80 °C → rt

1.2 **Reagents:** Hydrochloric acid
Solvents: Water; pH 1

Experimental Protocols

Rh-Catalyzed cascade C-H activation/C-C cleavage/cyclization of carboxylic acids with cyclopropanols

By: Wang, Siqi; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(48), 5929-5932.

31-116-CAS-19267066 Steps: **1**

1.1 **Reagents:** Tempo, Water-d_2
Catalysts: Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene] dirhodium, Cesium fluoride
Solvents: Toluene; 24 h, 120 °C

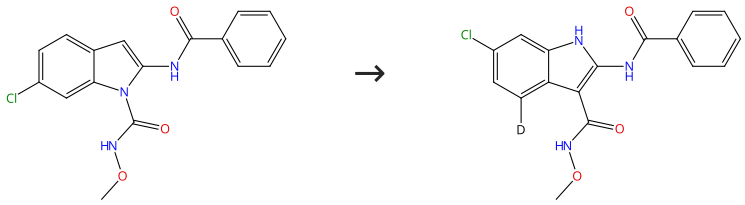
Experimental Protocols

Rh/Cu-Catalyzed Ketone β-Functionalization by Merging Ketone Dehydrogenation and Carboxyl-Directed C-H Alkylation

By: Li, Hongyi; et al

ACS Catalysis (2018), 8(6), 4777-4782.

Scheme 259 (1 Reaction) Steps: **1** Yield: **58%**



31-116-CAS-22543111 Steps: **1** Yield: **58%**

1.1 **Reagents:** Sodium acetate
Solvents: Acetonitrile, 1,2-Dichloroethane; 12 h, 130 °C; 130 °C → rt

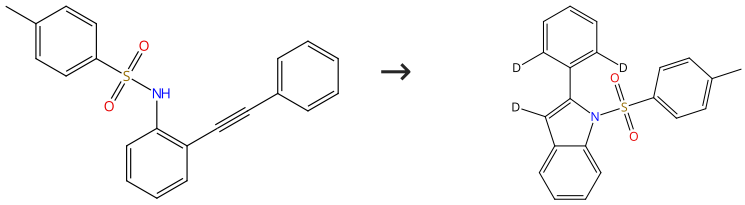
1.2 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 90 °C

Versatile Regioselective Deuteration of Indoles via Transition-Metal-Catalyzed H/D Exchange

By: Zhang, Jinquan; et al

ACS Catalysis (2020), 10(14), 7486-7494.

Scheme 260 (1 Reaction) Steps: **1** Yield: **57%**



Suppliers (2)

31-116-CAS-16307640 Steps: **1** Yield: **57%**

1.1 **Reagents:** Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Dimethylacetamide; 12 h, 50 °C

Experimental Protocols

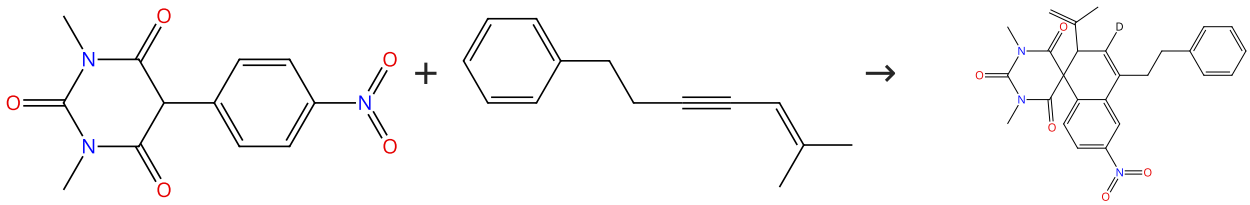
Rh(III)-Catalyzed Cascade Annulation/C-H Activation of o-Ethynylanilines with Diazo Compounds: One-Pot Synthesis of Benzo[a]carbazoles via 1,4-Rhodium Migration

By: Guo, Songjin; et al

Organic Letters (2016), 18(20), 5236-5239.

Scheme 261 (1 Reaction)

Steps: **1** Yield: **56%**



Suppliers (2)

31-251-CAS-8058331

Steps: **1** Yield: **56%**

1.1 **Reagents:** Cupric acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,4-Dioxane, Water-d_2; 3 h, 60 °C

Experimental Protocols

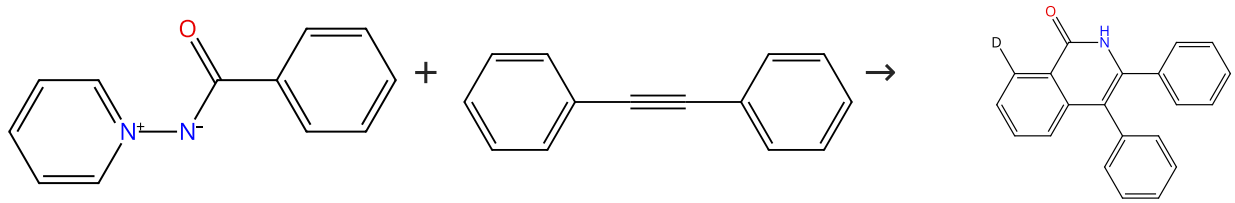
All-Carbon [3+3] Oxidative Annulations of 1,3-Enynes by Rhodium(III)-Catalyzed C-H Functionalization and 1,4-Migration

By: Burns, David J.; et al

Angewandte Chemie, International Edition (2015), 54(34), 9958-9962.

Scheme 262 (1 Reaction)

Steps: **1** Yield: **56%**



Suppliers (5)

Suppliers (88)

31-116-CAS-23442891

Steps: **1** Yield: **56%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 60 °C

Experimental Protocols

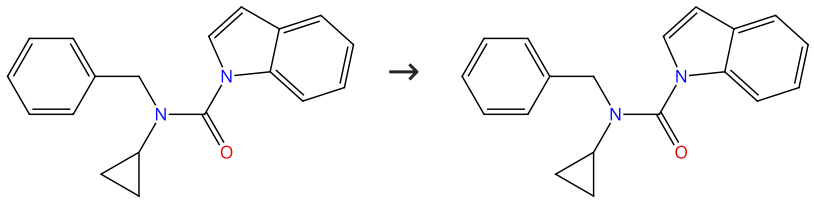
Rhodium(III)-catalyzed C-H activation/annulation of N-iminopyridinium ylides with alkynes and diazo compounds

By: Li, Xiang; et al

Organic Chemistry Frontiers (2021), 8(6), 1190-1196.

Scheme 263 (1 Reaction)

Steps: **1** Yield: **56%**



31-614-CAS-28370510

Steps: **1** Yield: **56%**

1.1 **Reagents:** Carbon monoxide, Water-d_2
Catalysts: Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, 1,1,1-trifluoromethanesulfonate (1:1)
Solvents: 1,2-Dichlorobenzene; 24 h, 130 °C

Experimental Protocols

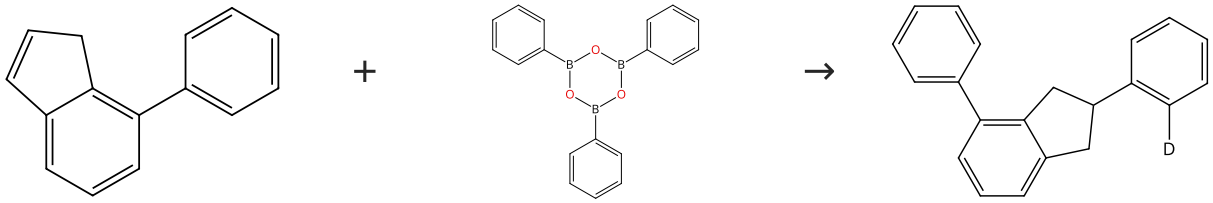
Rhodacyclopentanones as Linchpins for the Atom Economical Assembly of Diverse Polyheterocycles

By: Wang, Gang-Wei; et al

Journal of the American Chemical Society (2020), 142(4), 1740-1745.

Scheme 264 (1 Reaction)

Steps: **1** Yield: **56%**



Suppliers (13)

Suppliers (71)

31-116-CAS-23115834

Steps: **1** Yield: **56%**

1.1 **Reagents:** Tripotassium phosphate
Catalysts: Di-μ-chlorobis[(1,2,5,6-η)-1,3,5,7-cyclooctatetraene] dirhodium, BINAP
Solvents: 1,4-Dioxane; 15 min, rt

1.2 **Reagents:** Water-d_2; 20 h, 60 °C

Experimental Protocols

Enantioselective synthesis of chiral indane derivatives by rhodium-catalyzed addition of arylboron reagents to substituted indenes

By: Umeda, Moeko; et al

Organic Letters (2020), 22(24), 9597-9602.

Scheme 265 (1 Reaction)

Steps: **1** Yield: **56%**

Suppliers (193)

Suppliers (94)

31-017-CAS-23722566

Steps: **1** Yield: **56%**

1.1 **Reagents:** Platinum, Water-d_2, Tetrabutylammonium acetate
Catalysts: Rhodium trichloride
Solvents: Dimethylformamide; 20 h, 80 °C

1.2 **Reagents:** Potassium carbonate
Solvents: Acetone; 2 h, 60 °C

Experimental Protocols

2,2'-Biaryldicarboxylate Synthesis via Electrocatalytic Dehydrogenative C-H/C-H Coupling of Benzoic Acids

By: Zeng, Zhongyi; et al

ACS Catalysis (2021), 11(11), 6626-6632.

Scheme 266 (1 Reaction)

Steps: **1** Yield: **55%**

Suppliers (9)

31-116-CAS-10458626

Steps: **1** Yield: **55%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Dirhodium tetraacetate
Solvents: Formic acid, Water; 4 h, 100 °C

Experimental Protocols

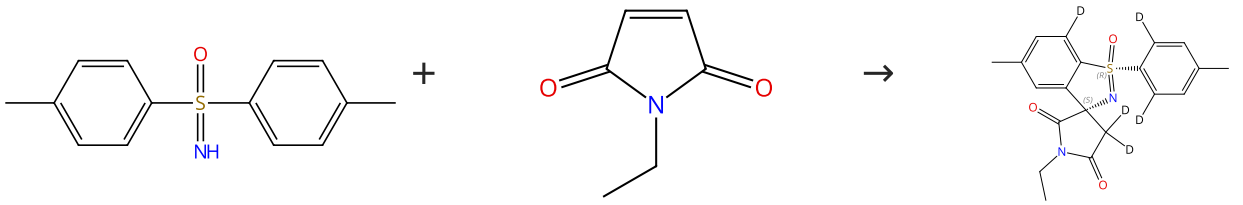
Rh-Catalyzed Synthesis of Coumarin Derivatives from Phenolic Acetates and Acrylates via C-H Bond Activation

By: Gadakh, Sunita K.; et al

Journal of Organic Chemistry (2015), 80(22), 11544-11550.

Scheme 267 (1 Reaction)

Steps: **1** Yield: **54%**



Suppliers (2)

Suppliers (113)

Relative stereochemistry shown

31-614-CAS-43601207

Steps: **1** Yield: **54%**

1.1 **Reagents:** Lithium acetate, Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: Tetrahydrofuran; 16 h, 80 °C

Experimental Protocols

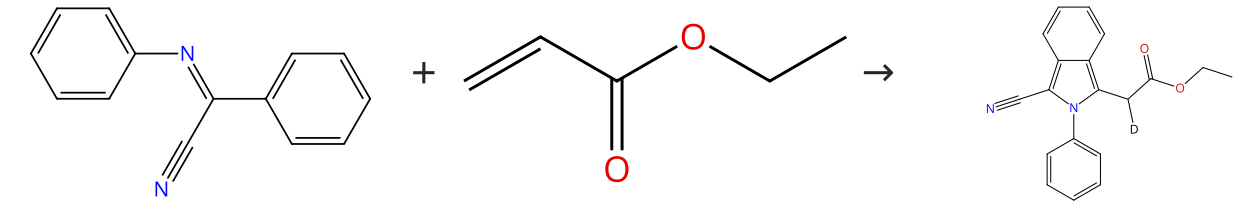
Synthesis of Spirocyclic-1,2-Benzisothiazoles by Rh(III)-Catalyzed [4+1] Annulation of Sulfoximines with Maleimides

By: Kumar, Anil; et al

Asian Journal of Organic Chemistry (2025), 14(1), e202400537.

Scheme 268 (1 Reaction)

Steps: **1** Yield: **54%**



Suppliers (6)

Suppliers (76)

31-085-CAS-19208835

Steps: **1** Yield: **54%**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 24 h, 130 °C

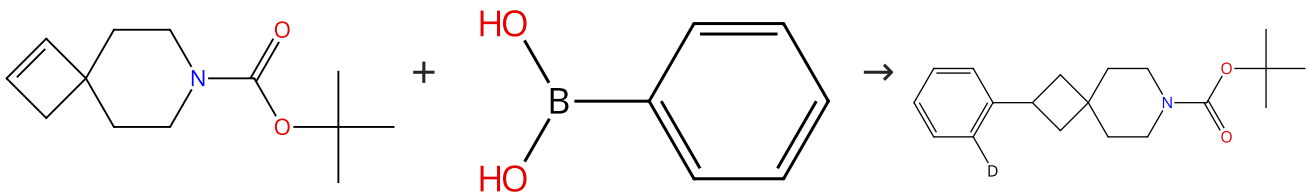
Rhodium(III)-Catalyzed C-H Activation of α-Iminonitriles or α-Imino Esters and Cyclization with Acrylates to 2H-Isoindoles

By: Li, Yazhou; et al

Journal of Organic Chemistry (2018), 83(19), 11736-11746.

Scheme 269 (1 Reaction)

Steps: **1** Yield: **54%**



Suppliers (12)

Suppliers (143)

31-614-CAS-23949115

Steps: **1** Yield: **54%**

1.1 **Reagents:** Cesium hydroxide
Catalysts: 1,1-Bis(diphenylphosphino)ferrocene, Bis[(1,2,5,6-η) -1,5-cyclooctadiene]di-μ-hydroxydirhodium
Solvents: 1,4-Dioxane; 30 min, 60 °C

1.2 **Reagents:** Water-d_2
Solvents: Toluene; 16 h, 60 °C

Experimental Protocols

A catalytic asymmetric cross-coupling approach to the synthesis of cyclobutanes

By: Goetzke, F. Wieland; et al

Nature Chemistry (2021), 13(9), 880-886.

Scheme 270 (1 Reaction)

Steps: **1** Yield: **52%**

Suppliers (92)

Suppliers (94)

31-017-CAS-23727579

Steps: **1** Yield: **52%**

1.1 **Reagents:** Platinum, Water-d_2, Tetrabutylammonium acetate
Catalysts: Dirhodium tetraacetate
Solvents: Dimethylformamide; 20 h, 80 °C

1.2 **Reagents:** Potassium carbonate
Solvents: Acetone; 1 h, 60 °C

Experimental Protocols

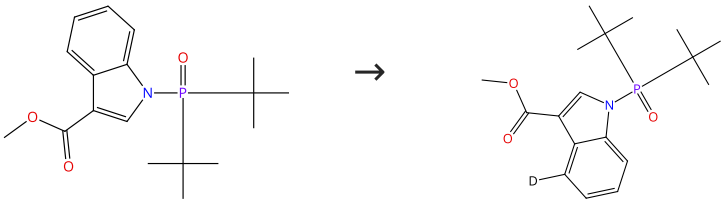
2,2'-Biaryldicarboxylate Synthesis via Electrocatalytic Dehydrogenative C-H/C-H Coupling of Benzoic Acids

By: Zeng, Zhongyi; et al

ACS Catalysis (2021), 11(11), 6626-6632.

Scheme 271 (1 Reaction)

Steps: **1** Yield: **52%**



31-614-CAS-42150732

Steps: **1** Yield: **52%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 24 h, 100 °C

Experimental Protocols

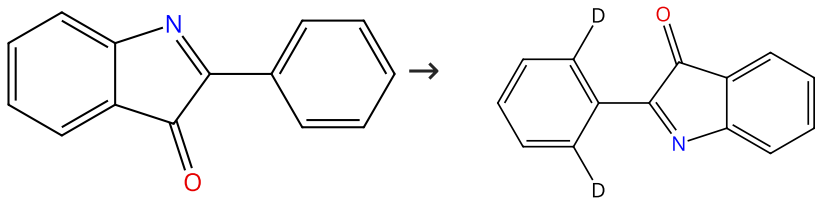
Rhodium-Catalyzed Selective C-H Alkenylation of Indole at C4 Position

By: Wu, Qingyi; et al

Asian Journal of Organic Chemistry (2021), 10(4), 749-752.

Scheme 272 (1 Reaction)

Steps: **1** Yield: **52%**



Suppliers (20)

31-614-CAS-31897962

Steps: **1** Yield: **52%**

1.1 **Reagents:** Water-d_2, Acetic acid, 2,2,2-trifluoro-, cesium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 2,2,2-Trifluoroethanol; 2 h, 100 °C

Experimental Protocols

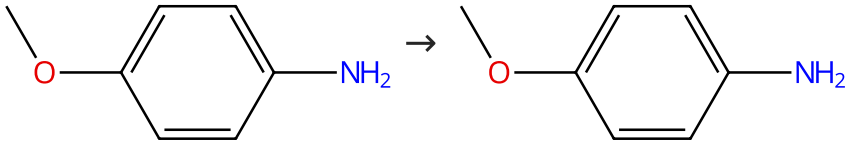
Construction of C2-Quaternary-indol-3-ones via Rh^{III}-Catalyzed [3+2] Spirocyclization from Indole Ketones and Nitroolefins

By: Hu, Wen-Bi; et al

Journal of Organic Chemistry (2022), 87(9), 6179-6188.

Scheme 273 (1 Reaction)

Steps: **1** Yield: **51%**



Suppliers (89)

31-614-CAS-28580116

Steps: **1** Yield: **51%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Rhodium
Solvents: Water-d_2; 2 h, 150 °C

Experimental Protocols

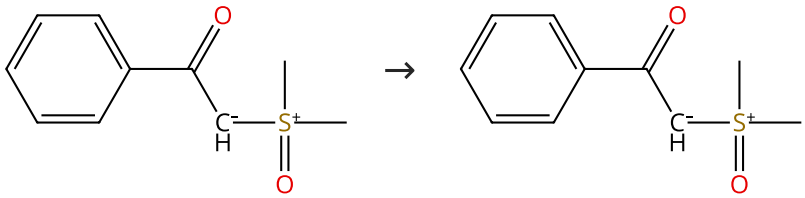
Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 274 (1 Reaction)

Steps: **1** Yield: **51%**



Suppliers (38)

31-614-CAS-36993736

Steps: **1** Yield: **51%**

1.1 **Reagents:** Pivalic acid
Catalysts: Silver acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver tetrafluoroborate
Solvents: Acetonitrile, 2,2,2-Trifluoroethanol; 1 h, 60 °C

1.2 **Reagents:** Water-d_2; 30 min, rt

Experimental Protocols

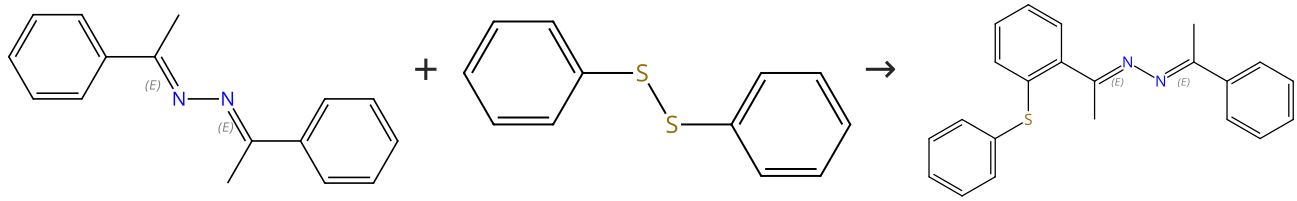
Rh(III)-Catalyzed Annulative Coupling of Sulfoxonium Ylides with Allyl Acetates: Generation of Bicyclo[4.1.0]heptan-2-ones

By: Chi, Wei; et al

European Journal of Organic Chemistry (2023), 26(28), e202300389.

Scheme 275 (1 Reaction)

Steps: **1** Yield: **51%**



Double bond geometry shown

Suppliers (7)

Suppliers (95)

Double bond geometry shown

31-081-CAS-18041997

Steps: **1** Yield: **51%**

1.1 **Reagents:** Cupric acetate
Catalysts: Silver triflate, Chloro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl][2-[1-[(2*E*)-2-(1-phenylethylidene)hydrazinylidene-κN^1]ethyl]phenyl-κ*C*]rhodium
Solvents: 1,2-Dichloroethane, Water-d_2; 24 h, 60 °C

Experimental Protocols

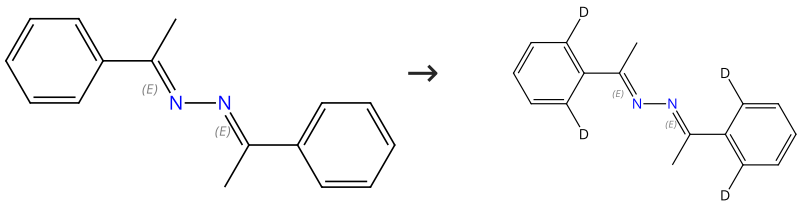
Rhodium(III)-Catalyzed Directed ortho-C-H Bond Functionalization of Aromatic Ketazines via C-S and C-C Coupling

By: Wen, Jing; et al

Journal of Organic Chemistry (2015), 80(21), 10457-10463.

Scheme 276 (1 Reaction)

Steps: **1** Yield: **51%**



Double bond geometry shown

Double bond geometry shown

Suppliers (7)

31-116-CAS-1656796

Steps: **1** Yield: **51%**

1.1 **Reagents:** Cupric acetate
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane, Water-d_2; 24 h, 60 °C

Experimental Protocols

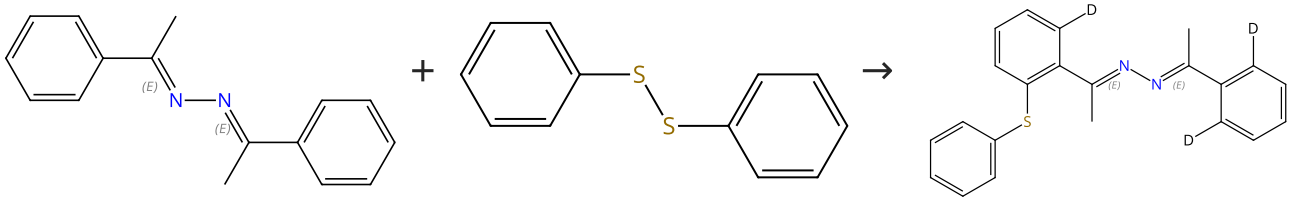
Rhodium(III)-Catalyzed Directed ortho-C-H Bond Functionalization of Aromatic Ketazines via C-S and C-C Coupling

By: Wen, Jing; et al

Journal of Organic Chemistry (2015), 80(21), 10457-10463.

Scheme 277 (1 Reaction)

Steps: **1** Yield: **50%**



Double bond geometry shown

Suppliers (95)

Double bond geometry shown

Suppliers (7)

31-116-CAS-5926498

Steps: **1** Yield: **50%**

1.1 **Reagents:** Cupric acetate
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane, Water-d_2; 24 h, 60 °C

Experimental Protocols

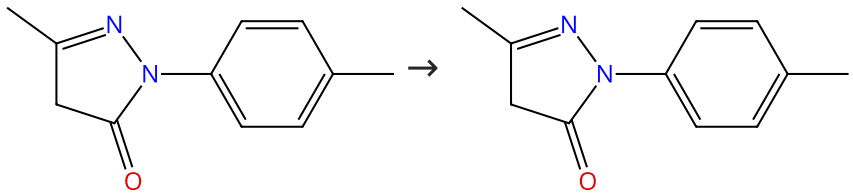
Rhodium(III)-Catalyzed Directed ortho-C-H Bond Functionalization of Aromatic Ketazines via C-S and C-C Coupling

By: Wen, Jing; et al

Journal of Organic Chemistry (2015), 80(21), 10457-10463.

Scheme 278 (1 Reaction)

Steps: **1** Yield: **50%**



Suppliers (73)

31-614-CAS-31725984

Steps: **1** Yield: **50%**

1.1 **Reagents:** Water-d_2
Catalysts: Cesium acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 1 h, 70 °C

Experimental Protocols

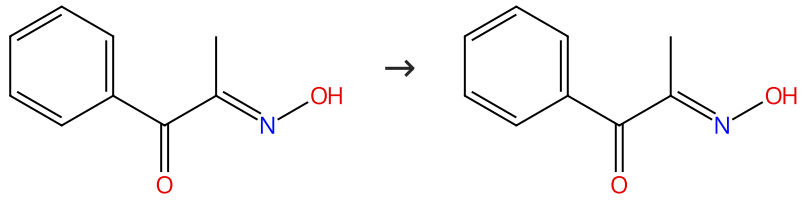
Rhodium-Catalyzed [4+2] Annulation of N-Aryl Pyrazolones with Diazo Compounds To Access Pyrazolone-Fused Cinnolines

By: Lin, Chih-Yu; et al

European Journal of Organic Chemistry (2021), 2021(35), 4984-4992.

Scheme 279 (1 Reaction)

Steps: **1** Yield: **48%**



Suppliers (55)

31-614-CAS-33647917

Steps: **1** Yield: **48%**

1.1 **Reagents:** Water-d_2, Propanoic acid, 2,2-dimethyl-, potassium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 6 h, 80 °C

Experimental Protocols

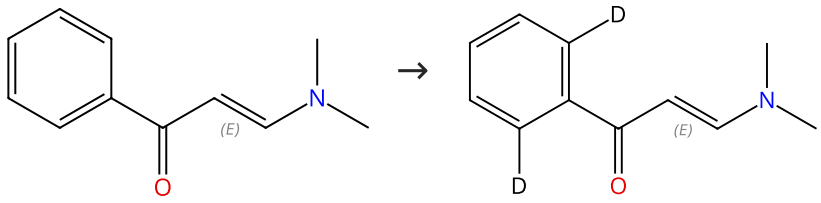
Rh(III)-Catalyzed C-H Activation and [4+1+1] Sequential Cyclization Cascade to Give Highly Fused Indano [1,2-b]azirines

By: Zheng, Fuqiang; et al

Organic Letters (2022), 24(31), 5688-5692.

Scheme 280 (3 Reactions)

Steps: **1** Yield: **25-46%**



Double bond geometry shown

Double bond geometry shown

Suppliers (49)

31-614-CAS-25851739

Steps: **1** Yield: **46%**

1.1 **Reagents:** Acetic acid, Water, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver tetrafluoroborate
Solvents: 1,2-Dichloroethane; 12 h, 80 °C

Experimental Protocols

Synthesis of Substituted 1-Hydroxy-2-Naphthaldehydes by Rhodium-Catalyzed C-H Bond Activation and Vinylene Transfer of Enaminones with Vinylene Carbonate

By: Liu, Min; et al

Advanced Synthesis & Catalysis (2022), 364(3), 512-517.

31-614-CAS-41473042

Steps: **1** Yield: **25%**

1.1 **Reagents:** Zinc acetate, Water-d_2
Catalysts: Silver hexafluoroantimonate, Di-μ-chlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium
Solvents: Dichloromethane; 1 h, 60 °C

Experimental Protocols

Synthesis of Indenone-Fused Pyran Derivatives from Aryl Enaminones and Cyclopropenones through Unsymmetrical Relay C-H Bond Activation and Double C-C/C-O Bond Formation

By: Yang, Chun; et al

Organic Letters (2024), 26(31), 6602-6607.

31-614-CAS-37221859

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium, [1,1,1-Trifluoro-*N*-[(trifluoromethyl) sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 0.5 h, 60 °C

Experimental Protocols

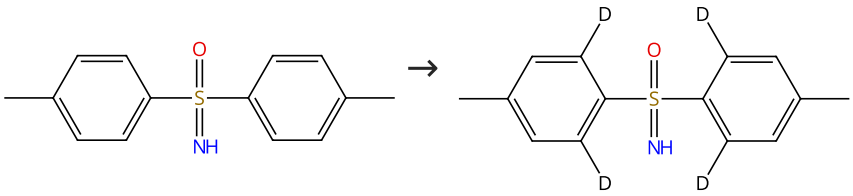
Synthesis of homophthalimide spironaphthalenones through [5 + 1] spiroannulation of aryl/alkenyl enaminones with diazo homophthalimides

By: Yang, Chun; et al

Organic Chemistry Frontiers (2023), 10(17), 4282-4288.

Scheme 281 (1 Reaction)

Steps: **1** Yield: **45%**



Suppliers (2)

31-116-CAS-20585358

Steps: **1** Yield: **45%**

1.1 **Reagents:** Cupric acetate, Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver tetrafluoroborate
Solvents: Toluene; 12 h, 100 °C

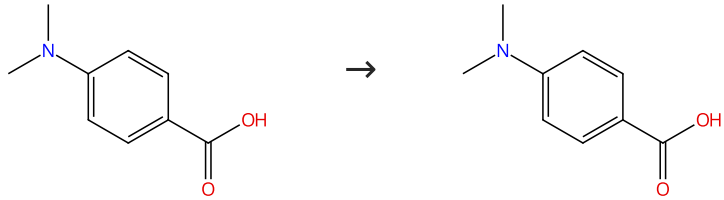
Synthesis of Furanone-Fused 1,2-Benzothiazine by Rh(III)-Catalyzed C-H Activation: Regioselective Oxidative Annulation Leading to in Situ Lactonization in One Pot

By: Hanchate, Vinayak; et al

Journal of Organic Chemistry (2019), 84(17), 11335-11342.

Scheme 282 (1 Reaction)

Steps: **1** Yield: **45%**



Suppliers (90)

31-614-CAS-25956993

Steps: **1** Yield: **45%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Rhodium
Solvents: Water-d_2; 2 h, 150 °C

Experimental Protocols

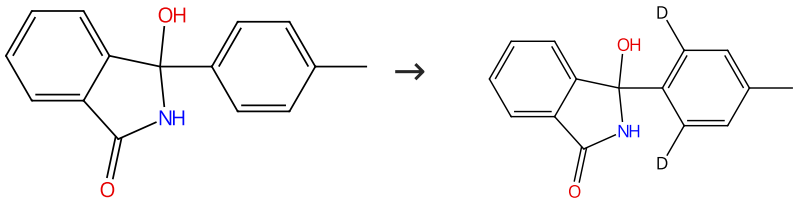
Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 283 (1 Reaction)

Steps: **1** Yield: **43%**



Suppliers (2)

31-614-CAS-38458585

Steps: **1** Yield: **43%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 1,4-Dioxane; 3 h, 80 °C

Experimental Protocols

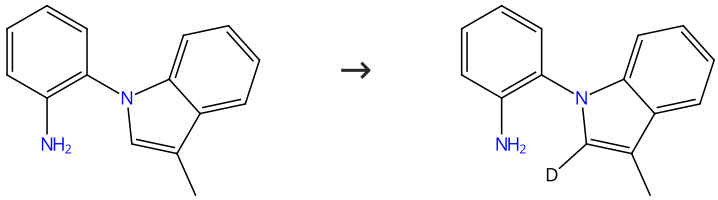
Rhodium-catalyzed divergent dehydroxylation/alkenylation of hydroxyisoindolinones with vinylene carbonate

By: Nan, Jiang; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(98), 14559-14562.

Scheme 284 (1 Reaction)

Steps: **1** Yield: **43%**



Suppliers (2)

31-614-CAS-24527495

Steps: **1** Yield: **43%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 2,2,2-Trifluoroethanol; 4 h, 100 °C

Experimental Protocols

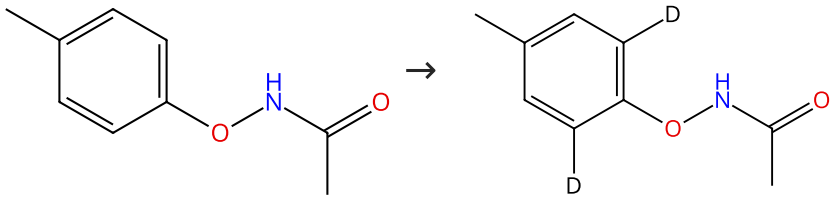
Synthesis of oxazolidinones through ring-opening and annulation of vinylene carbonate with 2-pyrrolyl/indolyl anilines under Rh(III) catalysis

By: Hu, Fang-Peng; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(90), 11980-11983.

Scheme 285 (1 Reaction)

Steps: **1** Yield: **42%**



Suppliers (2)

31-614-CAS-36992373

Steps: **1** Yield: **42%**

1.1 **Reagents:** Zinc acetate, Water-d_2
Catalysts: Triethylamine, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver tetrafluoroborate
Solvents: Methanol; 30 min, 40 °C

Experimental Protocols

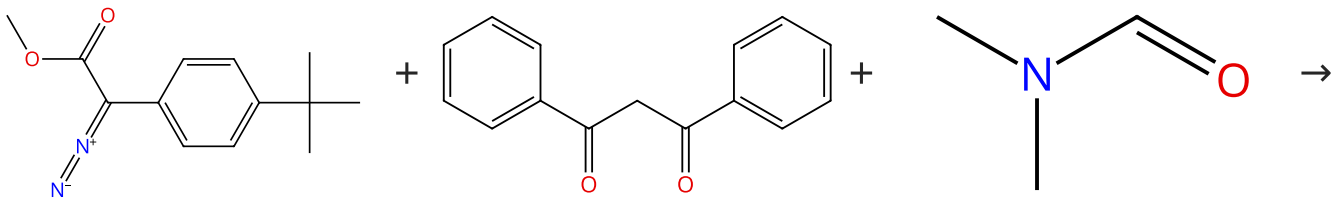
Carboamination and olefination: ortho C-H functionalization of phenoxyacetamide

By: Nanda, Tanmayee; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(57), 8818-8821.

Scheme 286 (1 Reaction)

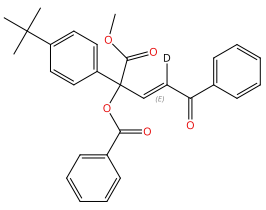
Steps: **1** Yield: **42%**



Supplier (1)

Suppliers (100)

Suppliers (332)



Double bond geometry shown

31-116-CAS-22983342 Steps: **1** Yield: **42%**

1.1 **Reagents:** Water-d_2
Catalysts: Dirhodium tetraacetate
Solvents: Dimethylformamide; 12 h, rt

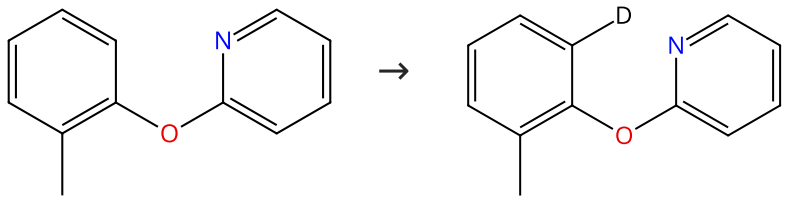
Experimental Protocols

Rhodium(II)-catalyzed multicomponent assembly of α,α,α-trisubstituted esters via formal insertion of O-C(sp^3)-C(sp^2) into C-C bonds

By: Ba, Dan; et al

Nature Communications (2020), 11(1), 4219.

Scheme 287 (1 Reaction) Steps: **1** Yield: **42%**



Suppliers (8)

31-116-CAS-19860856 Steps: **1** Yield: **42%**

1.1 **Reagents:** Water-d_2, Silver oxide (Ag_2O), Zinc triflate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 5 min, rt; 1 h, 100 °C

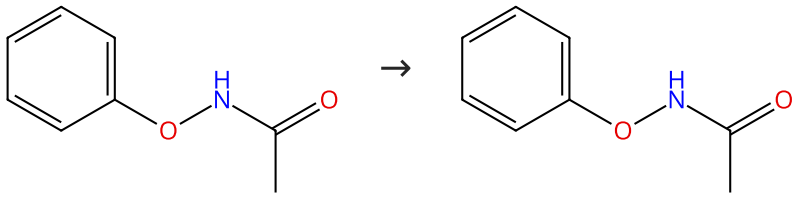
Experimental Protocols

Rhodium-catalyzed ortho-heteroarylation of phenols: directing group-enabled switching of the electronic bias for heteroaromatic coupling partner

By: Wu, Yimin; et al

Chemical Science (2018), 9(33), 6878-6882.

Scheme 288 (2 Reactions) Steps: **1** Yield: **42%**



Suppliers (11)

31-614-CAS-28226117 Steps: **1** Yield: **42%**

1.1 **Reagents:** Water-d_2
Catalysts: Potassium acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Acetonitrile; 24 h, rt

Experimental Protocols

Rhodium(III)-Catalyzed Redox-Neutral Cascade [3 + 2] Annulation of N-Phenoxyacetamides with Propiolates via C-H Functionalization/Isomerization/Lactonization

By: Pan, Jin-Long; et al

Organic Letters (2018), 20(22), 7131-7136.

31-614-CAS-29281700 Steps: **1**

1.1 **Reagents:** Dipotassium phosphate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 24 h, rt

Experimental Protocols

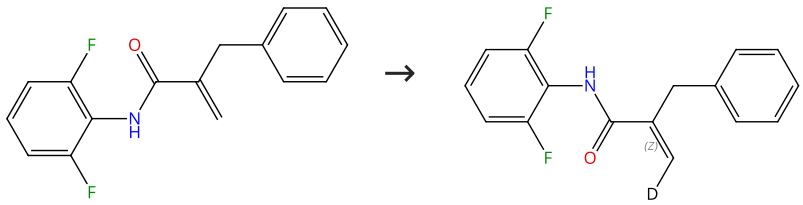
Dual Directing-Groups-Assisted Redox-Neutral Annulation and Ring Opening of N-Aryloxyacetamides with 1-Alkynylcyclobutanols via Rhodium(III)-Catalyzed C-H/C-C Activations

By: Pan, Jin-Long; et al

Organic Letters (2019), 21(8), 2823-2827.

Scheme 289 (1 Reaction)

Steps: **1** Yield: **41%**



Double bond geometry shown

31-116-CAS-23211714

Steps: **1** Yield: **41%**

1.1 **Reagents:** Potassium carbonate, Propanoic acid, 2,2-dimethyl-, silver(1+) salt (1:1), Water-d_2
Catalysts: *N*-Acetyl-L-leucine, Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Acetonitrile; 1.5 h, 60 °C

Experimental Protocols

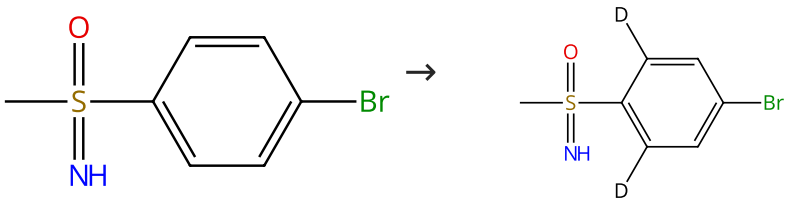
Rh^{III}-Catalyzed C-H (Het)arylation/Vinylation of N-2,6-Difluoroaryl Acrylamides

By: Wang, Huai-Wei; et al

Organic Letters (2021), 23(3), 656-662.

Scheme 290 (1 Reaction)

Steps: **1** Yield: **40%**



Suppliers (50)

31-614-CAS-33408733

Steps: **1** Yield: **40%**

1.1 **Reagents:** Silver triflate, Disodium phosphate, Water-d_2, Silver oxide (Ag_2O)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, 150 °C

Experimental Protocols

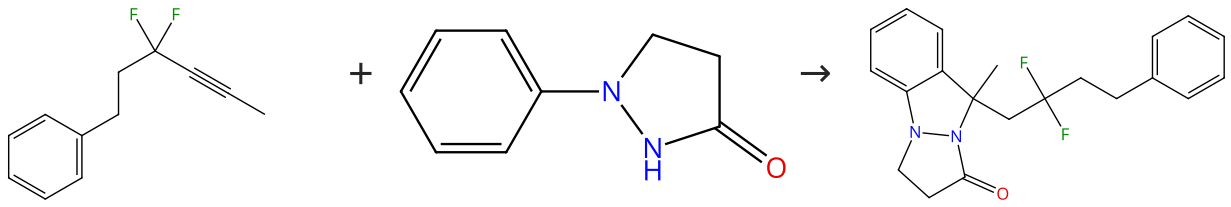
Rh(III)-catalysed C-H/C-H cross-coupling of S-aryl sulfoximines with thiophenes: facile access to [1]benzothieno[3,2-b][1]benzothiophene (BTBT) and benzothiazines

By: Yang, Chengyong; et al

Chemical Communications (Cambridge, United Kingdom) (2022), 58(57), 7952-7955.

Scheme 291 (1 Reaction)

Steps: **1** Yield: **40%**



Suppliers (92)

31-614-CAS-31375592

Steps: **1** Yield: **40%**

1.1 **Reagents:** Zinc acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 80 °C

Experimental Protocols

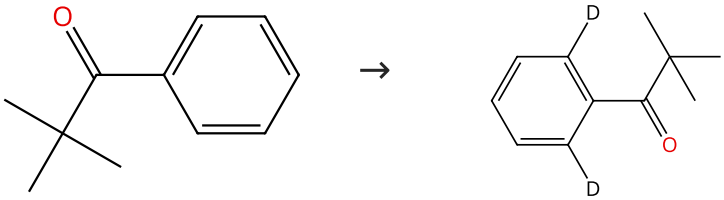
Rh(III)-Catalysed Switchable and Chemoselective Synthesis of Difluorinated Pyrazolo[1,2-a]indazolone and Indole Frameworks

By: Lin, Shuang; et al

Asian Journal of Organic Chemistry (2022), 11(2), e202200019.

Scheme 292 (1 Reaction)

Steps: **1** Yield: **40%**



Suppliers (67)

31-614-CAS-37660896

Steps: **1** Yield: **40%**

1.1 **Reagents:** Potassium acetate, Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 24 h, 120 °C

Experimental Protocols

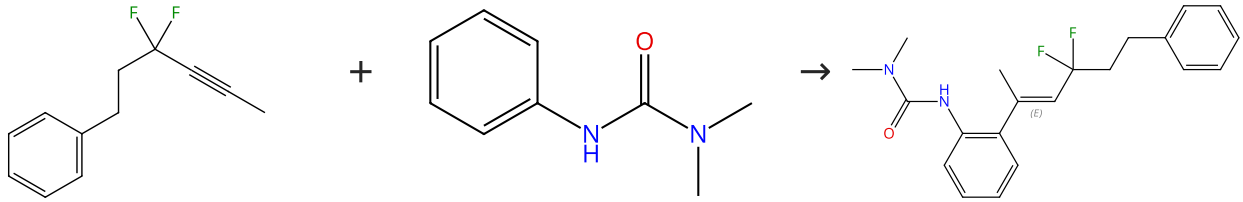
Rhodium-Catalyzed Alkylation of Aromatic Ketones with Allylic Alcohols and α,β-Unsaturated Ketones

By: Li, Wan-Di; et al

Catalysts (2023), 13(8), 1157.

Scheme 293 (1 Reaction)

Steps: **1** Yield: **39%**



Suppliers (62)

Double bond geometry shown

31-614-CAS-30574188

Steps: **1** Yield: **39%**

1.1 **Reagents:** Water-d_2, Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene; 24 h, 60 °C

Experimental Protocols

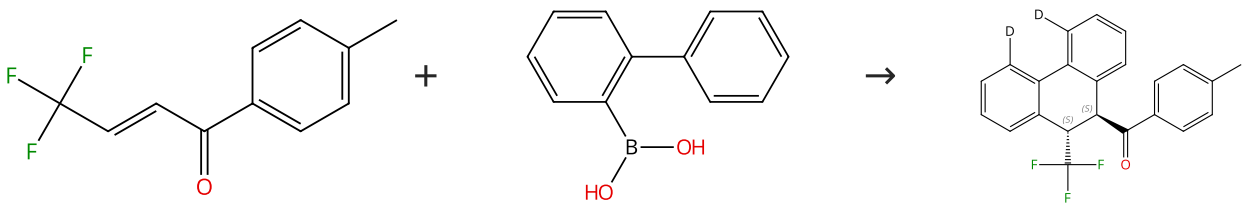
Rh(III)-Catalyzed Chemoselective C-H Alkenylation and [5 + 1] Annulation with Gem-Difluoromethylene Enabled by the Distinctive Fluorine Effect

By: Yang, Jian; et al

Journal of Organic Chemistry (2021), 86(14), 9711-9722.

Scheme 294 (1 Reaction)

Steps: **1** Yield: **39%**



Suppliers (96)

Relative stereochemistry shown

31-614-CAS-23995565

Steps: **1** Yield: **39%**

1.1 **Reagents:** Silver acetate, Water-d_2, Silver oxide (Ag_2O)
Catalysts: Bis[(1,2,3,4,5-η)-1,4-bis(1,1-dimethylethyl)-2-(2,2-dimethylpropyl)-2,4-cyclopentadien-1-yl]di-μ-iododiiodo dirhodium
Solvents: Ethyl acetate; 12 h, 80 °C

Experimental Protocols

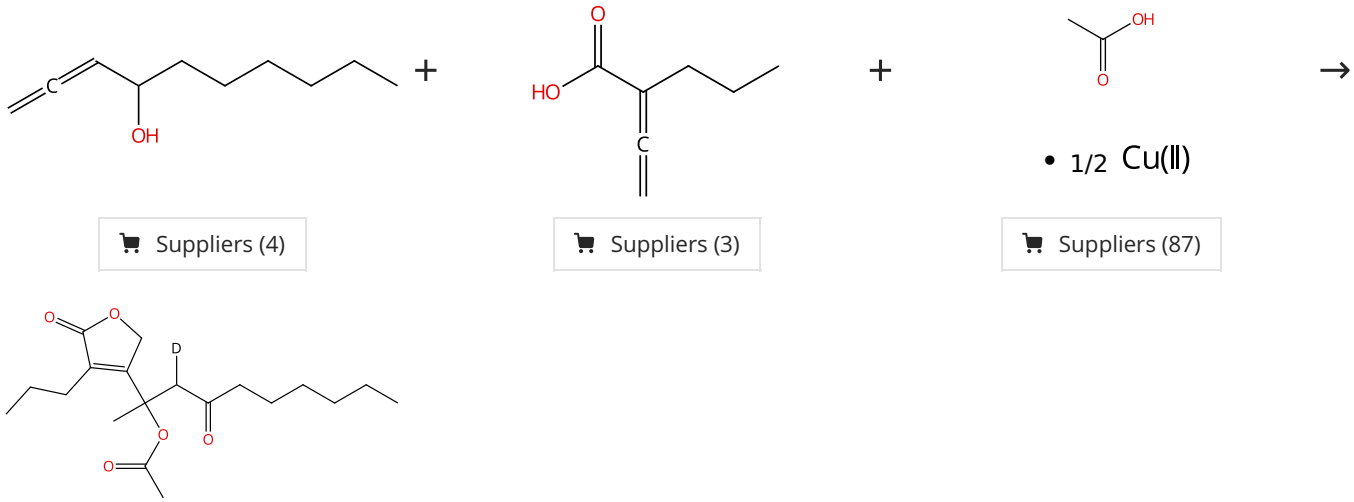
Rh(III)-Catalyzed Annulation of 2-Biphenylboronic Acid with Diverse Activated Alkenes

By: Liu, Bingxian; et al

Organic Letters (2021), 23(18), 7199-7204.

Scheme 295 (1 Reaction)

Steps: **1** Yield: **38%**



Suppliers (4) | Suppliers (3) | Suppliers (87)

31-614-CAS-37079138

Steps: **1** Yield: **38%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile, Methanol-d; 5 h, 50 °C

Experimental Protocols

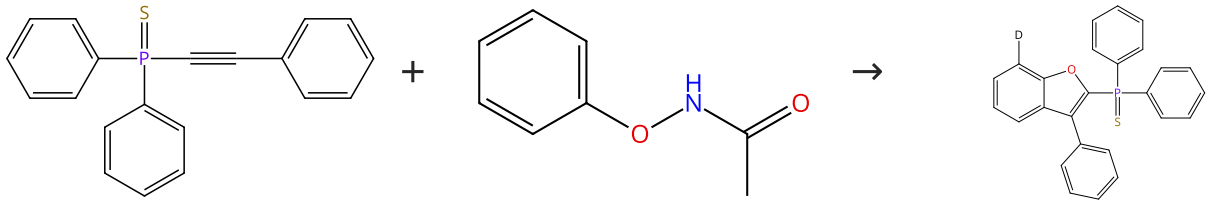
[Cp*RhCl$_2$]$_2$ catalyzed three-component coupling cyclization of 2,3-allenoic acids with 2,3-allenols in the presence of Cu(OAc)$_2$·H$_2$O

By: Fan, Junjie; et al

Organic Chemistry Frontiers (2023), 10(15), 3776-3780.

Scheme 296 (1 Reaction)

Steps: **1** Yield: **38%**



Suppliers (2) | Suppliers (11)

31-116-CAS-17730623

Steps: **1** Yield: **38%**

1.1 **Reagents:** Silver acetate, Acetic acid-d_4
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: Dichloromethane, Water-d_2; 20 h, 60 °C

Experimental Protocols

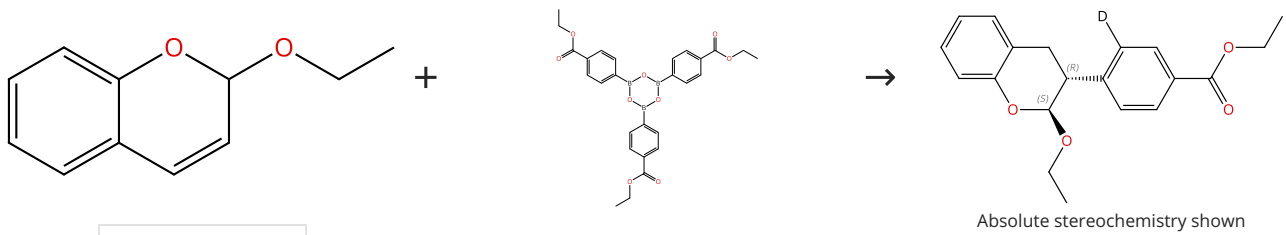
Synthesis of 3-Arylbenzofuran-2-ylphosphines via Rhodium-Catalyzed Redox-Neutral C-H Activation and Their Applications in Palladium-Catalyzed Cross-Coupling of Aryl Chlorides

By: Wang, Huanan; et al

Journal of Organic Chemistry (2017), 82(18), 9560-9569.

Scheme 297 (1 Reaction)

Steps: **1** Yield: **37%**



Absolute stereochemistry shown

Suppliers (8)

31-116-CAS-20140806 Steps: **1** Yield: **37%**

1.1 **Catalysts:** Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydi rhodium, (3*R*)-4,4'-Bis[bis(3,5-dimethylphenyl)phosphino]-2,2', 6,6'-tetramethoxy-3,3'-bipyridine
Solvents: Toluene; 30 min, rt

1.2 20 min, rt

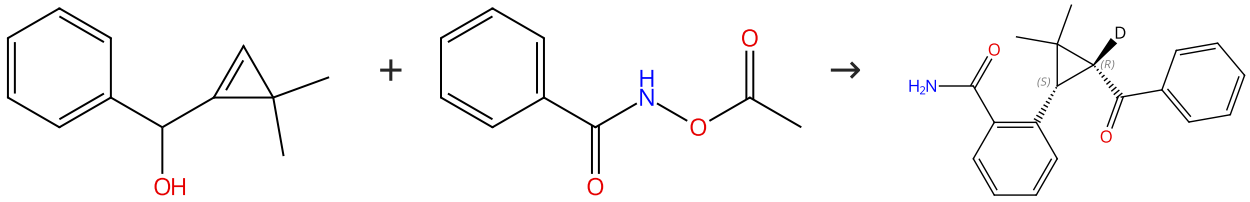
1.3 **Reagents:** Triethylamine, Tripotassium phosphate, Water-d_2
Solvents: Toluene; 12 h, 80 °C

Kinetic Resolution and Dynamic Kinetic Resolution of Chromene by Rhodium-Catalyzed Asymmetric Hydroarylation

By: Yang, Qingjing; et al

Angewandte Chemie, International Edition (2019), 58(16), 5343-5347.

Scheme 298 (1 Reaction) Steps: **1** Yield: **37%**



Relative stereochemistry shown

Supplier (1) Suppliers (9)

31-085-CAS-21526761 Steps: **1** Yield: **37%**

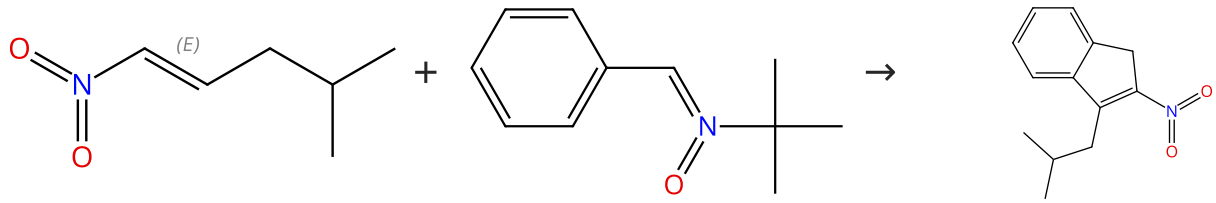
1.1 **Reagents:** Tripotassium phosphate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 24 h, 40 °C

Synergistic Dual Directing Groups-Enabled Diastereoselective C-H Cyclopropylation via Rh(III)-Catalyzed Couplings with Cyclopropenyl Alcohols

By: Wu, Min; et al

Organic Letters (2020), 22(4), 1295-1300.

Scheme 299 (1 Reaction) Steps: **1** Yield: **36%**



Double bond geometry shown

Suppliers (13) Suppliers (82)

31-614-CAS-26355051 Steps: **1** Yield: **36%**

1.1 **Reagents:** Oxygen
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 2,2,2-Trifluoroethanol, Water-d_2; 3 min, 80 °C

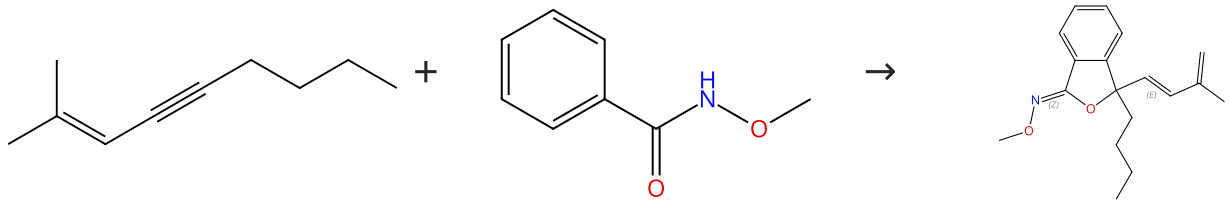
Experimental Protocols

Rhodium(III)-Catalyzed C-H Activation of Nitrones and Annulative Coupling with Nitroalkenes

By: Bai, Dachang; et al

Journal of Organic Chemistry (2017), 82(18), 9877-9884.

Scheme 300 (1 Reaction) Steps: **1** Yield: **35%**



Supplier (1) Suppliers (49)

Double bond geometry shown

31-614-CAS-25307776 Steps: **1** Yield: **35%**

1.1 **Reagents:** Sodium acetate, Cupric acetate
Catalysts: Bis(acetato-κ*O*)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium
Solvents: 1,4-Dioxane, Water-d_2; 12 h, 90 °C

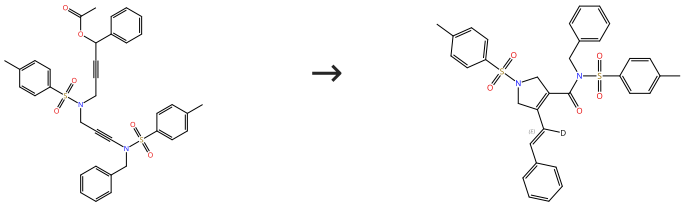
Experimental Protocols

Chemodivergent Oxidative Annulation of Benzamides and Enynes via 1,4-Rhodium Migration

By: Sun, Jiaqiong; et al

Organic Letters (2019), 21(6), 1789-1793.

Scheme 301 (1 Reaction) Steps: **1** Yield: **32%**



Double bond geometry shown

31-614-CAS-41299191 Steps: **1** Yield: **32%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 4 h, 80 °C; 1 h, 120 °C

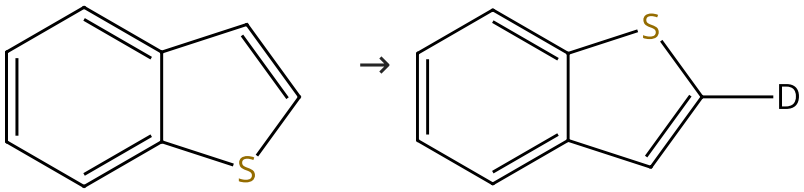
Experimental Protocols

Rhodium(III)-Catalyzed Intramolecular Cyclization and Sequential Aromatization of Ynamides with Propargyl Esters: Access to 2,5-Dihydropyrroles and Pyrroles

By: Yang, Jin-Ming; et al

Organic Letters (2024), 26(29), 6191-6196.

Scheme 302 (7 Reactions) Steps: **1** Yield: **7-28%**



Suppliers (99) Supplier (1)

31-614-CAS-31592813 Steps: **1** Yield: **28%**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Tetrahydrofuran, 1,1,1,3,3,3-Hexafluoro-2-propanol; 3 h, 110 °C

Experimental Protocols

Insight into Regioselective Control in Aerobic Oxidative C-H/C-H Coupling for C3-Arylation of Benzothiophenes: Toward Structurally Nontraditional OLED Materials

By: Shi, Yang; et al

Journal of the American Chemical Society (2021), 143(49), 21066-21076.

31-116-CAS-19860857 Steps: **1** Yield: **13%**

1.1 **Reagents:** Water-d_2, Silver oxide (Ag_2O), Zinc triflate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 5 min, rt; 1 h, 100 °C

Experimental Protocols

Rhodium-catalyzed ortho-heteroarylation of phenols: directing group-enabled switching of the electronic bias for heteroaromatic coupling partner

By: Wu, Yimin; et al

Chemical Science (2018), 9(33), 6878-6882.

31-116-CAS-20415405 Steps: **1** Yield: **11%**

1.1 **Reagents:** Water-d_2, Silver oxide (Ag_2O), Silver hexafluoroantimonate, Propanoic acid-*d*, 2,2-dimethyl-
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Dichloromethane; 2.5 h, 100 °C

Rhodium-Catalyzed C-H/C-H Cross Coupling of Benzylthioethers or Benzylamines with Thiophenes Enabled by Flexible Directing Groups

By: Yang, Shiping; et al

Organic Letters (2019), 21(13), 5086-5090.

31-116-CAS-14156280 Steps: **1** Yield: **11%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Acetic acid, 2,2,2-trifluoro-, copper(2+) salt (2:1), Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 min, rt; 1 h, 150 °C

Experimental Protocols

Rh(III)-catalyzed oxime ether-directed heteroarylation of arene through oxidative C-H/C-H cross-coupling

By: Qin, Dekun; et al

Chemical Communications (Cambridge, United Kingdom) (2015), 51(28), 6190-6193.

31-116-CAS-2247406 Steps: **1** Yield: **7%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 min, rt; 1 h, 140 °C

Experimental Protocols

Rhodium or ruthenium-catalyzed oxidative C-H/C-H cross-coupling: direct access to extended π-conjugated systems

By: Dong, Jiaxing; et al

Angewandte Chemie, International Edition (2013), 52(2), 580-584.

31-614-CAS-23945460 Steps: **1**

1.1 **Reagents:** Pivalic acid, Water-d_2, Silver oxide (Ag_2O), Silver hexafluoroantimonate
Catalysts: Bis(acetato-κ*O*)aqua[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium
Solvents: Tetrahydrofuran; rt → 80 °C; 45 min, 80 °C

Experimental Protocols

Rh^{III}-Catalyzed C6-Selective Oxidative C-H/C-H Cross-coupling of 2-Pyridones with Thiophenes

By: Huang, Gao; et al

Chemistry - A European Journal (2021), 27(48), 12294-12299.

31-116-CAS-16403686 Steps: **1**

1.1 **Reagents:** Pivalic acid, Water-d_2, Silver oxide (Ag_2O)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 6 h, 120 °C; 120 °C → rt

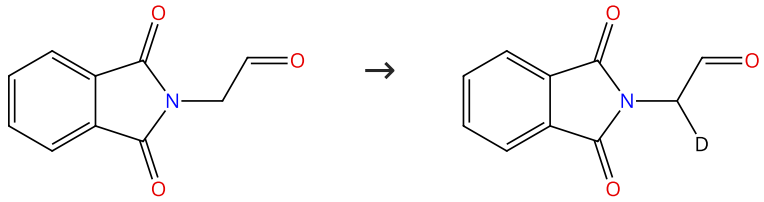
Experimental Protocols

Rhodium(III)-Catalyzed Oxidative C-H/C-H Cross-Coupling of Heteroarenes and Masked Benzylamines

By: Hu, Jundie; et al

Organic Letters (2016), 18(23), 5998-6001.

Scheme 303 (1 Reaction) Steps: **1** Yield: **27%**



Suppliers (78)

31-614-CAS-32632357 Steps: **1** Yield: **27%**

1.1 **Reagents:** Water-d_2
Catalysts: Nitrobenzene, Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydirhodium, 1,1'-(9,9-Dimethyl-9*H*-xanthene-4,5-diyl) bis[1,1-diphenylphosphine]; 1 h, 50 °C

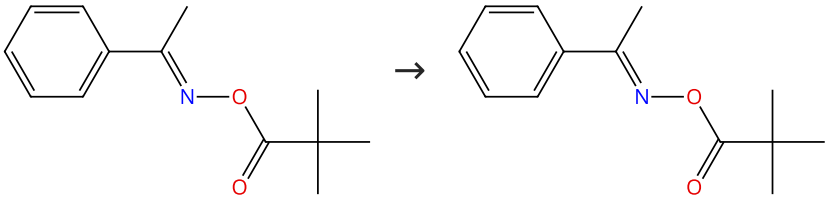
Experimental Protocols

Rhodium-Catalyzed Deuterated Tsuji-Wilkinson Decarbonylation of Aldehydes with Deuterium Oxide

By: Min, Xiang-Ting; et al

Journal of the American Chemical Society (2022), 144(25), 11081-11087.

Scheme 304 (1 Reaction) Steps: **1** Yield: **23%**



Supplier (1)

31-614-CAS-42153301 Steps: **1** Yield: **23%**

1.1 **Reagents:** Lithium carbonate (Li_2CO_3), Water-d_2, Silver oxide (Ag_2O)
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Diethyl ether, Toluene; 24 h, 60 °C

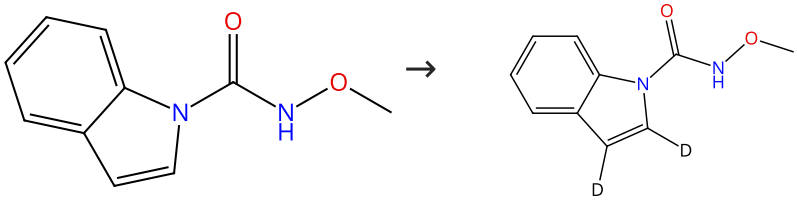
Experimental Protocols

One-pot Synthesis of 3-Acylsilane-Substituted Isoquinolines via Rhodium (III)-Catalyzed C-H Activation/Annulation of O-pivaloyl Oximes With Acryloylsilanes

By: Yang, Zengbao; et al

Asian Journal of Organic Chemistry (2021), 10(7), 1683-1686.

Scheme 305 (1 Reaction) Steps: **1** Yield: **23%**



Supplier (1)

31-614-CAS-36218330 Steps: **1** Yield: **23%**

1.1 **Reagents:** Cupric acetate, Oxygen, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Acetonitrile; 1 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Water; rt

Experimental Protocols

Condition-Controlled Divergent Synthesis of Imidazoindolone Spiroisoquinolinones from N-Alkoxycarboxamide Indoles and Diazo Homophthalimides

By: Wang, Manqing; et al

Advanced Synthesis & Catalysis (2023), 365(8), 1255-1261.

Scheme 306 (1 Reaction) Steps: **1** Yield: **23%**

Suppliers (94)

31-116-CAS-3321886 Steps: **1** Yield: **23%**

1.1 **Reagents:** Zinc, Water-d_2
Catalysts: Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium
Solvents: 1,4-Dioxane; 20 h, 90 °C

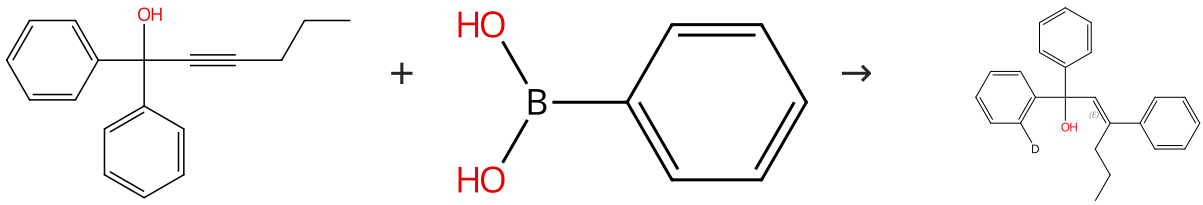
Hydrogenation of olefins using water and zinc metal catalyzed by a rhodium complex

By: Sato, Takashi; et al

Tetrahedron Letters (2006), 47(44), 7703-7705.

Scheme 307 (1 Reaction)

Steps: **1** Yield: **23%**



Supplier (1)

Suppliers (143)

Double bond geometry shown

31-116-CAS-20605332

Steps: **1** Yield: **23%**

1.1 **Catalysts:** Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydi rhodium, Bis[2-(diphenylphosphino)phenyl] ether
Solvents: Toluene; 0.5 h, 25 °C

1.2 **Reagents:** Cesium carbonate, Water-d_2
Solvents: Tetrahydrofuran; 12 h, 80 °C

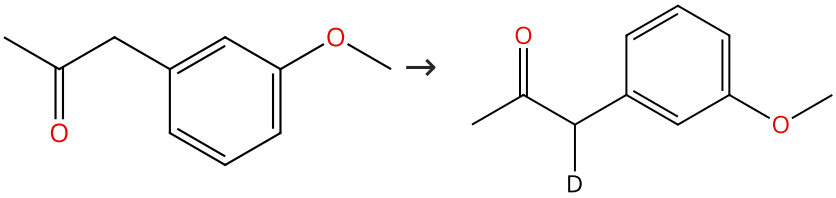
Rhodium-Catalyzed Expeditious Synthesis of Indenes from Propargyl Alcohols and Organoboronic Acids by Selective 1,4-Rhodium Migration over β-Oxygen Elimination

By: Liu, Na; et al

ACS Catalysis (2019), 9(8), 6857-6863.

Scheme 308 (1 Reaction)

Steps: **1** Yield: **20%**



Suppliers (86)

31-116-CAS-19472324

Steps: **1** Yield: **20%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxyd irhodium
Solvents: Toluene; 2 h, 50 °C

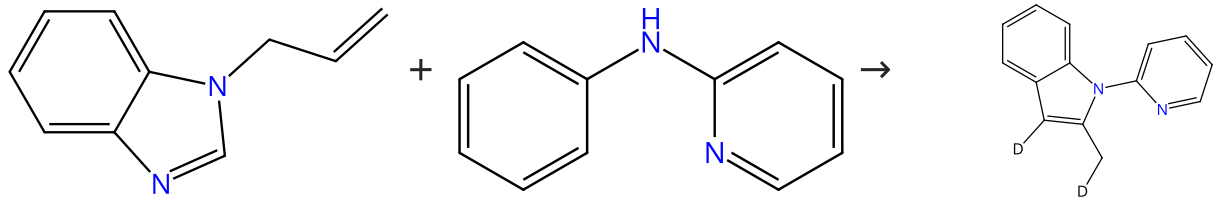
Expeditious Synthesis of Isoquinolone Derivatives by Rhodium(I)-Catalyzed Annulation Reaction through C-C Bond Cleavage

By: He, Yiyi; et al

Organic Letters (2019), 21(1), 185-189.

Scheme 309 (1 Reaction)

Steps: **1** Yield: **19%**



Suppliers (12)

Suppliers (73)

31-614-CAS-36618182

Steps: **1** Yield: **19%**

1.1 **Reagents:** Water-d_2, Lithium perchlorate, Zinc triflate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene; 30 min, 130 °C

Experimental Protocols

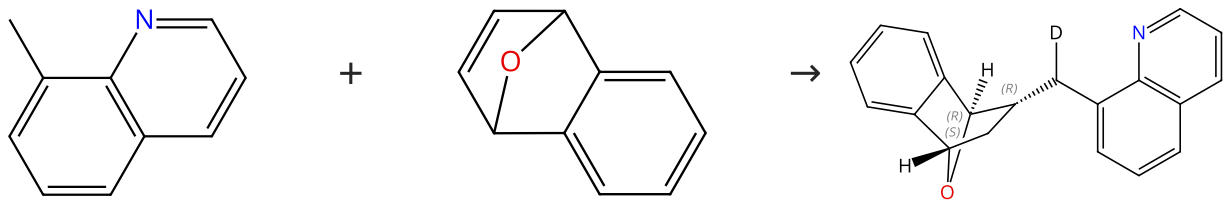
Rhodium-Catalyzed Synthesis of 2-Methylindoles via C-N Bond Cleavage of N-Allylbenzimidazole

By: Biswal, Pragati; et al

Journal of Organic Chemistry (2023), 88(13), 7988-7997.

Scheme 310 (1 Reaction)

Steps: **1** Yield: **17%**



Suppliers (69)

Suppliers (71)

Relative stereochemistry shown

31-614-CAS-36225716

Steps: **1** Yield: **17%**

1.1 **Reagents:** Acetic acid-*d*, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 0.5 h, 80 °C; 80 °C → rt

1.2 **Reagents:** Ethyl acetate, Sodium hydroxide
Solvents: Water

Experimental Protocols

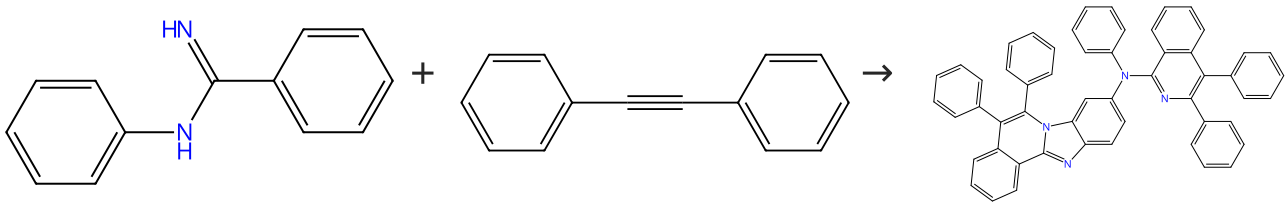
Rh(III)-Catalyzed Alkylation of 8-Methylquinolines with Oxabenzonorbornadienes

By: Sarthi; et al

Organic Letters (2023), 25(15), 2627-2631.

Scheme 311 (1 Reaction)

Steps: **1** Yield: **16%**



Suppliers (63)

Suppliers (88)

31-614-CAS-24461494

Steps: **1** Yield: **16%**

1.1 **Reagents:** Benzonitrile, Manganese diacetate, Potassium *tert*-butoxide, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 48 h, 40 °C

Experimental Protocols

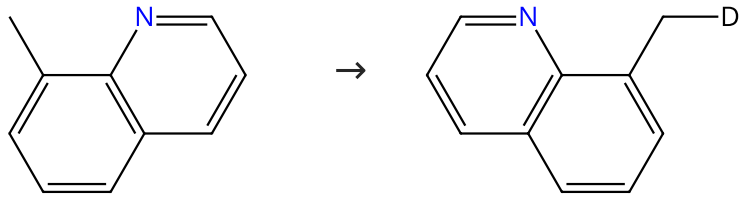
Rhodium-catalyzed multiple C-H activation/highly meta-selective C-H amination between amidines and alkynes

By: Xu, Fen; et al

Chemical Communications (Cambridge, United Kingdom) (2020), 56(76), 11227-11230.

Scheme 312 (3 Reactions)

Steps: **1** Yield: **12%**



Suppliers (69)

Supplier (1)

31-614-CAS-23995367

Steps: **1** Yield: **12%**

1.1 **Reagents:** Water-d_2, Lithium fluoride, Silver oxide (Ag_2O)
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: Chlorobenzene; 6 h, 110 °C

Experimental Protocols

Rh^{III}-Catalyzed Direct Heteroarylation of C(sp^3)-H and C(sp^2)-H Bonds in Heterocycles with N-Heteroaromatic Boronates

By: Wang, Huai-Wei; et al

Organic Letters (2021), 23(18), 7177-7182.

31-116-CAS-23488691 Steps: 1

1.1 **Reagents:** Ethanol, Acetic acid-*d*
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Water-d_2; 20 h, 100 °C

Experimental Protocols

Pd-Catalyzed sp^3 C-H alkoxycarbonylation of 8-methylquinolines using Mo(CO)$_6$ as a CO surrogate

By: Talukdar, Kangkan; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(27), 3359-3362.

31-116-CAS-22501045 Steps: 1

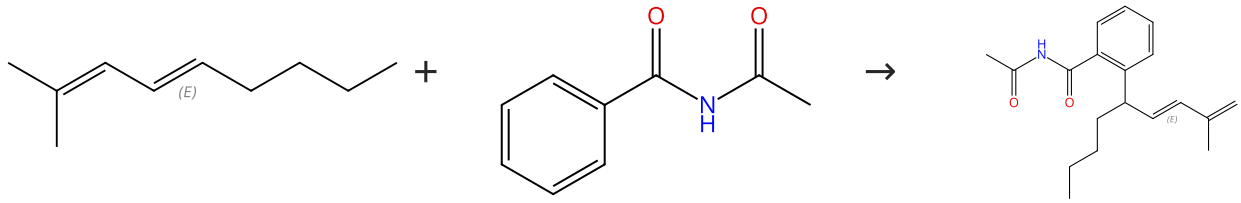
1.1 **Reagents:** Cupric acetate, Acetic acid-*d*
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Water-d_2; 20 h, 100 °C

Ru(II)-Catalyzed Chemoselective C(sp^3)-H Monoarylation of 8-Methyl Quinolines with Arylboronic Acids

By: Parmar, Diksha; et al

Journal of Organic Chemistry (2020), 85(18), 11844-11855.

Scheme 313 (1 Reaction) Steps: **1** Yield: **10%**



Double bond geometry shown

Suppliers (3)

Suppliers (13)

Double bond geometry shown

31-614-CAS-27532411 Steps: 1 Yield: 10%

1.1 **Reagents:** Cupric acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Dimethylacetamide, Water-d_2; 15 h, 70 °C

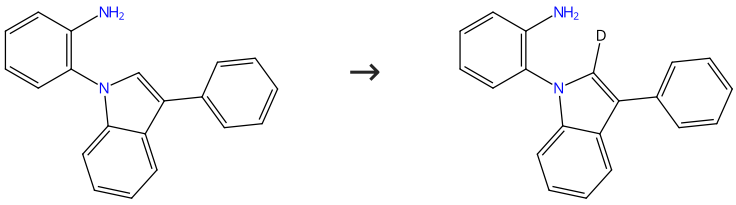
Experimental Protocols

Rhodium-Catalyzed Oxidative C-H Allylation of Benzamides with 1,3-Dienes by Allyl-to-Allyl 1,4-Rh(III) Migration

By: Korkis, Stamatis E.; et al

Journal of the American Chemical Society (2016), 138(37), 12252-12257.

Scheme 314 (1 Reaction) Steps: **1** Yield: **10%**



31-116-CAS-23684619 Steps: 1 Yield: 10%

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Dimethylformamide; 15 h, 120 °C; rt

Experimental Protocols

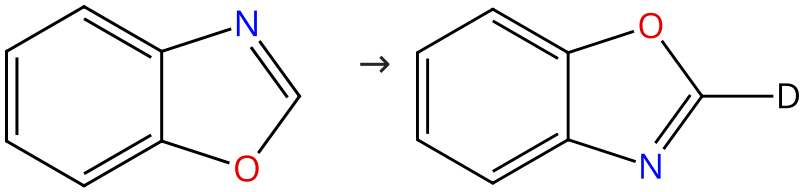
Rh^{III}-Catalyzed formal [5 + 1] cycliz ation of 2-pyrrolyl/indolyl anilines using vinylene carbonate as a C1 synthon

By: Nan, Jiang; et al

Organic Chemistry Frontiers (2021), 8(8), 1764-1769.

Scheme 315 (2 Reactions)

Steps: **1** Yield: **10%**



Suppliers (81)

31-116-CAS-18527032

Steps: **1** Yield: **10%**

1.1 **Reagents:** Diphenylacetylene, Water-d_2
Catalysts: Pivalic acid, Cupric acetate, Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 1 h, 120 °C

Experimental Protocols

Rhodium/Copper Cocatalyzed Highly trans-Selective 1,2-Diheteroarylation of Alkynes with Azoles via C-H Addition/Oxidative Cross-Coupling: A Combined Experimental and Theoretical Study

By: Tan, Guangying; et al

Journal of the American Chemical Society (2017), 139(44), 15724-15737.

31-116-CAS-5495087

Steps: **1**

1.1 **Reagents:** Pivalic acid, Silver carbonate, Water-d_2, Propanoic acid, 2,2-dimethyl-, cesium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Dimethylformamide; 0.5 h, 140 °C

Experimental Protocols

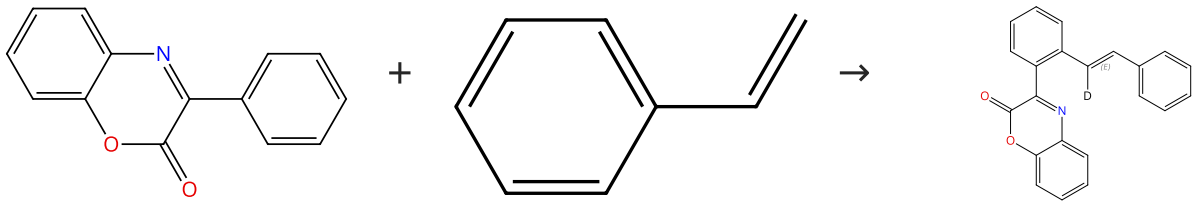
Rhodium(III)-Catalyzed ortho-Heteroarylation of Phenols through Internal Oxidative C-H Activation: Rapid Screening of Single-Molecular White-Light-Emitting Materials

By: Li, Bijin; et al

Angewandte Chemie, International Edition (2015), 54(47), 14008-14012.

Scheme 316 (1 Reaction)

Steps: **1** Yield: **7%**



Suppliers (10)

Suppliers (122)

Double bond geometry shown

31-614-CAS-35273133

Steps: **1** Yield: **7%**

1.1 **Reagents:** Sodium bicarbonate, Silver carbonate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 40 min, 90 °C

Experimental Protocols

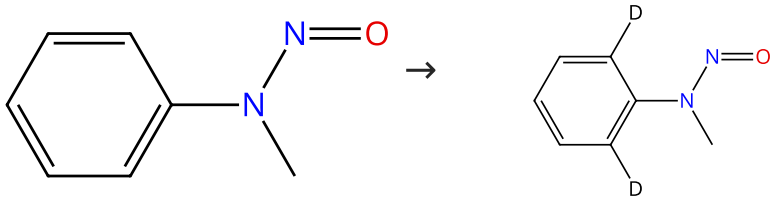
Rhodium(III)-catalyzed oxidative cross-coupling of benzoxazinones with styrenes via C-H activation

By: Yang, Xifa; et al

Organic & Biomolecular Chemistry (2023), 21(4), 797-806.

Scheme 317 (3 Reactions)

Steps: **1** Yield: **5%**



Suppliers (75)

31-116-CAS-18984827 Steps: **1** Yield: **5%**

1.1 **Reagents:** *tert*-Butyl alcohol-*d*
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate; 12 h, 30 °C

1.2 **Solvents:** Water-d_2; 12 h, 30 °C

Cp*Rh(III) catalyzed ortho-halogenation of N-nitrosoanilines by solvent-controlled regioselective C-H functionalization

By: Peng, Qiujun; et al

Organic & Biomolecular Chemistry (2018), 16(24), 4471-4481.

31-614-CAS-37136494 Steps: **1**

1.1 **Reagents:** Iodobenzene diacetate, Tripotassium phosphate, Water-d_2
Catalysts: Silver acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 100 °C

Experimental Protocols

Rh(III)-Catalyzed Direct C-H Cyclization of N-Nitrosoanilines with 1,3-Dicarbonyl Compounds: A Route to Tetrahydro carbazol-4-ones

By: Jiao, Liulin; et al

Journal of Organic Chemistry (2023), 88(15), 10662-10669.

31-116-CAS-18624954 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 20 h, 60 °C

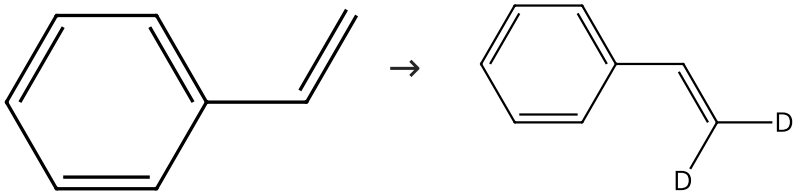
Experimental Protocols

The regioselective synthesis of 2-phosphinoylindoles via Rh(III)-catalyzed C-H activation

By: Wang, Huanan; et al

Organic Chemistry Frontiers (2018), 5(1), 88-91.

Scheme 318 (1 Reaction) Steps: **1**



Suppliers (122) Suppliers (20)

31-116-CAS-10393172 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: (*SP*-5-52)-[1,3-Bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]chlorohydro(8-quinolinolato-κ*N*^{1},κ*O*^{8})rhodium
Solvents: Water-d_2; 4 h, 50 °C

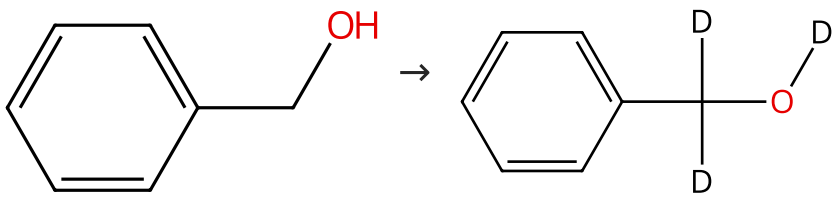
Experimental Protocols

Mild and Selective H/D Exchange at the β Position of Aromatic α-Olefins by N-Heterocyclic Carbene-Hydride-Rhodium Catalysts

By: Di Giuseppe, Andrea; et al

Angewandte Chemie, International Edition (2011), 50(17), 3938-3942, S3938/1-S3938/25.

Scheme 319 (1 Reaction) Steps: **1**



Suppliers (161) Supplier (1)

31-116-CAS-20661599 Steps: 1

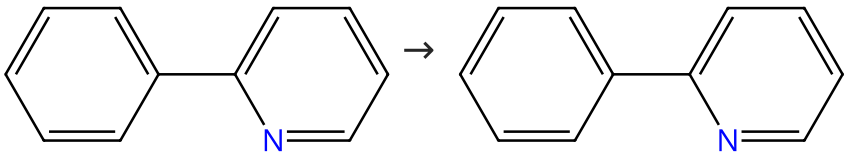
1.1 **Reagents:** Potassium hydroxide, Water-d_2
Catalysts: Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][1,3-dihydro-1-[(1-phenyl-1*H*-1,2,3-triazol-4-yl-κN^3)methyl]-3-(2,4,6-trimethylphenyl)-2*H*-imidazol-2-ylidene-κ*C*]-, tetraphenylborate(1-) (1:1)
Solvents: Toluene; 5 min, rt; 18 h, 120 °C

Controlling the selectivity and efficiency of the hydrogen borrowing reaction by switching between rhodium and iridium catalysts

By: Wang, Danfeng; et al

Dalton Transactions (2019), 48(37), 13989-13999.

Scheme 320 (1 Reaction) Steps: **1**



Suppliers (94)

31-614-CAS-25589880 Steps: 1

1.1 **Reagents:** Pivalic acid, 3-Diazooxindole, Oxygen, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Dichloromethane; 15 min, 23 °C

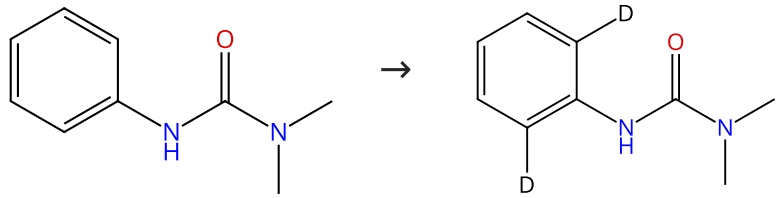
Experimental Protocols

A facile approach to synthesize N H-3-aryloxindoles at room temperature by Rh(III)-catalyzed C-H activation

By: Yang, Ning-Hong; et al

Catalysis Communications (2020), 136, 105904.

Scheme 321 (1 Reaction) Steps: **1**



Suppliers (62)

31-116-CAS-23860880 Steps: 1

1.1 **Reagents:** Water-d_2, Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 24 h, 60 °C

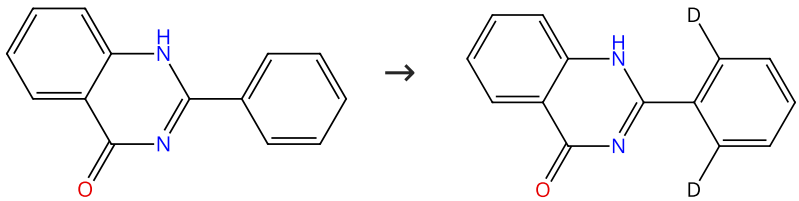
Experimental Protocols

Rh(III)-Catalyzed Chemoselective C-H Alkenylation and [5 + 1] Annulation with Gem-Difluoromethylene Enabled by the Distinctive Fluorine Effect

By: Yang, Jian; et al

Journal of Organic Chemistry (2021), 86(14), 9711-9722.

Scheme 322 (4 Reactions) Steps: **1**



Suppliers (72)

31-614-CAS-23958179 Steps: **1**

1.1 **Reagents:** Water-d_2, Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 24 h, 100 °C

Experimental Protocols

Three-Component Couplings among Heteroarenes, Difluorocyclopropenes, and Water via C-H Activation

By: Liu, Xuexin; et al

Organic Letters (2021), 23(17), 6831-6835.

31-116-CAS-23848164 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluorophosphate
Solvents: γ-Valerolactone; 24 h, 130 °C

Rhodium-Catalyzed Synthesis of Isoquinolino[1,2-b]Quinazolines via C-H Annulation in Biomass-Derived γ-Valerolactone

By: Wang, Liang; et al

Asian Journal of Organic Chemistry (2021), 10(7), 1671-1674.

31-116-CAS-23225813 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[μ-(acetato-κ*O*:κ*O*′)]bis(acetato-κ*O*)bis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium
Solvents: Ethanol; 24 h, 60 °C

Experimental Protocols

Rh(III)-catalyzed C-H olefination cascades to divergently construct diverse polyheterocycles by tuning manipulations of DG

By: Huang, Tianle; et al

Organic Letters (2021), 23(5), 1548-1553.

31-116-CAS-21625167 Steps: **1**

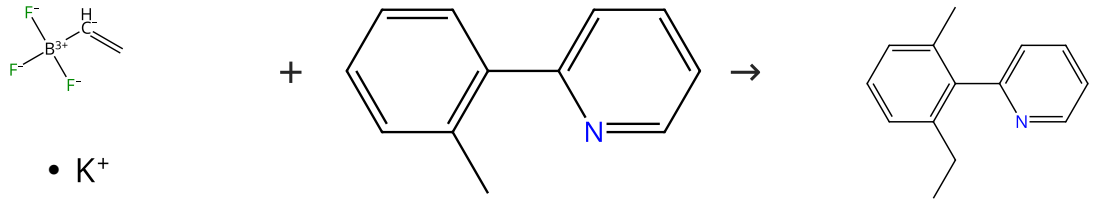
1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Acetonitrile; 24 h, 160 °C

Synthesis of C6-Substituted Isoquinolino[1,2-b]quinazolines via Rh(III)-Catalyzed C-H Annulation with Sulfoxonium Ylides

By: Zhang, Jin; et al

Journal of Organic Chemistry (2020), 85(5), 3192-3201.

Scheme 323 (1 Reaction) Steps: **1**



Suppliers (101) Suppliers (67) Suppliers (3)

31-614-CAS-24765476 Steps: **1**

1.1 **Reagents:** Water-d_2, Cesium fluoride
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1-Butanol; 24 h, 100 °C

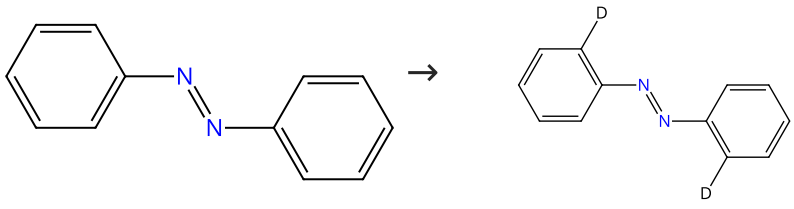
Experimental Protocols

Rhoda-Electrocatalyzed C-H Methylation and Paired Electrocatalyzed C-H Ethylation and Propylation

By: Kucinski, Krzysztof; et al

Chemistry - A European Journal (2022), 28(1), e202103837.

Scheme 324 (1 Reaction) Steps: **1**



Suppliers (76)

31-116-CAS-15850373 Steps: **1**

1.1 **Reagents:** Copper diacetate monohydrate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 0.5 h, 140 °C

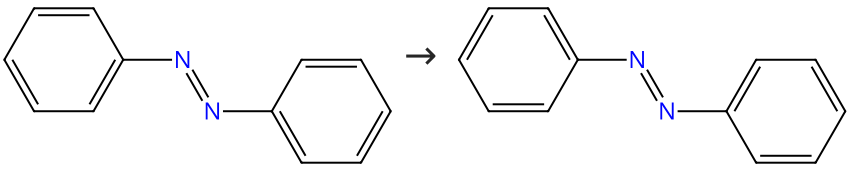
Experimental Protocols

ortho-Heteroarylation of Azobenzenes by Rh-Catalyzed Cross-Dehydrogenative Coupling: An Approach to Conjugated Biaryls

By: Deng, Hong; et al

Organic Letters (2016), 18(13), 3110-3113.

Scheme 325 (1 Reaction) Steps: **1**



Suppliers (76)

31-614-CAS-36610617 Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 1 h, 60 °C

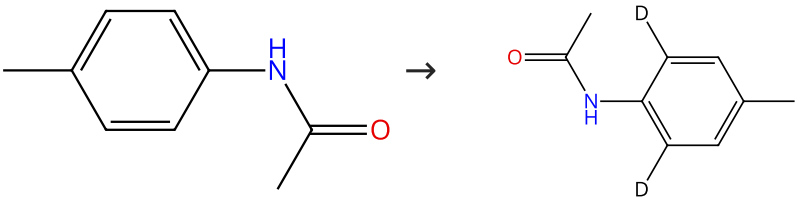
1.2 **Reagents:** Water

Rh(III)-catalyzed annulation of azobenzenes with vinylene carbonate

By: Zhang, Wenjie; et al

Youji Huaxue (2022), 42(1), 172-180.

Scheme 326 (1 Reaction) Steps: **1**



Suppliers (85)

31-614-CAS-35048786 Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: *tert*-Butanol; rt → 65 °C; 21 min, 65 °C

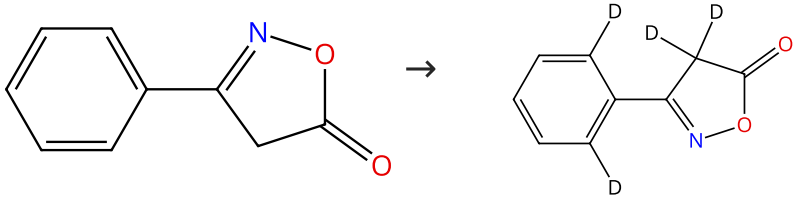
Experimental Protocols

Merging Rh-Catalyzed C-H Functionalization and Cascade Cyclization to Enable Propargylic Alcohols as Three-Carbon Synthons

By: Nagtilak, Prajyot Jayadev; et al

Chemistry - A European Journal (2023), 29(4), e202203055.

Scheme 327 (1 Reaction) Steps: **1**



Suppliers (50)

31-116-CAS-22532886 Steps: 1

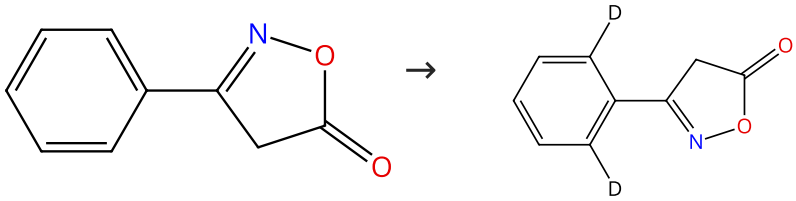
1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 16 h, 100 °C

Rh(III)-Catalyzed [4 + 2] Annulation of 3- Aryl-5-isoxazolone with Maleimides or Maleic Ester

By: Wan, Ting; et al

Organic Letters (2020), 22(16), 6484-6488.

Scheme 328 (1 Reaction) Steps: **1**



Suppliers (50)

31-116-CAS-23085111 Steps: 1

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene; 2 h, rt → 110 °C

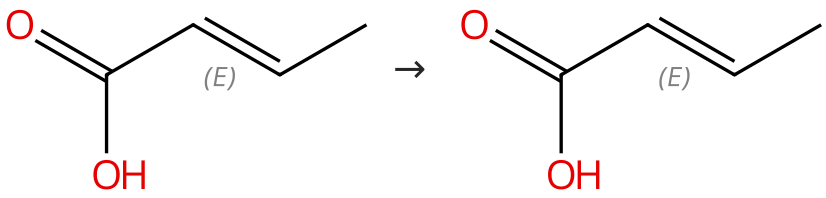
Experimental Protocols

Construction of isoxazolone-fused phenanthridines via Rh-catalyzed cascade C-H activation/cyclization of 3-arylisox azolones with cyclic 2-diazo-1,3-diketones

By: Hu, Wangcheng; et al

Organic & Biomolecular Chemistry (2021), 19(3), 552-556.

Scheme 329 (1 Reaction) Steps: **1**



Double bond geometry shown

Double bond geometry shown

Suppliers (81)

31-614-CAS-29866574 Steps: 1

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

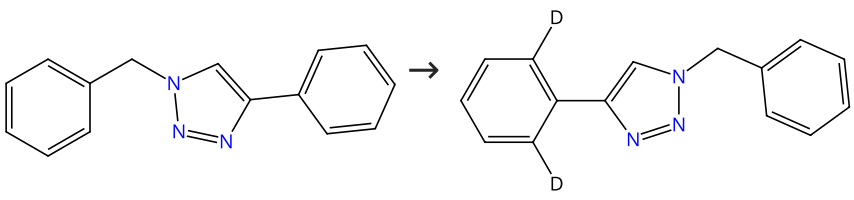
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 330 (1 Reaction) Steps: **1**



Suppliers (38)

31-116-CAS-19583976 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 40 °C

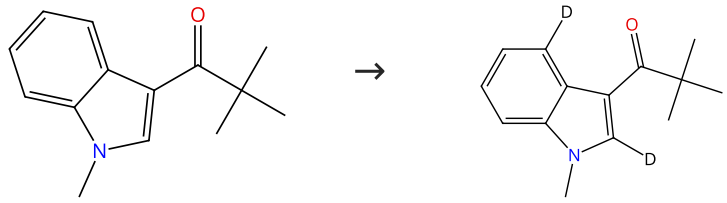
Experimental Protocols

Rhodium-catalyzed triazole-directed C-H bond functiona lization of arenes with diazo compounds

By: Wang, Huanhong; et al

Organic & Biomolecular Chemistry (2018), 16(43), 8191-8195.

Scheme 331 (1 Reaction) Steps: **1**



Suppliers (32)

31-614-CAS-42934196 Steps: **1**

1.1 **Reagents:** Water-d_2, Potassium fluoride
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 2,2,2-Trifluoroethanol; 12 h, 40 °C

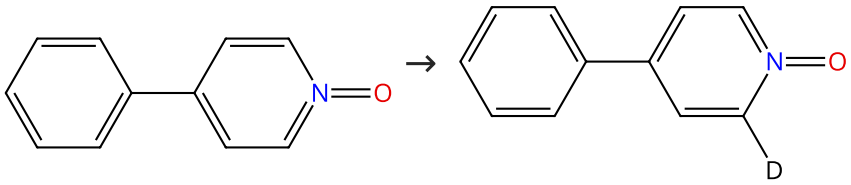
Experimental Protocols

Rhodium(III)-Catalyzed Regioselective C4 Alkylation of Indoles with Nitroalkenes

By: Zhao, Ru; et al

Journal of Organic Chemistry (2024), 89(23), 17844-17849.

Scheme 332 (1 Reaction) Steps: **1**



Suppliers (61)

31-116-CAS-4311383 Steps: **1**

1.1 **Reagents:** Cesium acetate, Water-d_2
Catalysts: 1,2-Bis(diphenylphosphino)ethane, Di-μ-chlorobis [(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium
Solvents: Toluene; 12 h, 120 °C

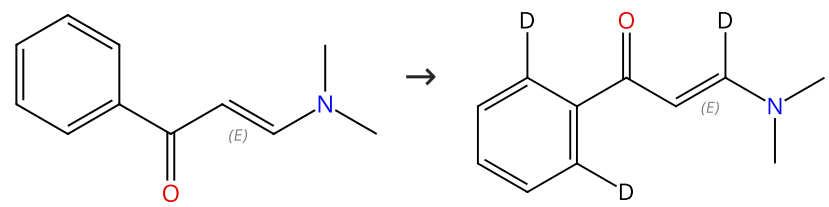
Experimental Protocols

A Versatile Rhodium(I) Catalyst System for the Addition of Heteroarenes to both Alkenes and Alkynes by a C- H Bond Activation

By: Ryu, Jaeyune; et al

Angewandte Chemie, International Edition (2012), 51(15), 3677-3681, S3677/1-S3677/59.

Scheme 333 (2 Reactions) Steps: **1**



Double bond geometry shown

Double bond geometry shown

Suppliers (49)

31-614-CAS-31541283 Steps: 1

1.1 **Reagents:** Sodium acetate, Cupric acetate, Water-d_2
Catalysts: Silver hexafluoroantimonate, Di-μ-chlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium
Solvents: 1,2-Dichloroethane; 18 h, 80 °C

Experimental Protocols

Rhodium-Catalyzed Regioselective Double Annulation of Enaminones with Propargyl Alcohols: Rapid Access to Arylnaphthalene Lignan Derivatives

By: Nagireddy, Attunuri; et al

Journal of Organic Chemistry (2022), 87(2), 1240-1248.

31-116-CAS-16023742 Steps: 1

1.1 **Reagents:** Silver acetate, Acetic acid-d_4
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 10 min, 80 °C

1.2 **Reagents:** Water-d_2; 12 h, 80 °C

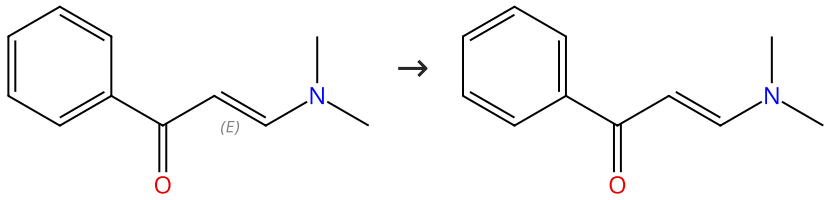
Experimental Protocols

Enaminones as Synthons for a Directed C-H Functionalization: Rh^{III}-Catalyzed Synthesis of Naphthalenes

By: Zhou, Shuguang; et al

Angewandte Chemie, International Edition (2016), 55(32), 9384-9388.

Scheme 334 (1 Reaction) Steps: 1



Double bond geometry shown

Suppliers (49)

31-614-CAS-40820150 Steps: 1

1.1 **Reagents:** Silver carbonate, Acetic acid-d, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Dichloromethane; 24 h, 110 °C

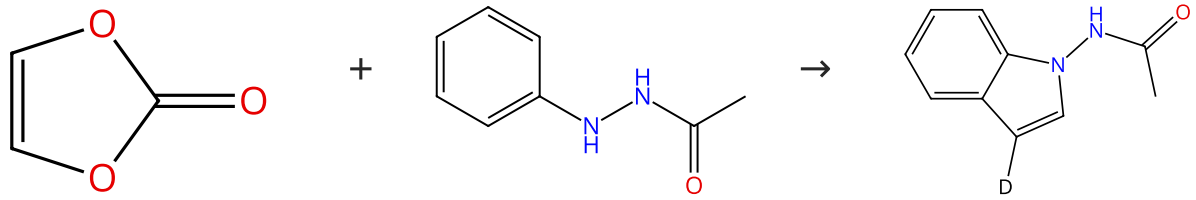
Experimental Protocols

Catalytic C-H activation-initiated transdiannulation: An oxygen transfer route to ring-fluorinated tricyclic γ-lactones

By: Li, Qiuyun; et al

Chinese Chemical Letters (2024), 35(9), 109494.

Scheme 335 (1 Reaction) Steps: 1



Suppliers (74) Suppliers (82)

31-614-CAS-39575166 Steps: 1

1.1 **Reagents:** Water-d_2
Catalysts: Zinc acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: *tert*-Butanol; 16 h, 80 °C

Experimental Protocols

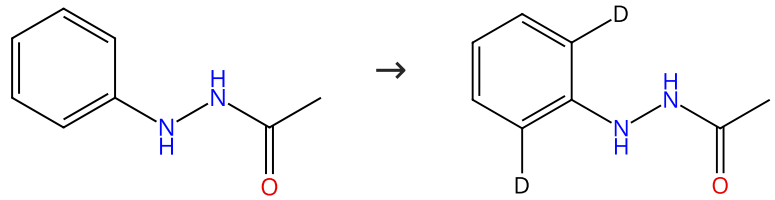
Rhodium-catalyzed annulation of hydrazines with vinylene carbonate to synthesize unsubstituted 1-aminoindole derivatives

By: Chen, Yichun; et al

RSC Advances (2024), 14(7), 4804-4809.

Scheme 336 (1 Reaction)

Steps: **1**



Suppliers (82)

31-116-CAS-20521524

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Zinc acetate, (Acetato-κ*O*)(acetato-κ*O*′)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium
Solvents: 1,2-Dichloroethane; 16 h, 100 °C

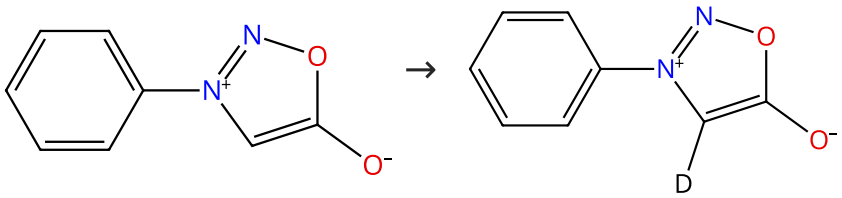
Synthesis of 1-aminoindole derivatives via Rh(III)-catalyzed annulation reactions of hydrazines with sulfoxonium ylides

By: Xie, Wucheng; et al

Organic Chemistry Frontiers (2019), 6(15), 2662-2666.

Scheme 337 (1 Reaction)

Steps: **1**



Suppliers (48)

31-614-CAS-36024277

Steps: **1**

1.1 **Reagents:** Silver acetate, Tempo, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 5 h, 50 °C; 50 °C → rt

1.2 **Reagents:** Water

Experimental Protocols

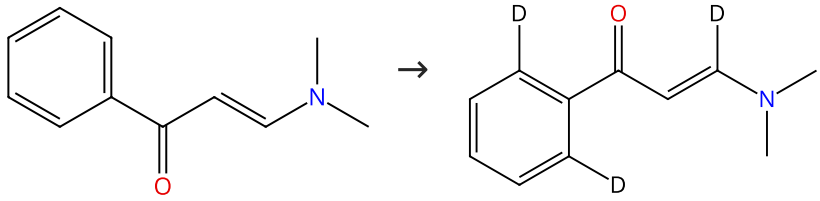
Unsymmetrical relay C-H alkenylation and [2 + 2] cycload dition of N-arylsydnones with allenyl acetates leading to quinoline-fused cyclobutanes

By: Song, Xia; et al

Organic Chemistry Frontiers (2023), 10(5), 1191-1197.

Scheme 338 (1 Reaction)

Steps: **1**



Suppliers (68)

31-614-CAS-36274549

Steps: **1**

1.1 **Reagents:** Sodium acetate, Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 10 h, 100 °C

Experimental Protocols

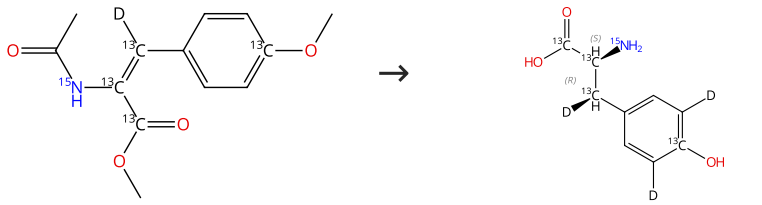
Rhodium-Catalyzed Dual C-H Activation for Regioselective Triple Annulation of Enaminones: Access to Polycyclic Naphth opyran Derivatives

By: Suresh, Vavilapalli; et al

Advanced Synthesis & Catalysis (2023), 365(11), 1770-1776.

Scheme 339 (1 Reaction)

Steps: **1**



Absolute stereochemistry shown

31-049-CAS-1568973

Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: (1,2-Bis((*S*,*S*)-2,5-diethyl-1-phospholidinyl)benzene)(1,5-cyclooctadiene)rhodium(1+) trifluoromethanesulfonate
Solvents: Methanol

1.2 **Reagents:** Hydrochloric acid
Solvents: Water

1.3 **Reagents:** Hydrogen bromide
Solvents: Water

1.4 **Reagents:** Deuterium chloride
Solvents: Water-d_2; overnight, reflux

Experimental Protocols

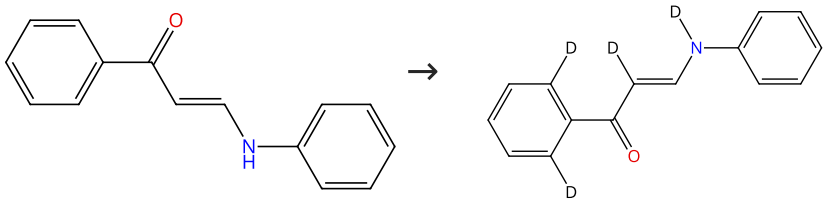
Hydrogen Exchange Rate of Tyrosine Hydroxyl Groups in Proteins As Studied by the Deuterium Isotope Effect on Cζ Chemical Shifts

By: Takeda, Mitsuhiro; et al

Journal of the American Chemical Society (2009), 131(51), 18556-18562.

Scheme 340 (1 Reaction)

Steps: **1**



Suppliers (12)

31-614-CAS-42963414

Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 2 min, rt; 18 h, 100 °C

Experimental Protocols

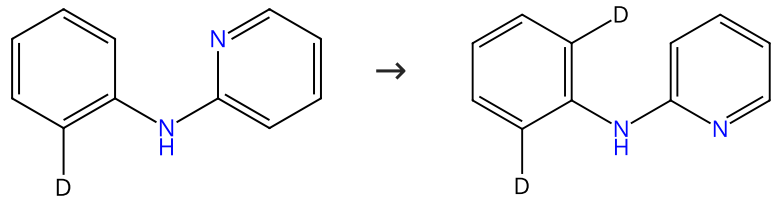
Rhodium-catalyzed synthesis of N-substituted 3-acylpyrroles from enaminones and vinylene carbonate

By: Ma, Jian-Bo; et al

Organic Chemistry Frontiers (2025), 12(2), 544-552.

Scheme 341 (1 Reaction)

Steps: **1**



Supplier (1)

31-614-CAS-37996240

Steps: **1**

1.1 **Reagents:** Acetic acid, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Methanol; 8 h, 110 °C

Experimental Protocols

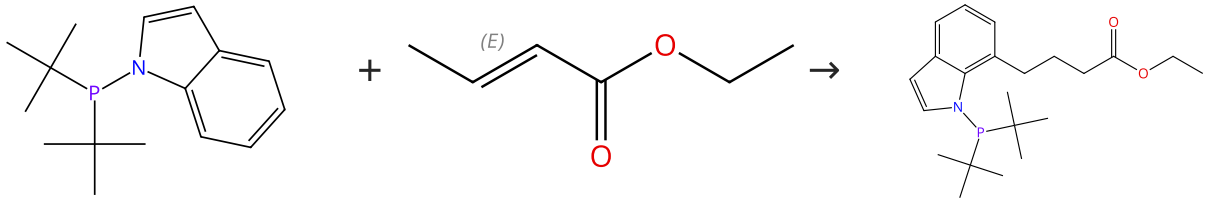
Rhodium-catalyzed C-H carboxymethylation of anilines with vinylene carbonate

By: Liu, Qiong; et al

Organic & Biomolecular Chemistry (2023), 21(41), 8320-8328.

Scheme 342 (1 Reaction)

Steps: **1**



Double bond geometry shown

Suppliers (74)

31-614-CAS-29477041

Steps: **1**

1.1 **Catalysts:** [1,1'-Biphenyl]-2,2'-diol, Di-μ-chlorotetrakis[(1,2-η)-cyclooctene]dirhodium
Solvents: Toluene; > 1 min, rt

1.2 **Reagents:** Water-d_2; 120 °C; 120 °C → rt

Experimental Protocols

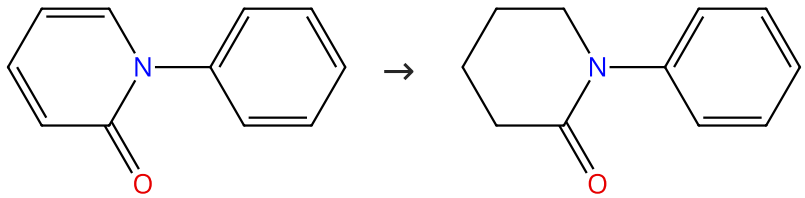
Rhodium-Catalyzed, Remote Terminal Hydroarylation of Activated Olefins through a Long-Range Deconjugative Isomerization

By: Borah, Arun Jyoti; et al

Journal of the American Chemical Society (2018), 140(19), 6062-6066.

Scheme 343 (1 Reaction)

Steps: **1**



Suppliers (34)

31-614-CAS-34895493

Steps: **1**

1.1 **Reagents:** Pivalic acid, Water-d_2, Silver oxide (Ag_2O)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 4 h, 80 °C

Experimental Protocols

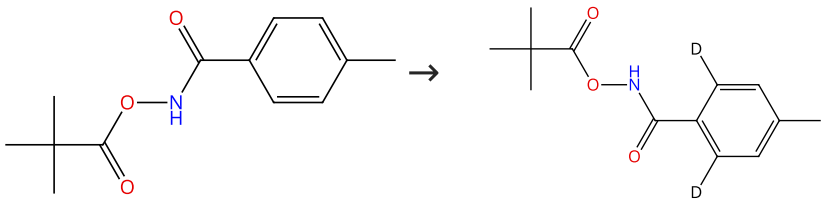
Rh(III)-Catalyzed Weakly Coordinating 2-Pyridone-Directed Oxidative Annulation Using Internal Alkynes: A Reversal in Selectivity

By: Bera, Satabdi; et al

Organic Letters (2022), 24(46), 8470-8475.

Scheme 344 (1 Reaction)

Steps: **1**



Suppliers (5)

31-116-CAS-14782725

Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 12 h, rt

Experimental Protocols

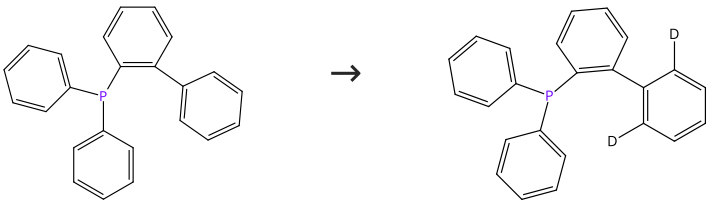
Rhodium-Catalyzed C-H Alkynylation of Arenes at Room Temperature

By: Feng, Chao; et al

Angewandte Chemie, International Edition (2014), 53(10), 2722-2726.

Scheme 345 (1 Reaction)

Steps: **1**



Suppliers (76)

31-614-CAS-40275885

Steps: **1**

1.1 **Reagents:** Disodium phosphate, Water-d_2
Catalysts: Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene] dirhodium
Solvents: Dichloromethane; 48 h, rt

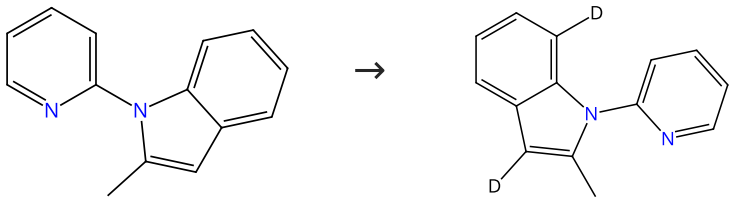
Merging Visible Light Photocatalysis and P(III)-Directed C-H Activation by a Single Catalyst: Modular Assembly of P-Alkyne Hybrid Ligands

By: Jiang, Wang; et al

Angewandte Chemie, International Edition (2023), 62(47), e202309709.

Scheme 346 (1 Reaction)

Steps: **1**



Supplier (1)

31-116-CAS-23631049

Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2-Methyl-2-butanol; 4 h, 130 °C

Experimental Protocols

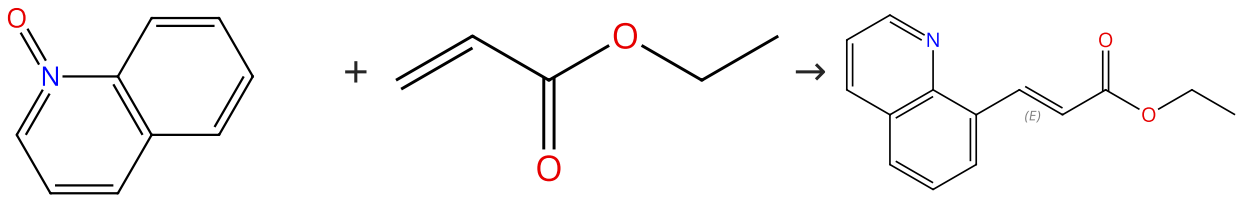
Rh(III)-Catalyzed Oxidative C-2 Coupling of N-Pyridinylindoles with Benzo[b]thiophene 1,1-Dioxides via C-H Bond Activation

By: Kumaran, Subramani; et al

Journal of Organic Chemistry (2021), 86(12), 7987-7999.

Scheme 347 (1 Reaction)

Steps: **1**



Suppliers (57)

Suppliers (76)

Double bond geometry shown

31-614-CAS-25960795

Steps: **1**

1.1 **Reagents:** Acetic acid, Copper diacetate dihydrate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Water-d_2; 5 h, 100 °C

Experimental Protocols

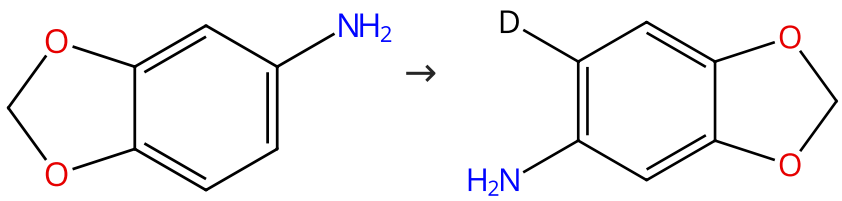
Rh^{III}-Catalyzed Dehydrogenative Coupling of Quinoline N-Oxides with Alkenes: N-Oxide as Traceless Directing Group for Remote C-H Activation

By: Sharma, Ritika; et al

European Journal of Organic Chemistry (2015), 2015(34), 7519-7528.

Scheme 348 (1 Reaction)

Steps: **1**



Suppliers (83)

31-116-CAS-17569064

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis(diphenylphosphino)methane, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium; 3 h, 100 °C

Experimental Protocols

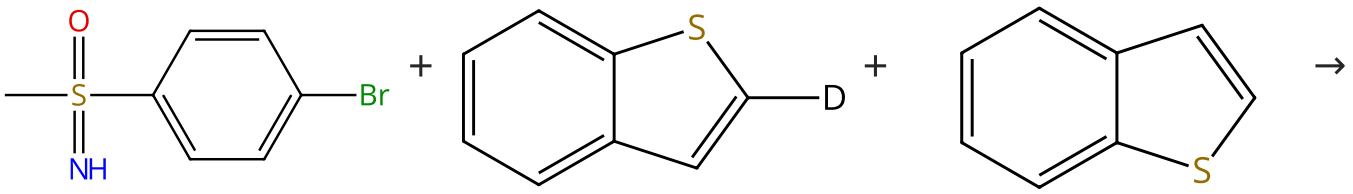
Reversed reactivity of anilines with alkynes in the rhodium-catalysed C-H activation/carbonylation tandem

By: Midya, Siba P.; et al

Nature Communications (2015), 6, 8591pp..

Scheme 349 (1 Reaction)

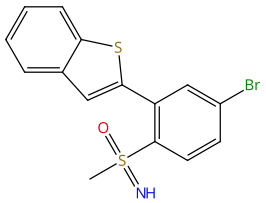
Steps: **1**



Suppliers (50)

Supplier (1)

Suppliers (99)



31-614-CAS-33408727

Steps: **1**

1.1 **Reagents:** Silver triflate, Disodium phosphate, Water-d_2, Silver oxide (Ag_2O)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, 150 °C

Experimental Protocols

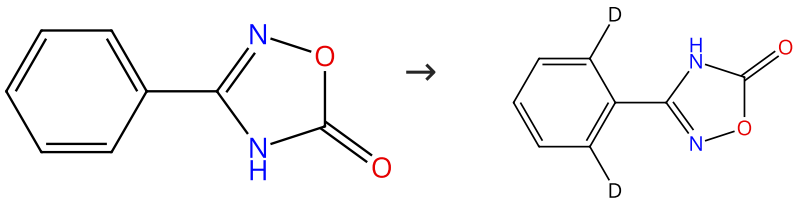
Rh(III)-catalysed C-H/C-H cross-coupling of S-aryl sulfoximines with thiophenes: facile access to [1]benzothieno[3,2-b][1]benzothiophene (BTBT) and benzothiazines

By: Yang, Chengyong; et al

Chemical Communications (Cambridge, United Kingdom) (2022), 58(57), 7952-7955.

Scheme 350 (1 Reaction)

Steps: **1**



Suppliers (71)

31-614-CAS-36454989 Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 120 °C

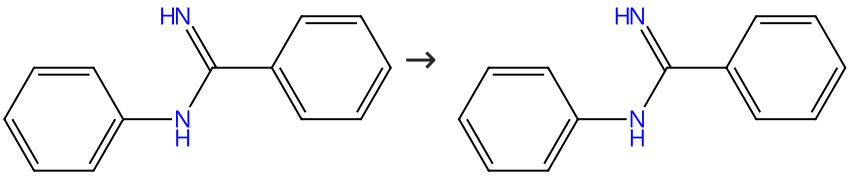
Experimental Protocols

Rh(III)-Catalyzed Synthesis of Substituted Isoindoles through a Direct C-H Activation/[4 + 1] Annulation and Acyl Migration Cascade of Oxadiazolones with Diazo Compounds

By: Yang, Xiaohao; et al

Organic Letters (2023), 25(18), 3195-3199.

Scheme 351 (1 Reaction) Steps: **1**



Suppliers (63)

31-614-CAS-24476020 Steps: **1**

1.1 **Reagents:** Benzonitrile, Manganese diacetate, Potassium *tert*-butoxide, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane

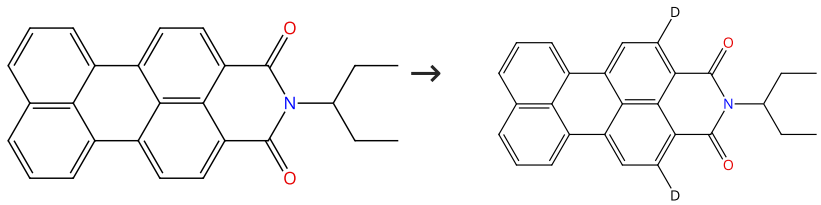
Experimental Protocols

Rhodium-catalyzed multiple C-H activation/highly meta-selective C-H amination between amidines and alkynes

By: Xu, Fen; et al

Chemical Communications (Cambridge, United Kingdom) (2020), 56(76), 11227-11230.

Scheme 352 (1 Reaction) Steps: **1**



31-614-CAS-32733611 Steps: **1**

1.1 **Reagents:** Silver carbonate
Catalysts: Lithium acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane, Water-d_2; 1 h, 85 °C

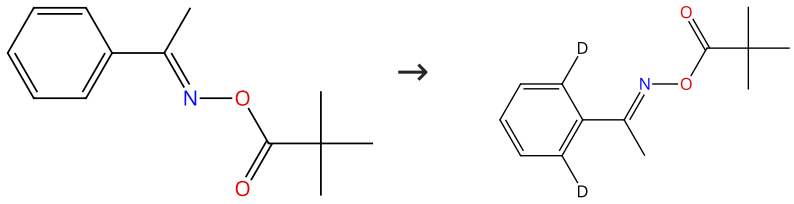
Experimental Protocols

Rh(III)-Catalyzed One-Step Synthesis of ortho-Alkynylated Perylene Imide Dyes: Optical and Electrochemical Properties of New Derivatives

By: Chand, Tapasi; et al

Chemistry - A European Journal (2022), 28(43), e202200723.

Scheme 353 (1 Reaction) Steps: **1**



Supplier (1)

31-116-CAS-24381669 Steps: 1

1.1 **Reagents:** Water-d_2
Catalysts: Silver hexafluoroantimonate, Di-μ-chlorodichlorobis[(3a,4,5,6,6a-η)-(3a*R*,13b*R*)-3,7-dihydro-2,8-bis(methylenemethyl)-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinaphthalen-3a-yl]dirhodium
Solvents: 1,2-Dichloroethane; 4 h, 10 °C

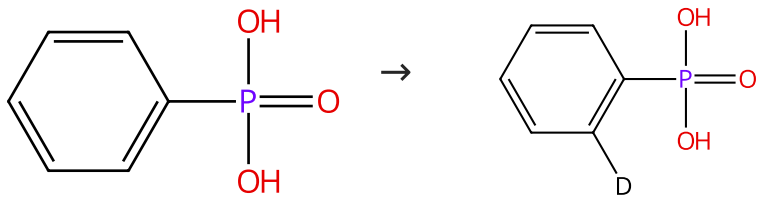
Experimental Protocols

Rhodium(III)-catalyzed asymmetric [4+1] spiroannulations of O-pivaloyl oximes with α-diazo compounds

By: Sun, Lincong; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(67), 8268-8271.

Scheme 354 (1 Reaction) Steps: 1



Suppliers (72)

31-116-CAS-20659803 Steps: 1

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2); 24 h, 90 °C

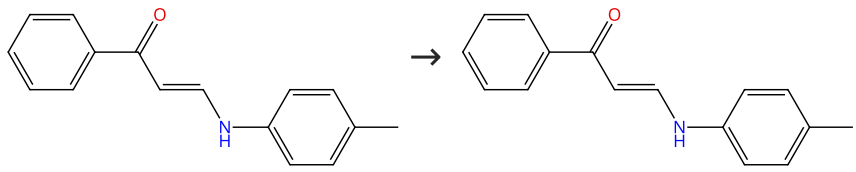
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 355 (1 Reaction) Steps: 1



Suppliers (3)

31-614-CAS-37948064 Steps: 1

1.1 **Reagents:** Silver nitrate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Nitromethane; 12 h, 40 °C

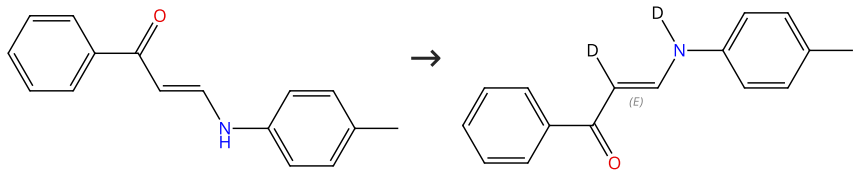
Experimental Protocols

Rh(III)-Catalyzed [3 + 2] Annulatio n/Pinacol Rearrangement Reaction of Enaminones with Iodonium Ylides: Direct Synthesis of 2-Spirocyclo-pyrrol-3-ones

By: Zhang, Mingshuai; et al

Organic Letters (2023), 25(39), 7214-7219.

Scheme 356 (1 Reaction) Steps: 1



Suppliers (3)

Double bond geometry shown

31-614-CAS-38002811 Steps: 1

1.1 **Reagents:** Silver trifluoroacetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Bismuth triflate
Solvents: 2-Methyltetrahydrofuran; 8 h, 50 °C

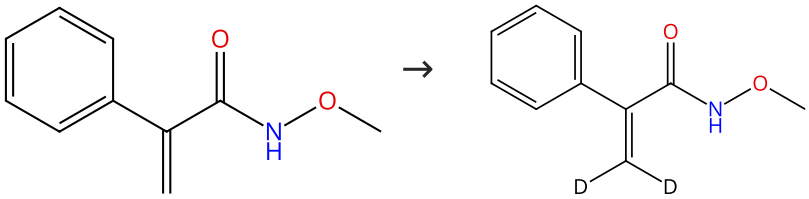
Experimental Protocols

Synthesis of Tetrahydro-indolones through Rh(III)-Catalyzed [3 + 2] Annulation of Enaminones with Iodonium Ylides

By: Zhang, Mingshuai; et al

Organic Letters (2023), 25(40), 7298-7303.

Scheme 357 (1 Reaction) Steps: 1



Suppliers (2)

31-614-CAS-40488277 Steps: 1

1.1 **Reagents:** Zinc acetate, Silver triflate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 2 h, 100 °C

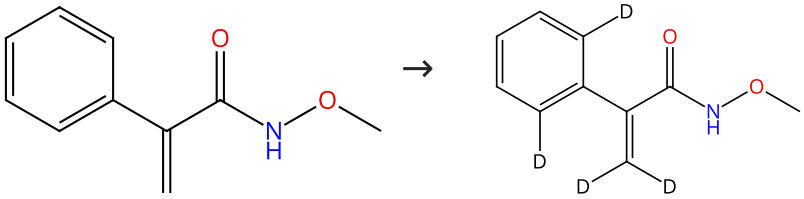
Experimental Protocols

Rh(III)-Catalyzed C-H Activation/Annulation for the Construction of Quinolizinones and Indolizines

By: Hou, Xinjiao; et al

Organic Letters (2024), 26(21), 4451-4456.

Scheme 358 (1 Reaction) Steps: 1



Suppliers (2)

31-614-CAS-40488281 Steps: 1

1.1 **Reagents:** Zinc acetate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 2 h, 100 °C

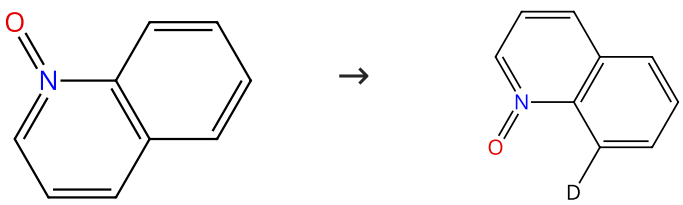
Experimental Protocols

Rh(III)-Catalyzed C-H Activation/Annulation for the Construction of Quinolizinones and Indolizines

By: Hou, Xinjiao; et al

Organic Letters (2024), 26(21), 4451-4456.

Scheme 359 (1 Reaction) Steps: 1



Suppliers (57)

Supplier (1)

31-116-CAS-4276908 Steps: 1

1.1 **Reagents:** Acetic acid, Copper diacetate dihydrate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Water-d_2; 5 h, 100 °C

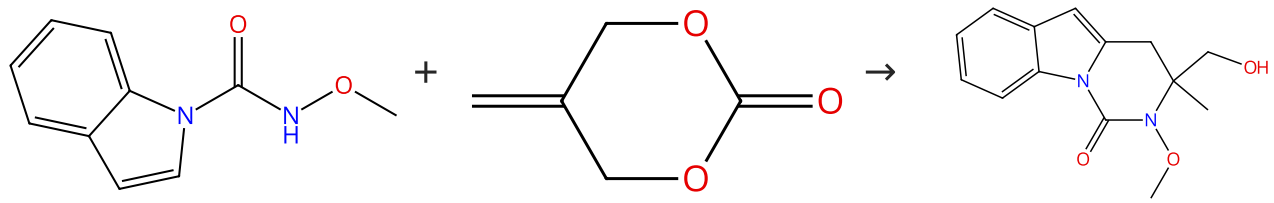
Experimental Protocols

Rh^{III}-Catalyzed Dehydrogenative Coupling of Quinoline N-Oxides with Alkenes: N-Oxide as Traceless Directing Group for Remote C-H Activation

By: Sharma, Ritika; et al

European Journal of Organic Chemistry (2015), 2015(34), 7519-7528.

Scheme 360 (1 Reaction) Steps: 1



Supplier (1) Suppliers (4)

31-614-CAS-24478351 Steps: 1

1.1 **Reagents:** Lithium carbonate (Li_2CO_3), Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Chlorobenzene; 12 h, 80 °C

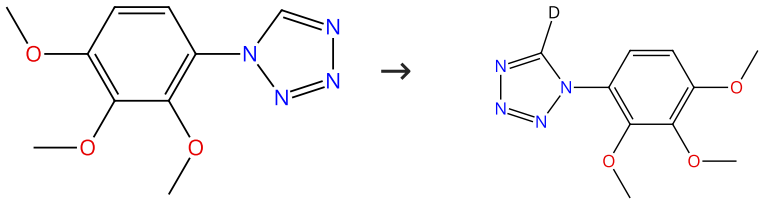
Experimental Protocols

Rh(III)-Catalyzed tandem C(sp^2)-H allylation/N-alkylation annulation of arene amides with 2-alkylidenetrimethylene carbonates

By: Xie, Hui; et al

Organic Chemistry Frontiers (2021), 8(23), 6585-6590.

Scheme 361 (1 Reaction) Steps: 1



31-116-CAS-10308086 Steps: 1

1.1 **Reagents:** Potassium acetate, Copper diacetate monohydrate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dimethylacetamide; 40 min, 80 °C

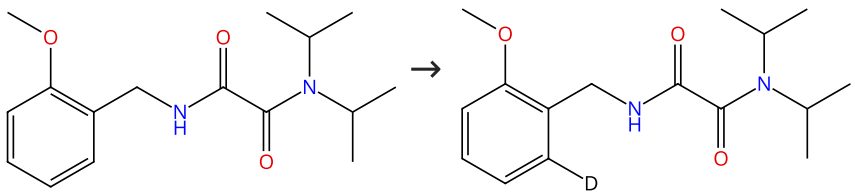
Experimental Protocols

One-Pot Synthesis of Multisubstituted 2-Aminoquinolines from Annulation of 1-Aryl Tetrazoles with Internal Alkynes via Double C-H Activation and Denitrogenation

By: Zhang, Lei; et al

Journal of Organic Chemistry (2014), 79(23), 11541-11548.

Scheme 362 (1 Reaction) Steps: 1



31-116-CAS-16403687 Steps: 1

1.1 **Reagents:** Pivalic acid, Water-d_2, Silver oxide (Ag_2O)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 6 h, 120 °C; 120 °C → rt

Experimental Protocols

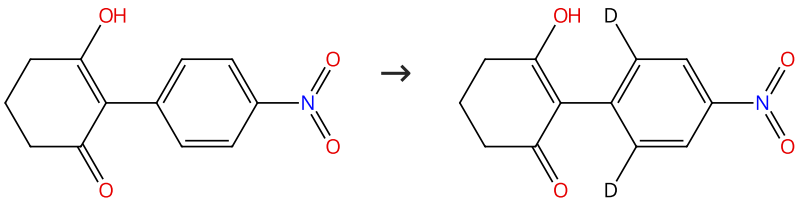
Rhodium(III)-Catalyzed Oxidative C-H/C-H Cross-Coupling of Heteroarenes and Masked Benzylamines

By: Hu, Jundie; et al

Organic Letters (2016), 18(23), 5998-6001.

Scheme 363 (1 Reaction)

Steps: **1**



31-116-CAS-6490024

Steps: **1**

1.1 **Reagents:** Acetic acid, Cupric acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,4-Dioxane, Water-d_2; 1.5 h, 60 °C

Experimental Protocols

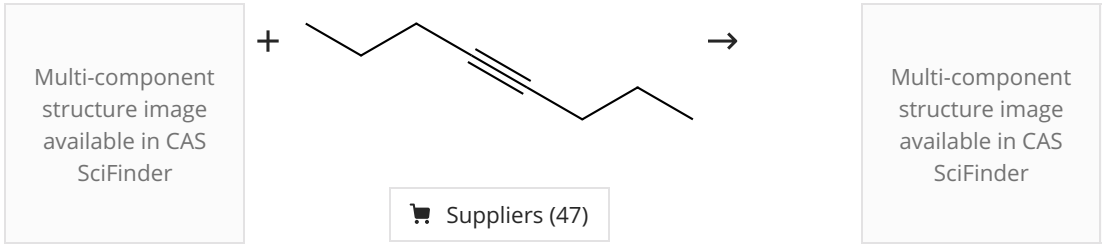
Catalytic 1,4-rhodium(III) migration enables 1,3-enynes to function as one-carbon oxidative annulation partners in C-H functionalizations

By: Burns, David J.; et al

Angewandte Chemie, International Edition (2014), 53(37), 9931-9935.

Scheme 364 (1 Reaction)

Steps: **1**



31-614-CAS-27663267

Steps: **1**

1.1 **Reagents:** Sodium acetate
Catalysts: Di-μ-chlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium
Solvents: 1,2-Dichloroethane, Water-d_2; 12 h, 100 °C

Experimental Protocols

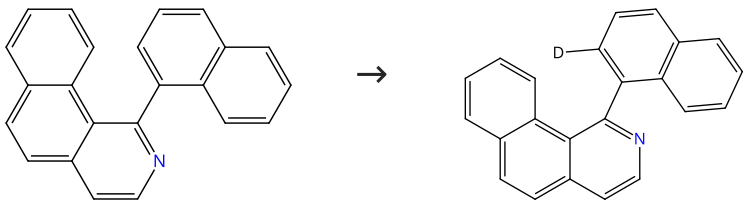
Rhodium(III)-N-Heterocyclic Carbene-Driven Cascade C-H Activation Catalysis

By: Ghorai, Debasish; et al

ACS Catalysis (2015), 5(4), 2692-2696.

Scheme 365 (2 Reactions)

Steps: **1**



31-614-CAS-29440070

Steps: **1**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: (α*S*)-α-(1-Methylethyl)-1,3-dioxo-1*H*-benz[*de*] isoquinoline-2(3*H*)-acetic acid, Bis(η^2-ethene)[(8a,9,10,11,11a-η)-(2a*S*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6] cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-8a(12*H*)-yl]rhodium
Solvents: Dimethylformamide; 18 h, 60 °C

Experimental Protocols

Rhodium-Catalyzed Atroposelective C-H/C-H Cross-Coupling Reaction between 1-Aryl Isoquinoline Derivatives and Indoli zines

By: Zhang, Wen-Wen; et al

Organic Letters (2022), 24(2), 564-569.

31-116-CAS-23236769 Steps: **1**

1.1 **Reagents:** Sodium trifluoromethanesulfonate, Silver fluoride, Water-d_2
Catalysts: (α*S*)-1,3-Dioxo-α-(phenylmethyl)-1*H*-benz[*de*] isoquinoline-2(3*H*)-acetic acid, Bis(η^2-ethene)[(8a,9,10,11,11a-η)-(2a*S*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6] cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-8a(12*H*)-yl]rhodium
Solvents: Methanol-d_4; 6 h, 80 °C

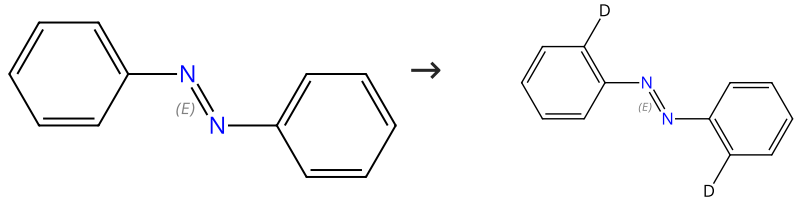
Experimental Protocols

Enantioselective Synthesis of Azoniahelicenes by Rh-Catalyzed C-H Annulation with Alkynes

By: Wang, Qiang; et al

Journal of the American Chemical Society (2021), 143(1), 114-120.

Scheme 366 (1 Reaction) Steps: **1**



Double bond geometry shown

Double bond geometry shown

Suppliers (19)

31-116-CAS-3562989 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 15 h, 110 °C

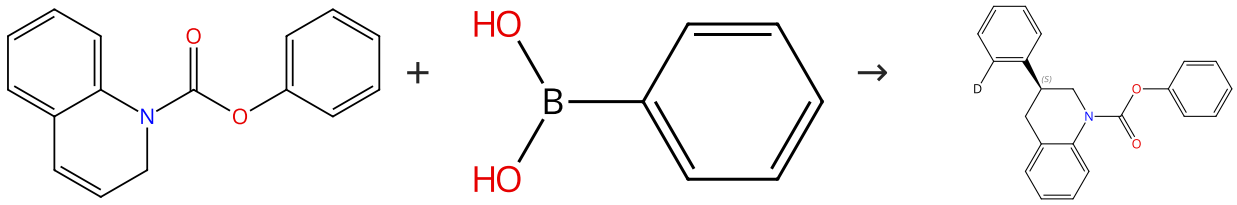
Experimental Protocols

A Unique Alkylation of Azobenzenes with Allyl Acetates by Rh^{II}/Rh^{I}-Catalyzed C-H Functionalization

By: Deng, Hong; et al

Organic Letters (2015), 17(10), 2450-2453.

Scheme 367 (1 Reaction) Steps: **1**



Supplier (1)

Suppliers (143)

Absolute stereochemistry shown

31-614-CAS-36974030 Steps: **1**

1.1 **Reagents:** Water-d_2, Cesium hydroxide
Catalysts: Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydi rhodium, 1,1'-[(4*S*)-[4,4'-Bi-1,3-benzodioxole]-5,5'-diyl]bis[1,1-diphenylphosphine]
Solvents: Toluene, Tetrahydropyran; 10 min, 70 °C

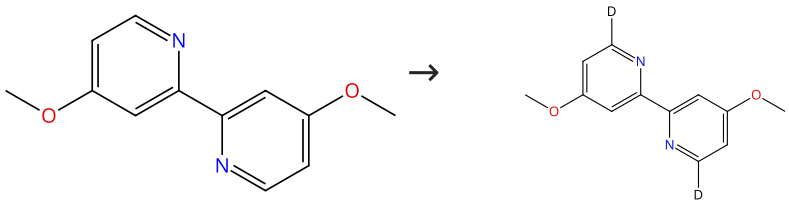
1.2 20 h, 70 °C

Catalytic Enantioselective Synthesis of 3-Piperidines from Arylboronic Acids and Pyridine

By: Mishra, Sourabh; et al

Journal of the American Chemical Society (2023), 145(26), 14221-14226.

Scheme 368 (1 Reaction) Steps: **1**



Suppliers (77)

31-116-CAS-19074744 Steps: **1**

1.1 **Reagents:** 1-Iodonaphthalene, *N*,*N*,*N*',*N*'-Tetramethylethylenediamine, Water-d_2
Catalysts: Palladium chloride, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium
Solvents: Dimethylformamide; 24 h, 25 bar, 85 °C

Experimental Protocols

Palladium/Rhodium Cooperative Catalysis for the Production of Aryl Aldehydes and Their Deuterated Analogues Using the Water-Gas Shift Reaction

By: Ibrahim, Malek Y. S.; et al

Angewandte Chemie, International Edition (2018), 57(32), 10362-10367.

Scheme 369 (1 Reaction) Steps: **1**

Suppliers (91)

31-116-CAS-18573752 Steps: **1**

1.1 **Reagents:** Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,4-Dioxane; 16 h, 110 °C

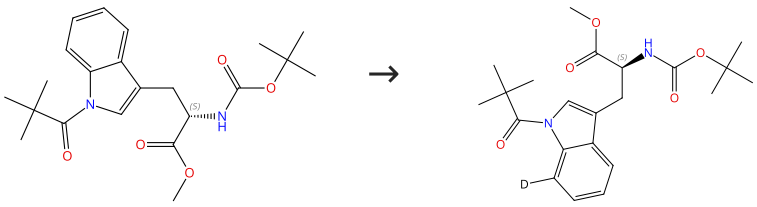
Experimental Protocols

Mechanistic DFT Study on Rhodium(III)-Catalyzed Double C-H Activation for Oxidative Annulations of 2-Substituted Imidazoles and Alkynes

By: Xie, Peipei; et al

Asian Journal of Organic Chemistry (2018), 7(3), 586-591.

Scheme 370 (1 Reaction) Steps: **1**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-39150531 Steps: **1**

1.1 **Reagents:** Water-d_2, Silver oxide (Ag_2O)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Dichloromethane; 18 h, 80 °C; 80 °C → rt

1.2 **Reagents:** Water

Experimental Protocols

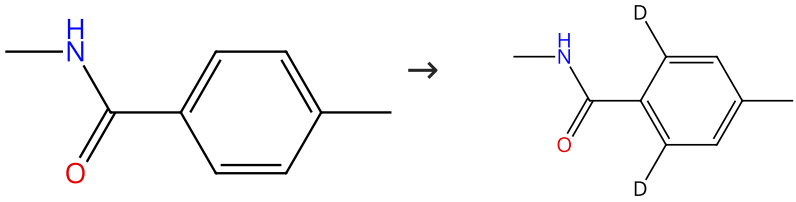
Rhodium-Catalyzed Regioselective C7$_{Ar}$-Functionalization of Tryptophan with Quinones and its Late Stage Peptide Exemplification

By: Tank, Disha Harsukhbhai; et al

Asian Journal of Organic Chemistry (2023), 12(12), e202300503.

Scheme 371 (1 Reaction)

Steps: **1**



Suppliers (45)

31-116-CAS-23350514

Steps: **1**

1.1 **Reagents:** Copper diacetate monohydrate, Water-d_2, Adamantanecarboxylic acid
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 3 h, 60 °C

Experimental Protocols

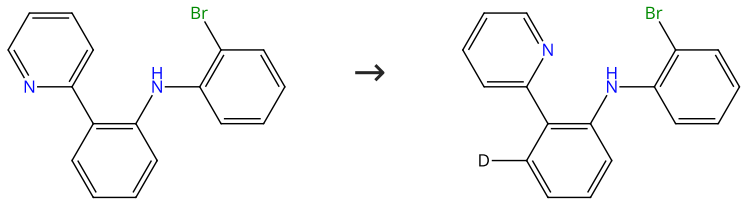
Dual Role of the Rhodium(III) Catalyst in C-H Activation: [4 + 3] Annulation of Amide with Allylic Alcohols to 7-Membered Lactams

By: Sherikar, Mahadev Sharanappa; et al

Journal of Organic Chemistry (2021), 86(6), 4625-4637.

Scheme 372 (1 Reaction)

Steps: **1**



31-116-CAS-15262777

Steps: **1**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Sodium tetrakis[3,5-bis(trifluoromethyl)phenyl] borate
Solvents: Water-d_2; 12 h, 110 °C

Rhodium-Catalyzed Selective Mono- and Diamin ation of Arenes with Single Directing Site "On Water"

By: Ali, Ashif Md; et al

Organic Letters (2016), 18(6), 1386-1389.

Scheme 373 (1 Reaction)

Steps: **1**

31-116-CAS-17430231

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: Ethanol-d_6; 12 h, 120 °C

Experimental Protocols

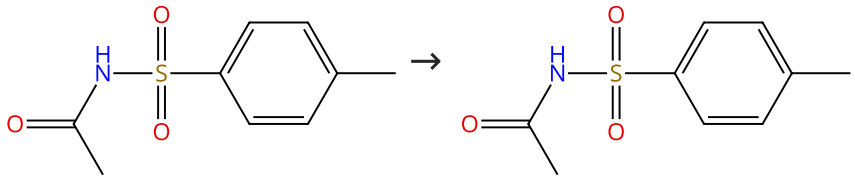
Divergent Access to 1-Naphthols and Isocou marins via Rh(III)-Catalyzed C-H Activation Assisted by Phosph onium Ylide

By: Li, Yunyun; et al

Organic Letters (2017), 19(13), 3410-3413.

Scheme 374 (1 Reaction)

Steps: **1**



Suppliers (66)

31-614-CAS-26309800

Steps: **1**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene-d_8; 24 h, 100 °C

Experimental Protocols

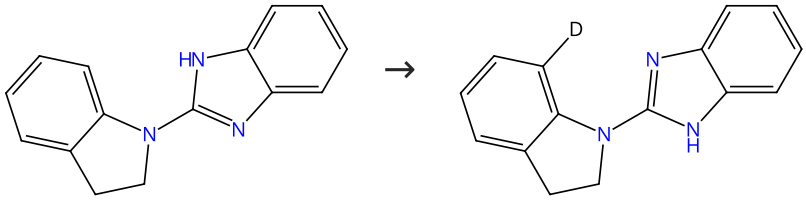
Regioselective Ortho Olefination of Aryl Sulfonamide via Rhodium-Catalyzed Direct C-H Bond Activation

By: Xie, Weijia; et al

Journal of Organic Chemistry (2014), 79(17), 8278-8287.

Scheme 375 (1 Reaction)

Steps: **1**



Suppliers (2)

31-614-CAS-39740516

Steps: **1**

1.1 **Reagents:** Propanoic acid, 2,2-dimethyl-, sodium salt (1:1), Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 80 °C

Experimental Protocols

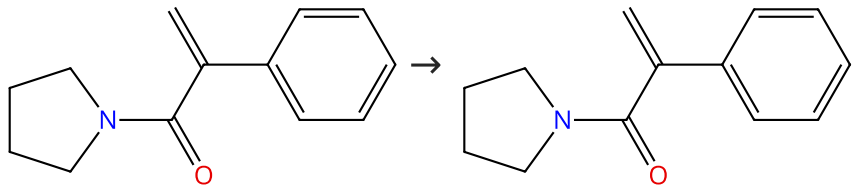
Rhodium(III)-Catalyzed C7-Spiroannulation of Indolines with Maleimides: Facile Access to Aza-Spiromulticycles

By: Zhao, Jinfang; et al

Advanced Synthesis & Catalysis (2024), 366(8), 1840-1846.

Scheme 376 (1 Reaction)

Steps: **1**



Supplier (1)

31-614-CAS-24479440

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, 1, 1,1-trifluoromethanesulfonate (1:1), 1,1'-(1*S*)-[1,1'-Binapht halene]-2,2'-diylbis[1,1-bis(4-methylphenyl)phosphine
Solvents: 1,4-Dioxane; 8 h, 100 °C

Experimental Protocols

Enantioselective Cross-Coupling of Electron-Deficient Alkenes via Ir-Catalyzed Vinylic sp^2 C-H Alkylation

By: Shibata, Takanori; et al

Organic Letters (2021), 23(21), 8158-8162.

Scheme 377 (1 Reaction)

Steps: **1**

31-614-CAS-28901366

Steps: **1**

1.1 **Reagents:** Sodium acetate, Silver triflate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

Experimental Protocols

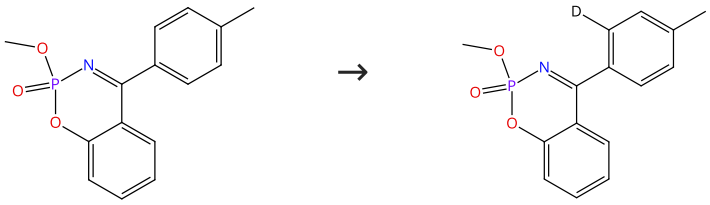
Rhodium(III)-Catalyzed Nonaromatic sp^2 C-H Activation/Annulation Using NHC as a Directing and Function alizable Group

By: Thenarukandiyil, Ranjeesh; et al

Organometallics (2016), 35(17), 3007-3013.

Scheme 378 (1 Reaction)

Steps: **1**



31-116-CAS-16282892

Steps: **1**

1.1 **Reagents:** Cupric acetate
Catalysts: Silver acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 3 h, 120 °C

1.2 **Reagents:** Water-d_2; 3 h

Experimental Protocols

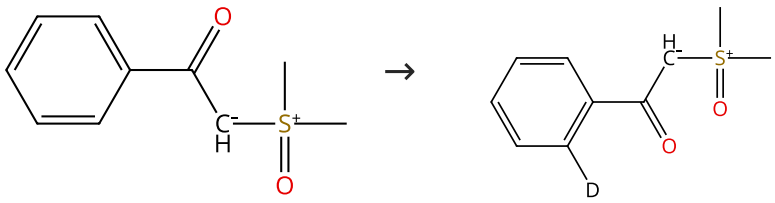
Rhodium(iii)-catalyzed ortho-alkenylation using a cyclic N-phosphoryl ketimine as the directing group

By: Zhu, Yu-Qin; et al

Organic & Biomolecular Chemistry (2016), 14(40), 9472-9475.

Scheme 379 (1 Reaction)

Steps: **1**



Suppliers (38)

31-116-CAS-22618420

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Zinc acetate, Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 12 h, 80 °C

Experimental Protocols

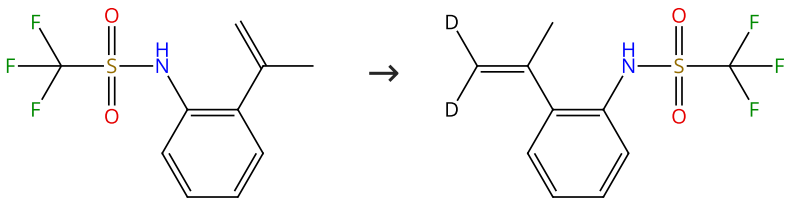
Regioselective Synthesis of α-Phosphinoylnaphthols through Rhodium-Catalyzed Annulation of 1-Alkynylphosphine Oxides with Sulfoxonium Ylides

By: Xie, Wucheng; et al

Synlett (2020), 31(15), 1482-1486.

Scheme 380 (1 Reaction)

Steps: **1**



31-614-CAS-31386078

Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 24 h, rt

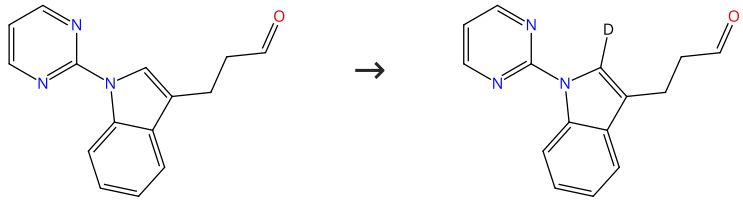
Rh(III)-Catalyzed [5 + 1] annulation of 2- alkenylanilides and 2-alkenylphenols with allenyl acetates

By: Singh, Anurag; et al

Chemical Science (2022), 13(7), 2043-2049.

Scheme 381 (1 Reaction)

Steps: **1**



31-116-CAS-17979098

Steps: **1**

1.1 **Reagents:** Cesium acetate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 6 h, 60 °C

Experimental Protocols

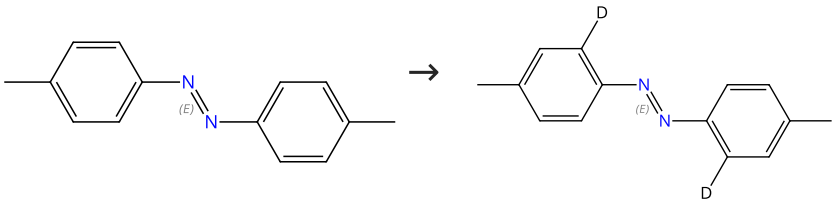
Rhodium-Catalyzed C-H Functionalization of Indoles with Diazo Compounds: Synthesis of Structurally Diverse 2,3-Fused Indoles

By: Gao, Mengying; et al

Advanced Synthesis & Catalysis (2018), 360(1), 100-105.

Scheme 382 (1 Reaction)

Steps: **1**



Double bond geometry shown

Double bond geometry shown

Suppliers (21)

31-116-CAS-19973292

Steps: **1**

1.1 **Reagents:** Acetic acid, Zinc triflate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 24 h, 140 °C

1.2 **Reagents:** Water-d_2

Experimental Protocols

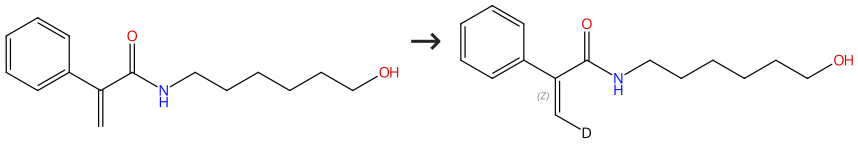
Rhodium-Catalyzed Reaction of Azobenzenes and Nitroso arenes toward Phenazines

By: Xiao, Yan; et al

Organic Letters (2019), 21(8), 2565-2568.

Scheme 383 (1 Reaction)

Steps: **1**



Double bond geometry shown

31-116-CAS-18396276

Steps: **1**

1.1 **Reagents:** Copper diacetate dihydrate, Water-d_2, Sodium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetone; 2 h, 100 °C

Experimental Protocols

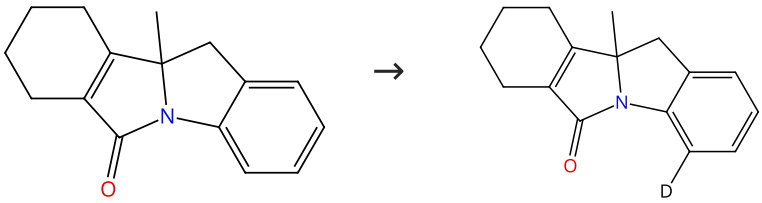
Macrolide Synthesis trough Intramolecular Oxidative Cross-Coupling of Alkenes

By: Jiang, Bing; et al

Angewandte Chemie, International Edition (2018), 57(2), 555-559.

Scheme 384 (1 Reaction)

Steps: **1**



31-614-CAS-34801089

Steps: **1**

1.1 **Reagents:** Sodium acetate trihydrate, Oxygen, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 10 h, 100 °C

Experimental Protocols

Rhodium-Catalyzed Asymmetric (3 + 2 + 2) Annulation via N-H/C-H Dual Activation and Internal Alkyne Insertion toward N-Fused 5/7 Bicycles

By: Yang, Chao; et al

ACS Catalysis (2022), 12(22), 14194-14208.

CAS SciFinder

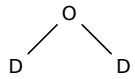
Task History

Initiating Search

February 21, 2025, 4:27 PM

Substances:

Filtered By:



Structure Match: **As Drawn**

Search Tasks

Task	Search Type	View
Returned Substance Results + Filters (1,728)	Substances	View Results
Exported: Retrieved Related Reaction Results + Filters (1,107)	Reactions	View Results

Filtered By:

Substance Role: **Reagent, Solvent**

Catalyst: [(1,2,5,6-η)-1,5-Cyclooctadiene]hydroxyrhodium, (1,2-Bis((*S*,*S*)-2,5-diethyl-1-phospholidinyl)benzene)(1,5-cyclooctadiene)rhodium(1+) trifluoromethanesulfonate, [(2,3,5,6-η)-Bicyclo[2.2.1]hepta-2,5-diene]bis[1,1',1''-(phosphinidyne-κ*P*)tris[methanol]]rhodium(1+), [(3a,4,5,6,6a-η)-(13c*R*)-2,8-Bis[[(1,1-dimethylethyl)diphenylsilyl]oxy]-3,7-dihydro-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinaphthalen-3a-yl]bis(η^2-ethene)rhodium, Acetic acid, rhodium(2+) salt, (Acetato-κ*O*)(acetato-κ*O*,κ*O*')[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium, Bis[1,1'-(1*S*)-[1,1'-binaphthalene]-2,2'-diylbis[1,1-diphenylphosphine-κ*P*]]di-μ-hydroxydirhodium, Bis[(1,2,3,4,5-η)-1,4-bis(1,1-dimethylethyl)-2-(2,2-dimethylpropyl)-2,4-cyclopentadien-1-yl]di-μ-iododiiododirhodium, Bis[(1,2,5,6-η)-1,5-cyclooctadiene]di-μ-hydroxydirhodium, Bis[2,6-bis(1-methylethyl)phenyl (2,3,5,6-η)-(1*R*,4*R*,7*R*)-5-methyl-7-(1-methylethyl)bicyclo[2.2.2]octa-2,5-diene-2-carboxylate]di-μ-chlorodirhodium, Bis(η^2-ethene)(2,4-pentanedionato-κ*O*,κ*O*')rhodium, Bis(η^2-ethene) [(8a,9,10,11,11a-η)-(2a*R*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6]cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-

8a(12*H*)-yl]rhodium, Bis(η^2-ethene)[(8a,9,10,11,11a-η)-(2a*S*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6]cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-8a(12*H*)-yl]rhodium, Bis(acetato-κ*O*)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium, Bis(acetato-κ*O*)aqua[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium, Bis[μ-(acetato-κ*O*:κ*O'*)]bis(acetato-κ*O*)bis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Carbonylchlorobis(triphenylphosphine)rhodium, Carbonylhydridotris(triphenylphosphine)rhodium, Chloro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl][2-[1-[(2*E*)-2-(1-phenylethylidene)hydrazinylidene-κ*N*^{1}]ethyl]phenyl-κ*C*]rhodium, Cobalt, compd. with rhodium (2:2), Dicarbonylrhodium acetylacetonate, Dichloro[(1,2,5,6-η)-1,5-cyclooctadiene]rhodate(1-), Di-μ-chlorobis[1,1''-[(2,3,9,10-η)-(1*R*,4*R*)-5,6,7,8-tetrafluoro-1,4-dihydro-1,4-ethenonaphthalene-2,9-diyl]bis[ferrocene]]dirhodium, Di-μ-chlorobis[1,1''-[(2,3,9,10-η)-(1*S*,4*S*)-5,6,7,8-tetrafluoro-1,4-dihydro-1,4-ethenonaphthalene-2,9-diyl]bis[ferrocene]]dirhodium, Di-μ-chlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium, Di-μ-chlorobis[(1,2,5,6-η)-1,3,5,7-cyclooctatetraene]dirhodium, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium, Di-μ-chlorobis[(2,3,9,10-η)-(1*R*,4*R*)-5,6,7,8-tetrafluoro-1,4-dihydro-2,9-diphenyl-1,4-ethenonaphthalene]dirhodium, Di-μ-chlorodichlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodate(2-), Di-μ-chlorodichlorobis[(1,2,3,4,5-η)-1,2,3,4-tetramethyl-5-(1-methylethyl)-2,4-cyclopentadien-1-yl]dirhodium, Di-μ-chlorodichlorobis[(3a,4,5,6,6a-η)-(3a*R*,13b*R*)-3,7-dihydro-2,8-bis(methylenemethyl)-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a'*]dinaphthalen-3a-yl]dirhodium, Di-μ-chlorodichlorobis(η^5-2,4-cyclopentadien-1-yl)dirhodium, Di-μ-chlorotetrakis[(1,2-η)-cyclooctene]dirhodium, Di-μ-chlorotetrakis(η^2-ethene)dirhodium, Dirhodium tetraacetate, Rhodamine 6G, Rhodamine B, Rhodate(3-), chlorotris[3-(diphenylphosphino-κ*P*)benzenesulfonato]-, sodium (1:3), (*SP*-4-2)-, Rhodate(9-), chlorotris[[3,3',3''-(phosphinidyne-κ*P*)tris[benzenesulfonato]](3-)]-, nonasodium, nonahydrate, (*SP*-4-2)-, Rhodate(9-), chlorotris[[3,3',3''-(phosphinidyne-κ*P*)tris[benzenesulfonato]](3-)]-, sodium (1:9), (*SP*-4-2)-, Rhodium, Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][1,1'-(1,2-ethanediyl)bis(1,1-dimethylphosphine-κ*P*)]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][1,3-dihydro-1-[(1-phenyl-1*H*-1,2,3-triazol-4-yl-κ*N*^{3})methyl]-3-(2,4,6-trimethylphenyl)-2*H*-imidazol-2-ylidene-κ*C*]-, tetraphenylborate(1-) (1:1), Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][(1*R*,1'*R*)-1,1'-(1,2-ethanediyl)bis[1-(2-methoxyphenyl)phenylphosphine-κ*P*]]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-

κ*N*^{1},κ*N*$^{1'}$]chloro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, chloride (1:1), Rhodium(1+), aqua-d_2-bis(trimethylphosphine)-, sodium hexakis[μ-[[*N*,*N*'-1,5-naphthalenediylbis[2,3-di(hydroxy-κ*O*)benzamidato]](4-)]]tetragallate(12-) (1:11:1), Rhodium(1+), aqua-d_2-bis(trimethylphosphine)-, tetrafluoroborate(1-) (1:1), Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, 1,1,1-trifluoromethanesulfonate (1:1), Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, salt with 1,1,1-trifluoro-*N*-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1), Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), bis[(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), bis(acetonitrile)[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), bis(acetonitrile)bis[2-[5-(1,1-dimethylethyl)-2-benzothiazolyl-κ*N*^{3}]phenyl-κ*C*]-, (*OC*-6-13)-, hexafluorophosphate(1-) (1:1), Rhodium(1+), bis(acetonitrile)bis[2-[5-(1,1-dimethylethyl)-2-benzoxazolyl-κ*N*^{3}]-3',5'-bis(trifluoromethyl)[1,1'-biphenyl]-3-yl-κ*C*]-, (*OC*-6-13-Λ)-, hexafluorophosphate(1-) (1:1), Rhodium(1+), bis(acetonitrile)bis[2-[6-(1,1-dimethylethyl)-2*H*-indazol-2-yl-κ*N*^{1}]phenyl-κ*C*]-, (*OC*-6-13-Λ)-, hexafluorophosphate(1-) (1:1), Rhodium(1+), tris[μ-[4-(1,1-dimethylethyl)benzenemethanethioato]]bis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]di-, chloride (1:1), Rhodium(1+), tris[μ-(benzeneethanethiolato)]bis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]di-, chloride (1:1), Rhodium(1+), tris[μ-(benzenemethanethiolato)]bis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]di-, chloride (1:1), Rhodium(2+), aqua([2,2'-bipyridine]-4,4'-diol-κ*N*^{1},κ*N*$^{1'}$)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, sulfate (1:1), Rhodium(2+), diaquabis[4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-κ*N*^{1},κ*N*$^{1'}$]bis[μ-(4-methylbenzenesulfonato-κ*O*:κ*O*')]bis(2-methyl-2-phenylpropyl)di-, stereoisomer, tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-) (1:2), Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2), Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, tetrafluoroborate(1-) (1:2), Rhodium, [(3a,4,5,6,6a-η)-(13b*R*)-2,8-bis[3,5-bis(1,1-dimethylethyl)phenyl]-3,7-dihydro-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinaphthalen-3a-yl][(1,2,5,6-η)-1,5-cyclooctadiene]-, stereoisomer, Rhodium, bis[μ-[α,α,α',α'-tetramethyl-1,3-benzenedipropanoato(2-)-κ*O*^{1},κ*O*'^{3}:κ*O*^{3},κ*O*'^{1}]]di-, (*Rh*-*Rh*), Rhodium, dicarbonylchloro[*N*-[4-(diphenylphosphino-κ*P*)benzoyl]-L-leucyl-L-lysyl-L-lysyl-L-leucyl-L-leucyl-L-lysyl-L-leucyl-L-leucyl-L-lysyl-L-lysyl-L-leucyl-L-leucyl-L-lysyl-L-leucinamide]-, (*SP*-4-3)-, Rhodium, di-μ-chlorobis[(2,3,5,6-η)-(1*S*,4*S*)-2,5-diphenylbicyclo[2.2.2]octa-2,5-diene]di-, Rhodium, di-μ-chlorodichlorobis[(3a,4,5,6,6a-η)-(13b*R*)-2,8-

diphenyl-3a*H*-cyclopenta[*b*]dinaphtho[2,1-*e*:1',2'-*g*][1,4]dioxocin-3a-yl]di-, Rhodium, di-μ-iododiiodobis[(3a,4,5,6,6a-η)-(13b*R*)-4,5,6-trimethyl-3a*H*-cyclopenta[*b*]dinaphtho[2,1-*e*:1',2'-*g*][1,4]dioxocin-3a-yl]di-, Rhodium, tetracarbonyldi-μ-chlorodi-, Rhodium, tetrakis[(1,2,5,6-η)-1,5-cyclooctadiene]tetra-μ-hydrotetra-, *tetrahedro*, Rhodium, tetrakis[μ-[2-ethyl-3-methyl-2-(1-methylethyl)butanoato-κ*O*:κ*O*']]di-, (*Rh*-*Rh*), Rhodium, tetrakis[μ-(acetato-κ*O*:κ*O*')][1,3-bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]di-, (*Rh*-*Rh*), Rhodium, tetrakis[μ-(acetato-κ*O*:κ*O*')]bis[tris(1,1-dimethylethyl)phosphine]di-, (*Rh*-*Rh*), Rhodium, tetrakis[μ-(α,α-diphenylbenzeneacetato-κ*O*:κ*O*')]di-, (*Rh*-*Rh*), Rhodium, tetrakis[μ-(octanoato-κ*O*:κ*O*')]di-, (*Rh*-*Rh*), Rhodium, tri-μ-carbonylnonacarbonyltetra-, *tetrahedro*, Rhodium trichloride, Rhodium trichloride hydrate, Rhodium trichloride trihydrate, Ruthenium(3+), bis[4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-κN^{1},κ$N^{1'}$][chloro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium][μ-(dipyrido[3,2-5,6:3',2'-5,6]quinoxalino[2,3-*f*][1,10]phenanthroline-κN^{4},κN^{5}:κN^{13},κN^{14})]-, chloride hexafluorophosphate(1-) (1:1:2), (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, (*SP*-5-31)-Methyl[5,10,15,20-tetrakis(4-methylphenyl)-21*H*,23*H*-porphinato(2-)-κN^{21},κN^{22},κN^{23},κN^{24}]rhodium, (*SP*-5-52)-[1,3-Bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]chlorohydro(8-quinolinolato-κN^{1},κO^{8})rhodium, stereoisomer of Bis[(1,2,3,4,5-η)-1,3-bis(1,1-dimethylethyl)-2,4-cyclopentadien-1-yl]di-μ-chlorodichlorodirhodium, Stereoisomer of bis[(3a,4,5,6,6a-η)-(13b*R*)-3,7-dihydro-2,8-bis[[tris(1-methylethyl)silyl]oxy]-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinaphthalen-3a-yl]di-μ-iododiiododirhodium, Stereoisomer of bis[μ-(benzeneethanethiolato)]dichlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium, Stereoisomer of bis[μ-(benzenemethanethiolato)]dichlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium, Tetrakis[(1,2-η)-cyclooctene]di-μ-hydroxydirhodium, Tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium(2+)

Document Type:	Journal
Language:	English

CAS SciFinder

Reactions (191)

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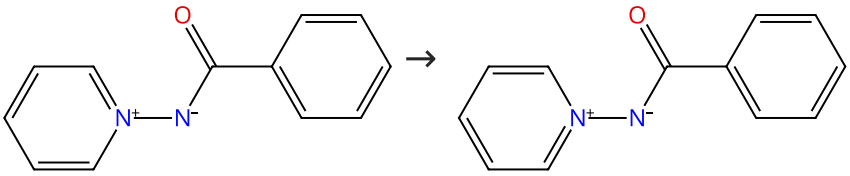
Scheme 1 (1 Reaction) Steps: **1**



Suppliers (5)

31-614-CAS-28308649 Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 80 °C

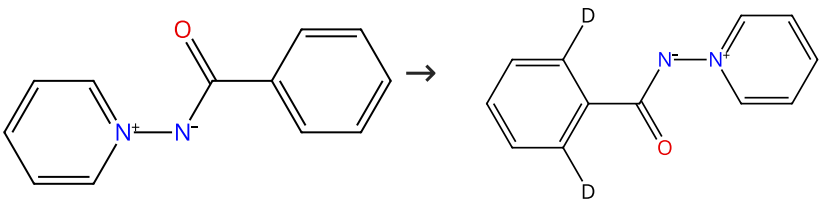
Experimental Protocols

Rh(III)-Catalyzed Diverse C-H Functionalization of Iminopyridinium Ylides

By: Dong, Zhenzhen; et al

Chinese Journal of Chemistry (2021), 39(9), 2489-2494.

Scheme 2 (1 Reaction) Steps: **1**



Suppliers (5)

31-614-CAS-31169047 Steps: **1**

1.1 **Reagents:** Monopotassium phosphate, Water-d_2, 3-Phenyl-1,4,2-dioxazol-5-one
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 2,2,2-Trifluoroethanol; 6 h, rt

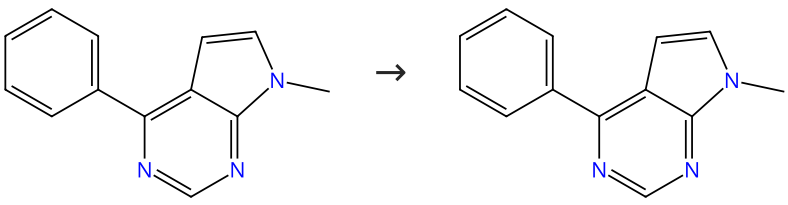
Experimental Protocols

Rh(III)-Catalyzed C-H Diamidation and Diamidation/Intramolecular Cyclization of N-Iminopyridinium Ylides with Dioxazolones

By: Li, Xiang; et al

Journal of Organic Chemistry (2022), 87(5), 3468-3481.

Scheme 3 (1 Reaction) Steps: **1**



Suppliers (3)

31-614-CAS-33603623 Steps: **1**

1.1 **Reagents:** Water-d_2, Potassium hexafluorophosphate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 3 h, 40 °C

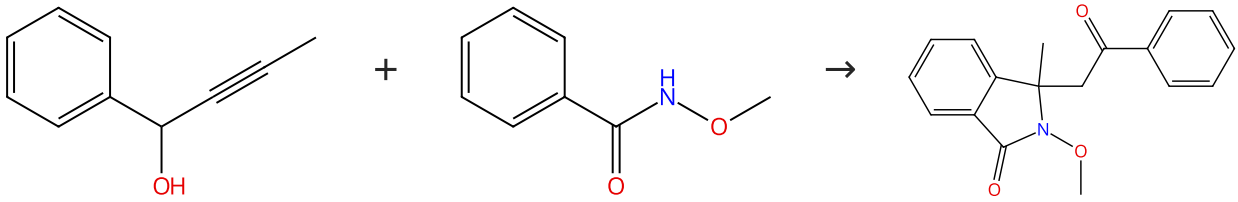
Experimental Protocols

Hydrogen evolution-enabled rhodaelectro-catalyzed [4+2] annulations of purines and 7-deazapurines with alkynes

By: Xu, Chao; et al

Chemical Communications (Cambridge, United Kingdom) (2022), 58(68), 9508-9511.

Scheme 4 (1 Reaction) Steps: **1**



Suppliers (11) Suppliers (49)

31-614-CAS-25390067 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Acetonitrile; 24 h, 30 °C

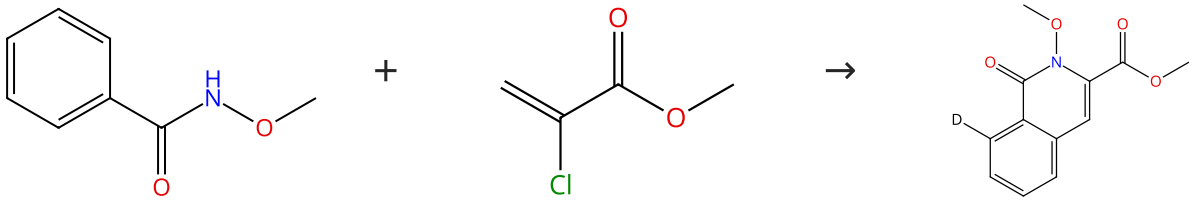
Experimental Protocols

Rhodium(III)-catalyzed selective access to isoindolinones via formal [4 + 1] annulation of arylamides and propargyl alcohols

By: Xu, You-wei; et al

Chinese Journal of Catalysis (2017), 38(8), 1390-1398.

Scheme 5 (1 Reaction) Steps: **1**



Suppliers (49) Suppliers (27)

31-614-CAS-33764003 Steps: **1**

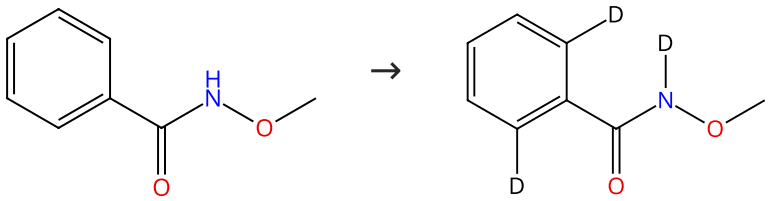
1.1 **Reagents:** Potassium carbonate, Water-d_2, Silver hexafluoro antimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile; 12 h, 80 °C

Synthesis of Isoquinolone, 1,2-Benzothiazine, and Naphtho[1',2':4,5]imidazo[1,2-a]pyridine Derivatives via Rhodium(III)-Catalyzed (4 + 2) Annulation

By: Zhu, Yueyue; et al

Journal of Organic Chemistry (2022), 87(17), 11722-11734.

Scheme 6 (1 Reaction) Steps: **1**



Suppliers (49)

31-614-CAS-33215392 Steps: 1

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 12 h, 100 °C

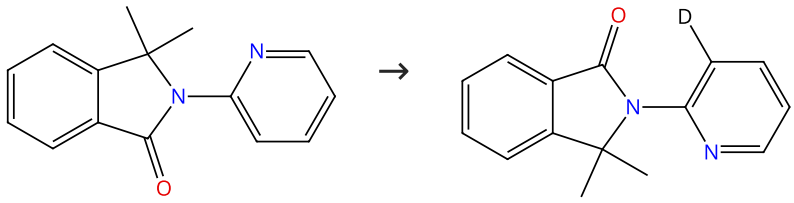
Experimental Protocols

Synthesis of Diverse γ-Lactams via Rh-Catalyzed C(sp^2)-H Addition to Aliphatic Nitriles

By: Li, Wenwei; et al

Organic Letters (2022), 24(28), 5090-5094.

Scheme 7 (1 Reaction) Steps: 1



31-116-CAS-23034890 Steps: 1

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 24 h, 100 °C

Experimental Protocols

Efficient Access to Isoquinolines via Rhodium-Catalyzed Oxidative Annulation of Pyridyl C-H Bonds Directed by Carbonyl with Internal Alkynes

By: Shi, Lijun; et al

Synthesis (2021), 53(3), 538-546.

Scheme 8 (1 Reaction) Steps: 1

31-116-CAS-22515953 Steps: 1

1.1 **Reagents:** Water-d_2
Catalysts: Tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium(2+)
Solvents: 1,2-Dichloroethane, Tetrahydrofuran; 48 h, 85 °C

Direct Carbon-Carbon σ Bond Amination of Unstrained Arylalkylketones

By: Hu, Xinwei; et al

ACS Catalysis (2020), 10(15), 8402-8408.

Scheme 9 (1 Reaction) Steps: 1

31-116-CAS-22515954 Steps: 1

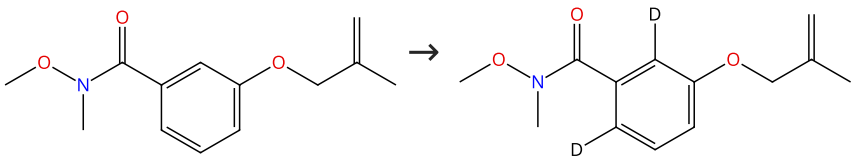
1.1 **Reagents:** Water-d_2
Catalysts: Tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium(2+)
Solvents: 1,2-Dichloroethane, Tetrahydrofuran; 48 h, 85 °C

Direct Carbon-Carbon σ Bond Amination of Unstrained Arylalkylketones

By: Hu, Xinwei; et al

ACS Catalysis (2020), 10(15), 8402-8408.

Scheme 10 (1 Reaction) Steps: **1**



31-116-CAS-22926167 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 30 min, 70 °C

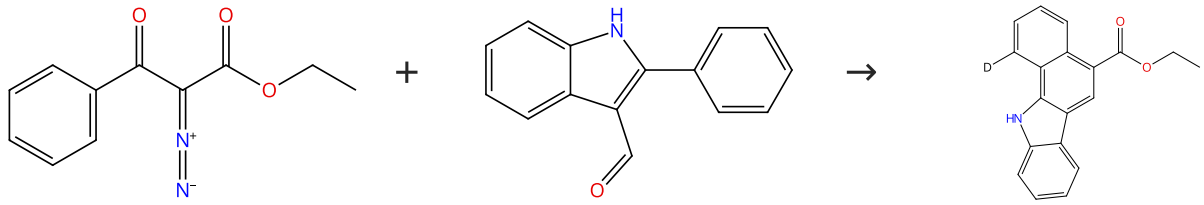
Experimental Protocols

Rh(III)-catalyzed tandem annulative redox-neutral arylation/ amidation of aromatic tethered alkenes

By: Chen, Chao; et al

Chemical Science (2020), 11(44), 12124-12129.

Scheme 11 (1 Reaction) Steps: **1**



Suppliers (10) Suppliers (73)

31-614-CAS-31532897 Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 80 °C; 80 °C → rt

1.2 **Reagents:** Water

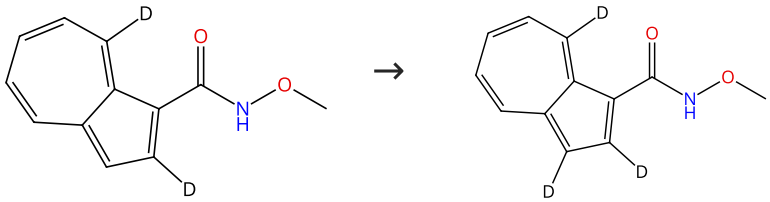
Experimental Protocols

Rh(III)-Catalyzed Reaction of 2-Aryl-3-acyl-1H-indoles with α-Diazo Carbonyl Compounds: Synthesis of 5- Carbonyl Substituted Benzo[a]carbazoles via [5+1] Annulation

By: Li, Bin; et al

Asian Journal of Organic Chemistry (2022), 11(3), e202100710.

Scheme 12 (1 Reaction) Steps: **1**



31-116-CAS-23028482 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium(2+)
Solvents: Toluene; 6 h, 100 °C

Experimental Protocols

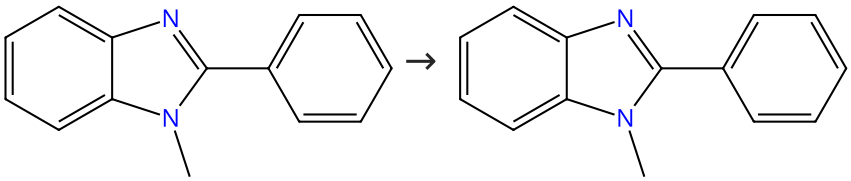
Regioselective and Chemodivergent Synthesis of Azulenol actones and Azulenolactams from Rhodium(III)-Catalyzed Reactions of Azulenecarboxamides with Sulfoxonium Ylides

By: Lee, Seung Cheol; et al

Advanced Synthesis & Catalysis (2021), 363(2), 512-524.

Scheme 13 (1 Reaction)

Steps: **1**



Suppliers (47)

31-614-CAS-29246475

Steps: **1**

1.1 **Reagents:** Acetic acid, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 12 h, 100 °C

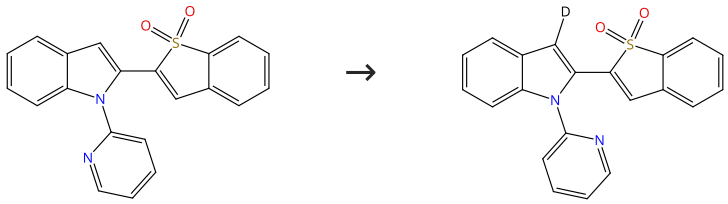
Divergent synthesis of α-aryl ketones/esters via rhodium-catalyzed selective deesterification and decarbonylation of diazo compounds

By: Tang, Zhonghe; et al

Organic Chemistry Frontiers (2018), 5(17), 2583-2587.

Scheme 14 (1 Reaction)

Steps: **1**



31-116-CAS-23632162

Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2-Methyl-2-butanol; 12 h, 130 °C

Experimental Protocols

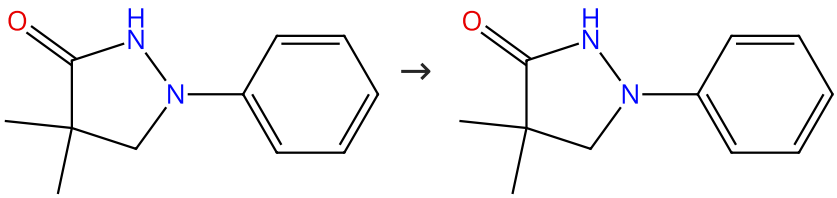
Rh(III)-Catalyzed Oxidative C-2 Coupling of N-Pyridinylindoles with Benzo[b]thiophene 1,1-Dioxides via C-H Bond Activation

By: Kumaran, Subramani; et al

Journal of Organic Chemistry (2021), 86(12), 7987-7999.

Scheme 15 (1 Reaction)

Steps: **1**



Suppliers (25)

31-614-CAS-28955620

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 40 °C

Experimental Protocols

Rh(III)-Catalyzed synthesis of pyrazolo[1,2-a]cinnolines from pyrazolidinones and diazo compounds

By: Li, Panpan; et al

Organic Chemistry Frontiers (2018), 5(11), 1777-1781.

Scheme 16 (1 Reaction)

Steps: **1**

31-614-CAS-32733608

Steps: **1**

1.1 **Reagents:** Silver carbonate
Catalysts: Lithium acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane, Water-d_2; 1 h, 85 °C

Experimental Protocols

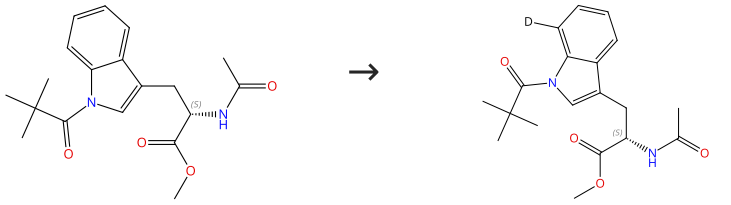
Rh(III)-Catalyzed One-Step Synthesis of ortho-Alkynylated Perylene Imide Dyes: Optical and Electrochemical Properties of New Derivatives

By: Chand, Tapasi; et al

Chemistry - A European Journal (2022), 28(43), e202200723.

Scheme 17 (1 Reaction)

Steps: **1**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-39737768

Steps: **1**

1.1 **Reagents:** Trisodium phosphate, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 120 °C

Macrocyclization of maleimide-decorated peptides via late-stage Rh(III)-catalyzed Trp(C7) alkenylation

By: Zhang, Yu; et al

Organic Letters (2023), 25(14), 2456-2460.

Scheme 18 (1 Reaction)

Steps: **1**

Suppliers (15)

31-614-CAS-41355116

Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; rt; 4 h, 100 °C

Experimental Protocols

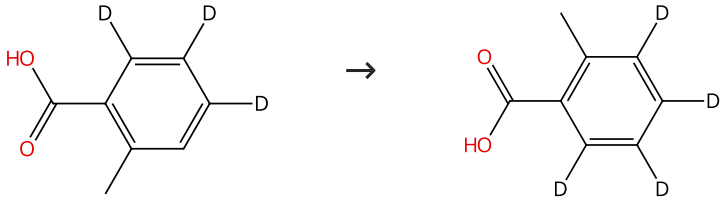
Rh(III)-catalyzed [4 + 1] annulation of 1- arylindazolones with alkynyl cyclobutanols: access to indazolo[1,2-a]indazolones

By: Hu, Jiang; et al

Organic & Biomolecular Chemistry (2024), 22(32), 6500-6505.

Scheme 19 (1 Reaction)

Steps: **1**



31-614-CAS-36223919 Steps: **1**

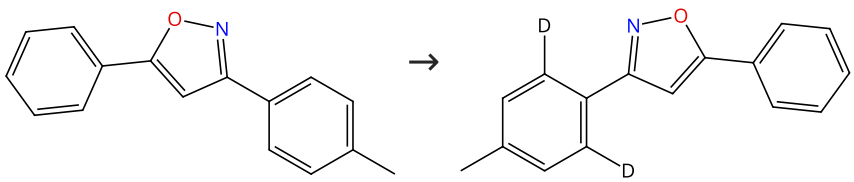
1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 12 h, 140 °C

Rh(III)-catalyzed cascade annulation of 4-diazoisoquinolin-3-ones with benzoic acids to access spiro[isobenzofuran-1,4'-isoquinoline]-3,3'-diones

By: Chen, Junrong; et al

Tetrahedron (2023), 137, 133392.

Scheme 20 (1 Reaction) Steps: **1**



Suppliers (9)

31-116-CAS-19894832 Steps: **1**

1.1 **Reagents:** Acetic acid, Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Tetrahydrofuran; 1 h, 100 °C

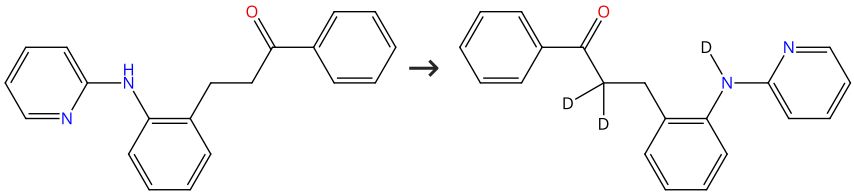
Experimental Protocols

Catalyst Control in Positional-Selective C-H Alkenylation of Isoxazoles and a Ruthenium-Mediated Assembly of Trisubstituted Pyrroles

By: Kumar, Pravin; et al

Organic Letters (2019), 21(7), 2134-2138.

Scheme 21 (1 Reaction) Steps: **1**



31-614-CAS-41686877 Steps: **1**

1.1 **Reagents:** Sodium acetate, Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Methanol; 6 h, 70 °C

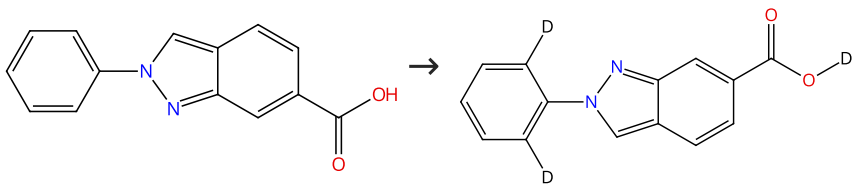
Experimental Protocols

Rh(III)-catalyzed aldehydic and aryl C-H alkylation with cyclopropanols via C-H/C-C bond activation

By: Dash, Om Prakash; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(76), 10576-10579.

Scheme 22 (1 Reaction) Steps: **1**



31-614-CAS-42450400 Steps: **1**

1.1 **Reagents:** Acetic acid-*d*, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 5 min, 80 °C

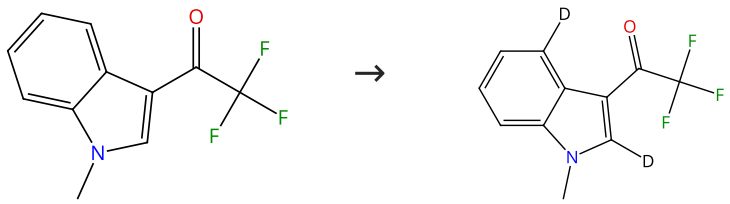
Microwave-Assisted Rhodium (III)-Catalyzed [3+3] Annulation of 2-Benzyl-2H-Indazole-6-carboxylic Acids with Iodonium Ylides: A Regioselective Synthesis of Indazole-Fused Chromenes

By: Chen, Hong-Ren; et al

Advanced Synthesis & Catalysis (2025), 367(1), e202400756.

Scheme 23 (1 Reaction)

Steps: **1**



Suppliers (50)

31-116-CAS-19253086

Steps: **1**

1.1 **Reagents:** Acetic acid, Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 120 °C

Experimental Protocols

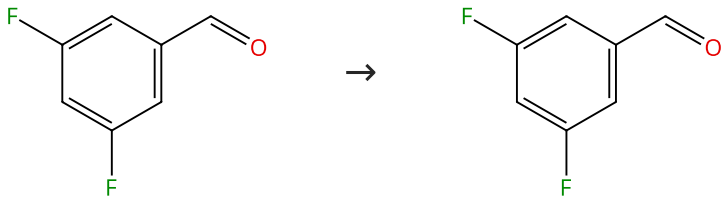
Rhodium(III)-catalyzed C-H activation at the C_4-position of indole: switchable hydroarylation and oxidative Heck-type reactions of maleimides

By: Sherikar, Mahadev Sharanappa; et al

Chemical Communications (Cambridge, United Kingdom) (2018), 54(79), 11200-11203.

Scheme 24 (1 Reaction)

Steps: **1**



Suppliers (95)

31-614-CAS-25569780

Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver tetrafluoroborate, (α*R*)-α-Ethyl-2-fluoro-6-(trifluoromethyl)benzenemethanamine, Di-μ-chlorodic hlorobis[(1,2,3,4,5-η)-1,2,3,4-tetramethyl-5-(1-methylethyl)-2,4-cyclopentadien-1-yl]dirhodium
Solvents: 1,4-Dioxane; 5 min, 30 °C; 24 h, 70 °C

Experimental Protocols

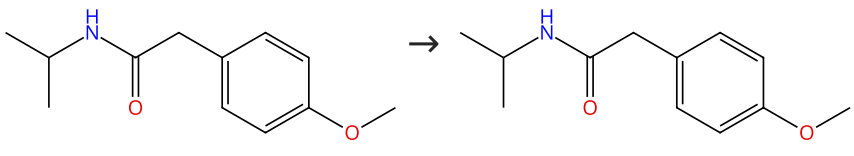
Introducing the Chiral Transient Directing Group Strategy to Rhodium(III)-Catalyzed Asymmetric C-H Activation

By: Li, Guozhu; et al

Chemistry - A European Journal (2019), 25(18), 4688-4694.

Scheme 25 (1 Reaction)

Steps: **1**



Suppliers (8)

31-614-CAS-25176815

Steps: **1**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

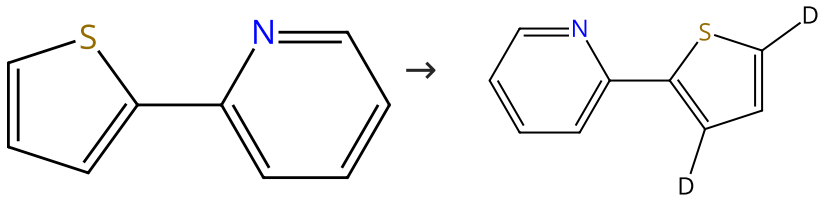
Rh(III)-Catalyzed Distal C-H Alkenylation of Weakly Coordi nating Acetamides Via Desily lation Pathway

By: Ramesh, Vinay Bapu; et al

Advanced Synthesis & Catalysis (2019), 361(16), 3683-3688.

Scheme 26 (1 Reaction)

Steps: **1**



Suppliers (71)

31-614-CAS-42666356

Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Acetonitrile; 4 h, 120 °C

Experimental Protocols

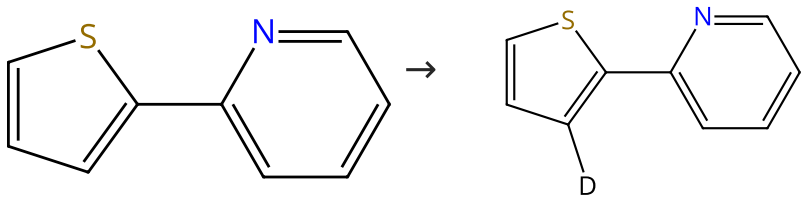
Catalyst-Controlled Regiodivergent C-H Alkynylation of 2-Pyridylthiophenes

By: Gui, Yuting; et al

Advanced Synthesis & Catalysis (2025), 367(3), e202400856.

Scheme 27 (1 Reaction)

Steps: **1**



Suppliers (71)

31-614-CAS-42666352

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Acetonitrile; 4 h, 120 °C

Experimental Protocols

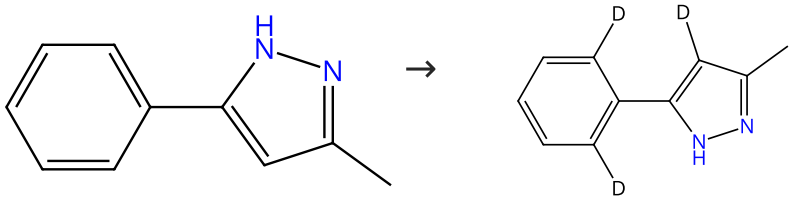
Catalyst-Controlled Regiodivergent C-H Alkynylation of 2-Pyridylthiophenes

By: Gui, Yuting; et al

Advanced Synthesis & Catalysis (2025), 367(3), e202400856.

Scheme 28 (2 Reactions)

Steps: **1**



Suppliers (76)

31-614-CAS-36269879

Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 12 h, rt → 110 °C

Rh(III)- catalyzed allylation-intramolecular hydroamination sequence of 5-arylsubstituted pyrazoles with allyl methyl carbonate: Access to 5,6-dihydropyrazolo[5,1-a]isoquinolines

By: Gu, Jinhui; et al

Tetrahedron Letters (2023), 122, 154495.

31-614-CAS-35273640 Steps: **1**

1.1 **Reagents:** Silver acetate, Methanol-d_4, Disodium phosphate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver; 12 h, rt → 110 °C

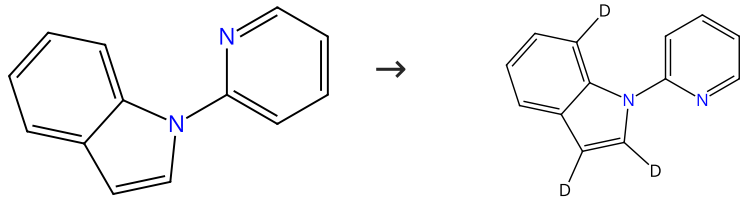
Experimental Protocols

Rh(III)-catalyzed [4 + 1] cycliz ation of aryl substituted pyrazoles with cyclopropanols via C-H activation

By: Chen, Wenxi; et al

Organic & Biomolecular Chemistry (2023), 21(4), 775-782.

Scheme 29 (1 Reaction) Steps: **1**



Suppliers (36)

31-116-CAS-23631849 Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2-Methyl-2-butanol; 4 h, 130 °C

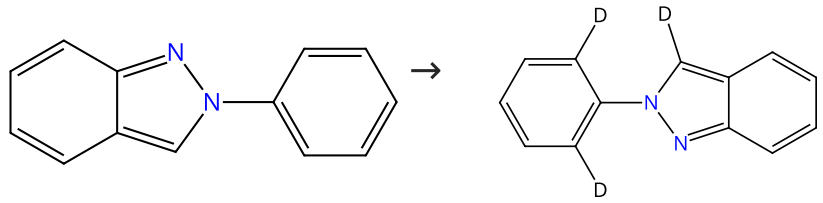
Experimental Protocols

Rh(III)-Catalyzed Oxidative C-2 Coupling of N-Pyridinylindoles with Benzo[b]thiophene 1,1-Dioxides via C-H Bond Activation

By: Kumaran, Subramani; et al

Journal of Organic Chemistry (2021), 86(12), 7987-7999.

Scheme 30 (1 Reaction) Steps: **1**



Suppliers (36)

31-614-CAS-38718611 Steps: **1**

1.1 **Reagents:** 1-Adamantanecarboxylic acid, Copper diacetate monohydrate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 16 h, 80 °C

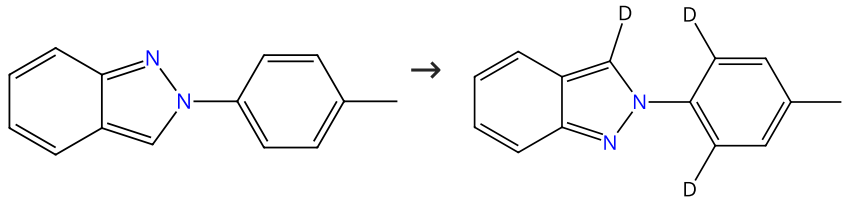
Experimental Protocols

Rh(III)-catalyzed oxidative [4+2] annulation of 2-arylquin oxalines and 2-aryl-2H-indazoles with allyl alcohols

By: Nipate, Dhananjay S.; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(3), 344-347.

Scheme 31 (1 Reaction) Steps: **1**



Suppliers (10)

31-116-CAS-21640779 Steps: **1**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Potassium hexafluorophosphate, Silver hexafluoro antimonate
Solvents: 1,2-Dichloroethane; 5 min, rt

1.2 **Reagents:** Water-d_2; 3 h, 110 °C

Rhodium(III)-catalyzed ortho-C-H amidation of 2-arylindazoles with a dioxazolone as an amidating reagent

By: Ghosh, Payel; et al

Organic & Biomolecular Chemistry (2020), 18(9), 1728-1732.

Scheme 32 (1 Reaction) Steps: **1**

Suppliers (95)

31-614-CAS-28899603 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver tetrafluoroborate, (α*R*)-α-Ethyl-2-fluoro-6-(trifluoromethyl)benzenemethanamine, Di-μ-chlorodic hlorobis[(1,2,3,4,5-η)-1,2,3,4-tetramethyl-5-(1-methylethyl)-2,4-cyclopentadien-1-yl]dirhodium
Solvents: 1,4-Dioxane; 5 min, 30 °C; 24 h, 70 °C

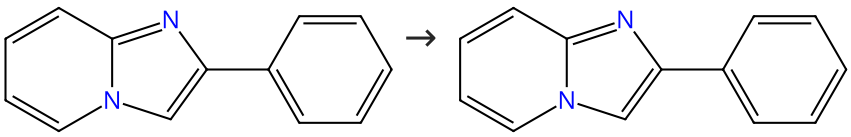
Experimental Protocols

Introducing the Chiral Transient Directing Group Strategy to Rhodium(III)-Catalyzed Asymmetric C-H Activation

By: Li, Guozhu; et al

Chemistry - A European Journal (2019), 25(18), 4688-4694.

Scheme 33 (1 Reaction) Steps: **1**



Suppliers (83)

31-614-CAS-40566186 Steps: **1**

1.1 **Reagents:** Water-d_2, Silver hexafluoroantimonate
Catalysts: Eosin, Bis(acetato-κ*O*)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 30 s, rt; 24 h, rt

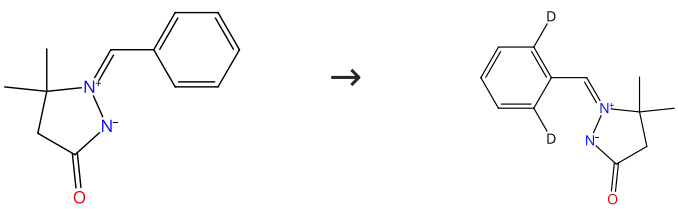
Experimental Protocols

Mild construction of N-fused polycyclic compounds via Rh(III) /Eosin-Y co-catalyze C-H activation

By: Wu, Zhouping; et al

Green Synthesis and Catalysis (2024), 5(2), 108-111.

Scheme 34 (1 Reaction) Steps: **1**



Suppliers (2)

31-614-CAS-39662900 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate; 24 h, 60 °C

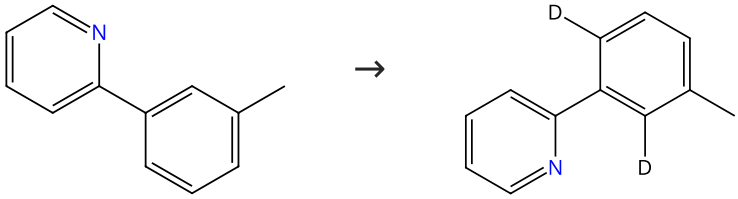
Experimental Protocols

Synthesis of gem-difluorinated pentacyclic indenopyrazolopyrazolones via Rh(iii)-catalyzed cascade C-H functionalization/[3 + 2] dipolar cycloaddition

By: Liu, Fu-Xiaomin; et al

Organic Chemistry Frontiers (2024), 11(9), 2512-2517.

Scheme 35 (1 Reaction) Steps: **1**



Suppliers (58)

31-116-CAS-18469880 Steps: **1**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 2 h, 120 °C

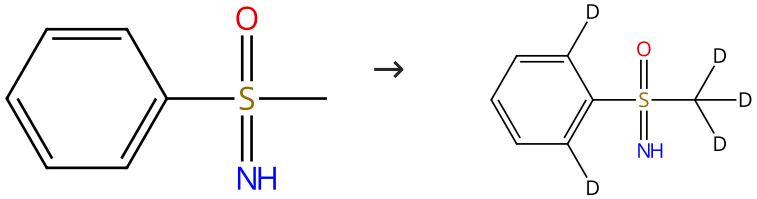
Experimental Protocols

A versatile rhodium(III) catalyst for direct acyloxylation of aryl and alkenyl C-H bonds with carboxylic acids

By: Chen, Changjun; et al

Organic Chemistry Frontiers (2018), 5(3), 415-422.

Scheme 36 (1 Reaction) Steps: **1**



Suppliers (49)

31-614-CAS-24344768 Steps: **1**

1.1 **Reagents:** Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 2,2,2-Trifluoroethanol; 2 h, 100 °C

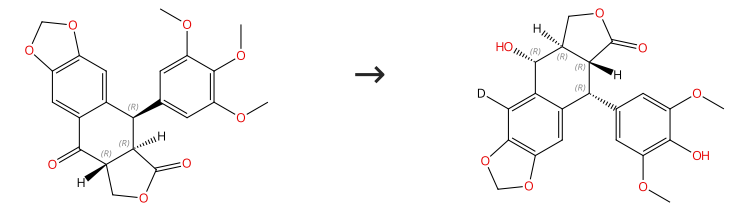
Experimental Protocols

Sulfoximines Assisted Rh(III)-Catalyzed C-H Activation/Annulation Cascade to Synthesize Highly Fused Indeno-1,2-benzothiazines

By: Li, Jian; et al

Journal of Organic Chemistry (2021), 86(21), 15217-15227.

Scheme 37 (1 Reaction) Steps: **1**



Absolute stereochemistry shown, Rotation (-)

Absolute stereochemistry shown

Suppliers (42)

31-614-CAS-36763524 Steps: **1**

1.1 **Reagents:** Water-d_2, Silver oxide (Ag_2O)
Catalysts: Pivalic acid, Tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium(2+)
Solvents: 1,2-Dichloroethane; 12 h, 110 °C

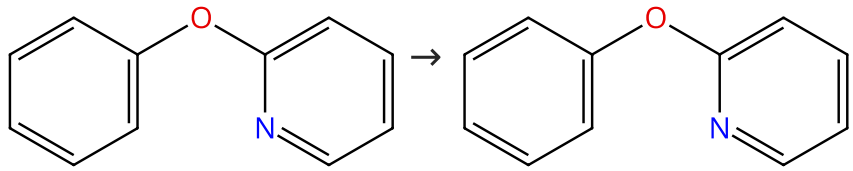
Experimental Protocols

Late-Stage Functionalization for the Divergent Synthesis of Podophyllotoxin Derivatives by Rhodium Catalysis

By: Zhao, Yue; et al

Chemistry - A European Journal (2023), 29(43), e202300960.

Scheme 38 (1 Reaction) Steps: **1**



Suppliers (66)

31-614-CAS-28228690 Steps: **1**

1.1 **Reagents:** Silver carbonate, Oxygen, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 2 h, 130 °C

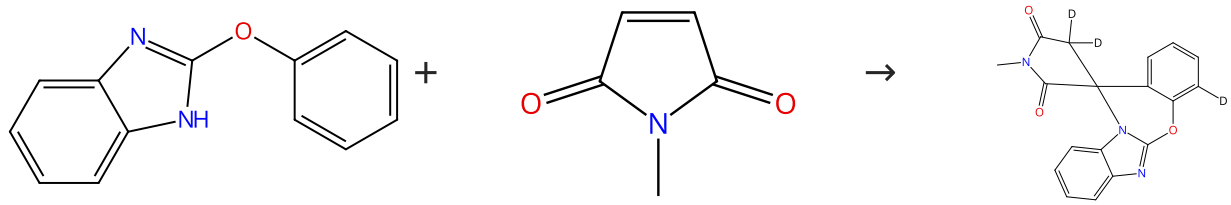
Experimental Protocols

Rh(III)-Catalyzed Direct ortho-Chalcogenation of Phenols and Anilines

By: Yang, Shiping; et al

Journal of Organic Chemistry (2017), 82(23), 12430-12438.

Scheme 39 (1 Reaction) Steps: **1**



Suppliers (5) Suppliers (82)

31-614-CAS-34565245 Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 2,2,2-Trifluoroethanol; 12 h, 100 °C

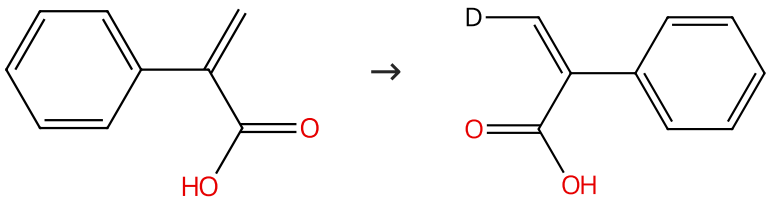
Experimental Protocols

Synthesis of 1,3-benzooxazine spirosuccinimides through the cascade reaction of 2-phenoxy-1H-benzo[d]imidazoles with maleimides

By: Wang, Yue; et al

Tetrahedron Letters (2022), 110, 154182.

Scheme 40 (3 Reactions) Steps: **1**



Suppliers (95)

31-614-CAS-33530298 Steps: **1**

1.1 **Reagents:** Cesium acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran, Water-d_2; 1 h, 130 °C

Experimental Protocols

Synthesis of Furans via Rhodium(III)-Catalyzed Cyclization of Acrylic Acids with α-Diazocarbonyl Compounds

By: Hong, Chao; et al

Journal of Organic Chemistry (2022), 87(18), 11979-11988.

31-614-CAS-31063391 Steps: **1**

1.1 **Reagents:** Zinc acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane, Water-d_2; 1 h, 80 °C

Experimental Protocols

Rh-Catalyzed Coupling of Acrylic/Benzoic Acids with α-Diazocarbonyl Compounds: An Alternative Route for α-Pyrones and Isocoumarins

By: Hong, Chao; et al

Organic Letters (2022), 24(3), 815-820.

31-116-CAS-17729538 Steps: **1**

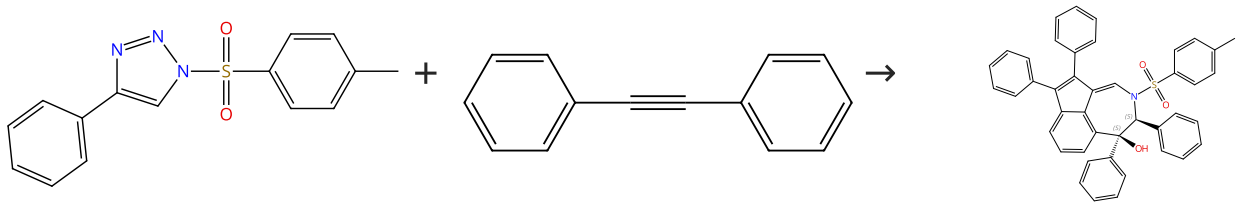
1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile; 0.5 h, rt → 120 °C

One step synthesis of γ-alkylidenebutenolides from simple vinyl carboxylic acids and alkenes

By: Yu, Chunbing; et al

Chemical Communications (Cambridge, United Kingdom) (2017), 53(71), 9902-9905.

Scheme 41 (1 Reaction) Steps: **1**



Suppliers (4) Suppliers (88)

Relative stereochemistry shown

31-614-CAS-26556508 Steps: **1**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 15 h, 85 °C

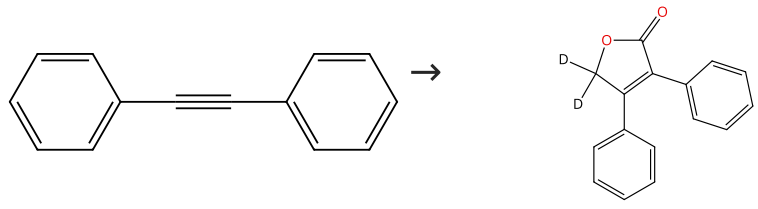
Experimental Protocols

Rhodium(III)-Catalyzed [3+2]/[5+2] Annulation of 4-Aryl 1,2,3-Triazoles with Internal Alkynes through Dual C(sp^2)-H Functionalization

By: Yang, Yuan; et al

Angewandte Chemie, International Edition (2015), 54(22), 6595-6599.

Scheme 42 (1 Reaction) Steps: **1**



Suppliers (88)

31-614-CAS-25976634 Steps: **1**

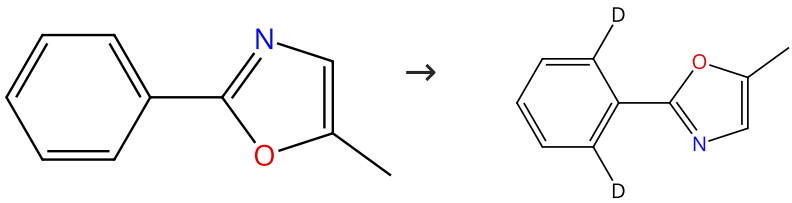
1.1 **Reagents:** Triethylamine, Carbon monoxide, Water-d_2
Catalysts: Rhodium, tri-μ-carbonylnonacarbonyltetra-, *tetrahedro*
Solvents: Tetrahydrofuran

Carbonylation of acetylenes under water gas shift conditions. A new method for synthesis of furan-2(5H)-ones

By: Doyama, Kazuo; et al

Journal of the Chemical Society, Chemical Communications (1987), (9), 649-50.

Scheme 43 (1 Reaction) Steps: **1**



Suppliers (21)

31-116-CAS-23707304 Steps: **1**

1.1 **Reagents:** Phenoxyacetic acid, Manganese oxide (MnO_2), Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Toluene; 12 h, 80 °C

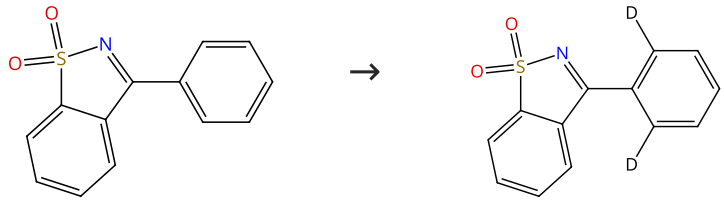
Experimental Protocols

Rh(III)-Catalyzed olefination to build diverse oxazole derivatives from functional alkynes

By: He, Yuan; et al

Organic & Biomolecular Chemistry (2021), 19(22), 4937-4942.

Scheme 44 (4 Reactions) Steps: **1**



Suppliers (30)

31-116-CAS-21823201 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Cupric acetate, Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 24 h, 120 °C

Rhodium-Catalyzed Direct ortho C-H Thiolation of Cyclic N-Sulfonyl Ketimines

By: Shi, Guangrui; et al

Asian Journal of Organic Chemistry (2020), 9(5), 788-792.

31-116-CAS-20577580 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Sodium acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluorophosphate
Solvents: 1,2-Dichloroethane; 1 h, 80 °C

Rh(III)-Catalyzed Ring-Opening Addition of Azabenzonorbornadienes with Cyclic N-Sulfony Ketimines via C-H Bond Activation

By: Zhang, Xuexin; et al

Advanced Synthesis & Catalysis (2019), 361(19), 4495-4499.

31-116-CAS-12195945 Steps: **1**

1.1 **Reagents:** Pivalic acid, Cupric acetate, Zinc acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Chlorobenzene; 1 h, 120 °C

Experimental Protocols

Rhodium-Catalyzed Direct C-H Vinylation of Arenes To Access Styrenes with Vinyl Acetate as a Vinyl Source

By: Mei, Shu-Tao; et al

European Journal of Organic Chemistry (2015), 2015(28), 6135-6140.

31-116-CAS-1212719 Steps: **1**

1.1 **Reagents:** 4-Nitrobenzoic acid, Oxygen, Water-d_2, Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Dichloromethane, Chlorobenzene; 1 h, 80 °C

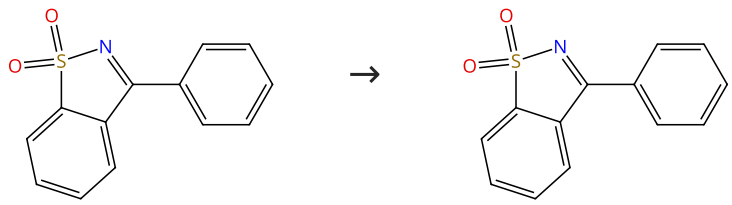
Experimental Protocols

Rhodium-catalysed direct C-H allylation of N-sulfonyl ketimines with allyl carbonates

By: Mei, Shu-Tao; et al

Chemical Communications (Cambridge, United Kingdom) (2015), 51(14), 2980-2983.

Scheme 45 (1 Reaction) Steps: **1**



Suppliers (30)

31-614-CAS-26213385 Steps: **1**

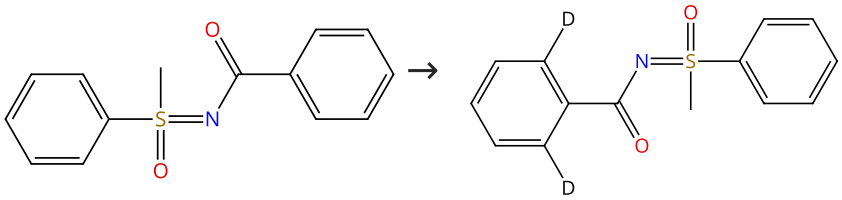
1.1 **Reagents:** Water-d_2
Catalysts: Iodobenzene diacetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 1 h, 140 °C

Spirocyclic Sultam and Heterobiaryl Synthesis through Rh-Catalyzed Cross-Dehydrogenative Coupling of N-Sulfonyl Ketimines and Thiophenes or Furans

By: Mei, Shu-Tao; et al

Organic Letters (2016), 18(5), 1088-1091.

Scheme 46 (2 Reactions) Steps: **1**



Suppliers (4)

31-614-CAS-36767655 Steps: **1**

1.1 **Reagents:** Cupric acetate, Vinylene carbonate, [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Zinc triflate
Solvents: 1,4-Dioxane; 2 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water-d_2

Experimental Protocols

Rhodium-catalyzed directing group-assisted annulation of arene C-H bond with vinylene carbonate toward isocoumarins

By: Wang, Lu; et al

Youji Huaxue (2022), 42(1), 242-248.

31-116-CAS-23826688 Steps: 1

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 6 h, 70 °C

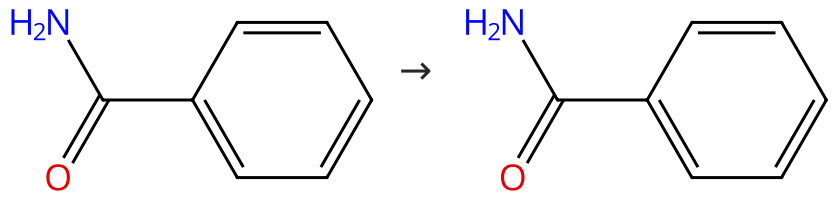
Experimental Protocols

Rh(III)-Catalyzed Relay Double Carbenoid Insertion and Diannulation of Sulfoximine Benzamides with α-Diazo Carbonyl Compounds: Access to Furo[2,3-c]isochromenes

By: Yang, Chen; et al

Organic Letters (2020), 22(7), 2506-2511.

Scheme 47 (1 Reaction) Steps: **1**



Suppliers (115)

31-614-CAS-28072941 Steps: 1

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 8 h, reflux

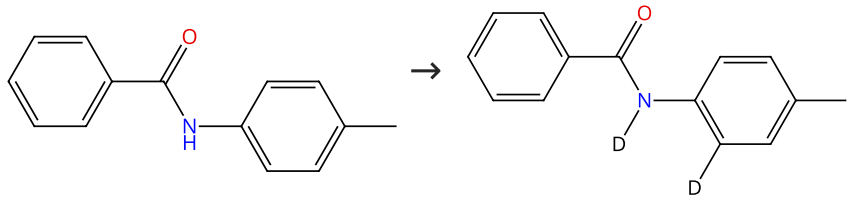
Experimental Protocols

One-pot construction of diverse and functionalized isochromenoquinolinediones by Rh(III)-catalyzed annulation of unprotected arylamides with 3-diazoquinolinediones and their application for fluorescence sensor

By: Shrestha, Rajeev; et al

RSC Advances (2019), 9(30), 17347-17357.

Scheme 48 (1 Reaction) Steps: **1**



Suppliers (55)

31-116-CAS-15587152 Steps: 1

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 90 °C

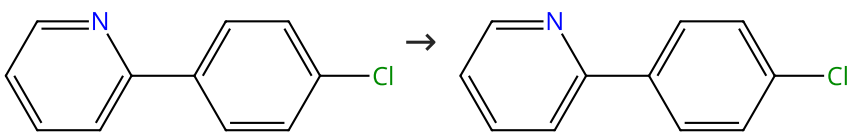
Experimental Protocols

Non-coordinating-Anion-Directed Reversal of Activation Site: Selective C-H Bond Activation of N-Aryl Rings

By: Wang, Dawei; et al

Chemistry - A European Journal (2016), 22(25), 8663-8668.

Scheme 49 (1 Reaction) Steps: **1**



Suppliers (68)

31-614-CAS-35155681 Steps: **1**

1.1 **Reagents:** Zinc acetate, Methanol-d_4, Water-d_2, Lithium perchlorate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 2,2,2-Trifluoroethanol; 20 min, 130 °C

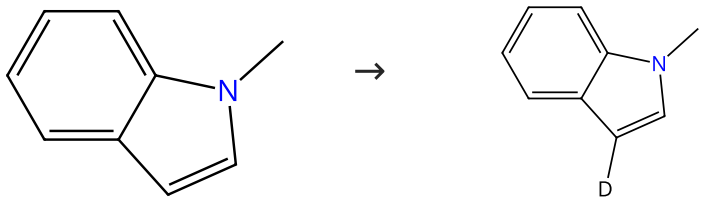
Experimental Protocols

N-Allylbenzimidazole as a strategic surrogate in Rh-catalyzed stereoselective trans-propenylation of aryl C(sp^2)-H bond

By: Biswal, Pragati; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(2), 199-202.

Scheme 50 (1 Reaction) Steps: **1**



Suppliers (107) Suppliers (2)

31-116-CAS-15871121 Steps: **1**

1.1 **Reagents:** Copper diacetate monohydrate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 0.5 h, 140 °C

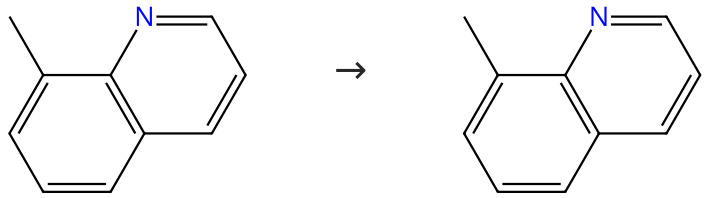
Experimental Protocols

ortho-Heteroarylation of Azobenzenes by Rh-Catalyzed Cross-Dehydrogenative Coupling: An Approach to Conjugated Biaryls

By: Deng, Hong; et al

Organic Letters (2016), 18(13), 3110-3113.

Scheme 51 (1 Reaction) Steps: **1**



Suppliers (69) Suppliers (3)

31-614-CAS-30940804 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Cupric acetate, Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; overnight, 55 °C

Experimental Protocols

Rhodium(III)-catalyzed alkylation of primary C(sp^3)-H bonds with α-diazocarbonyl compounds

By: Hou, Wei; et al

Chemical Communications (Cambridge, United Kingdom) (2016), 52(62), 9672-9675.

Scheme 52 (1 Reaction) Steps: **1**

Suppliers (69)

31-614-CAS-41689791 Steps: **1**

1.1 **Reagents:** Cupric acetate, Acetic acid-d_4, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 24 h, 100 °C

1.2 **Reagents:** Hydrogen peroxide
Catalysts: Methyltrioxorhenium
Solvents: Dichloromethane; 10 min, 0 °C; 0 °C → rt; 24 h, rt

1.3 **Reagents:** Manganese oxide (MnO_2); rt

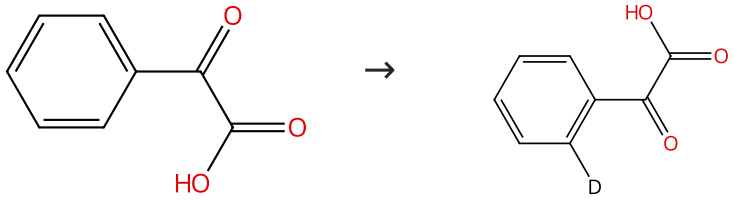
Experimental Protocols

Dual C(sp^3)-H and C(sp^2)-H Activation of 8-Methylquinoline N-Oxides: A Route to Access C7-H Bond

By: Mandal, Santu; et al

Organic Letters (2024), 26(36), 7560-7564.

Scheme 53 (1 Reaction) Steps: **1**



Suppliers (112)

31-614-CAS-26965287 Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

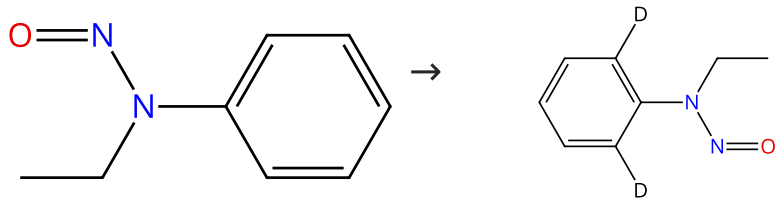
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 54 (1 Reaction) Steps: **1**



Suppliers (45)

31-116-CAS-6590539 Steps: **1**

1.1 **Reagents:** Silver acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Methanol-d_4, Water-d_2; 14 h, 30 °C

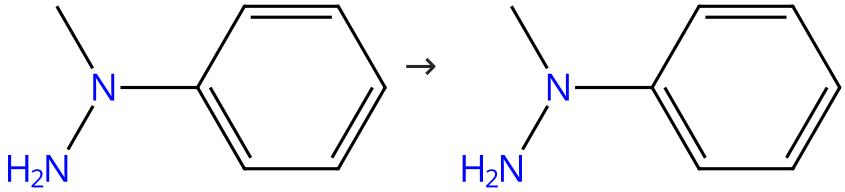
Experimental Protocols

Rhodium(III)-Catalyzed N-Nitroso-Directed C-H Olefination of Arenes. High-Yield, Versatile Coupling under Mild Conditions

By: Liu, Baoqing; et al

Journal of the American Chemical Society (2013), 135(1), 468-473.

Scheme 55 (1 Reaction) Steps: **1**



Suppliers (73)

31-614-CAS-26377993 Steps: **1**

1.1 **Reagents:** Zinc acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Toluene; 24 h, 50 °C

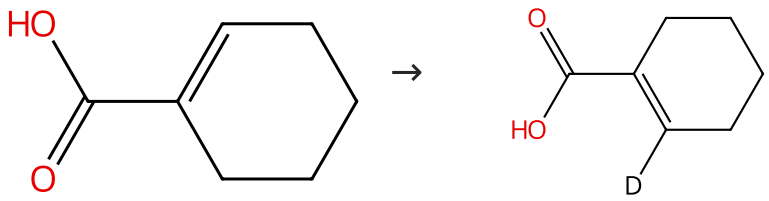
Experimental Protocols

Rh(III)-catalyzed, hydrazine-directed C-H functionalization with 1-alkynylcyclobutanols: a new strategy for 1 H-indazoles

By: Zhang, Lei; et al

Chemical Communications (Cambridge, United Kingdom) (2020), 56(54), 7415-7418.

Scheme 56 (1 Reaction) Steps: **1**



Suppliers (94)

31-116-CAS-21791628 Steps: **1**

1.1 **Reagents:** Potassium carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 30 min, 80 °C

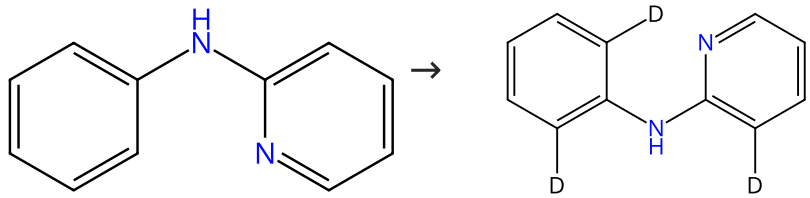
1.2 **Reagents:** Hydrochloric acid
Solvents: Water; acidified

Rh-Catalyzed C-H Amination/Annulation of Acrylic Acids and Anthranils by Using -COOH as a Deciduous Directing Group: An Access to Diverse Quinolines

By: Gao, Yang; et al

Organic Letters (2020), 22(7), 2600-2605.

Scheme 57 (1 Reaction) Steps: **1**



Suppliers (73)

31-116-CAS-20699349 Steps: **1**

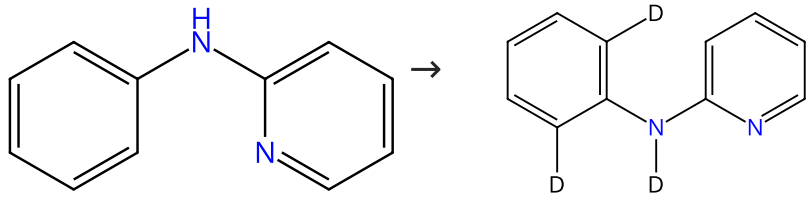
1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,4-Dioxane; 2 h, 120 °C; 120 °C → rt

Synthesis of 2-Arylindoles by Rhodium-Catalyzed/Copper-Mediated Annulative Coupling of N-Aryl-2-aminopyridines and Propargyl Alcohols via Selective C-H/C-C Activation

By: Yan, Xufei; et al

Organic Letters (2019), 21(18), 7455-7459.

Scheme 58 (1 Reaction) Steps: **1**



Suppliers (73)

31-614-CAS-41686876 Steps: **1**

1.1 **Reagents:** Sodium acetate, Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Methanol; 2 h, 70 °C

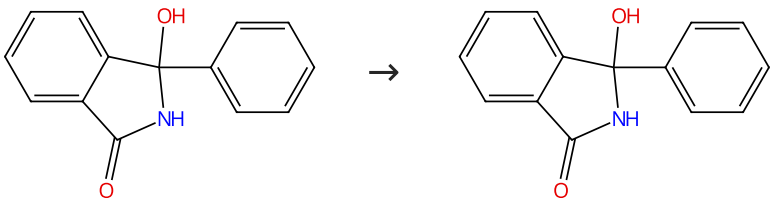
Experimental Protocols

Rh(III)-catalyzed aldehydic and aryl C-H alkylation with cyclopropanols via C-H/C-C bond activation

By: Dash, Om Prakash; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(76), 10576-10579.

Scheme 59 (1 Reaction) Steps: **1**



Suppliers (7)

31-614-CAS-41630997 Steps: **1**

1.1 **Reagents:** Lithium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 80 °C

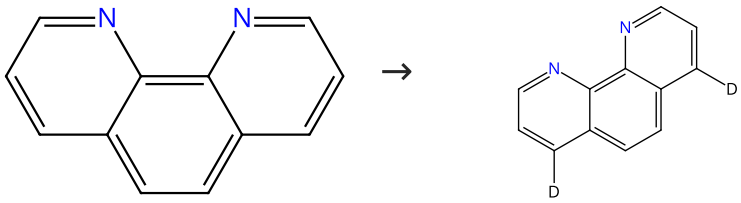
Experimental Protocols

Rh(III)-Catalyzed [3 + 3]-Coupling Cyclization of 3-Hydroxyisoindolinones with Carbenoids: Rapid Access to Spirolactam Skeletons

By: Wang, Chengjie; et al

Organic Letters (2024), 26(36), 7728-7732.

Scheme 60 (1 Reaction) Steps: **1**



Suppliers (111)

31-116-CAS-22370918 Steps: **1**

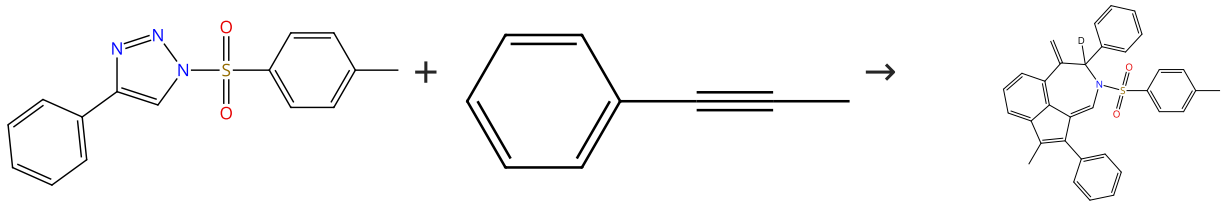
1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: Rhodium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-κN^1,κ$N^{1'}$]chloro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, chloride (1:1), Ruthenium(3+), bis[4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-κN^1,κ$N^{1'}$][chloro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium][μ-(dipyrido[3,2-5,6:3',2'-5,6]quinoxalino[2,3-*f*][1,10]phenanthroline-κN^4,κN^5:κN^{13},κN^{14})]-, chloride hexafluorophosphate(1-) (1:1:2)
Solvents: Acetonitrile-d_3; 45 min; 60 min, 50 °C

The Metallic Traveler: Formate- and Photoinduced Regioselective Phenanthroline Deuterations via Reductively Activated RhCp* Centers

By: Mengele, Alexander K.; et al

Organometallics (2020), 39(14), 2739-2748.

Scheme 61 (1 Reaction) Steps: **1**



Suppliers (4)

Suppliers (70)

31-251-CAS-5782737 Steps: **1**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 15 h, 85 °C

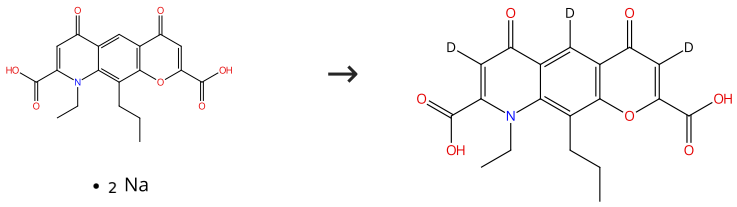
Experimental Protocols

Rhodium(III)-Catalyzed [3+2]/[5+2] Annulation of 4-Aryl 1,2,3-Triazoles with Internal Alkynes through Dual C (sp^2)-H Functionalization

By: Yang, Yuan; et al

Angewandte Chemie, International Edition (2015), 54(22), 6595-6599.

Scheme 62 (1 Reaction) Steps: **1**



• 2 Na

Suppliers (43)

31-116-CAS-6682617 Steps: **1**

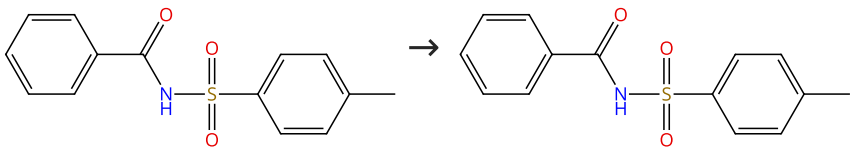
1.1 **Reagents:** Water-d_2
Catalysts: Rhodium trichloride
Solvents: Dimethylformamide

Synthesis of nedocromil sodium labeled with tritium, deuterium and carbon-14

By: Wilkinson, D. J.; et al

Journal of Labelled Compounds and Radiopharmaceuticals (1985), 22(9), 883-92.

Scheme 63 (1 Reaction) Steps: **1**



Suppliers (50)

31-116-CAS-12137388 Steps: **1**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 20 h, 130 °C

Experimental Protocols

Rhodium-Catalyzed Annulation of N-Benzoylsulfonamide with Isocyanide through C-H Activation

By: Zhu, Chen; et al

Chemistry - A European Journal (2011), 17(45), 12591-12595, S12591/1-S12591/43.

Scheme 64 (1 Reaction) Steps: **1**

• Br^- • Br^-

Suppliers (2)

31-614-CAS-29099365 Steps: **1**

1.1 **Reagents:** Cesium acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Acetonitrile-d_3, Water-d_2; 12 h, rt

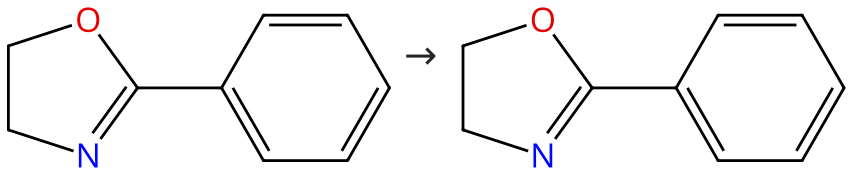
Experimental Protocols

Rhodium-Catalyzed C-H Activation of Phenacyl Ammonium Salts Assisted by an Oxidizing C-N Bond: A Combination of Experimental and Theoretical Studies

By: Yu, Songjie; et al

Journal of the American Chemical Society (2015), 137(4), 1623-1631.

Scheme 65 (1 Reaction) Steps: **1**



Suppliers (68)

31-614-CAS-40981657 Steps: **1**

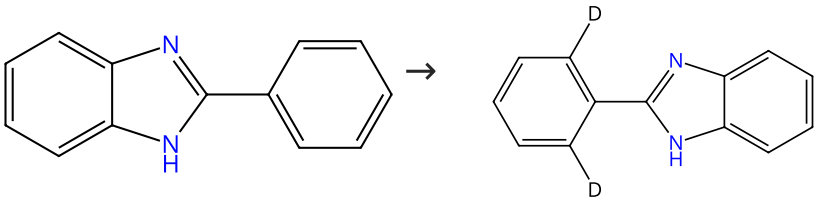
1.1 **Reagents:** Water-d_2, Propanoic acid, 2,2-dimethyl-, potassium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 0.5 h, 80 °C

Synthesis of CF_3-Isoquinolinones and Imidazole-Fused CF_3-Isoquinolinones Based on C-H Activation-Initiated Cascade Reactions of 2-Aryloxazolines

By: Liang, Miaomiao; et al

Journal of Organic Chemistry (2024), 89(14), 10180-10196.

Scheme 66 (1 Reaction) Steps: **1**



Suppliers (78)

31-614-CAS-37740873 Steps: **1**

1.1 **Reagents:** Sodium acetate, Cupric acetate, 1-Adamantane carboxylic acid, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 80 °C

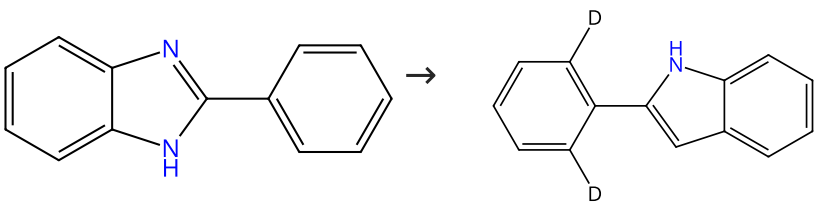
Experimental Protocols

Rh(III)-Catalyzed C-H Annulation and Spirolactonization of 2-Aryl-1H-benzo[d]imidazoles with 4-Hydroxy-2-alkynoates via C-H bond activation

By: Siva Sankaram, G.; et al

Asian Journal of Organic Chemistry (2023), 12(11), e202300395.

Scheme 67 (1 Reaction) Steps: **1**



Suppliers (78)

31-614-CAS-24036776 Steps: **1**

1.1 **Reagents:** Silver acetate, Cesium acetate, *N*-*tert*-Butylmal eimide, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, rt → 120 °C

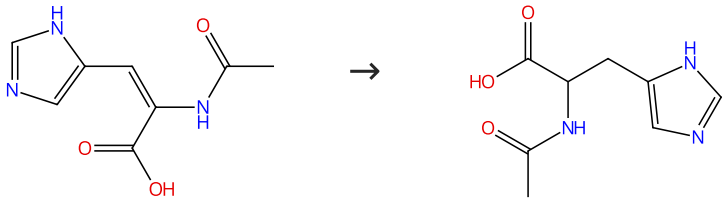
Experimental Protocols

Rh(III)-Catalyzed [4+2] Cyclization of 2-Aryl-1H-benzo[d] imidazoles with Maleimides via C-H Activation

By: Deng, Chen; et al

European Journal of Organic Chemistry (2021), 2021(25), 3552-3558.

Scheme 68 (1 Reaction) Steps: **1**



Suppliers (4) Suppliers (21)

31-244-CAS-9234722 Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), 1,1'-[[(4*S*,5*S*)-2,2-Dimethyl-1,3-dioxolane-4,5-diyl]bis(methylene)]bis[1,1-diphenylphosphine]
Solvents: Water-d_2; 15 s, rt

Experimental Protocols

Hyperpolarization of amino acid precursors to neurotran smitters with parahydrogen induced polarization

By: Soon, Pei Che; et al

Chemical Communications (Cambridge, United Kingdom) (2013), 49(46), 5304-5306.

Scheme 69 (1 Reaction) Steps: **1**

Suppliers (4)

31-116-CAS-4212654 Steps: **1**

1.1 **Reagents:** Tempo, Oxygen, Water-d_2, Propanoic acid, 2,2-dimethyl-, cesium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Xylene; 2 h, 110 °C

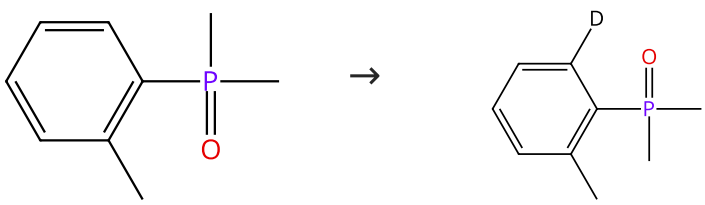
Experimental Protocols

Rhodium-catalyzed oxidative coupling through C-H activation and annulation directed by phosphonamide and phosphi namide groups

By: Park, Sangjune; et al

Chemical Communications (Cambridge, United Kingdom) (2013), 49(77), 8671-8673.

Scheme 70 (1 Reaction) Steps: **1**



Suppliers (5)

31-116-CAS-16621803 Steps: 1

1.1 **Reagents:** Cupric acetate, Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 12 h, 120 °C

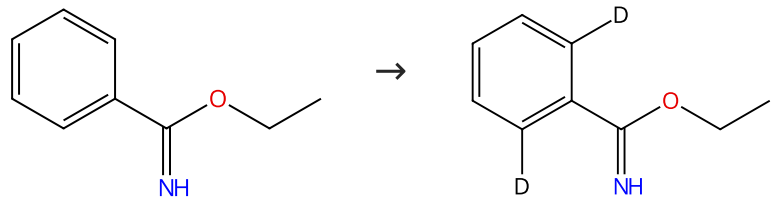
Experimental Protocols

Oxidative ortho-alkenylation of arylphosphine oxides by rhodium-catalyzed C-H bond twofold cleavage

By: Mo, Juntae; et al

RSC Advances (2013), 3(40), 18296-18299.

Scheme 71 (1 Reaction) Steps: **1**



Suppliers (20)

31-116-CAS-20454891 Steps: 1

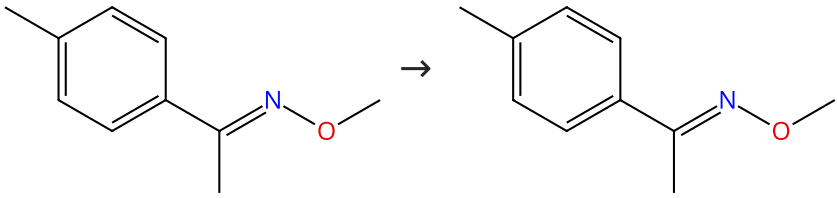
1.1 **Reagents:** Water-d_2, Tricyclo[3.3.1.1^{3,7}]decane-1-carboxylic acid, potassium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 16 h, 80 °C

Rhodium-Catalyzed Cascade Annulation of Benzimidates and Nitroalkenes for the Synthesis of Difuncti onalized Indenes

By: Lv, Ningning; et al

Advanced Synthesis & Catalysis (2019), 361(17), 4140-4146.

Scheme 72 (1 Reaction) Steps: **1**



Suppliers (4)

31-614-CAS-40568980 Steps: 1

1.1 **Reagents:** Cupric acetate, Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane, Water-d_2; 5 h, 110 °C

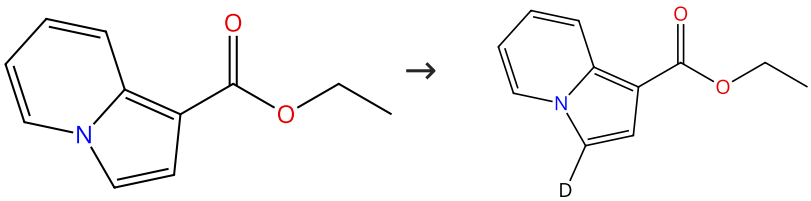
Experimental Protocols

Modular Assembly of Pyrrolo[3,4-c]isoquinolines through Rh-Catalyzed Cascade C-H Activation/Annulation of O-Methyl Aryloximes with Maleimides

By: Wu, Yinsong; et al

Journal of Organic Chemistry (2024), 89(12), 8447-8457.

Scheme 73 (1 Reaction) Steps: **1**



Suppliers (42)

31-614-CAS-29440087 Steps: 1

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: (α*S*)-α-(1-Methylethyl)-1,3-dioxo-1*H*-benz[*de*]isoquinoline-2(3*H*)-acetic acid, Bis(η^2-ethene)[(8a,9,10,11,11a-η)-(2a*S*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6]cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-8a(12*H*)-yl]rhodium
Solvents: Dimethylformamide; 18 h, 60 °C

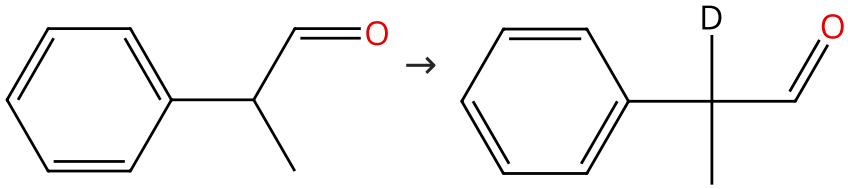
Experimental Protocols

Rhodium-Catalyzed Atroposelective C-H/C-H Cross-Coupling Reaction between 1-Aryl Isoquinoline Derivatives and Indolizines

By: Zhang, Wen-Wen; et al

Organic Letters (2022), 24(2), 564-569.

Scheme 74 (1 Reaction) Steps: 1



Suppliers (90) Supplier (1)

31-614-CAS-32259237 Steps: 1

1.1 **Reagents:** Water-d_2
Catalysts: Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium, Benzenesulfonic acid, 2-[[bis[2-(diphenylphosphino)ethyl]amino]carbonyl]-, sodium salt (1:1); 1 h

1.2 **Reagents:** Carbon monoxide, Hydrogen; 24 h, 3 M Pa, 60 °C

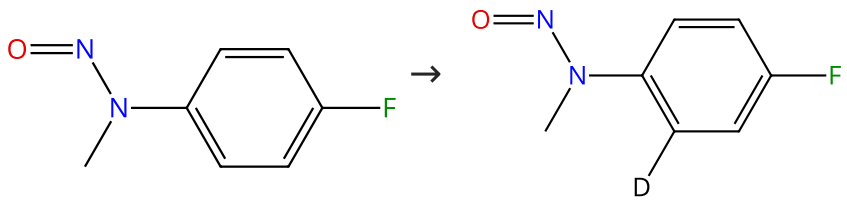
Experimental Protocols

Water-soluble diphosphine ligands for rhodium-catalyzed branch-selective hydroaminomethylation of vinyl arenes with anilines in water

By: Zhang, Luyun; et al

Green Chemistry (2022), 24(11), 4420-4424.

Scheme 75 (1 Reaction) Steps: 1



Suppliers (22)

31-116-CAS-3534734 Steps: 1

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Acetonitrile; 10 min

1.2 **Reagents:** *tert*-Butyl alcohol-*d*
Solvents: Acetonitrile-d_3, Water-d_2; 16 h, 80 °C

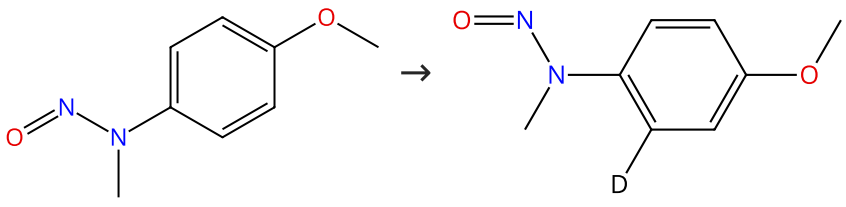
Experimental Protocols

Rhodium(III)-Catalyzed Indole Synthesis Using N-N Bond as an Internal Oxidant

By: Liu, Baoqing; et al

Journal of the American Chemical Society (2013), 135(44), 16625-16631.

Scheme 76 (1 Reaction) Steps: 1



Suppliers (18)

31-116-CAS-1391330 Steps: **1**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Acetonitrile; 10 min

1.2 **Reagents:** *tert*-Butyl alcohol-*d*
Solvents: Acetonitrile-d_3, Water-d_2; 16 h, 80 °C

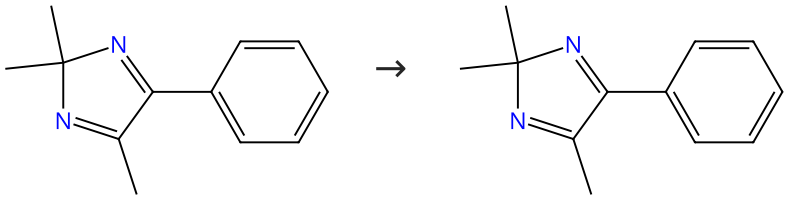
Experimental Protocols

Rhodium(III)-Catalyzed Indole Synthesis Using N-N Bond as an Internal Oxidant

By: Liu, Baoqing; et al

Journal of the American Chemical Society (2013), 135(44), 16625-16631.

Scheme 77 (1 Reaction) Steps: **1**



31-614-CAS-26754409 Steps: **1**

1.1 **Reagents:** Zinc acetate, Water-d_2, [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 2 h, 100 °C

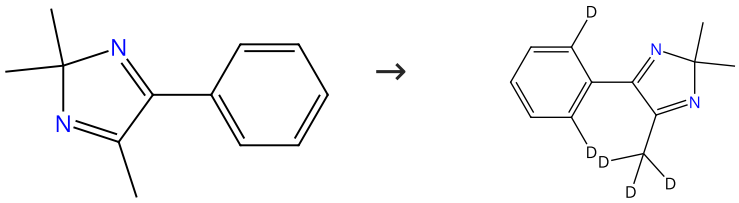
Experimental Protocols

Formation of diversified spiro-[imidazole-indene] derivatives from 2H-imidazoles: based on versatile propargyl alcohols

By: Luo, Yi; et al

Organic Chemistry Frontiers (2021), 8(16), 4549-4553.

Scheme 78 (1 Reaction) Steps: **1**



31-614-CAS-42962954 Steps: **1**

1.1 **Reagents:** Zinc acetate, Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 1 h, 120 °C

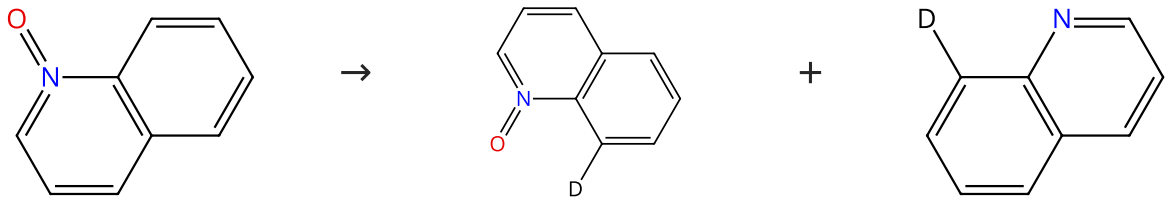
Experimental Protocols

Synthesis of CF_3-Azafluorenes through the Cascade Reaction of 2H-Imidazoles with CF_3-Ynones

By: Li, Hao; et al

Organic Letters (2024), 26(48), 10310-10316.

Scheme 79 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (57) Supplier (1) Suppliers (5)

31-116-CAS-17607870 Steps: **1** Yield: **85%**

1.1 **Reagents:** Acetic acid, Water-d_2, Silver tetrafluoroborate
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Dimethylformamide; 5 h, 140 °C

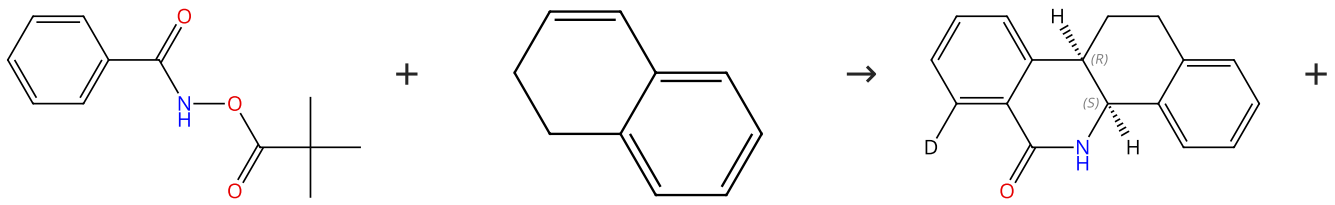
Experimental Protocols

Rhodium-Catalyzed Remote C-8 Alkylation of Quinolines with Activated and Unactivated Olefins: Mechanistic Study and Total Synthesis of EP4 Agonist

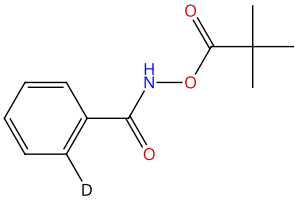
By: Sharma, Ritika; et al

Advanced Synthesis & Catalysis (2017), 359(17), 3022-3028.

Scheme 80 (1 Reaction) Steps: **1** Yield: **82%**



Suppliers (14) Suppliers (69)



Relative stereochemistry shown

31-116-CAS-22828972 Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium bicarbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 2,2,2-Trifluoroethanol; 3 h, rt

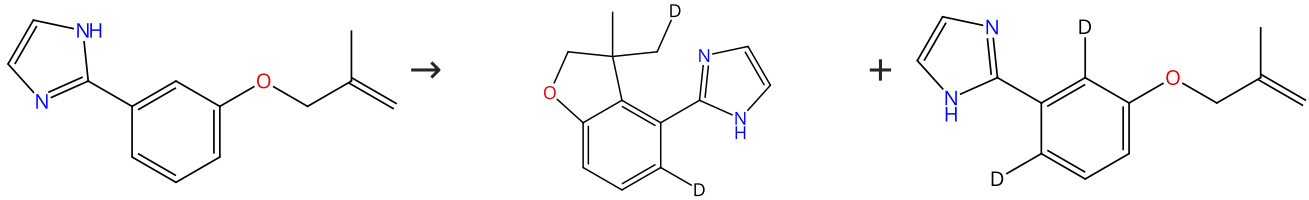
Experimental Protocols

Regio- and Stereoselective Synthesis of the Core Structure of Hexahydrobenzo[c]phenanthridine Alkaloids via Redox-Neutral Cp*Rh(III)-Catalyzed C-H/N-H Annulation of Cyclic Alkenes with Benzamides

By: Das Adhikari, Gopal Krushna; et al

ACS Omega (2020), 5(37), 24033-24044.

Scheme 81 (1 Reaction) Steps: **1** Yield: **80%**



31-614-CAS-36906791 Steps: **1** Yield: **80%**

1.1 **Reagents:** Methanol-d_4, Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]; 18 h, rt

Experimental Protocols

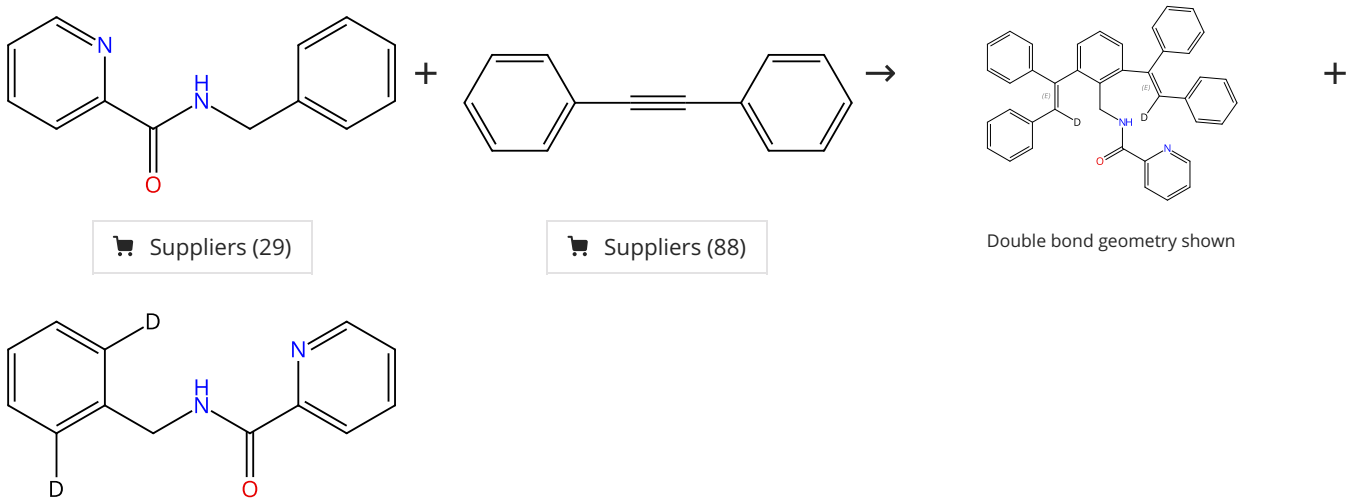
Intramolecular Hydroarylation of Arenes via Imidazole-Directed C-H Activation in Aqueous Methanol Using Rhodium (III) as the Catalyst and Mechanistic Study

By: Sinha, Nilotpal; et al

Journal of Organic Chemistry (2023), 88(13), 8969-8983.

Scheme 82 (1 Reaction)

Steps: **1** Yield: **73%**



Suppliers (29)

Suppliers (88)

Double bond geometry shown

31-116-CAS-15703313

Steps: **1** Yield: **73%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene] dirhodium, Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 120 °C

Experimental Protocols

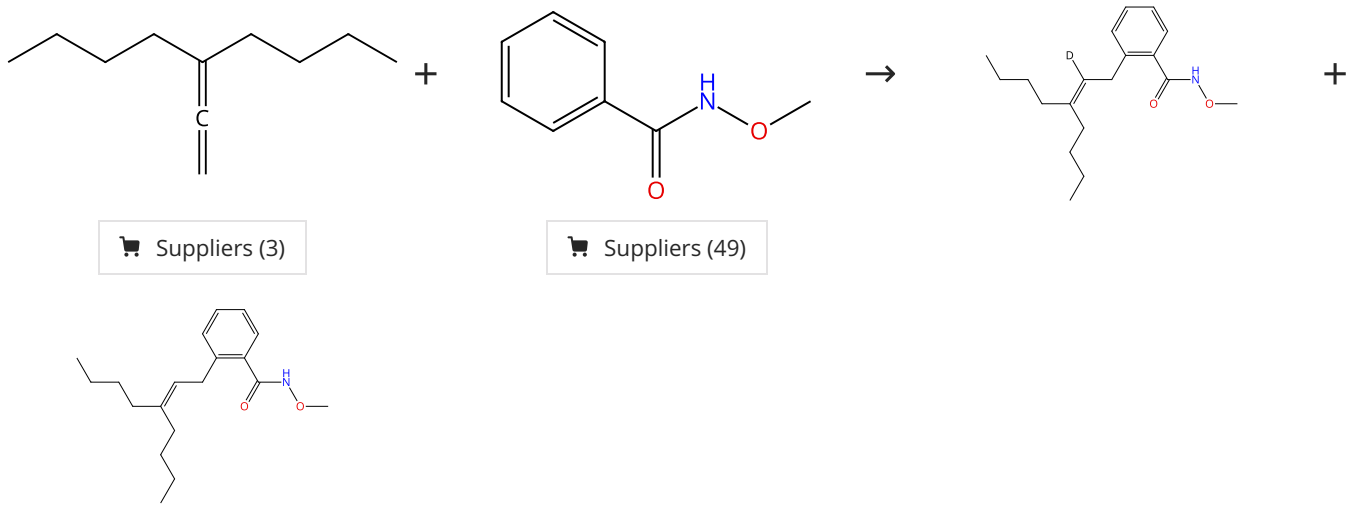
Rh^{I}/Rh^{III} catalyst-controlled divergent aryl/heteroaryl C-H bond functionalization of picolinamides with alkynes

By: Martinez, Angel Manu; et al

Chemical Science (2015), 6(10), 5802-5814.

Scheme 83 (1 Reaction)

Steps: **1** Yield: **73%**



Suppliers (3)

Suppliers (49)

Supplier (1)

31-085-CAS-2642493

Steps: **1** Yield: **73%**

1.1 **Reagents:** Methanol-d_4, Cesium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Methanol-d_4, Water-d_2; rt; 20 h, -20 °C

Experimental Protocols

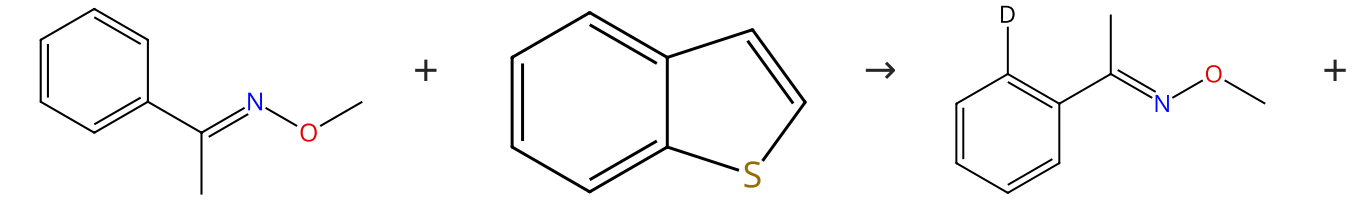
Highly Selective Mild Stepwise Allylation of N-Methoxybenzamides with Allenes

By: Zeng, Rong; et al

Journal of the American Chemical Society (2012), 134(23), 9597-9600.

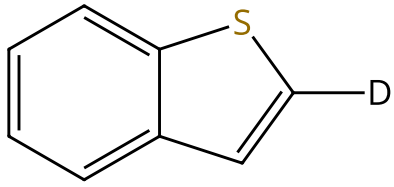
Scheme 84 (1 Reaction)

Steps: **1** Yield: **73%**



Suppliers (4)

Suppliers (99)



Supplier (1)

31-116-CAS-2612123

Steps: **1** Yield: **73%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Acetic acid, 2,2,2-trifluoro-, copper(2+) salt (2:1), Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 min, rt; 1 h, 150 °C

Experimental Protocols

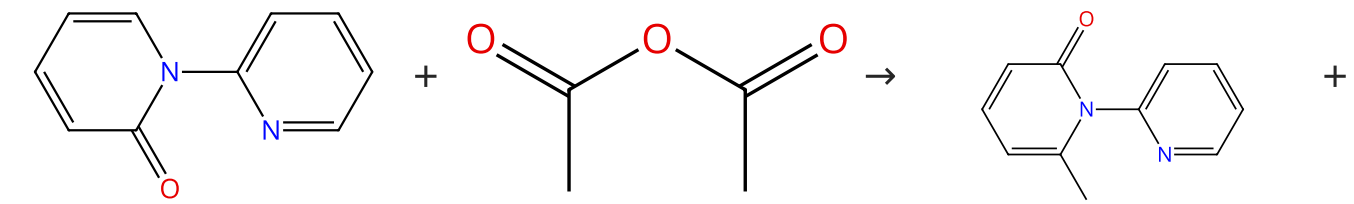
Rh(III)-catalyzed oxime ether-directed heteroarylation of arene through oxidative C-H/C-H cross-coupling

By: Qin, Dekun; et al

Chemical Communications (Cambridge, United Kingdom) (2015), 51(28), 6190-6193.

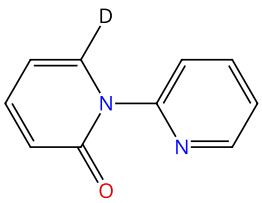
Scheme 85 (1 Reaction)

Steps: **1** Yield: **69%**



Suppliers (8)

Suppliers (90)



31-116-CAS-21949640

Steps: **1** Yield: **69%**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: 1,4-Dioxane; 8 h, 130 °C

Experimental Protocols

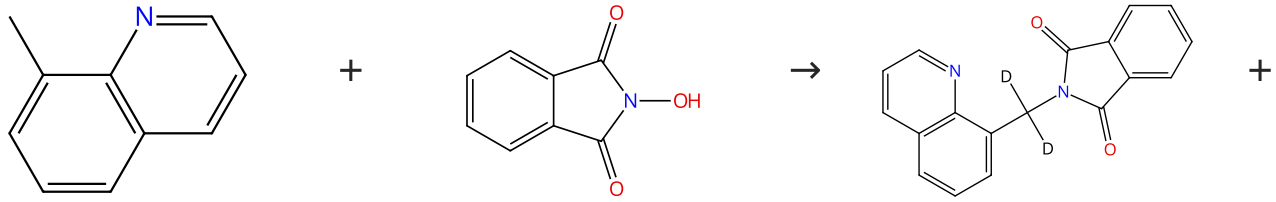
Rh(I)-Catalyzed C6-Selective Decarbonylative Alkylation of 2-Pyridones with Alkyl Carboxylic Acids and Anhydrides

By: Zhao, Haoqiang; et al

Organic Letters (2020), 22(11), 4228-4234.

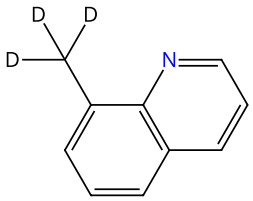
Scheme 86 (1 Reaction)

Steps: **1** Yield: **69%**



Suppliers (69)

Suppliers (92)



Supplier (1)

31-614-CAS-34877449

Steps: **1** Yield: **69%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 5 h, 80 °C

Experimental Protocols

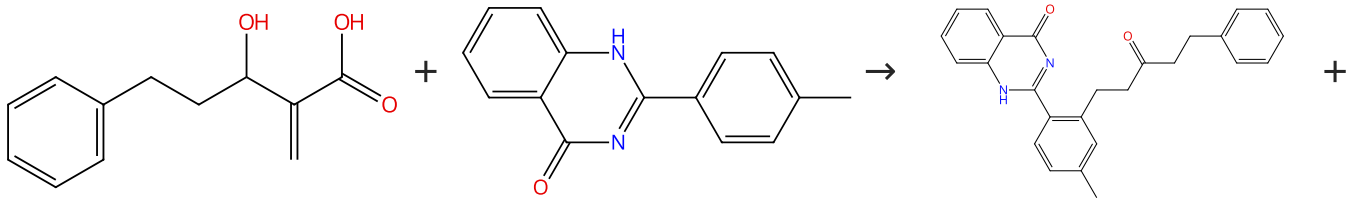
Regioselective C(sp^3)-H amidation of 8-methylquinolines with N-hydroxyphthalimides

By: Kumar, Rohit; et al

Chemical Communications (Cambridge, United Kingdom) (2022), 58(94), 13151-13154.

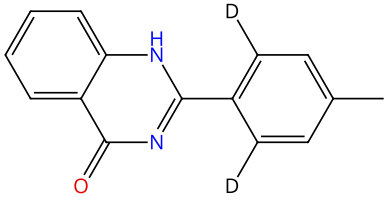
Scheme 87 (1 Reaction)

Steps: **1** Yield: **68%**



Suppliers (2)

Suppliers (34)



31-614-CAS-33815180

Steps: **1** Yield: **68%**

1.1 **Reagents:** Silver trifluoroacetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 11 h, 80 °C

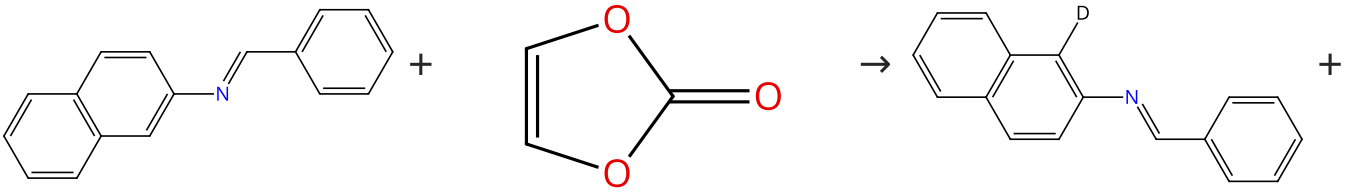
Rh(III)-Catalyzed C-H Activation of 2-Aryl Quinazolinones and Coupling with 2-Carboxyl Allylic Alcohols for the Synthesis of β-Aryl Ketone Substituted Quinazolinones

By: Kang, Shaodong; et al

European Journal of Organic Chemistry (2022), 2022(30), e202200472.

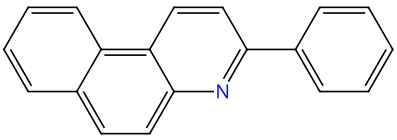
Scheme 88 (1 Reaction)

Steps: **1** Yield: **68%**



Suppliers (45)

Suppliers (74)



Suppliers (2)

31-614-CAS-24542866

Steps: **1** Yield: **68%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dimethylacetamide; 12 h, 110 °C

Experimental Protocols

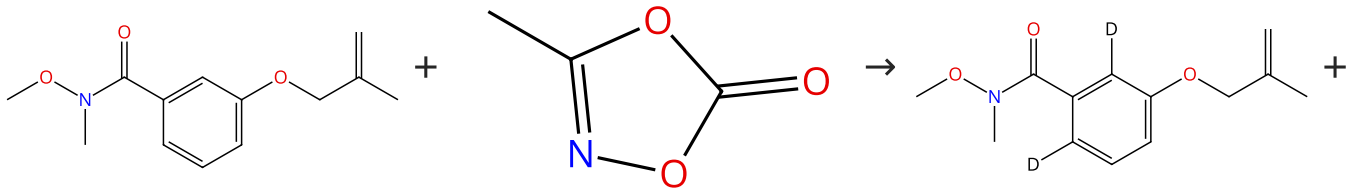
Rhodium-Catalyzed Dehydrogenative Annulation of N-Arylmethanimines with Vinylene Carbonate for Synthe sizing Quinolines

By: Hu, Yan; et al

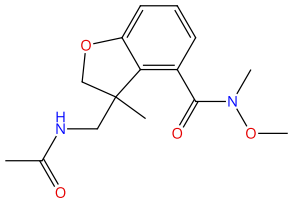
Organic Letters (2021), 23(21), 8527-8532.

Scheme 89 (1 Reaction)

Steps: **1** Yield: **67%**



Suppliers (31)



31-116-CAS-22923992

Steps: **1** Yield: **67%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 30 min, 70 °C

Experimental Protocols

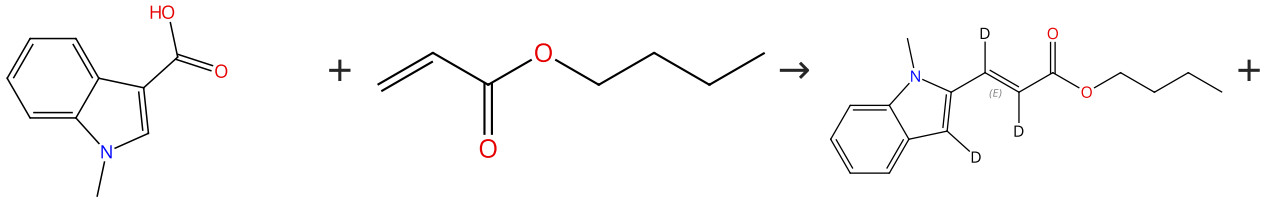
Rh(III)-catalyzed tandem annulative redox-neutral arylation/ amidation of aromatic tethered alkenes

By: Chen, Chao; et al

Chemical Science (2020), 11(44), 12124-12129.

Scheme 90 (1 Reaction)

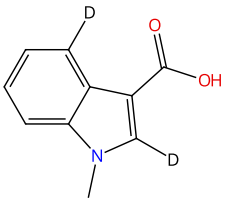
Steps: **1** Yield: **65%**



Suppliers (74)

Suppliers (66)

Double bond geometry shown



31-614-CAS-38070382

Steps: **1** Yield: **65%**

1.1 **Reagents:** Potassium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,4-Dioxane; 3 h, 100 °C

Experimental Protocols

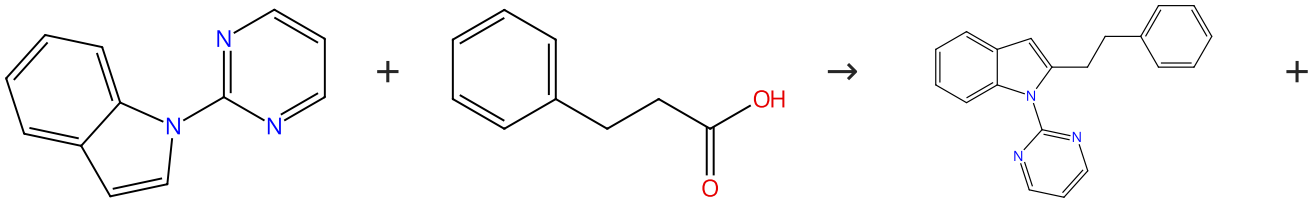
Rhodaelectro-Catalyzed Decarboxylative Cross-Dehydrog enative-Coupling of Indole-3-carboxylic Acids and Olefins via Weakly Coordinating Carboxyl group

By: Zhang, Jiaqi; et al

Journal of Organic Chemistry (2023), 88(21), 15198-15208.

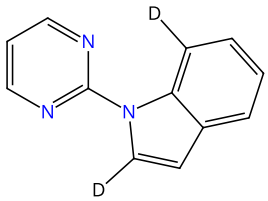
Scheme 91 (1 Reaction)

Steps: **1** Yield: **65%**



Suppliers (59)

Suppliers (112)



31-116-CAS-23574707

Steps: **1** Yield: **65%**

1.1 **Reagents:** Pivalic acid, Water-d_2, Di-*tert*-butyl dicarbonate
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: 1,4-Dioxane; 2 h, 130 °C

Experimental Protocols

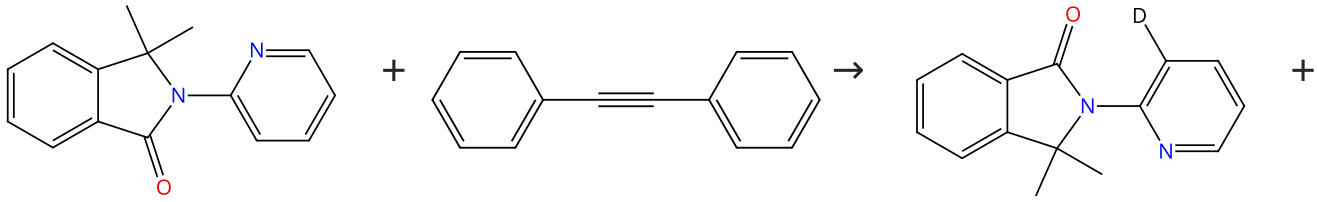
Rhodium(I)-Catalyzed C2-Selective Decarbonylative C-H Alkylation of Indoles with Alkyl Carboxylic Acids and Anhydrides

By: Yu, Haiyang; et al

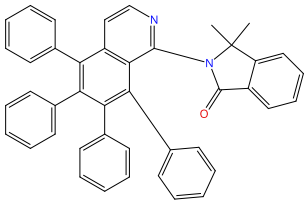
Asian Journal of Organic Chemistry (2021), 10(4), 879-885.

Scheme 92 (1 Reaction)

Steps: **1** Yield: **65%**



Suppliers (88)



31-116-CAS-23037657

Steps: **1** Yield: **65%**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2)
Solvents: 1,2-Dichloroethane; 24 h, 100 °C

Experimental Protocols

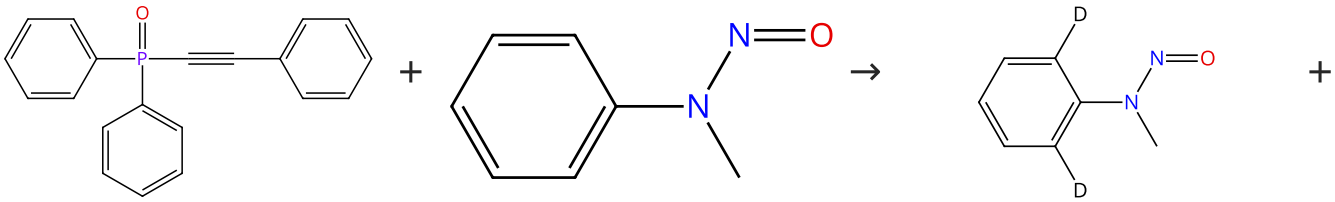
Efficient Access to Isoquinolines via Rhodium-Catalyzed Oxidative Annulation of Pyridyl C-H Bonds Directed by Carbonyl with Internal Alkynes

By: Shi, Lijun; et al

Synthesis (2021), 53(3), 538-546.

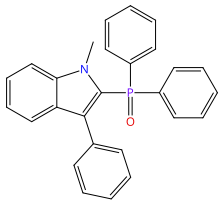
Scheme 93 (1 Reaction)

Steps: **1** Yield: **65%**



Suppliers (11)

Suppliers (75)



31-116-CAS-18624953

Steps: **1** Yield: **65%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 20 h, 60 °C

Experimental Protocols

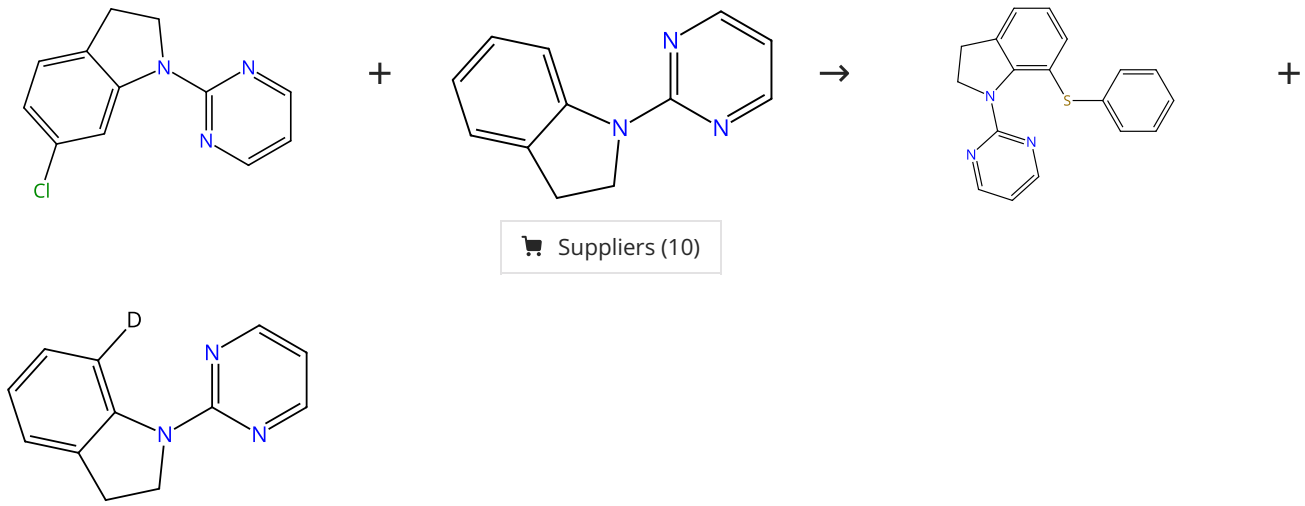
The regioselective synthesis of 2-phosphinoylindoles via Rh(III)-catalyzed C-H activation

By: Wang, Huanan; et al

Organic Chemistry Frontiers (2018), 5(1), 88-91.

Scheme 94 (1 Reaction)

Steps: **1** Yield: **64%**



Suppliers (10)

31-113-CAS-9242180

Steps: **1** Yield: **64%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 1 h, 130 °C

Experimental Protocols

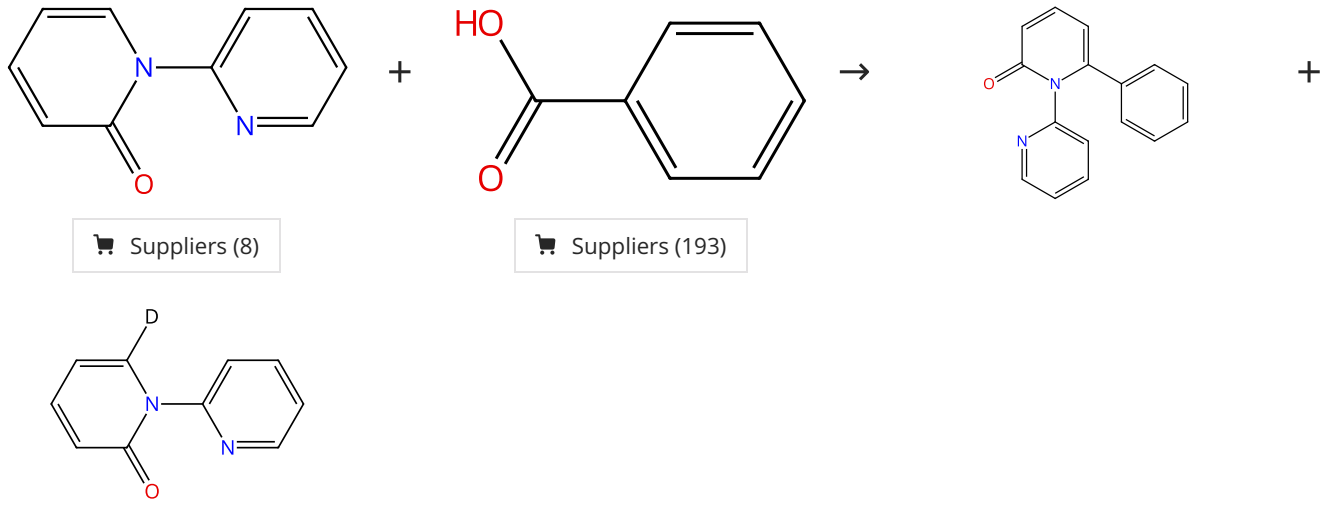
Rh(III)-Catalyzed C7-Thiolation and Selenation of Indolines

By: Xie, Wucheng; et al

Journal of Organic Chemistry (2016), 81(2), 396-403.

Scheme 95 (1 Reaction)

Steps: **1** Yield: **63%**



Suppliers (8)

Suppliers (193)

31-116-CAS-24229678

Steps: **1** Yield: **63%**

1.1 **Reagents:** Pivalic acid, Water-d_2, Di-*tert*-butyl dicarbonate
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: 1,4-Dioxane; 1 h, rt

Experimental Protocols

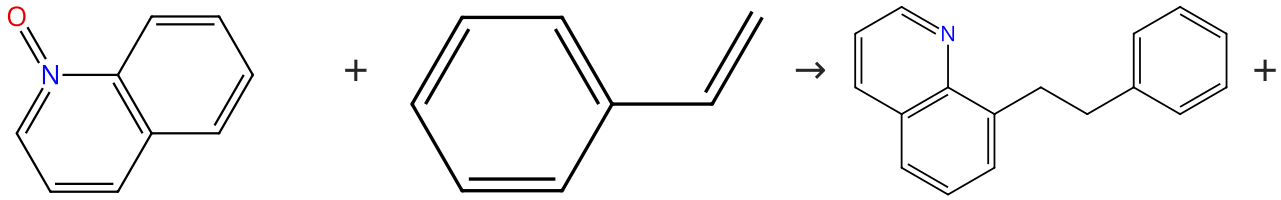
Rh(I)-Catalyzed Direct C6-H Arylation of 2-Pyridones with Aryl Carboxylic Acids

By: Zhao, Haoqiang; et al

Advanced Synthesis & Catalysis (2021), 363(16), 3995-4001.

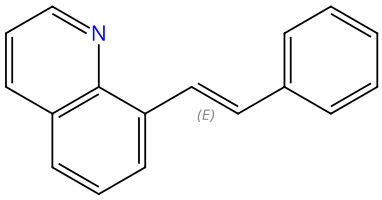
Scheme 96 (1 Reaction)

Steps: **1** Yield: **60%**



Suppliers (57)

Suppliers (122)



Double bond geometry shown

Suppliers (7)

31-085-CAS-17607871

Steps: **1** Yield: **60%**

1.1 **Reagents:** Acetic acid, Water-d_2, Silver tetrafluoroborate
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Dimethylformamide; 2 h, 140 °C

Experimental Protocols

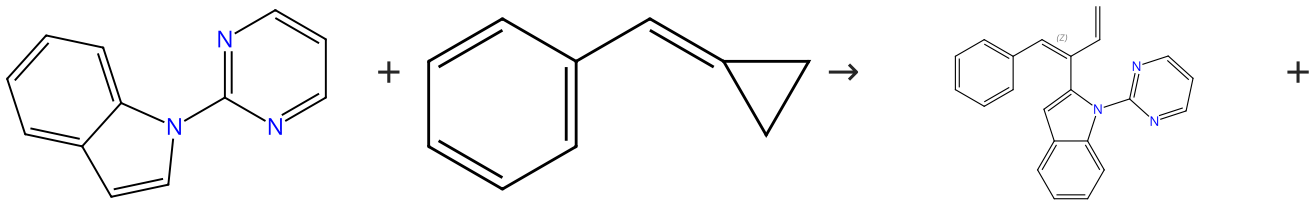
Rhodium-Catalyzed Remote C-8 Alkylation of Quinolines with Activated and Unactivated Olefins: Mechanistic Study and Total Synthesis of EP4 Agonist

By: Sharma, Ritika; et al

Advanced Synthesis & Catalysis (2017), 359(17), 3022-3028.

Scheme 97 (1 Reaction)

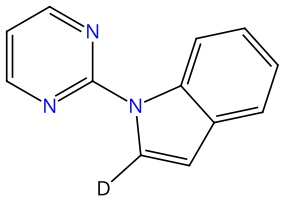
Steps: **1** Yield: **60%**



Suppliers (59)

Suppliers (20)

Double bond geometry shown



Suppliers (3)

31-614-CAS-30362229

Steps: **1** Yield: **60%**

1.1 **Reagents:** Water-d_2
Catalysts: Cyclopentanecarboxylic acid, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Tricyclo[3.3.1.1^{3,7}]decane-1-carboxylic acid, sodium salt (1:1)
Solvents: 1,4-Dioxane; 1 h, 95 °C

Experimental Protocols

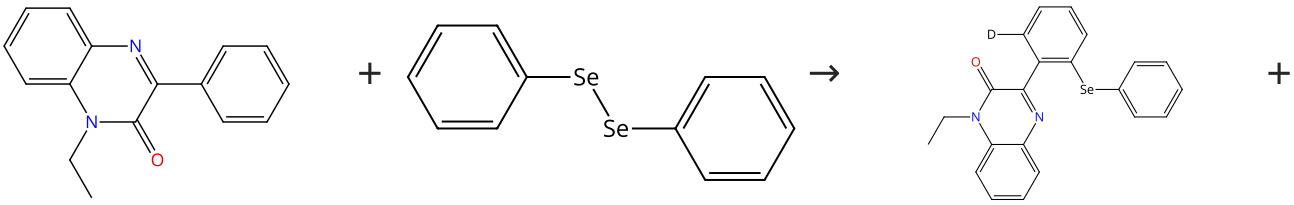
Rhodaelectro-catalyzed chemo-divergent C-H activations with alkylidenecyclopropanes for selective cycloprop ylations

By: Shen, Zhigao; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(30), 3668-3671.

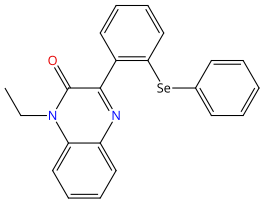
Scheme 98 (1 Reaction)

Steps: **1** Yield: **58%**



Suppliers (3)

Suppliers (63)



31-614-CAS-36224943

Steps: **1** Yield: **58%**

1.1 **Reagents:** Silver carbonate, Water-d_2, [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*]methanesulfonamidato-κ*O*] silver
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 24 h, 110 °C

Experimental Protocols

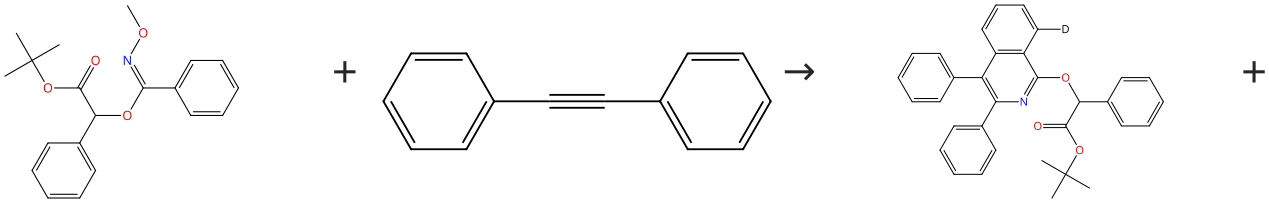
Rhodium-catalyzed selenylation and sulfenylation of quinoxalinones 'on water'

By: Lalji, Ram Sunil Kumar; et al

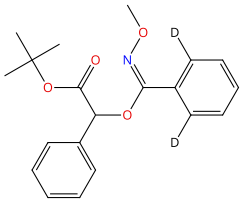
RSC Advances (2023), 13(9), 6191-6198.

Scheme 99 (1 Reaction)

Steps: **1** Yield: **58%**



Suppliers (88)



31-116-CAS-20469719

Steps: **1** Yield: **58%**

1.1 **Reagents:** Water-d_2, Silver hexafluoroantimonate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 20 h, rt

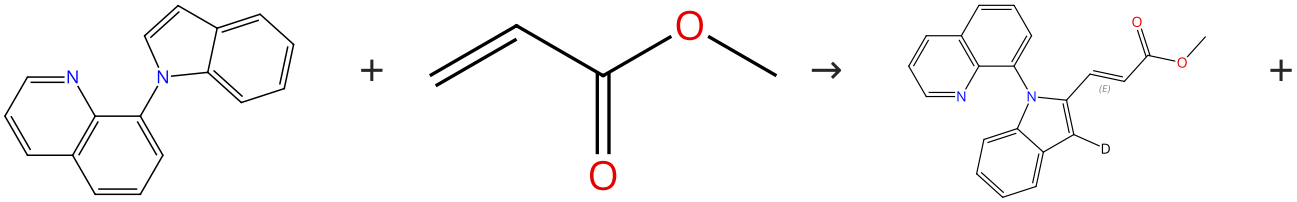
Three-Component Synthesis of Isoquinoline Derivatives by a Relay Catalysis with a Single Rhodium(III) Catalyst

By: Zhou, Chao; et al

Organic Letters (2019), 21(13), 4971-4975.

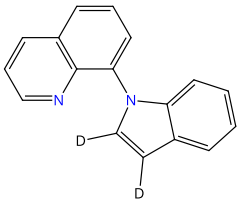
Scheme 100 (1 Reaction)

Steps: **1** Yield: **57%**



Suppliers (66)

Double bond geometry shown



31-116-CAS-23752503

Steps: **1** Yield: **57%**

1.1 **Reagents:** Cupric acetate, Water-d_2, Boric acid (H_3BO_3)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 2 h, 100 °C

Experimental Protocols

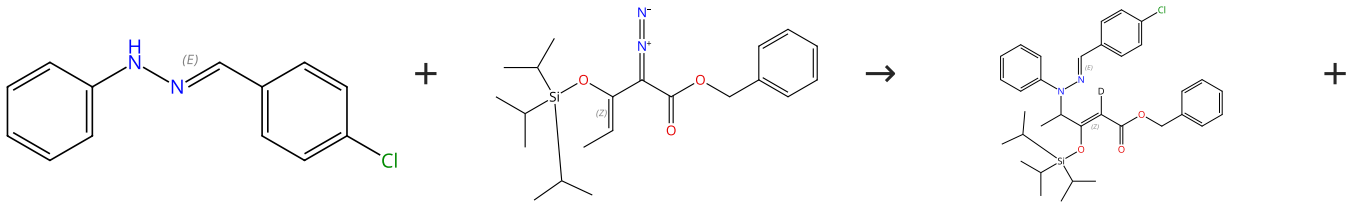
Access to the C2 C-H olefination, alkylation and deuteration of indoles by rhodium(III) catalysis: an opportunity for diverse syntheses

By: Wu, Jiaping; et al

Organic Chemistry Frontiers (2021), 8(12), 3032-3040.

Scheme 101 (1 Reaction)

Steps: **1** Yield: **56%**

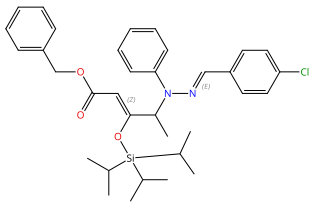


Double bond geometry shown

Double bond geometry shown

Double bond geometry shown

Suppliers (9)



Double bond geometry shown

31-614-CAS-25288825

Steps: **1** Yield: **56%**

1.1 **Reagents:** Water-d_2
Solvents: Dichloromethane; 30 min, rt

1.2 **Catalysts:** Dirhodium tetraacetate
Solvents: Dichloromethane; 1 h, rt; 1 h, rt

Experimental Protocols

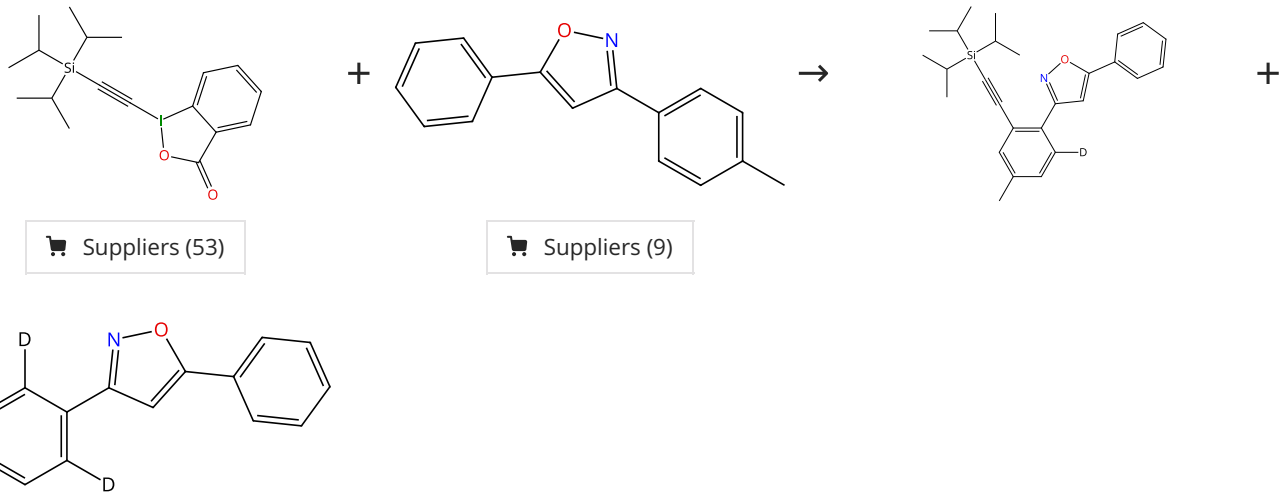
Synthesis of Tetrahydropyridazines by a Metal-Carbene-Directed Enantioselective Vinylogous N-H Insertion/Lewis Acid-Catalyzed Diastereoselective Mannich Addition

By: Xu, Xinfang; et al

Angewandte Chemie, International Edition (2012), 51(39), 9829-9833, S9829/1-S9829/76.

Scheme 102 (1 Reaction)

Steps: **1** Yield: **56%**



Suppliers (53)

Suppliers (9)

31-614-CAS-41046765

Steps: **1** Yield: **56%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, rt

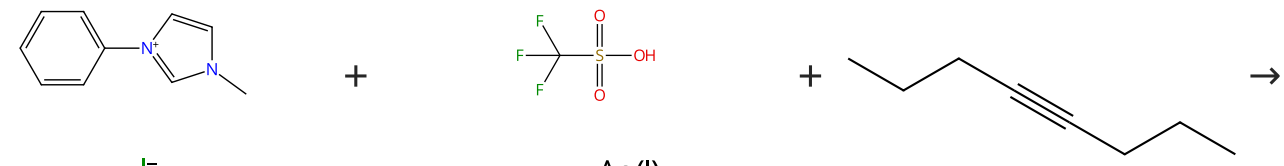
Isoxazole group directed Rh(III)-catalyzed alkynylation using TIPS-EBX

By: Das, Sukanya; et al

Organic & Biomolecular Chemistry (2024), 22(34), 6922-6927.

Scheme 103 (1 Reaction)

Steps: **1** Yield: **56%**



- I^-

- Ag(I)

Suppliers (12)

Suppliers (107)

Suppliers (47)

Multi-component structure image available in CAS SciFinder

Multi-component structure image available in CAS SciFinder

31-116-CAS-2316860

Steps: **1** Yield: **56%**

1.1 **Reagents:** Sodium acetate
Catalysts: Di-μ-chlorobis[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]dirhodium
Solvents: 1,2-Dichloroethane, Water-d_2; 12 h, 100 °C

Experimental Protocols

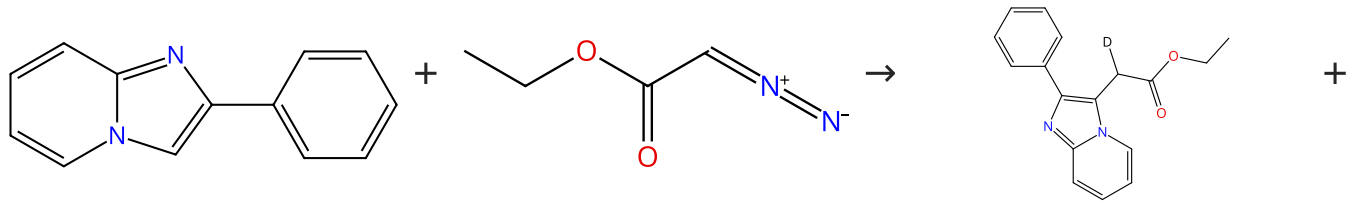
Rhodium(III)-N-Heterocyclic Carbene-Driven Cascade C-H Activation Catalysis

By: Ghorai, Debasish; et al

ACS Catalysis (2015), 5(4), 2692-2696.

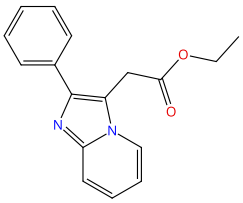
Scheme 104 (1 Reaction)

Steps: **1** Yield: **56%**



Suppliers (83)

Suppliers (41)



Suppliers (2)

31-116-CAS-22060515

Steps: **1** Yield: **56%**

1.1 **Reagents:** Water-d_2
Catalysts: Dirhodium tetraacetate
Solvents: Chloroform; rt; 4 h, rt

Experimental Protocols

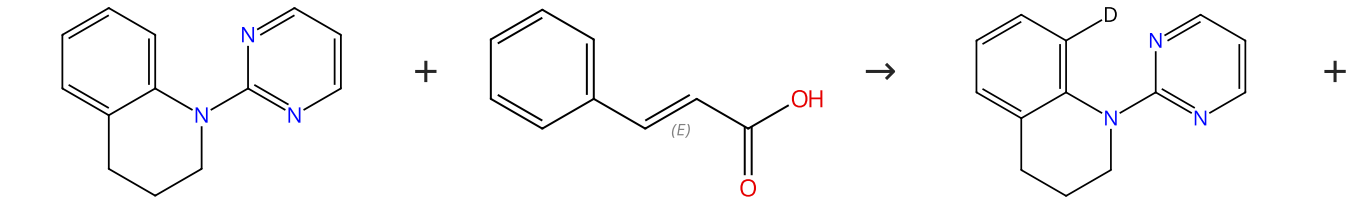
Rhodium catalyzed direct C3-ethoxycarbonylmethylation of imidazo[1,2-a]pyridines with ethyl diazoacetate

By: Huang, Qiuyao; et al

Tetrahedron (2020), 76(10), 130998.

Scheme 105 (1 Reaction)

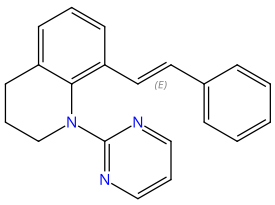
Steps: **1** Yield: **55%**



Supplier (1)

Double bond geometry shown

Suppliers (164)



Double bond geometry shown

31-614-CAS-39744511

Steps: **1** Yield: **55%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Dicarbonylrhodium acetylacetonate
Solvents: 1,4-Dioxane; 0.5 h, 250 psi, 140 °C; 140 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water

Experimental Protocols

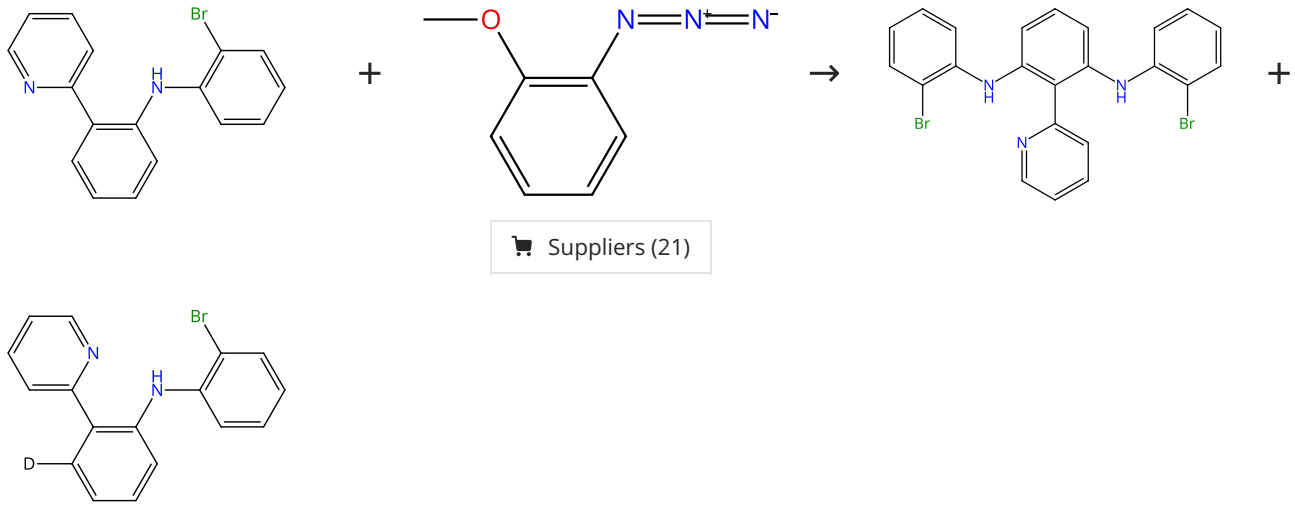
Microwave-assisted Rhodium(I)-Catalyzed C8-Regioselective C-H Alkenylation and Arylation of 1,2,3,4-Tetrahydro quinolines with Alkenyl and Aryl Carboxylic Acids

By: Zhao, Haoqiang; et al

Advanced Synthesis & Catalysis (2024), 366(8), 1820-1826.

Scheme 106 (1 Reaction)

Steps: **1** Yield: **55%**



Suppliers (21)

31-080-CAS-4011655

Steps: **1** Yield: **55%**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Sodium tetrakis[3,5-bis(trifluoromethyl)phenyl] borate
Solvents: Water-d_2; 12 h, 110 °C

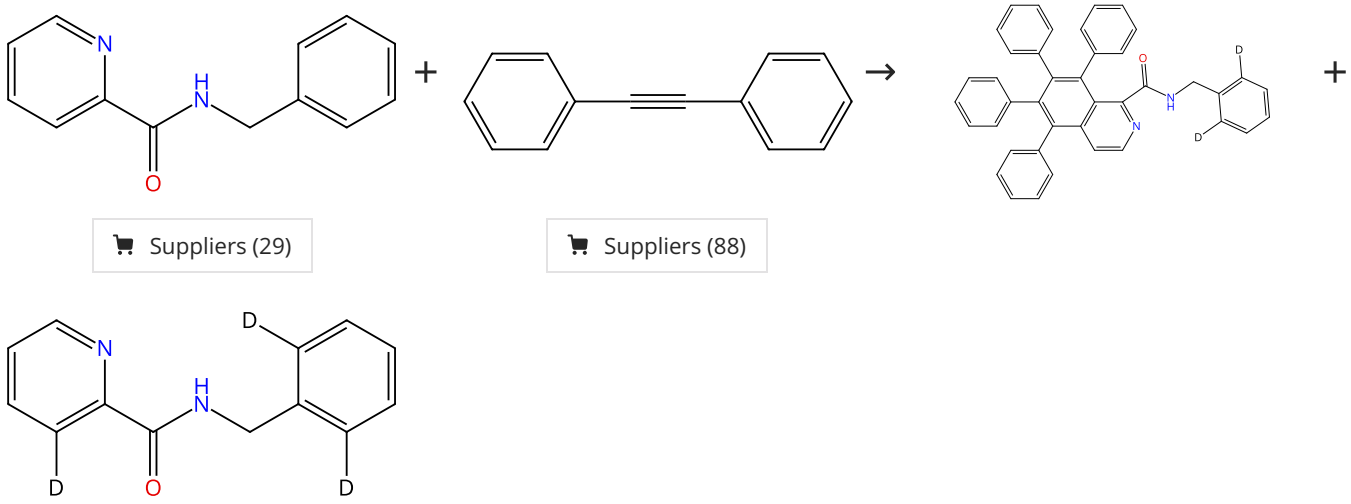
Rhodium-Catalyzed Selective Mono- and Diamin ation of Arenes with Single Directing Site "On Water"

By: Ali, Ashif Md; et al

Organic Letters (2016), 18(6), 1386-1389.

Scheme 107 (1 Reaction)

Steps: **1** Yield: **55%**



Suppliers (29)

Suppliers (88)

31-116-CAS-15703311

Steps: **1** Yield: **55%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 4 h, 120 °C

Experimental Protocols

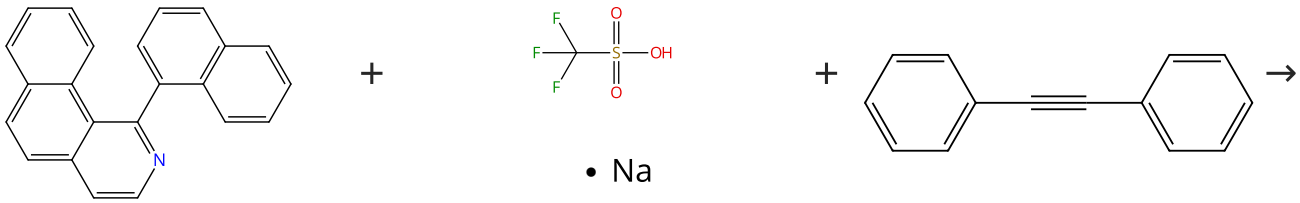
Rh^{I}/Rh^{III} catalyst-controlled divergent aryl/heteroaryl C-H bond functionalization of picolinamides with alkynes

By: Martinez, Angel Manu; et al

Chemical Science (2015), 6(10), 5802-5814.

Scheme 108 (1 Reaction)

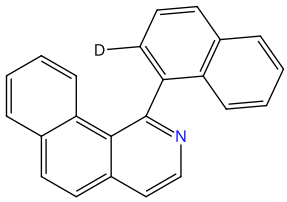
Steps: **1** Yield: **54%**



Suppliers (87)

Suppliers (88)

Multi-component structure image available in CAS SciFinder



31-116-CAS-23240001

Steps: **1** Yield: **54%**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: (α*S*)-1,3-Dioxo-α-(phenylmethyl)-1*H*-benz[*de*]isoquinoline-2(3*H*)-acetic acid, Bis(η^2-ethene)[(8a,9,10,11,11a-η)-(2a*S*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6]cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-8a(12*H*)-yl]rhodium
Solvents: Methanol-d_4; 2 h, 80 °C

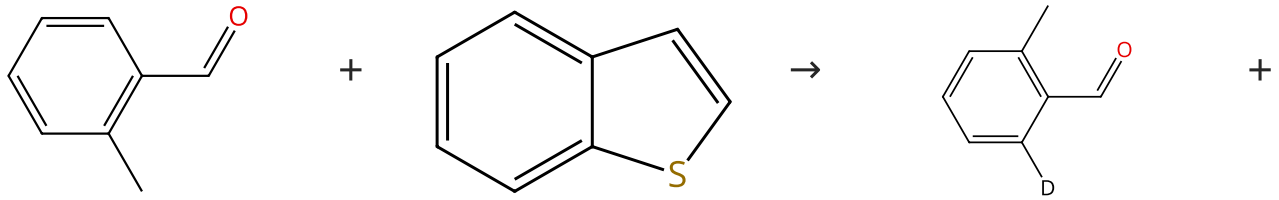
Enantioselective Synthesis of Azoniahelicenes by Rh-Catalyzed C-H Annulation with Alkynes

By: Wang, Qiang; et al

Journal of the American Chemical Society (2021), 143(1), 114-120.

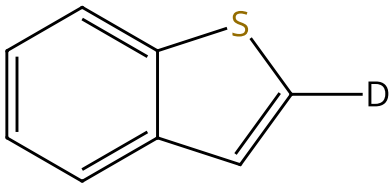
Scheme 109 (1 Reaction)

Steps: **1** Yield: **54%**



Suppliers (94)

Suppliers (99)



Supplier (1)

31-116-CAS-22267695

Steps: **1** Yield: **54%**

1.1 **Reagents:** Benzylamine, Water-d_2, Silver tetrafluoroborate, Silver oxide (Ag_2O), Propanoic acid-*d*, 2,2-dimethyl-
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 2-Methyl-2-butanol, 1,2-Dichloroethane; 15 min, rt; 4 h, 80 °C

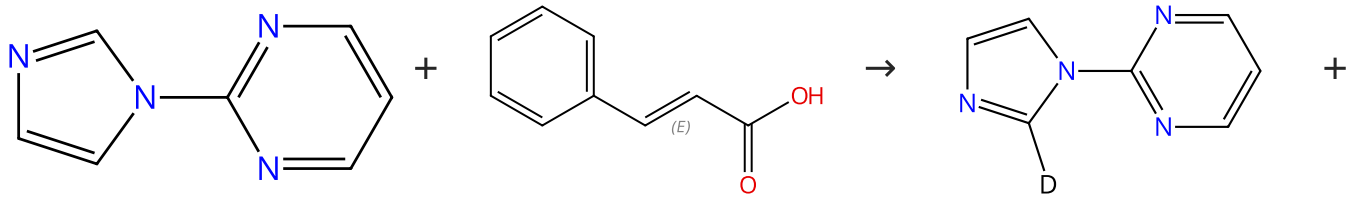
Transient directing ligand- and solvent-controlled C-H/C-H cross-coupling/quaternization cyclization/dequaternization of benzaldehydes with thiophenes

By: Sun, Denan; et al

Chemical Communications (Cambridge, United Kingdom) (2019), 55(52), 7518-7521.

Scheme 110 (1 Reaction)

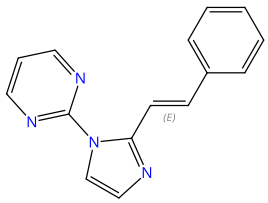
Steps: **1** Yield: **53%**



Suppliers (12)

Double bond geometry shown

Suppliers (164)



Double bond geometry shown

31-614-CAS-32465933

Steps: **1** Yield: **53%**

1.1 **Reagents:** Pivalic anhydride, Water-d_2
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-, Bis[2-(diphenylphosphino)phenyl] ether
Solvents: 1,4-Dioxane; 6 h, 140 °C

Experimental Protocols

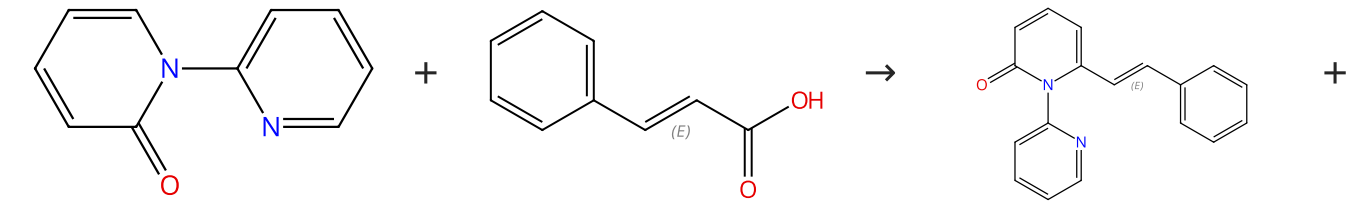
Ligand-Promoted Rh^{I}-Catalyzed C2-Selective C-H Alkenylation and Polyenylation of Imidazoles with Alkenyl Carboxylic Acids

By: Zhao, Haoqiang; et al

Chemistry - A European Journal (2022), 28(36), e202200441.

Scheme 111 (1 Reaction)

Steps: **1** Yield: **53%**

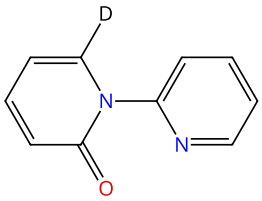


Suppliers (8)

Double bond geometry shown

Suppliers (164)

Double bond geometry shown



31-116-CAS-20867166

Steps: **1** Yield: **53%**

1.1 **Reagents:** Water-d_2, Di-*tert*-butyl dicarbonate
Catalysts: Rhodium, tetracarbonyldi-μ-chlorodi-
Solvents: 1,4-Dioxane; 1 h, 130 °C

Experimental Protocols

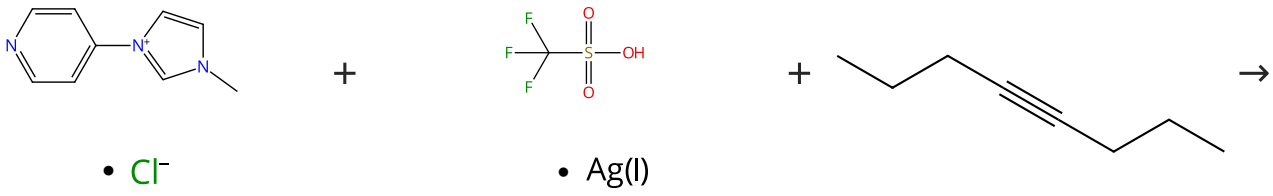
Rhodium(I)-catalyzed C6-selective C-H alkenylation and polyenylation of 2-pyridones with alkenyl and conjugated polyenyl carboxylic acids

By: Zhao, Haoqiang; et al

Chemical Science (2019), 10(43), 10089-10096.

Scheme 112 (1 Reaction)

Steps: **1** Yield: **53%**



• Cl^-

• Ag(I)

Supplier (1)

Suppliers (107)

Suppliers (47)

Multi-component structure image available in CAS SciFinder

+

Multi-component structure image available in CAS SciFinder

31-614-CAS-26727702

Steps: **1** Yield: **53%**

1.1 **Reagents:** Sodium acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane, Water-d_2; 2 h, 100 °C

Experimental Protocols

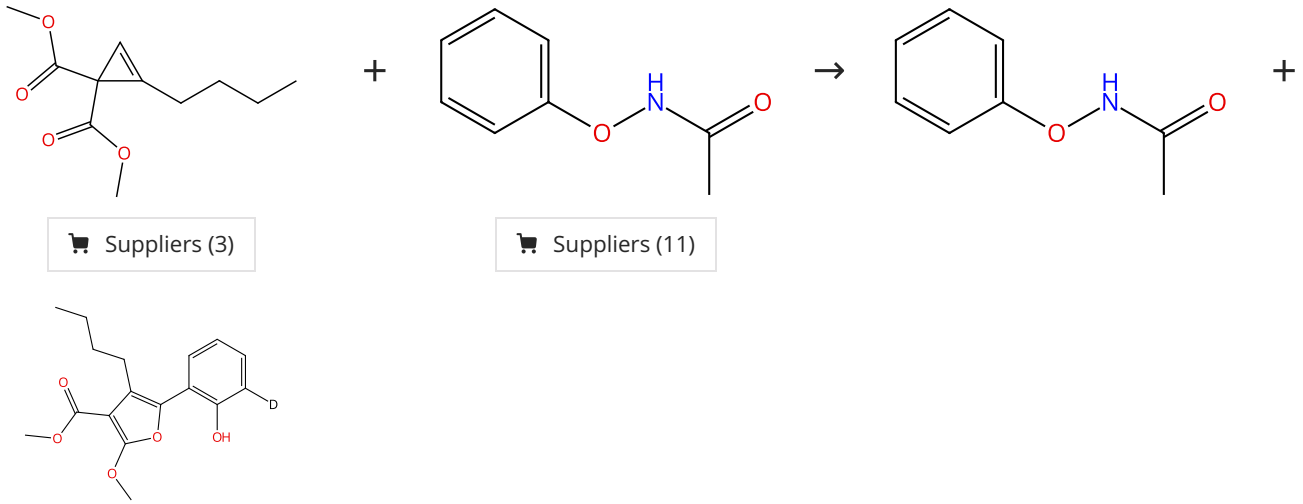
Rhodium(III)-Catalyzed Activation and Functionalization of Pyridine C-H Bond by Exploring a Unique Double Role of "N-Heterocyclic Carbene-Pyridyl" Ligand Platform

By: Thenarukandiyil, Ranjeesh; et al

Organometallics (2015), 34(10), 1890-1897.

Scheme 113 (1 Reaction)

Steps: **1** Yield: **53%**



Suppliers (3)

Suppliers (11)

31-614-CAS-27742871

Steps: **1** Yield: **53%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis(acetato-κ*O*)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium
Solvents: Chlorobenzene; 2 h, 60 °C

Experimental Protocols

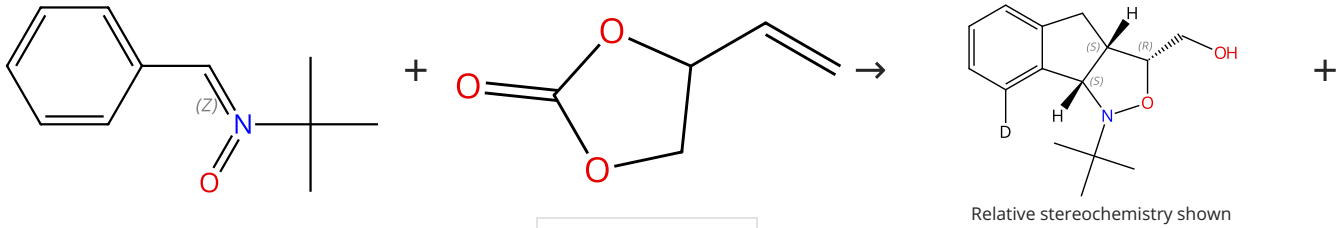
Efficient Synthesis of Arylated Furans by a Sequential Rh-Catalyzed Arylation and Cycloisomerization of Cyclopropenes

By: Wang, Xiaoming; et al

Angewandte Chemie, International Edition (2018), 57(6), 1712-1716.

Scheme 114 (1 Reaction)

Steps: **1** Yield: **53%**

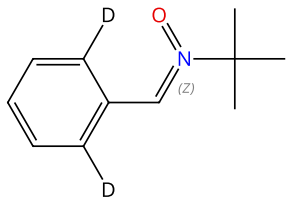


Double bond geometry shown

Suppliers (17)

Suppliers (62)

Relative stereochemistry shown



Double bond geometry shown

31-614-CAS-34193888

Steps: **1** Yield: **53%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Chlorobenzene; 12 h, 60 °C

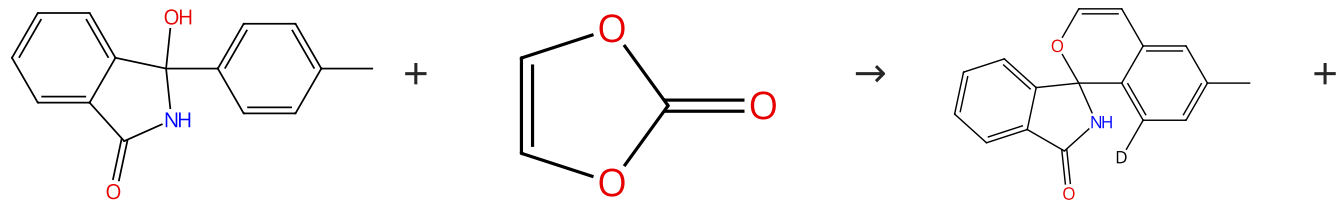
Regio- and stereo-selective construction of cis-indeno[1,2-c] isoxazoles via a C-H allylation/1,3-dipolar cycloaddition cascade

By: Zhu, Man; et al

Organic Chemistry Frontiers (2022), 9(21), 5879-5884.

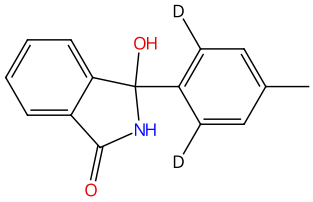
Scheme 115 (1 Reaction)

Steps: **1** Yield: **52%**



Suppliers (2)

Suppliers (74)



31-614-CAS-38458584

Steps: **1** Yield: **52%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], [1,1,1-Trifluoro-*N*-[(trifluoromethyl)sulfonyl-κ*O*] methanesulfonamidato-κ*O*]silver
Solvents: 1,4-Dioxane; 3 h, 80 °C

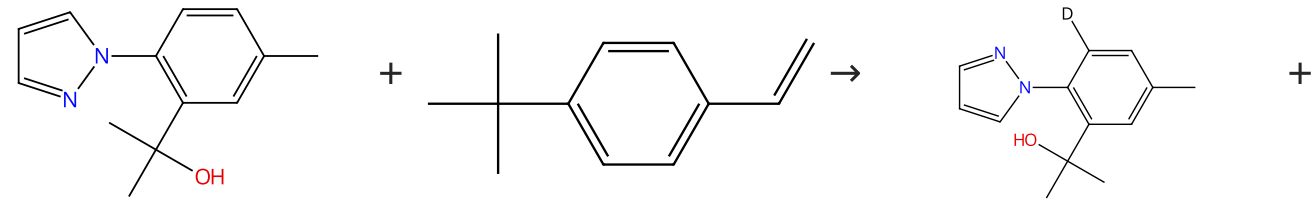
Rhodium-catalyzed divergent dehydroxylation/alkenylation of hydroxyisoindolinones with vinylene carbonate

By: Nan, Jiang; et al

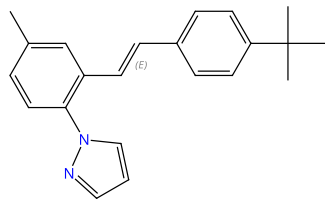
Chemical Communications (Cambridge, United Kingdom) (2023), 59(98), 14559-14562.

Scheme 116 (1 Reaction)

Steps: **1** Yield: **51%**



Suppliers (60)



Double bond geometry shown

31-614-CAS-30137120

Steps: **1** Yield: **51%**

1.1 **Reagents:** Potassium acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2-Methyl-2-butanol-*d*, Water-d_2; 2 h, 100 °C

Experimental Protocols

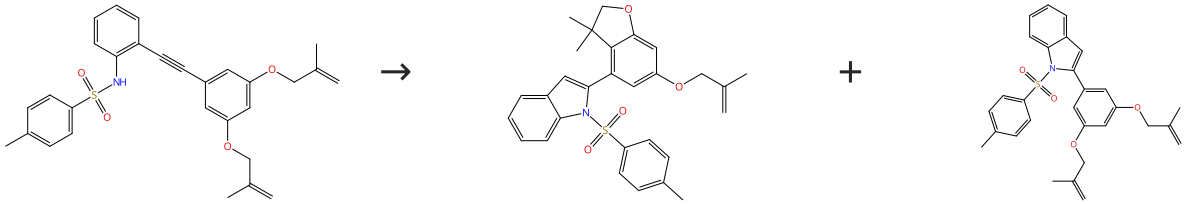
Electro-Oxidative C-C Alkenylation by Rhodium(III) Catalysis

By: Qiu, Youai; et al

Journal of the American Chemical Society (2019), 141(6), 2731-2738.

Scheme 117 (1 Reaction)

Steps: **1** Yield: **51%**



31-614-CAS-30110254

Steps: **1** Yield: **51%**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dimethylacetamide; 10 h, 80 °C

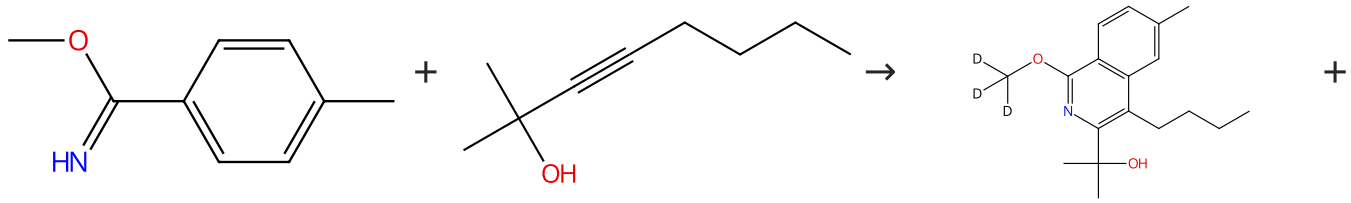
Synthesis of Indole-Fused Polycyclics via Rhodium-Catalyzed Undirected C-H Activation/Alkene Insertion

By: Guo, Songjin; et al

Organic Letters (2019), 21(16), 6320-6324.

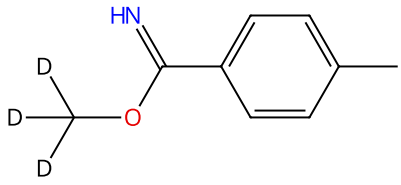
Scheme 118 (1 Reaction)

Steps: **1** Yield: **50%**



Suppliers (7)

Suppliers (19)



31-116-CAS-20676445 Steps: **1** Yield: **50%**

1.1 **Reagents:** Methanol-d_4, Propanoic acid, 2,2-dimethyl-, sodium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Water-d_2; 10 h, 35 °C

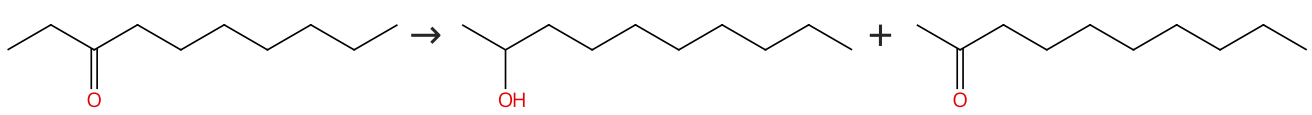
Experimental Protocols

Flow Rhodaelectro-Catalyzed Alkyne Annulations by Versatile C-H Activation: Mechanistic Support for Rhodium(III/IV)

By: Kong, Wei-Jun; et al

Journal of the American Chemical Society (2019), 141(43), 17198-17206.

Scheme 119 (1 Reaction) Steps: **1** Yield: **50%**



Suppliers (53)

deuterated

deuterated

31-491-CAS-7520886 Steps: **1** Yield: **50%**

1.1 **Reagents:** Hydrogen
Catalysts: Rhodium
Solvents: Water-d_2; 24 h, 160 °C

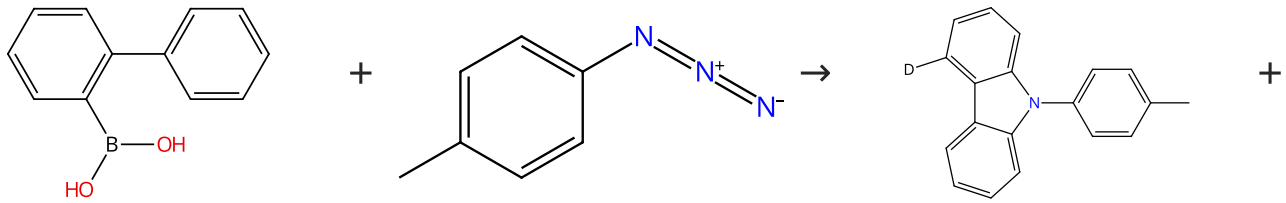
Experimental Protocols

Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

By: Esaki, Hiroyoshi; et al

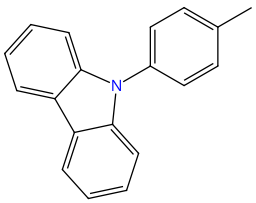
Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 120 (1 Reaction) Steps: **1** Yield: **49%**



Suppliers (96)

Suppliers (30)



Suppliers (47)

31-116-CAS-19191475 Steps: **1** Yield: **49%**

1.1 **Reagents:** Sodium carbonate, Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,4-Dioxane; 12 h, 80 °C

Experimental Protocols

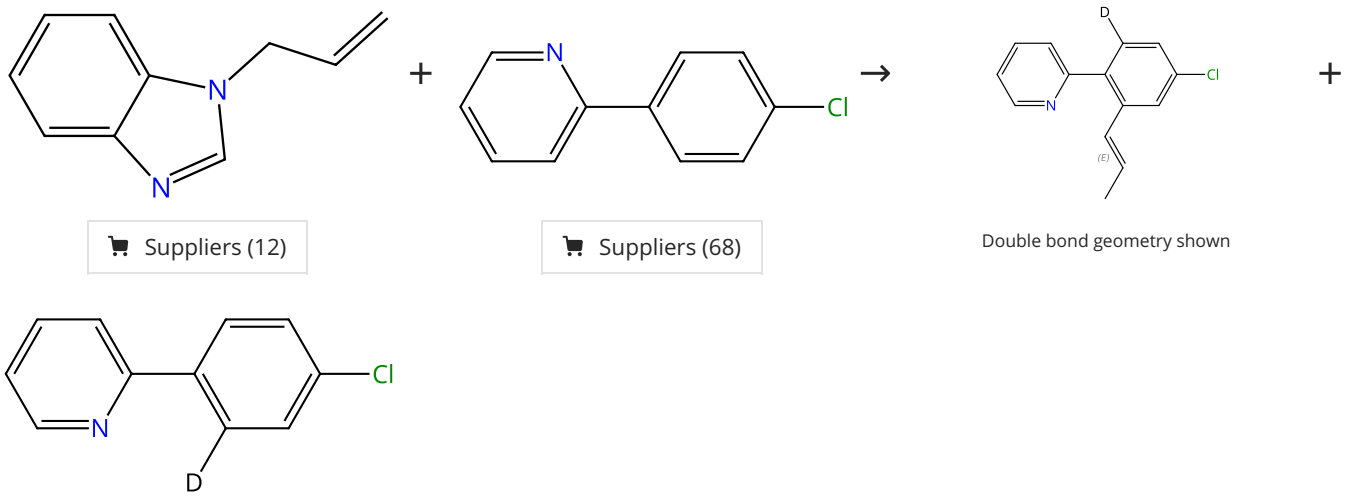
Rh(III)-Catalyzed C-H Activation of Boronic Acid with Aryl Azide

By: Xu, Shiyang; et al

Organic Letters (2018), 20(18), 5578-5582.

Scheme 121 (1 Reaction)

Steps: **1** Yield: **48%**



Suppliers (12)

Suppliers (68)

Double bond geometry shown

31-614-CAS-35155686

Steps: **1** Yield: **48%**

1.1 **Reagents:** Zinc acetate, Water-d_2, Lithium perchlorate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2,2,2-Trifluoroethanol; 30 min, 130 °C

Experimental Protocols

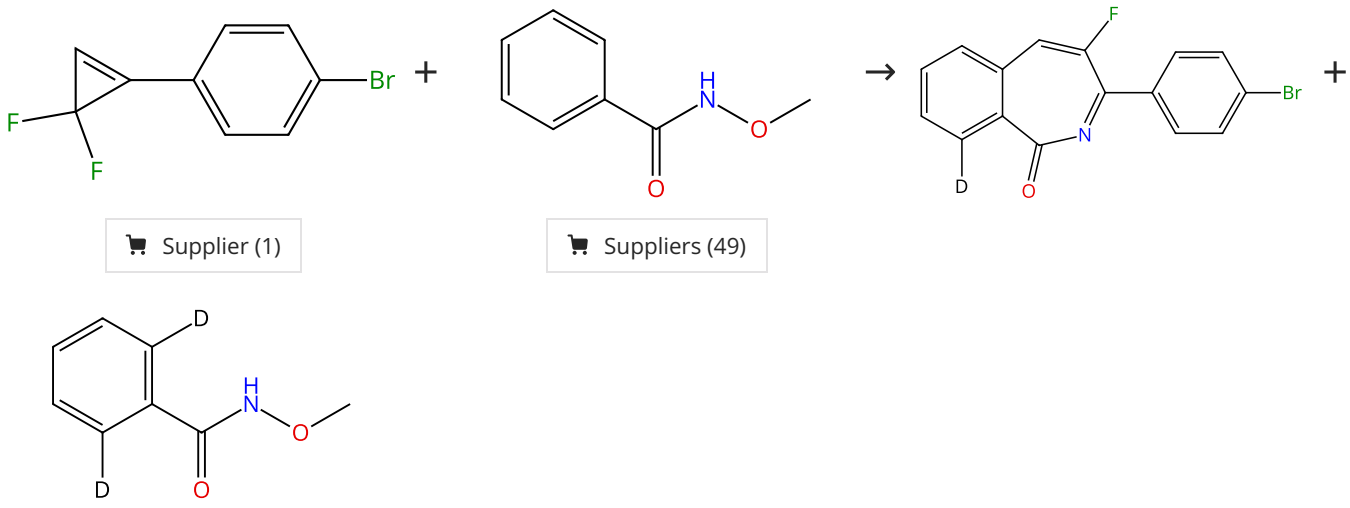
N-Allylbenzimidazole as a strategic surrogate in Rh-catalyzed stereoselective trans-propenylation of aryl C(sp^2)-H bond

By: Biswal, Pragati; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(2), 199-202.

Scheme 122 (1 Reaction)

Steps: **1** Yield: **48%**



Supplier (1)

Suppliers (49)

31-614-CAS-24813350

Steps: **1** Yield: **48%**

1.1 **Reagents:** Potassium acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 6 h, rt

Experimental Protocols

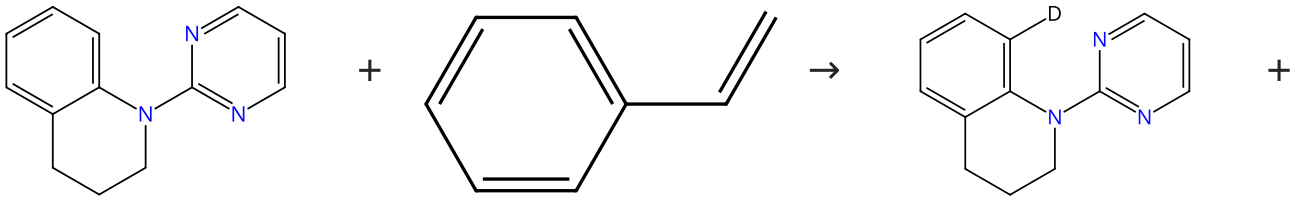
Gem-Difluorocyclopropenes as Versatile β-Monofluorinated Three-sp^2 Carbon Sources for Cp*Rh(III)-Catalyzed [4 + 3] Annulation: Experimental Development and Mechanistic Insight

By: Xu, Huiying; et al

ACS Catalysis (2021), 11(23), 14694-14701.

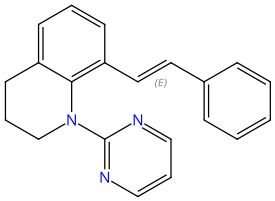
Scheme 123 (1 Reaction)

Steps: **1** Yield: **46%**



Supplier (1)

Suppliers (122)



Double bond geometry shown

31-614-CAS-36175401

Steps: **1** Yield: **46%**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 8 h, 1 atm, 130 °C

Experimental Protocols

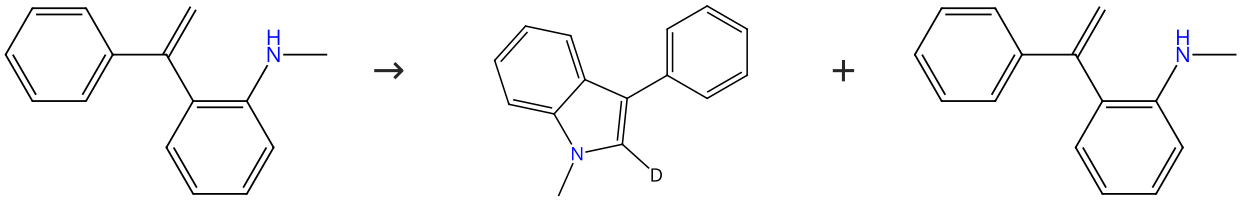
Rhodium(III-Catalyzed C8-Selective C-H Alkenylation and Alkylation of 1, 2, 3, 4-Tetrahydroquinolines with Styrenes and Allylic Alcohols

By: Yang, Ji; et al

Advanced Synthesis & Catalysis (2023), 365(7), 1027-1035.

Scheme 124 (1 Reaction)

Steps: **1** Yield: **46%**



Suppliers (14)

31-614-CAS-26751764

Steps: **1** Yield: **46%**

1.1 **Reagents:** Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 4.5 h, 100 °C

Experimental Protocols

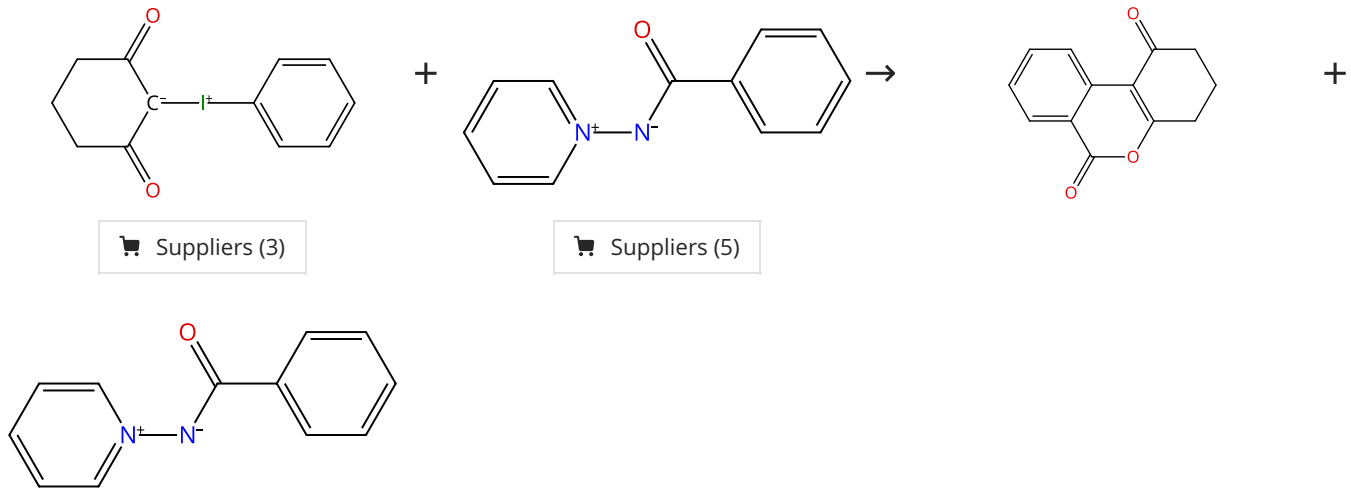
Divergent Functionalization of N-Alkyl-2-alkenylanilines: Efficient Synthesis of Substituted Indoles and Quinolines

By: Ghorai, Jayanta; et al

Chemistry - An Asian Journal (2018), 13(17), 2499-2504.

Scheme 125 (1 Reaction)

Steps: **1** Yield: **45%**



Suppliers (3)

Suppliers (5)

31-614-CAS-30955916

Steps: **1** Yield: **45%**

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 80 °C

Experimental Protocols

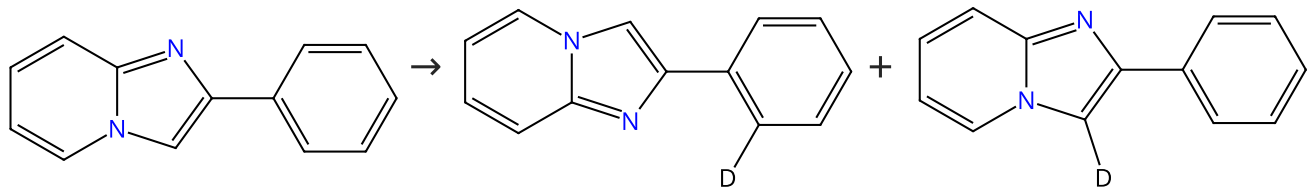
Rh(III)-Catalyzed Diverse C-H Functionalization of Iminopyridinium Ylides

By: Dong, Zhenzhen; et al

Chinese Journal of Chemistry (2021), 39(9), 2489-2494.

Scheme 126 (1 Reaction)

Steps: **1** Yield: **42%**



Suppliers (83)

31-116-CAS-14005762

Steps: **1** Yield: **42%**

1.1 **Reagents:** Oxygen
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2)
Solvents: Toluene; 12 h, 110 °C

1.2 **Reagents:** Water-d_2

Experimental Protocols

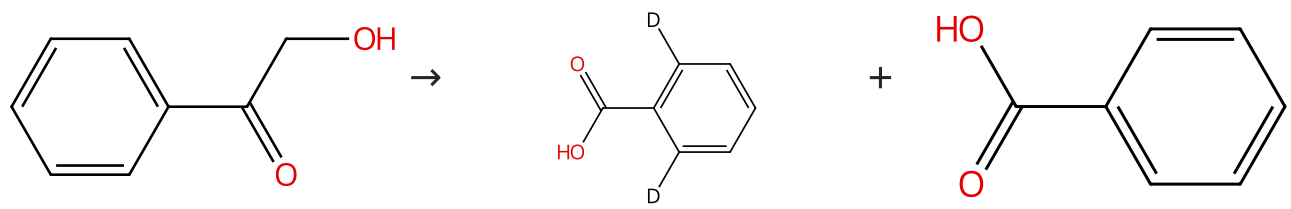
Rhodium-catalyzed annulation between 2-arylimidazo[1,2-a]pyridines and alkynes leading to pyrido[1,2-a]benzimidazole derivatives

By: Peng, Haibo; et al

Organic & Biomolecular Chemistry (2015), 13(19), 5354-5357.

Scheme 127 (1 Reaction)

Steps: **1** Yield: **40%**



Suppliers (81)

Suppliers (6)

Suppliers (193)

31-614-CAS-31698760 Steps: **1** Yield: **40%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 1 h, 80 °C

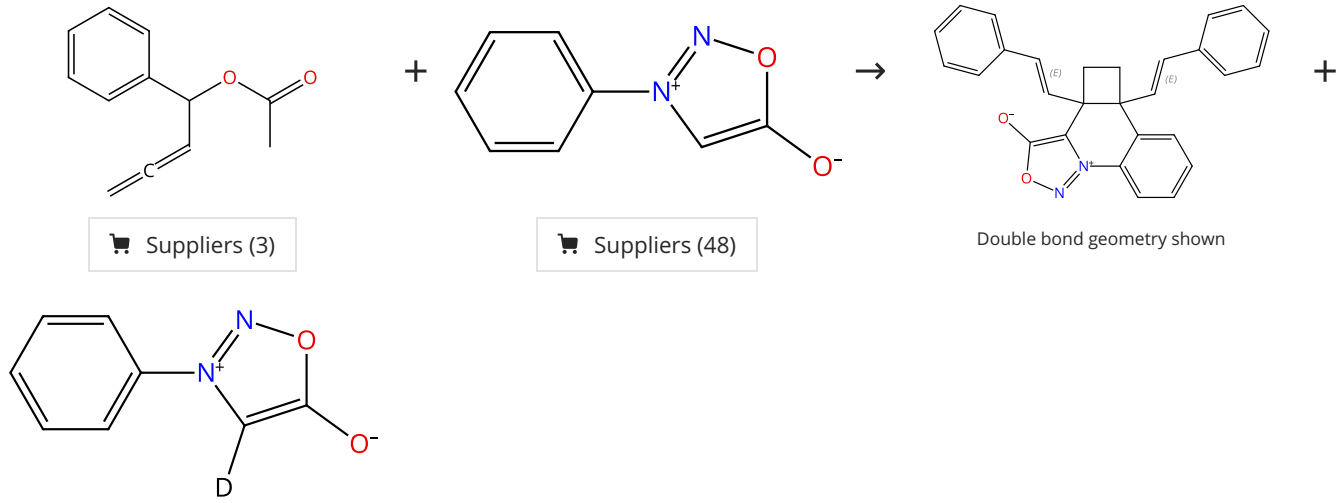
Experimental Protocols

Rhodium(III)-catalyzed Cleavage of C-C Bond and C-H Bond Cascaded by Michael Addition for the Conversion of α-Hydroxy Ketones to Phthalides and Isocoumarins

By: Yin, Fucheng; et al

Asian Journal of Organic Chemistry (2022), 11(4), e202200024.

Scheme 128 (1 Reaction) Steps: **1** Yield: **39%**



Suppliers (3) Suppliers (48)

Double bond geometry shown

31-614-CAS-36024258 Steps: **1** Yield: **39%**

1.1 **Reagents:** Silver acetate, Tempo, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 5 h, 50 °C; 50 °C → rt

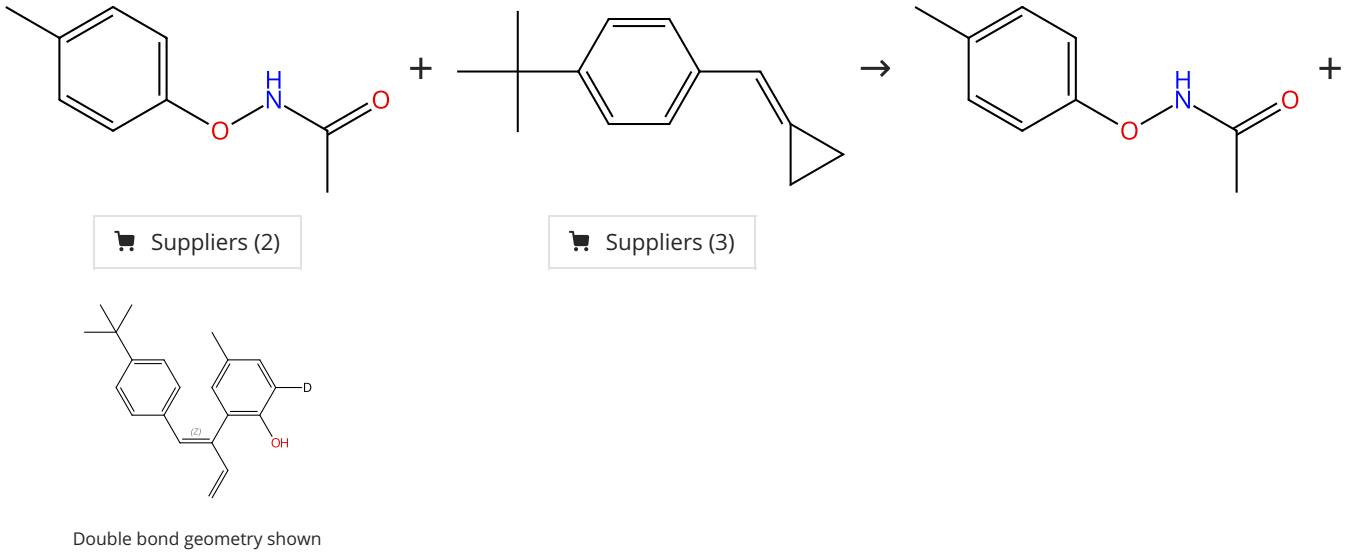
1.2 **Reagents:** Water

Unsymmetrical relay C-H alkenylation and [2 + 2] cycload dition of N-arylsydnones with allenyl acetates leading to quinoline-fused cyclobutanes

By: Song, Xia; et al

Organic Chemistry Frontiers (2023), 10(5), 1191-1197.

Scheme 129 (1 Reaction) Steps: **1** Yield: **36%**



Suppliers (2) Suppliers (3)

Double bond geometry shown

31-614-CAS-25655398 Steps: **1** Yield: **36%**

1.1 **Reagents:** Cesium acetate
Catalysts: Bis(acetato-κ*O*)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium
Solvents: Water-d_2; 6 h, 60 °C

Experimental Protocols

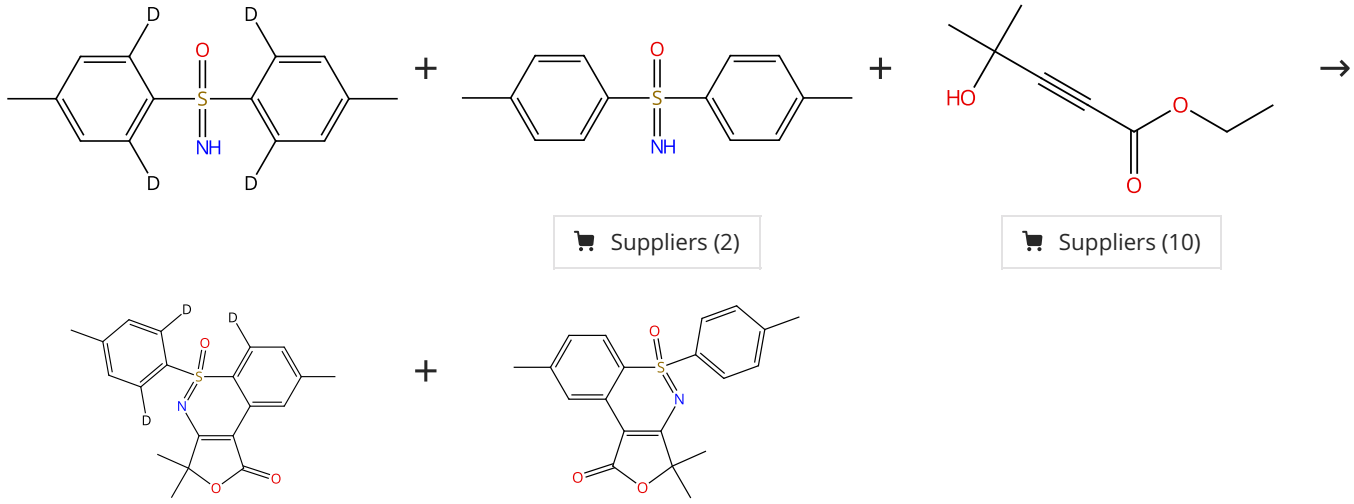
Rh(III)-Catalyzed Chemodivergent Coupling of N-Phenoxyac etamides and Alkylidenecyclopropanes via C-H Activation

By: Xu, Guiqing; et al

Organic Letters (2021), 23(8), 2927-2932.

Scheme 130 (1 Reaction)

Steps: **1** Yield: **36%**



31-357-CAS-20585359

Steps: **1** Yield: **36%**

1.1 **Reagents:** Cupric acetate, Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver tetrafluoroborate
Solvents: Toluene; 12 h, 100 °C

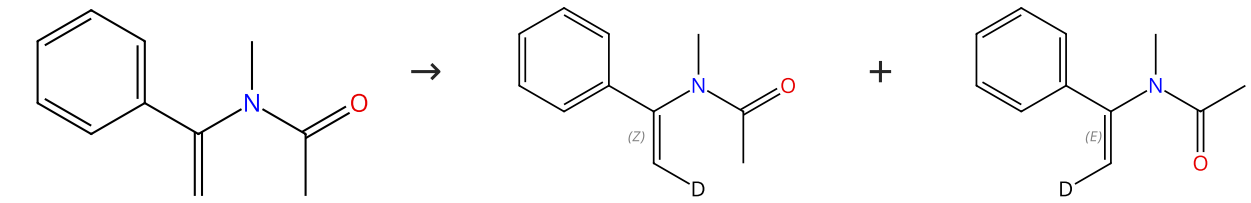
Synthesis of Furanone-Fused 1,2-Benzothiazine by Rh(III)-Catalyzed C-H Activation: Regioselective Oxidative Annulation Leading to in Situ Lactonization in One Pot

By: Hanchate, Vinayak; et al

Journal of Organic Chemistry (2019), 84(17), 11335-11342.

Scheme 131 (1 Reaction)

Steps: **1** Yield: **34%**



Suppliers (13)

Double bond geometry shown

Double bond geometry shown

31-116-CAS-13345435

Steps: **1** Yield: **34%**

1.1 **Catalysts:** Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane, Water-d_2; 2 h, 80 °C

Experimental Protocols

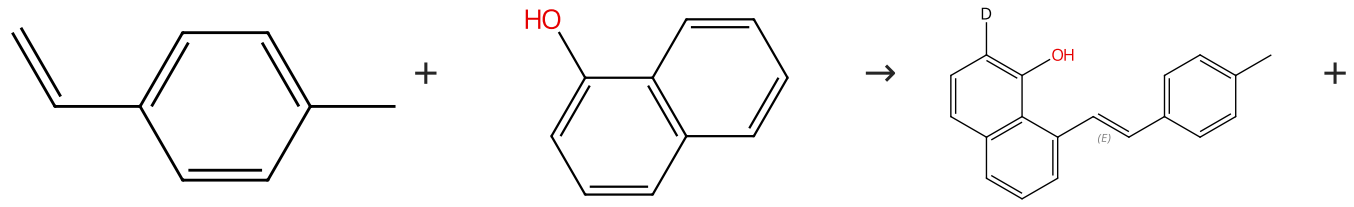
Amide-Assisted Acetoxylation of Vinyl C(sp^2)-H Bonds by Rhodium Catalysis

By: Yu, Wenlong; et al

Organic Letters (2014), 16(18), 4870-4873.

Scheme 132 (1 Reaction)

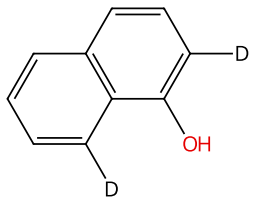
Steps: **1** Yield: **33%**



Suppliers (70)

Suppliers (133)

Double bond geometry shown



31-614-CAS-31759850 Steps: **1** Yield: **33%**

1.1 **Reagents:** Water-d_2, Propanoic acid, 2,2-dimethyl-, potassium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 2-Methyl-2-butanol; 3 h, 100 °C

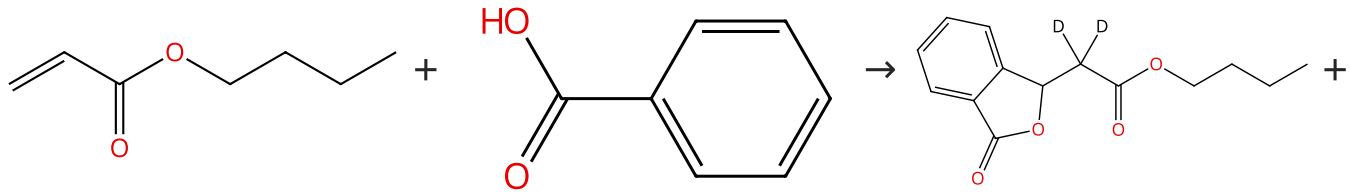
Experimental Protocols

Rhodaelectro-Catalyzed peri-Selective Direct Alkenylations with Weak O-Coordination Enabled by the Hydrogen Evolution Reaction (HER)

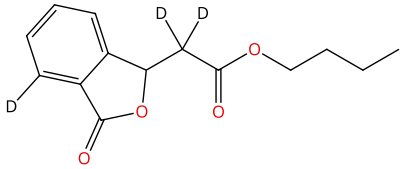
By: Sadowski, Bartlomiej; et al

Angewandte Chemie, International Edition (2022), 61(20), e202117188.

Scheme 133 (1 Reaction) Steps: **1** Yield: **28%**



Suppliers (66) Suppliers (193)



31-614-CAS-39430265 Steps: **1** Yield: **28%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]; 18 h, 110 °C

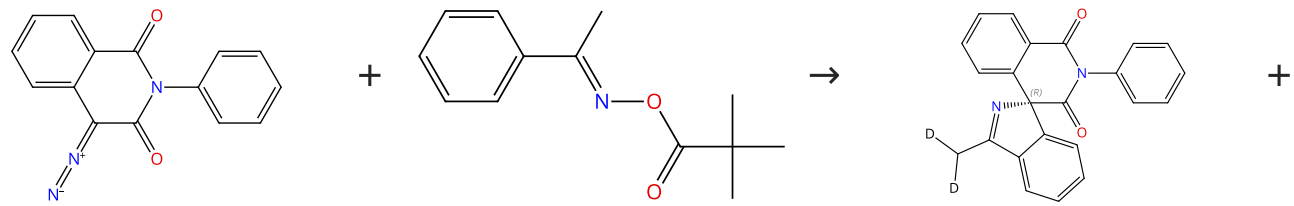
Experimental Protocols

Green method for constructing phthalides via oxidative coupling of aromatic acids and acrylates in neat water and air

By: Wei, Wenting; et al

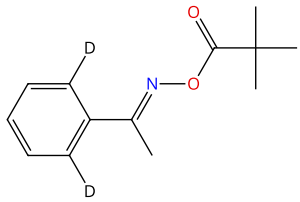
Youji Huaxue (2023), 43(3), 1177-1186.

Scheme 134 (1 Reaction) Steps: **1** Yield: **26%**



Supplier (1)

Absolute stereochemistry shown



31-116-CAS-24381781 Steps: **1** Yield: **26%**

1.1 **Reagents:** Water-d_2
Catalysts: Silver hexafluoroantimonate, Di-μ-chlorodichlorobis[(3a,4,5,6,6a-η)-(3a*R*,13b*R*)-3,7-dihydro-2,8-bis(methylen emethyl)-3a*H*-cyclopenta[6,7]cycloocta[2,1-*a*:3,4-*a*']dinapht halen-3a-yl]dirhodium
Solvents: 1,2-Dichloroethane; 4 h, 10 °C

Experimental Protocols

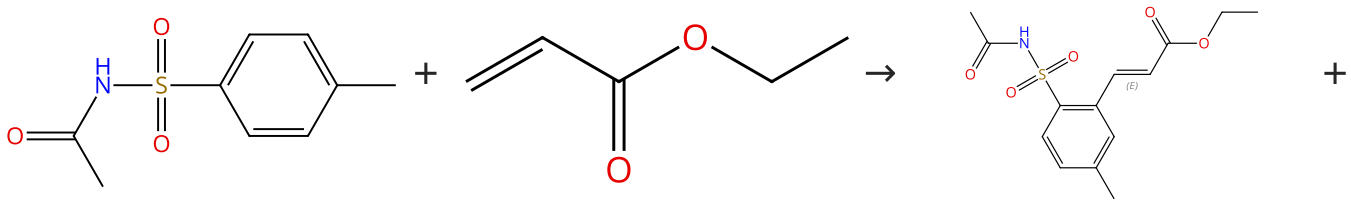
Rhodium(III)-catalyzed asymmetric [4+1] spiroannulations of O-pivaloyl oximes with α-diazo compounds

By: Sun, Lincong; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(67), 8268-8271.

Scheme 135 (1 Reaction)

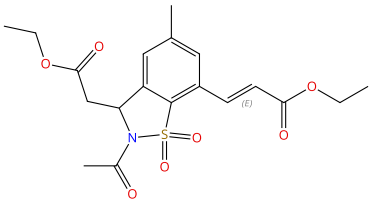
Steps: **1** Yield: **25%**



Suppliers (66)

Suppliers (76)

Double bond geometry shown



Double bond geometry shown

31-085-CAS-5332790

Steps: **1** Yield: **25%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Toluene-d_8; 2 h, 100 °C

Experimental Protocols

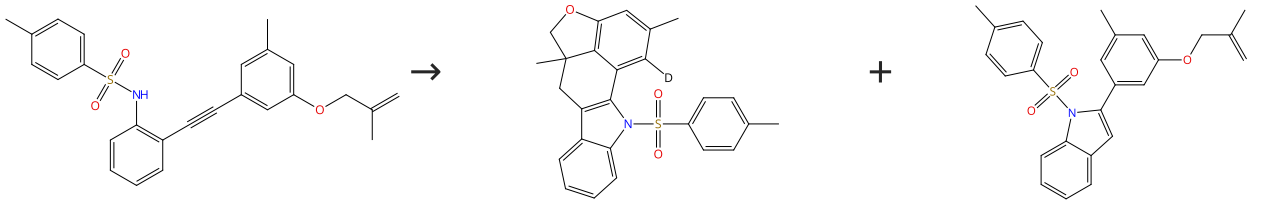
Regioselective Ortho Olefination of Aryl Sulfonamide via Rhodium-Catalyzed Direct C-H Bond Activation

By: Xie, Weijia; et al

Journal of Organic Chemistry (2014), 79(17), 8278-8287.

Scheme 136 (1 Reaction)

Steps: **1** Yield: **23%**



31-614-CAS-29298261

Steps: **1** Yield: **23%**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Cupric acetate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Dimethylacetamide; 10 h, 100 °C

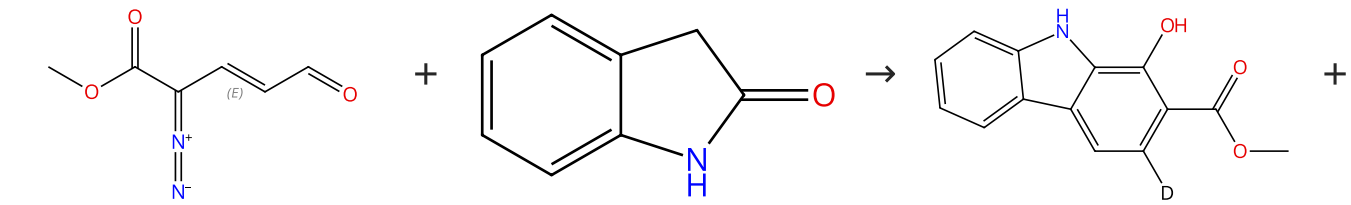
Synthesis of Indole-Fused Polycyclics via Rhodium-Catalyzed Undirected C-H Activation/Alkene Insertion

By: Guo, Songjin; et al

Organic Letters (2019), 21(16), 6320-6324.

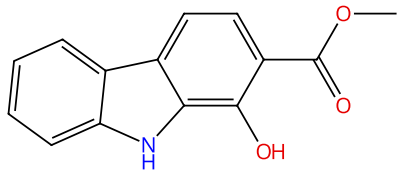
Scheme 137 (1 Reaction)

Steps: **1** Yield: **21%**



Double bond geometry shown

Suppliers (122)



31-614-CAS-27990798 Steps: **1** Yield: **21%**

1.1 **Reagents:** Water-d_2
Catalysts: (±)-1,1'-Binaphthyl-2,2'-diyl hydrogen phosphate, Rhodium, tetrakis[μ-(octanoato-κ*O*:κ*O*')]di-, (*Rh*-*Rh*)
Solvents: 1,2-Dichloroethane; 2 h, 80 °C; 3 h, 80 °C

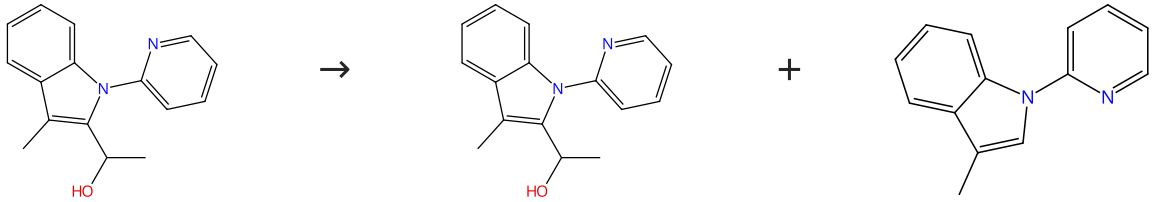
Experimental Protocols

An unprecedented benzannulation of oxindoles with enalcarbenoids: a regioselective approach to functionalized carbazoles

By: Rathore, Kuldeep Singh; et al

Chemical Communications (Cambridge, United Kingdom) (2016), 52(34), 5812-5815.

Scheme 138 (1 Reaction) Steps: **1** Yield: **19%**



31-614-CAS-27192928 Steps: **1** Yield: **19%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Ethanol; 48 h, 90 °C

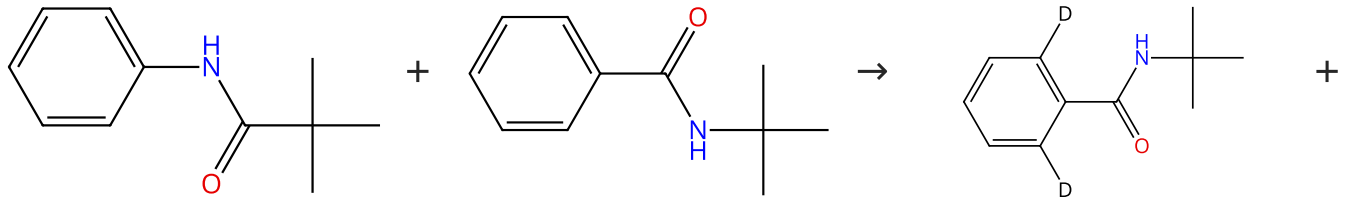
Experimental Protocols

Rh(III)-Catalyzed Csp^2-Csp^3 σ-Bond Enolation of α-Indolyl Alcohols

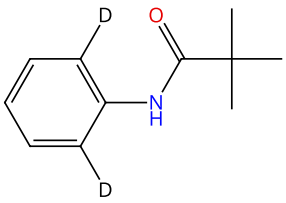
By: Hu, Xinwei; et al

Organic Letters (2021), 23(10), 3965-3969.

Scheme 139 (1 Reaction) Steps: **1** Yield: **14%**



Suppliers (78) Suppliers (55)



31-116-CAS-18998649 Steps: **1** Yield: **14%**

1.1 **Reagents:** Silver carbonate, Trifluoroacetic acid-*d*, Water-d_2
Catalysts: Copper fluoride (CuF_2), Rhodium trichloride
Solvents: Toluene; 2 h, 150 °C; cooled

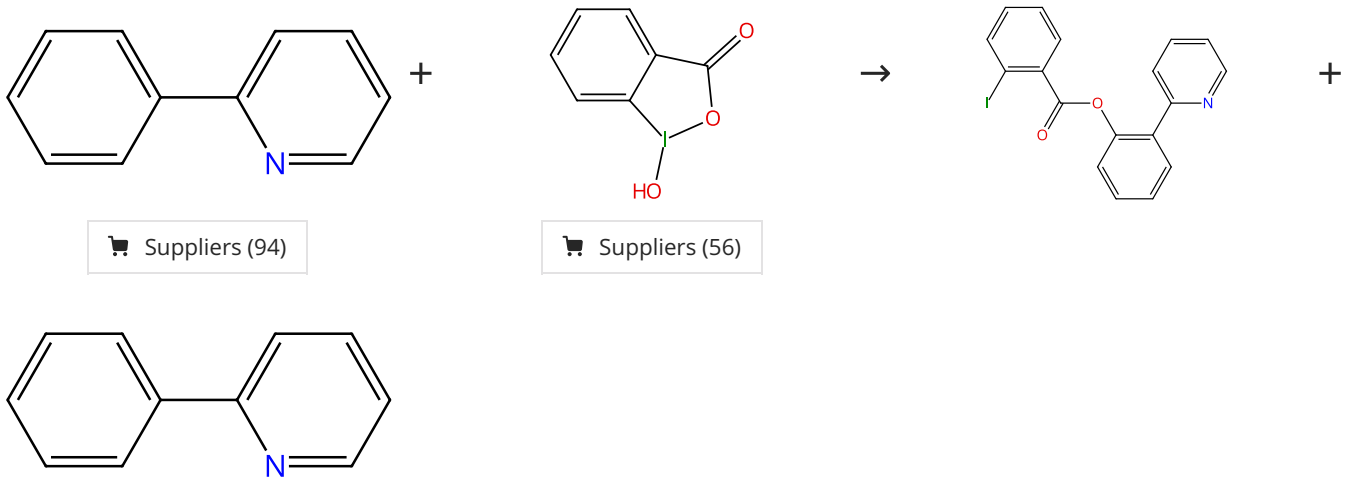
Oxidative C-H/C-H Cross-Coupling Reactions between N-Acylanilines and Benzamides Enabled by a Cp*- Free $RhCl_3$/TFA Catalytic System

By: Shi, Yang; et al

Angewandte Chemie, International Edition (2018), 57(29), 9108-9112.

Scheme 140 (1 Reaction)

Steps: **1** Yield: **10%**



Suppliers (94)

Suppliers (56)

31-614-CAS-30736921

Steps: **1** Yield: **10%**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Copper(II) triflate
Solvents: 1,2-Dichloroethane, Water-d_2; 0.5 h, 60 °C

Experimental Protocols

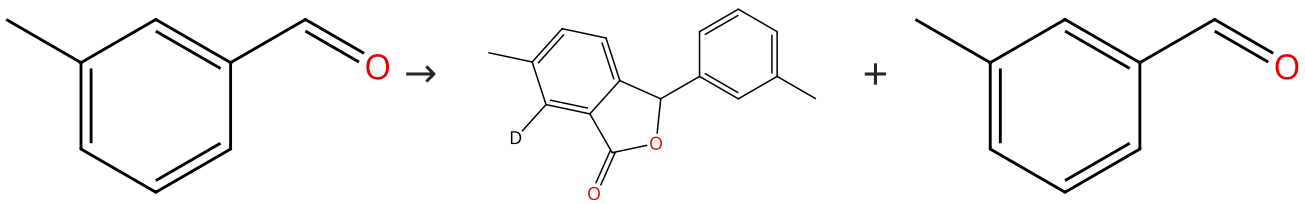
Experimental and theoretical studies on rhodium-catalyzed direct C-H benzoxylation reaction

By: Jin, Chen; et al

Tetrahedron Letters (2018), 59(21), 2042-2045.

Scheme 141 (1 Reaction)

Steps: **1** Yield: **3%**



Suppliers (94)

31-614-CAS-30517991

Steps: **1** Yield: **3%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Silver tetrafluoroborate, (α*R*)-α-Ethyl-2-fluoro-6-(trifluoromethyl)benzenemethanamine, Di-μ-chlorodic hlorobis[(1,2,3,4,5-η)-1,2,3,4-tetramethyl-5-(1-methylethyl)-2,4-cyclopentadien-1-yl]dirhodium
Solvents: 1,4-Dioxane; 5 min, 30 °C; 24 h, 70 °C

Experimental Protocols

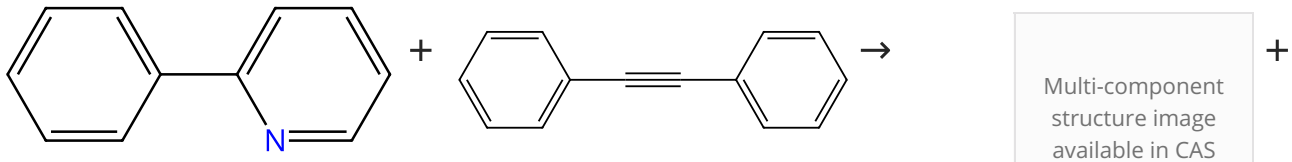
Introducing the Chiral Transient Directing Group Strategy to Rhodium(III)-Catalyzed Asymmetric C-H Activation

By: Li, Guozhu; et al

Chemistry - A European Journal (2019), 25(18), 4688-4694.

Scheme 142 (1 Reaction)

Steps: **1**



Suppliers (94)

Suppliers (88)

Multi-component structure image available in CAS SciFinder

Multi-component structure image available in CAS SciFinder

31-614-CAS-24542178

Steps: **1**

1.1 **Reagents:** Water-d_2, Potassium hexafluorophosphate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 3.5 h, 35 °C

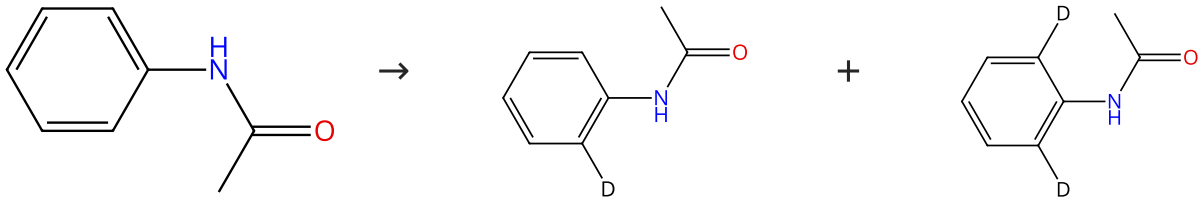
Electrochemically enabled rhodium-catalyzed [4+2] annulations of arenes with alkynes

By: Wang, Zi-Chen; et al

Green Chemistry (2021), 23(23), 9515-9522.

Scheme 143 (1 Reaction)

Steps: **1**



Suppliers (108)

Suppliers (2)

31-116-CAS-20053636

Steps: **1**

1.1 **Reagents:** Silver trifluoroacetate, Water-d_2
Catalysts: Rhodium trichloride, Acetic acid, 2,2,2-trifluoro-, copper(2+) salt (2:1)
Solvents: Mesitylene; 2 h, 140 °C

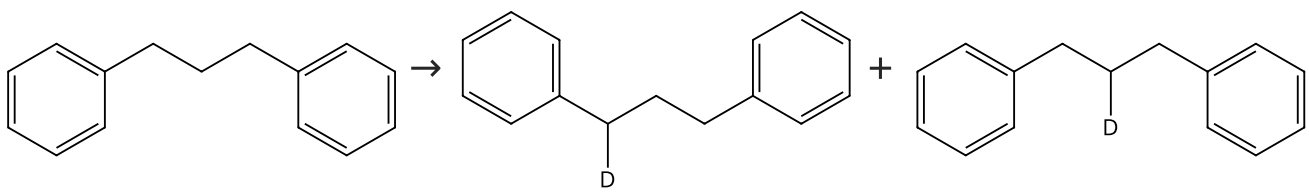
General rhodium-catalyzed oxidative cross-coupling reactions between anilines: synthesis of unsymmetrical 2,2'-diamino biaryls

By: Shi, Yang; et al

Chemical Communications (Cambridge, United Kingdom) (2019), 55(38), 5475-5478.

Scheme 144 (1 Reaction)

Steps: **1**



Suppliers (70)

31-116-CAS-21884549 Steps: **1**

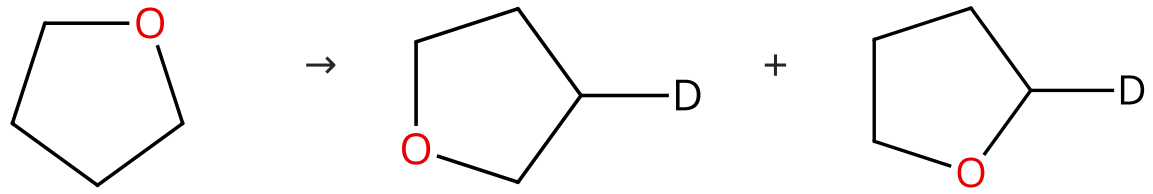
1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: (*SP*-5-31)-Methyl[5,10,15,20-tetrakis(4-methylphenyl)-21*H*,23*H*-porphinato(2-)-κN^{21},κN^{22},κN^{23},κN^{24}]rhodium
Solvents: Benzene; 34 h, 200 °C

Rhodium Porphyrin Catalyzed Regioselective Hydrogenolysis of 1,2-Diarylcyclopropanes with Water as the Hydrogen Source

By: Feng, Shiyu; et al

Organometallics (2020), 39(6), 848-855.

Scheme 145 (1 Reaction) Steps: **1**



Suppliers (410)

31-116-CAS-4983198 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium(2+), diaquabis[4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-κN^1,κ$N^{1'}$]bis[μ-(4-methylbenzenesulfonato-κO:κO')]bis(2-methyl-2-phenylpropyl)di-, stereoisomer, tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-) (1:2)
Solvents: Tetrahydrofuran; 40 h, 135 °C

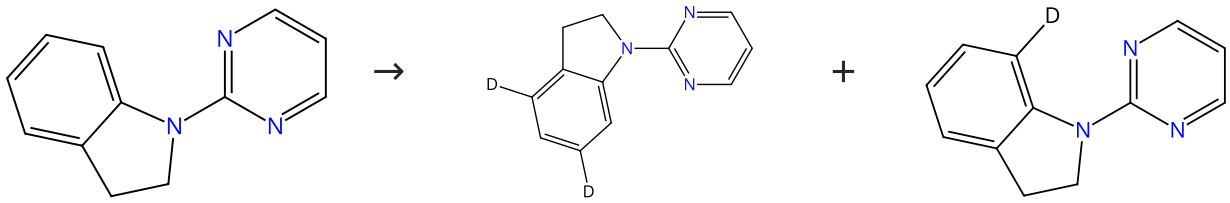
Experimental Protocols

C-H Activation with iridium(III) and rhodium(III) alkyl complexes containing a 2,2'-bipyridyl ligand

By: Yi, Xiao-Yi; et al

European Journal of Inorganic Chemistry (2010), (16), 2369-2375.

Scheme 146 (1 Reaction) Steps: **1**



Suppliers (10)

31-116-CAS-21543212 Steps: **1**

1.1 **Reagents:** Cupric acetate, Cesium carbonate, Water-d_2, 9-[(4-Bromophenyl)sulfonyl]-1,4-dihydronaphthalen-1,4-imine
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane; 12 h, 110 °C

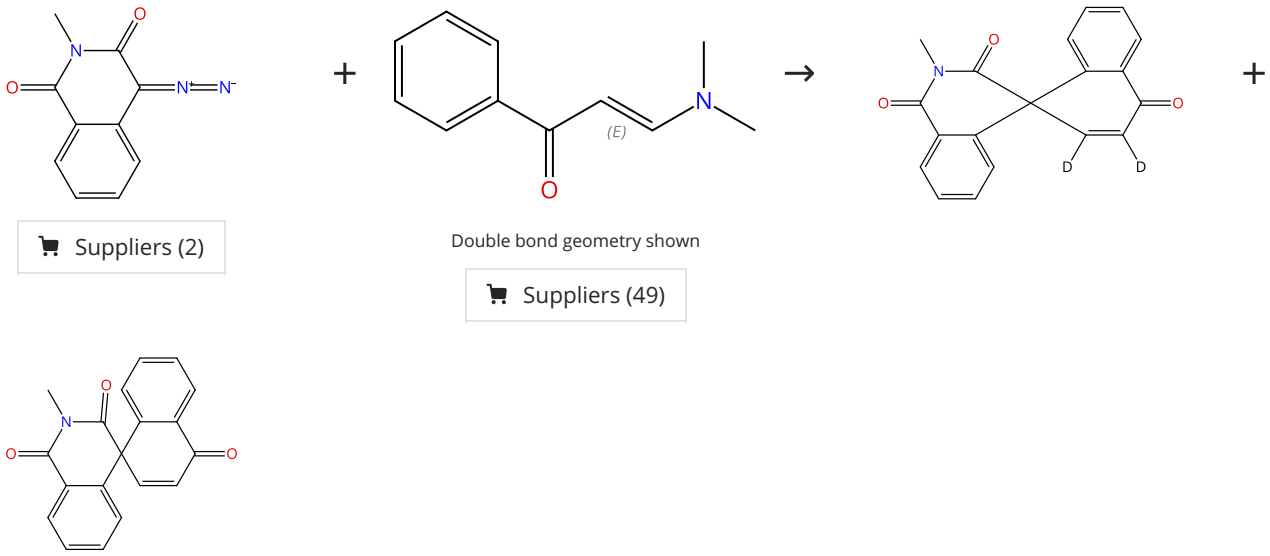
Site-Selective Rh-Catalyzed C-7 and C-6 Dual C-H Functionalization of Indolines: Synthesis of Functionalized Pyrrolocarbazoles

By: Banerjee, Sonbidya; et al

Journal of Organic Chemistry (2020), 85(4), 2793-2805.

Scheme 147 (1 Reaction)

Steps: **1**



Suppliers (2)

Double bond geometry shown

Suppliers (49)

31-614-CAS-37221850

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Rhodium, [1,1,1-Trifluoro-*N*-[(trifluoromethyl) sulfonyl-κ*O*]methanesulfonamidato-κ*O*]silver
Solvents: 1,2-Dichloroethane; 12 h, 60 °C

Experimental Protocols

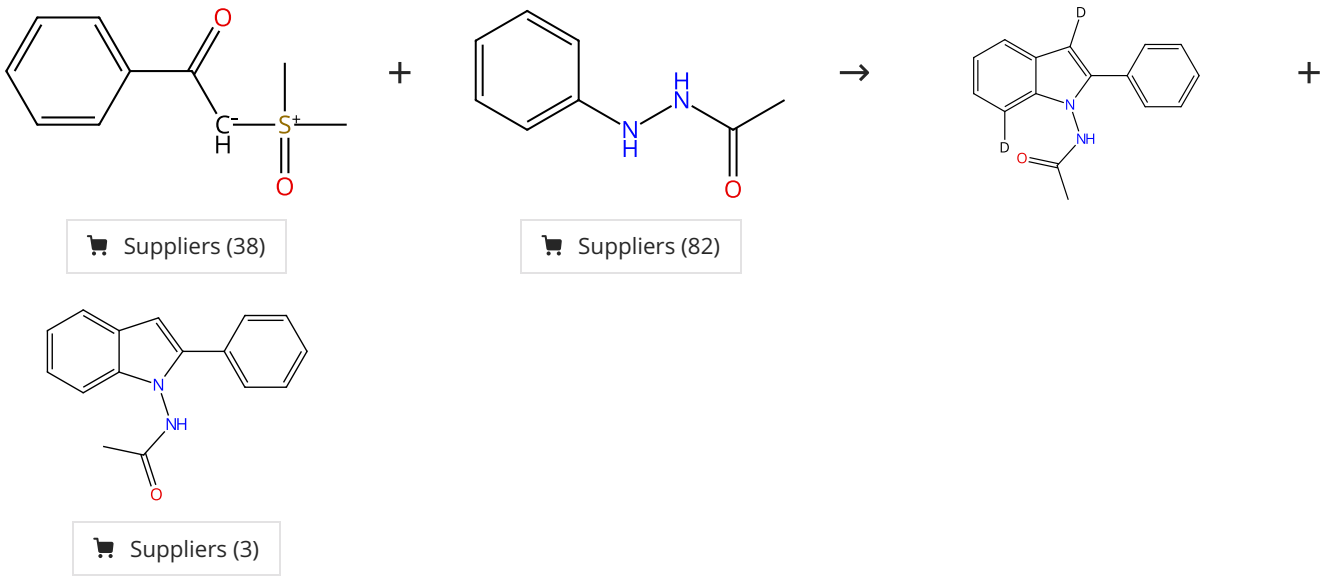
Synthesis of homophthalimide spironaphthalenones through [5 + 1] spiroannulation of aryl/alkenyl enaminones with diazo homophthalimides

By: Yang, Chun; et al

Organic Chemistry Frontiers (2023), 10(17), 4282-4288.

Scheme 148 (1 Reaction)

Steps: **1**



Suppliers (38)

Suppliers (82)

Suppliers (3)

31-116-CAS-20521525

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Zinc acetate, (Acetato-κ*O*)(acetato-κ*O*′)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium
Solvents: 1,2-Dichloroethane; 16 h, 100 °C

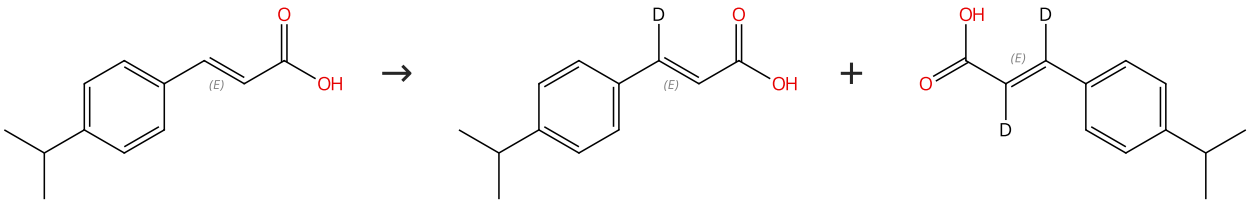
Synthesis of 1-aminoindole derivatives via Rh(III)-catalyzed annulation reactions of hydrazines with sulfoxonium ylides

By: Xie, Wucheng; et al

Organic Chemistry Frontiers (2019), 6(15), 2662-2666.

Scheme 149 (1 Reaction)

Steps: **1**



Double bond geometry shown

Double bond geometry shown

Double bond geometry shown

Suppliers (39)

31-116-CAS-20659800

Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

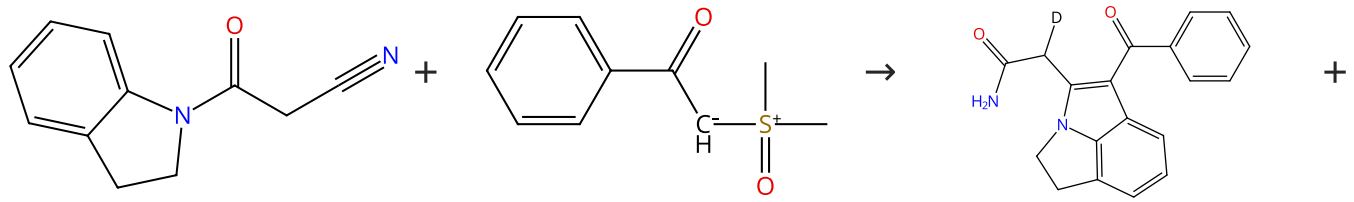
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

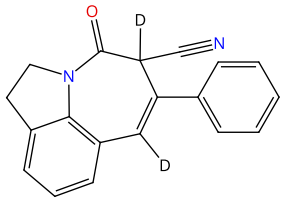
Scheme 150 (1 Reaction)

Steps: **1**



Suppliers (4)

Suppliers (38)



31-116-CAS-20002389

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Lithium acetate, Bis(acetato-κ*O*)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium
Solvents: 2-Methyl-2-butanol; 12 h, 80 °C

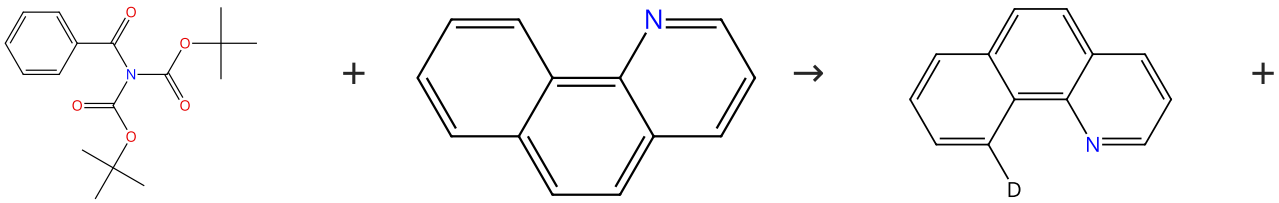
Facile construction of hydrogenated azepino[3,2,1-hi]indoles by Rh(III)-catalyzed C-H activation/[5+2] annulation of N-cyanoacetylindolines with sulfoxonium ylides

By: Hu, Panjie; et al

Organic Chemistry Frontiers (2018), 5(22), 3263-3266.

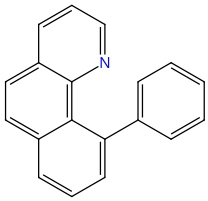
Scheme 151 (1 Reaction)

Steps: **1**



Suppliers (4)

Suppliers (81)



Supplier (1)

31-116-CAS-18343815

Steps: **1**

1.1 **Reagents:** Tributylamine, Water-d_2
Catalysts: Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene] dirhodium
Solvents: Toluene; 15 h, 150 °C

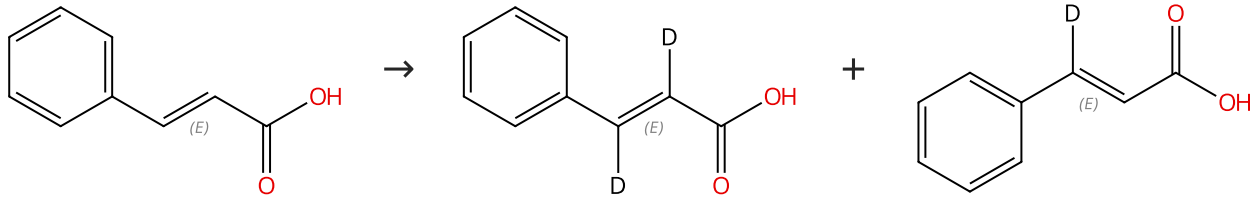
Site-Selective C-H/C-N Activation by Cooperative Catalysis: Primary Amides as Arylating Reagents in Directed C-H Arylation

By: Meng, Guangrong; et al

ACS Catalysis (2017), 7(10), 7251-7256.

Scheme 152 (1 Reaction)

Steps: **1**



Double bond geometry shown

Double bond geometry shown

Double bond geometry shown

Suppliers (164)

31-116-CAS-20659795

Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

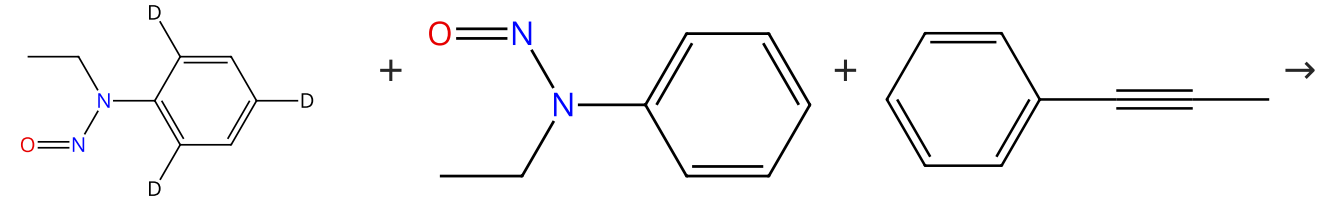
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 153 (1 Reaction)

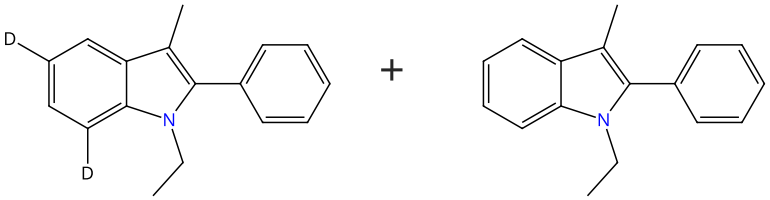
Steps: **1**



Supplier (1)

Suppliers (45)

Suppliers (70)



Suppliers (3)

31-614-CAS-24958468

Steps: **1**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Acetonitrile; 10 min

1.2 **Reagents:** *tert*-Butyl alcohol-*d*
Solvents: Acetonitrile-d_3, Water-d_2; 2 h, 80 °C

Experimental Protocols

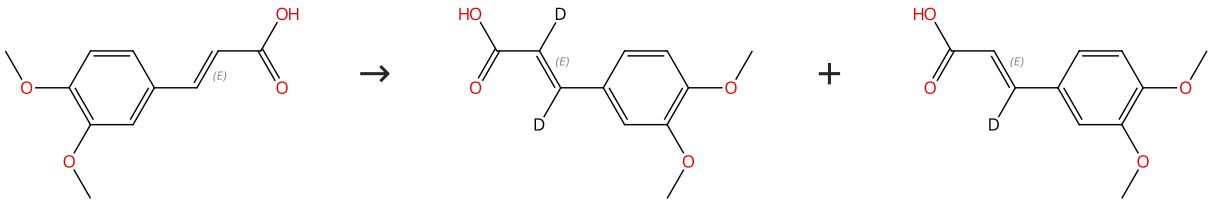
Rhodium(III)-Catalyzed Indole Synthesis Using N-N Bond as an Internal Oxidant

By: Liu, Baoqing; et al

Journal of the American Chemical Society (2013), 135(44), 16625-16631.

Scheme 154 (1 Reaction)

Steps: **1**



Double bond geometry shown

Double bond geometry shown

Double bond geometry shown

Suppliers (71)

31-116-CAS-20659802

Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

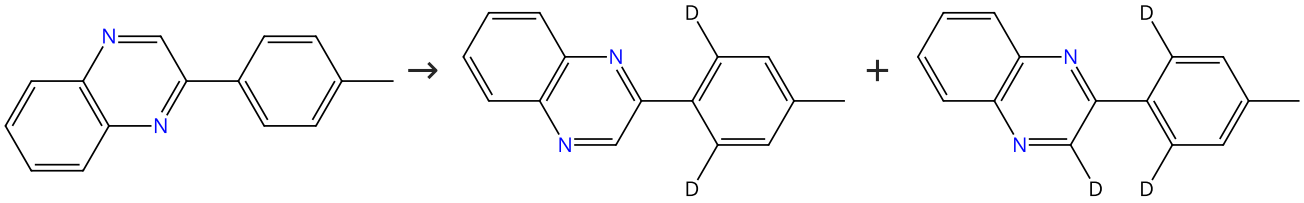
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 155 (1 Reaction)

Steps: **1**



Suppliers (17)

31-614-CAS-38718615 Steps: **1**

1.1 **Reagents:** 1-Adamantanecarboxylic acid, Copper diacetate monohydrate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 100 °C

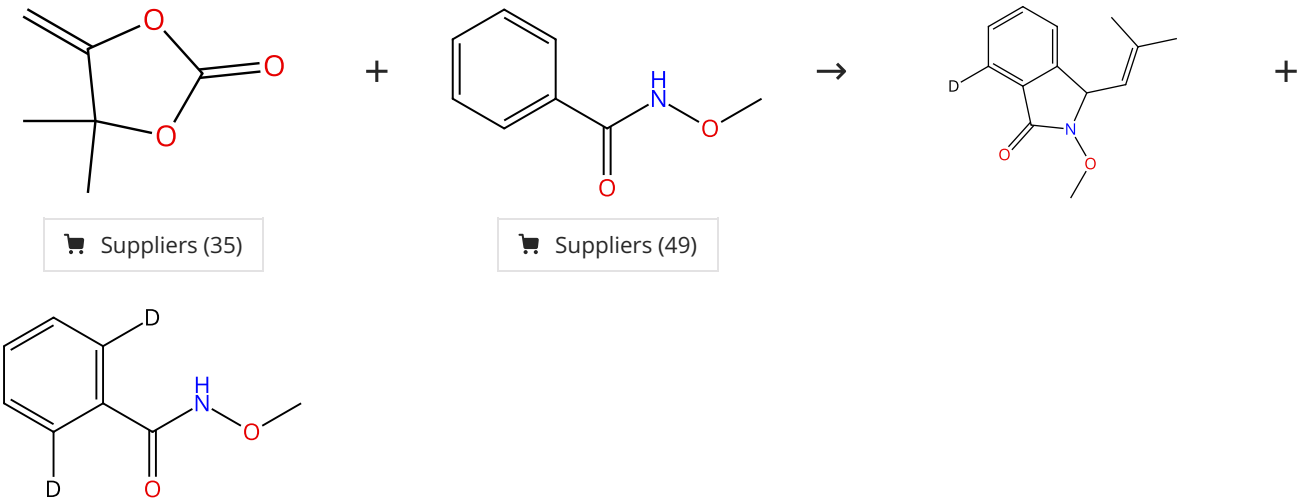
Experimental Protocols

Rh(III)-catalyzed oxidative [4+2] annulation of 2-arylquinoxalines and 2-aryl-2H-indazoles with allyl alcohols

By: Nipate, Dhananjay S.; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(3), 344-347.

Scheme 156 (1 Reaction) Steps: **1**



Suppliers (35) Suppliers (49)

31-614-CAS-39394880 Steps: **1**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Dichloromethane; 1 h, 100 °C

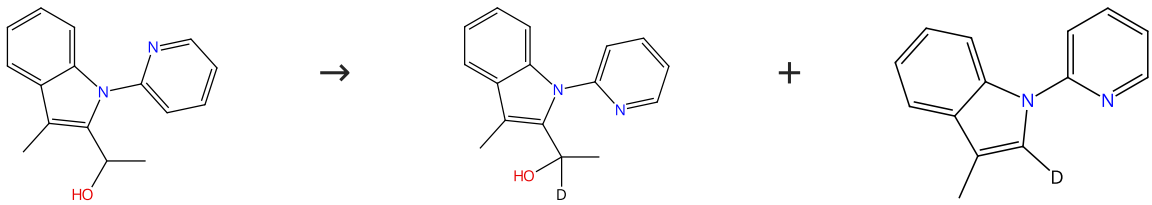
Experimental Protocols

Rh(III)-Catalyzed [4 + 1] Annulation of Benzamides with Vinyl Cyclic Carbonates for the Synthesis of Isoindolinones

By: Li, Xiang; et al

Organic Letters (2024), 26(7), 1304-1309.

Scheme 157 (1 Reaction) Steps: **1**



31-116-CAS-23371929 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium(2+)
Solvents: 1,2-Dichloroethane; 48 h, 85 °C

Experimental Protocols

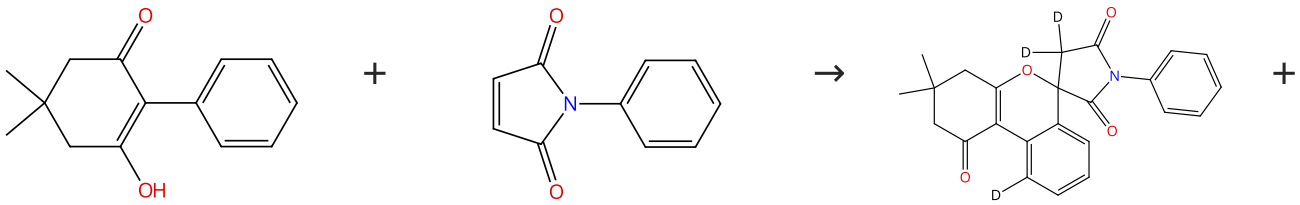
Rh(III)-Catalyzed sulfonylamination of α-indolyl alcohols via Csp^2-Csp^3 bond cleavage

By: Hu, Xinwei; et al

Organic Chemistry Frontiers (2021), 8(5), 983-987.

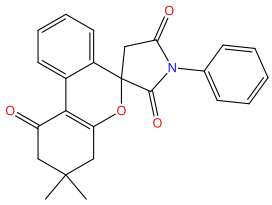
Scheme 158 (1 Reaction)

Steps: **1**



Suppliers (2)

Suppliers (98)



31-614-CAS-38334576

Steps: **1**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,4-Dioxane; 2 h, 90 °C

Experimental Protocols

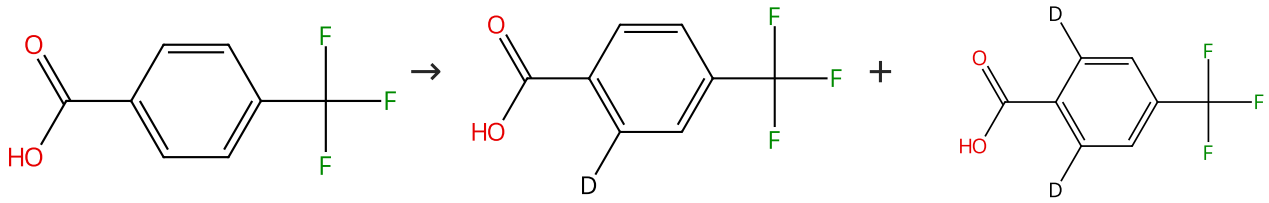
Rh(III)-Catalyzed C-H Activation/O-Annulation for Construction of Divergent Spirosuccinimide and Maleimide-Fused Isochromenes

By: Kamaraj, Eswaran; et al

Advanced Synthesis & Catalysis (2023), 365(22), 3915-3926.

Scheme 159 (1 Reaction)

Steps: **1**



Suppliers (94)

31-116-CAS-20659773

Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

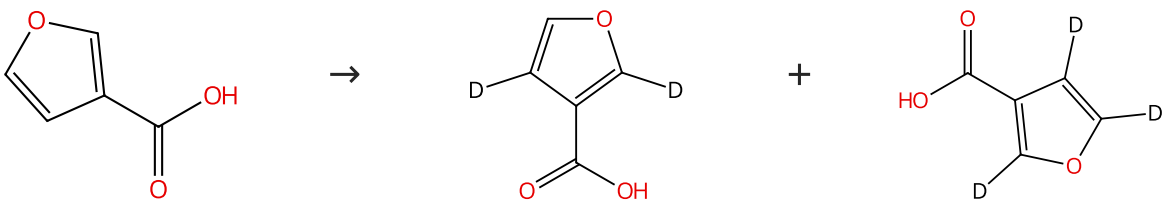
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 160 (1 Reaction)

Steps: **1**



Suppliers (104)

31-116-CAS-20659792 Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

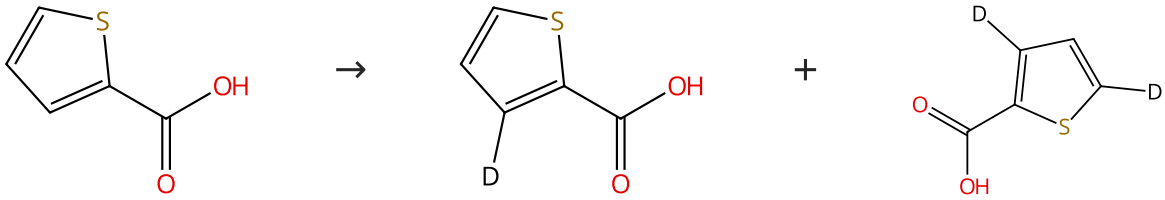
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 161 (1 Reaction) Steps: **1**



Suppliers (101)

31-116-CAS-20659793 Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

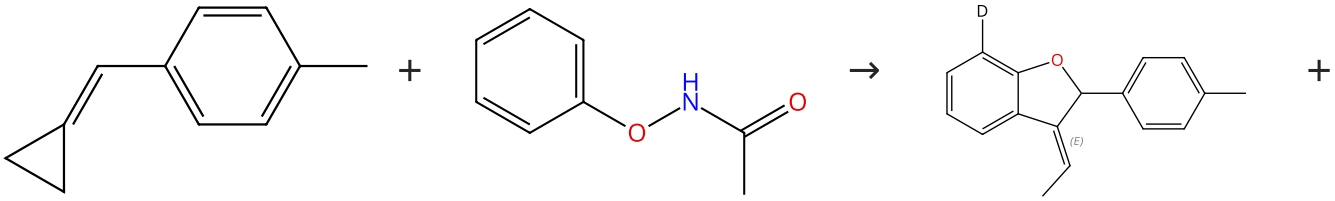
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

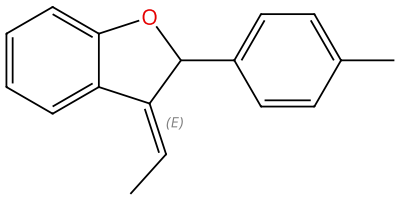
Scheme 162 (1 Reaction) Steps: **1**



Suppliers (4)

Suppliers (11)

Double bond geometry shown



Double bond geometry shown

31-116-CAS-23863829 Steps: **1**

1.1 **Reagents:** Cesium carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 4 h, 60 °C

Experimental Protocols

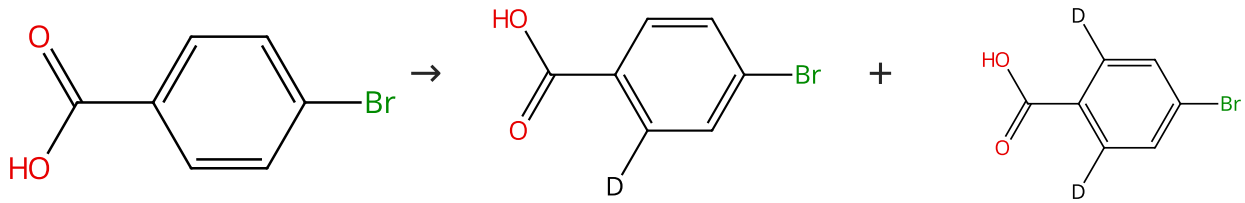
Rh(III)-Catalyzed Stereoselective C-C Bond Cleavage of ACPs with N-Phenoxyacetamides: The Critical Role of the Nucleophilic Directing Group

By: Singh, Anurag; et al

Journal of Organic Chemistry (2021), 86(15), 10474-10483.

Scheme 163 (1 Reaction)

Steps: **1**



Suppliers (107)

31-116-CAS-20659780

Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

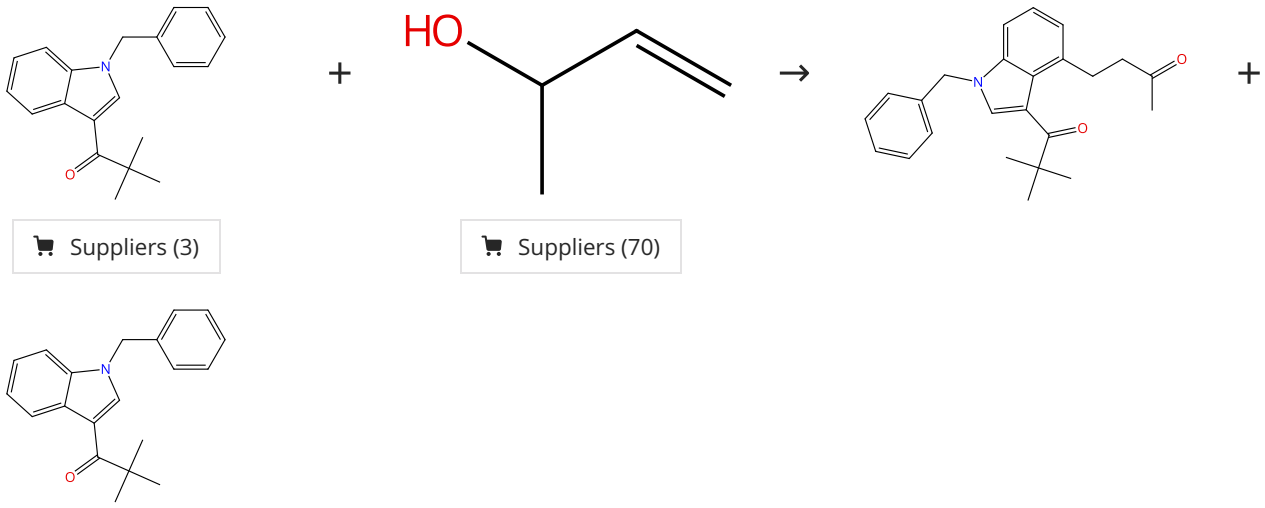
A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 164 (1 Reaction)

Steps: **1**



Suppliers (3)

Suppliers (70)

31-614-CAS-30026705

Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 4 h, 100 °C

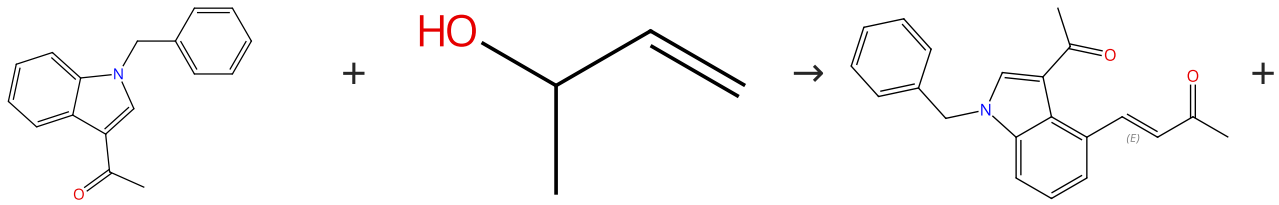
Weak Coordination Enabled Switchable C4-Alkenylation and Alkylation of Indoles with Allyl Alcohols

By: Pradhan, Sourav; et al

Organic Letters (2020), 22(5), 1720-1725.

Scheme 165 (1 Reaction)

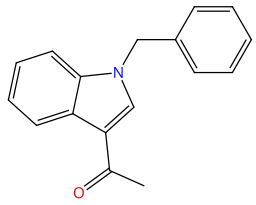
Steps: **1**



Suppliers (29)

Suppliers (70)

Double bond geometry shown



31-614-CAS-28425507

Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: 1,4-Dioxane; 4 h, 100 °C

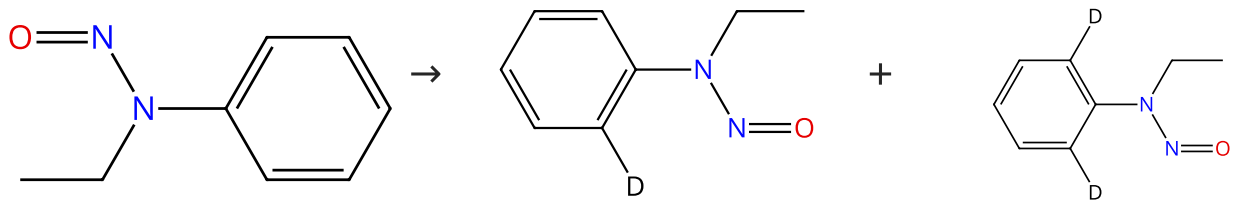
Weak Coordination Enabled Switchable C4-Alkenylation and Alkylation of Indoles with Allyl Alcohols

By: Pradhan, Sourav; et al

Organic Letters (2020), 22(5), 1720-1725.

Scheme 166 (1 Reaction)

Steps: **1**



Suppliers (45)

31-116-CAS-14783418

Steps: **1**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Acetonitrile; 10 min

1.2 **Reagents:** *tert*-Butyl alcohol-*d*
Solvents: Acetonitrile-d_3, Water-d_2; 16 h, 80 °C

Experimental Protocols

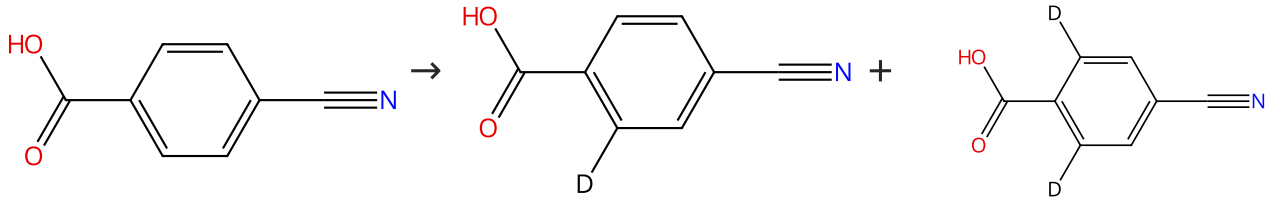
Rhodium(III)-Catalyzed Indole Synthesis Using N-N Bond as an Internal Oxidant

By: Liu, Baoqing; et al

Journal of the American Chemical Society (2013), 135(44), 16625-16631.

Scheme 167 (1 Reaction)

Steps: **1**



Suppliers (82)

31-116-CAS-20659781 Steps: 1

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

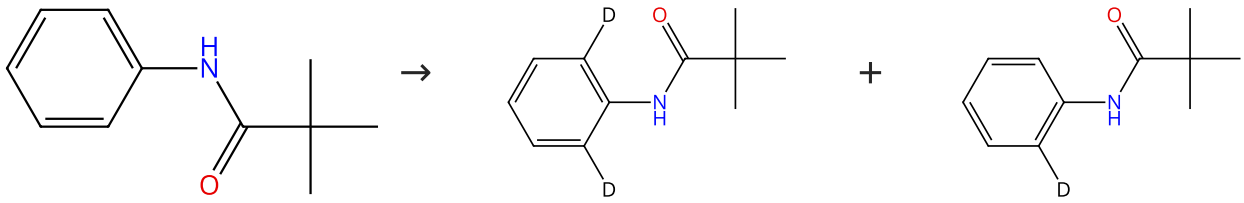
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 168 (1 Reaction) Steps: 1



Suppliers (78)

31-116-CAS-20053635 Steps: 1

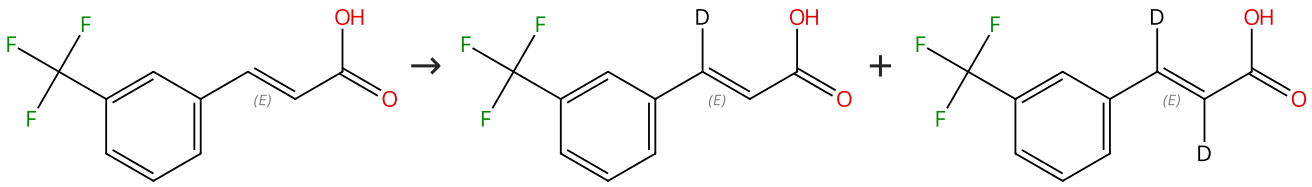
1.1 **Reagents:** Silver trifluoroacetate, Water-d_2
Catalysts: Rhodium trichloride, Acetic acid, 2,2,2-trifluoro-, copper(2+) salt (2:1)
Solvents: Mesitylene; 2 h, 140 °C

General rhodium-catalyzed oxidative cross-coupling reactions between anilines: synthesis of unsymmetrical 2,2'-diamino biaryls

By: Shi, Yang; et al

Chemical Communications (Cambridge, United Kingdom) (2019), 55(38), 5475-5478.

Scheme 169 (1 Reaction) Steps: 1



Double bond geometry shown

Double bond geometry shown

Double bond geometry shown

Suppliers (56)

31-116-CAS-20659796 Steps: 1

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

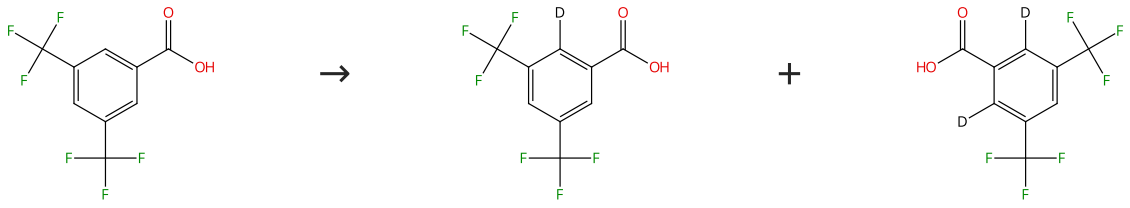
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 170 (1 Reaction) Steps: 1



Suppliers (97)

31-116-CAS-20659775 Steps: 1

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

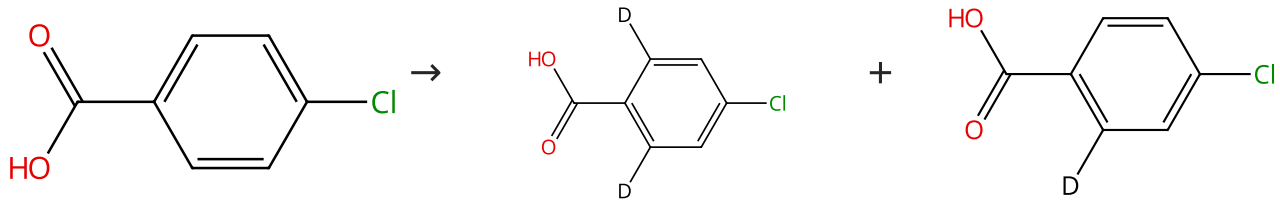
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 171 (1 Reaction) Steps: 1



Suppliers (111)

31-116-CAS-20659777 Steps: 1

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

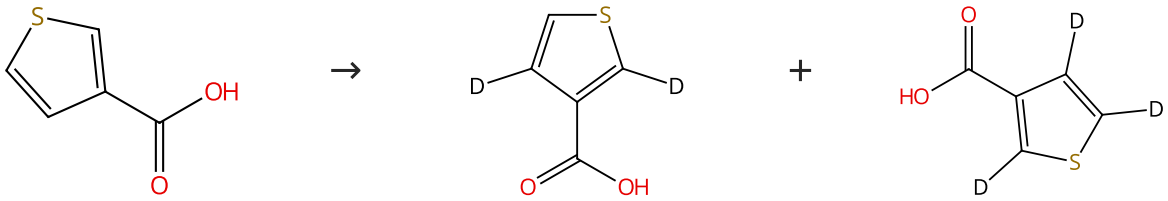
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 172 (1 Reaction) Steps: 1



Suppliers (100)

31-116-CAS-20659794 Steps: 1

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

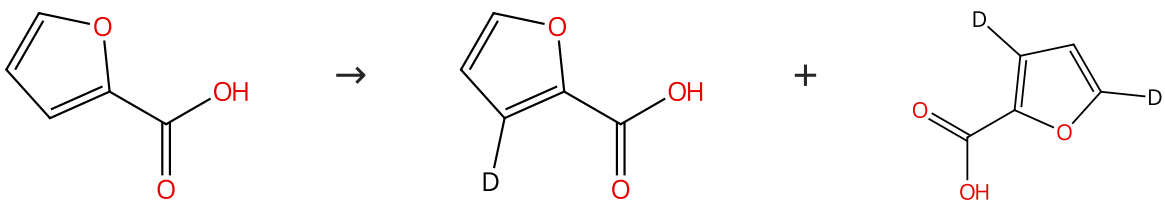
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 173 (1 Reaction) Steps: 1



Suppliers (109)

Supplier (1)

31-116-CAS-20659791 Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

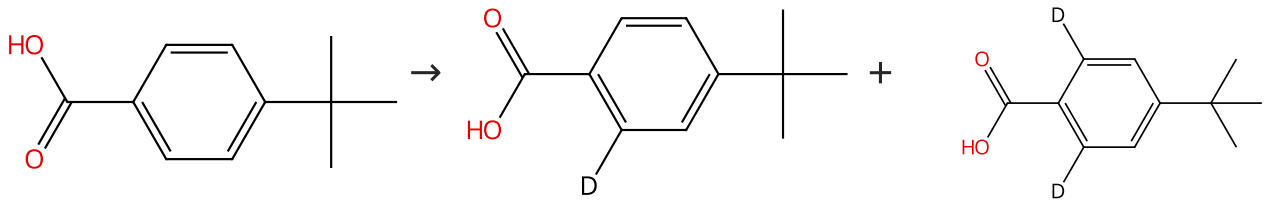
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

Organic Letters (2019), 21(17), 7044-7048.

Scheme 174 (1 Reaction) Steps: **1**



Suppliers (92)

31-116-CAS-20659785 Steps: **1**

1.1 **Reagents:** Sodium acetate, Oxygen, Water-d_2
Catalysts: Rhodium(2+), tris(acetonitrile)[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, (*OC*-6-11)-hexafluoro antimonate(1-) (1:2); 24 h, 90 °C

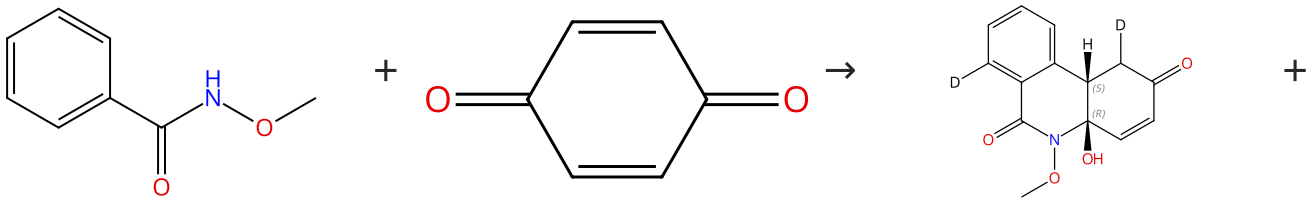
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 15 min

A Protocol for the Ortho-Deuteration of Acidic Aromatic Compounds in D_2O Catalyzed by Cationic Rh^{III}

By: Garreau, Alyssa L.; et al

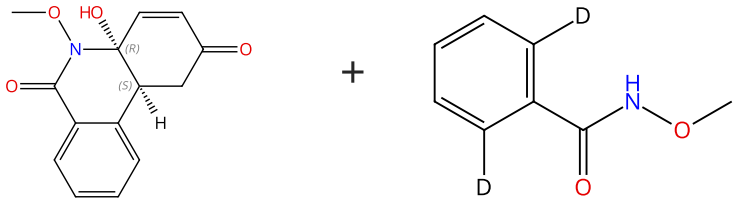
Organic Letters (2019), 21(17), 7044-7048.

Scheme 175 (1 Reaction) Steps: **1** Yield: **63%**



Suppliers (49) Suppliers (100)

Absolute stereochemistry shown



Absolute stereochemistry shown, Rotation (-)

31-085-CAS-21890719 Steps: **1** Yield: **63%**

1.1 **Reagents:** (4-Bromophenyl)acetic acid, Water-d_2
Catalysts: Cesium acetate, Bis(η^2-ethene)[(8a,9,10,11,11a-η)-(2a*S*)-1,2,3,4-tetrahydro-7,13-dimethoxy-8*H*-cyclopenta[5,6] cyclonona[1,2,3-*cd*:1,9,8-*c'd'*]diinden-8a(12*H*)-yl]rhodium
Solvents: 1,4-Dioxane, Acetone-d_6; 12 h, 0 °C

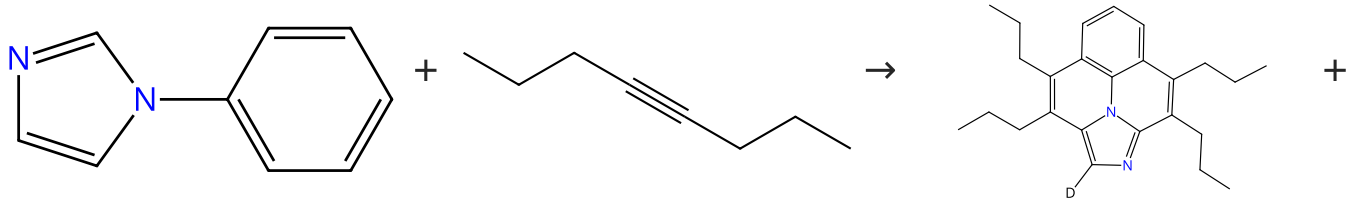
Rhodium(III)-Catalyzed Asymmetric C-H Activation of N-Methoxybenzamide with Quinone and Its Applic ation in the Asymmetric Synthesis of a

By: Yan, Xiaoqiang; et al

Organic Letters (2020), 22(8), 3219-3223.

Scheme 176 (1 Reaction)

Steps: **1** Yield: **59%**



Suppliers (83)

Suppliers (47)

31-116-CAS-10976211

Steps: **1** Yield: **59%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: Toluene; 12 h, 110 °C

Experimental Protocols

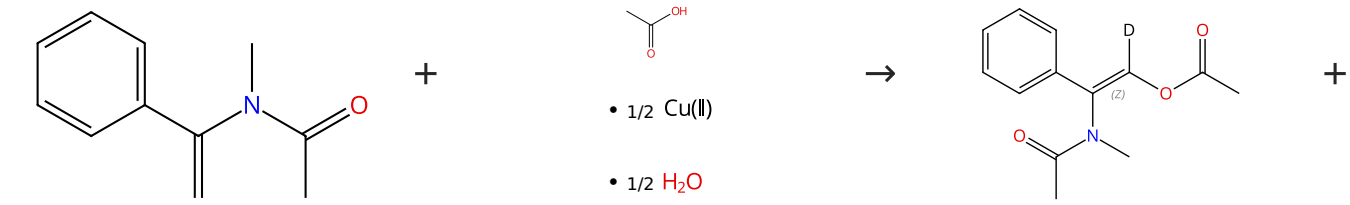
Synthesis of substituted benzo[ij]imidazo[2,1,5-de]quinolizine by rhodium(III)-catalyzed multiple C-H activation and annulations

By: Ge, Qingmei; et al

Organic & Biomolecular Chemistry (2016), 14(5), 1814-1821.

Scheme 177 (1 Reaction)

Steps: **1** Yield: **52%**



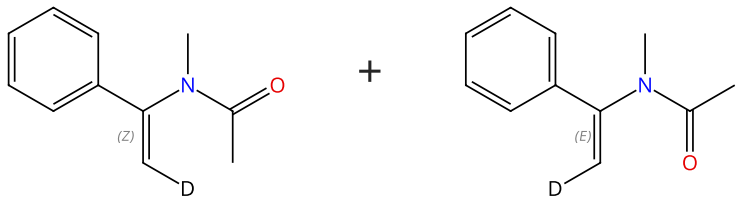
• 1/2 Cu(II)

• 1/2 H_2O

Suppliers (13)

Suppliers (99)

Double bond geometry shown



Double bond geometry shown

Double bond geometry shown

31-116-CAS-15474138

Steps: **1** Yield: **52%**

1.1 **Catalysts:** Silver triflate, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium]
Solvents: 1,2-Dichloroethane, Water-d_2; 3 h, 80 °C

Experimental Protocols

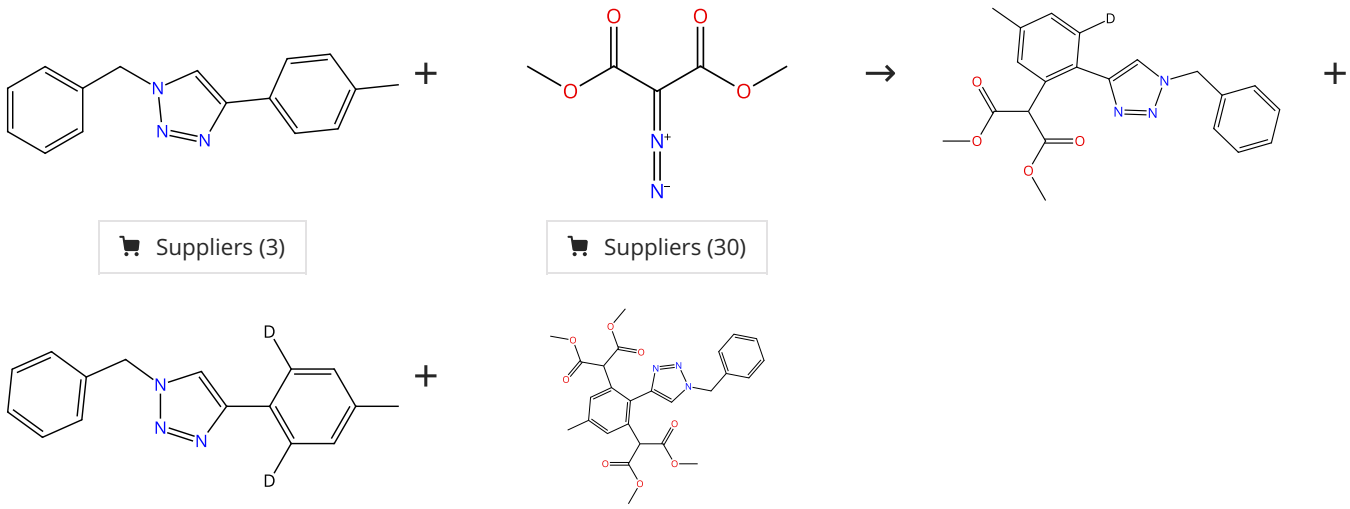
Amide-Assisted Acetoxylation of Vinyl C(sp^2)-H Bonds by Rhodium Catalysis

By: Yu, Wenlong; et al

Organic Letters (2014), 16(18), 4870-4873.

Scheme 178 (1 Reaction)

Steps: **1** Yield: **41%**



Suppliers (3)

Suppliers (30)

31-116-CAS-19583977

Steps: **1** Yield: **41%**

1.1 **Reagents:** Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: 1,2-Dichloroethane; 12 h, 40 °C

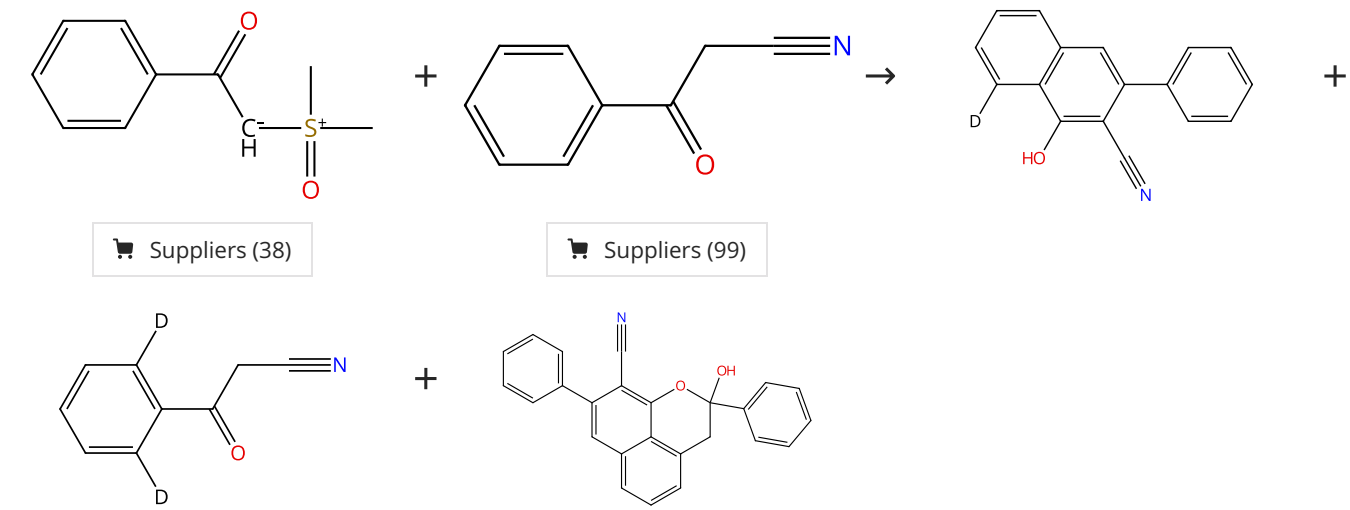
Rhodium-catalyzed triazole-directed C-H bond functionalization of arenes with diazo compounds

By: Wang, Huanhong; et al

Organic & Biomolecular Chemistry (2018), 16(43), 8191-8195.

Scheme 179 (1 Reaction)

Steps: **1** Yield: **25%**



Suppliers (38)

Suppliers (99)

31-116-CAS-18665550

Steps: **1** Yield: **25%**

1.1 **Reagents:** Water-d_2
Catalysts: Silver acetate, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium
Solvents: 1,2-Dichloroethane; 5 h, 80 °C

Experimental Protocols

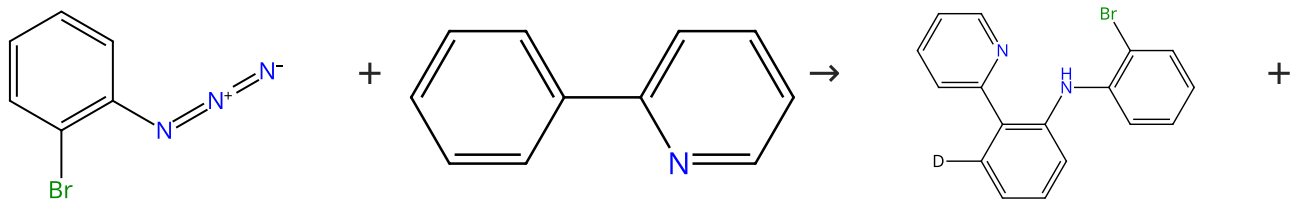
Construction of (Dihydro)naphtho[1,8-bc]pyrans via Rh(III)-Catalyzed Twofold C-H Activation of Benzoylacetonitriles

By: Hu, Panjie; et al

Organic Letters (2018), 20(8), 2160-2163.

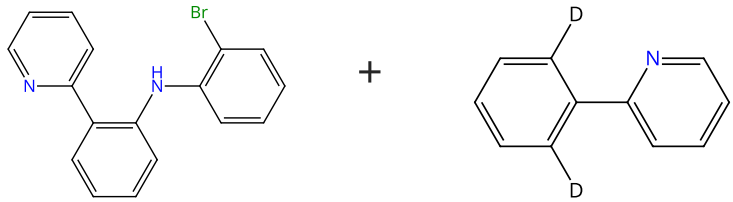
Scheme 180 (1 Reaction)

Steps: **1**



Suppliers (17)

Suppliers (94)



Supplier (1)

31-080-CAS-1873765

Steps: **1**

1.1 **Catalysts:** Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Sodium tetrakis[3,5-bis(trifluoromethyl)phenyl] borate
Solvents: Water-d_2; 20 min, 110 °C

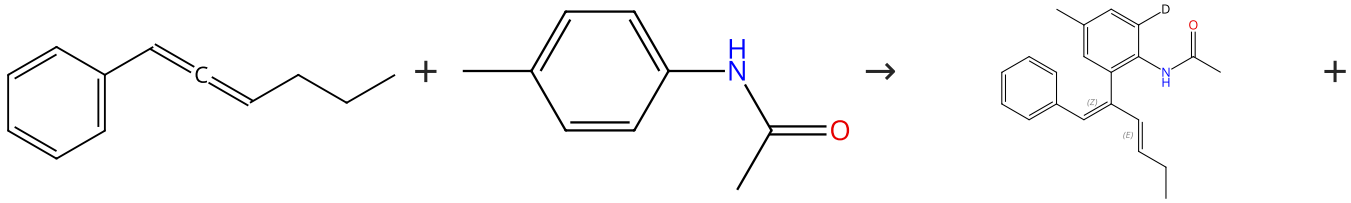
Rhodium-Catalyzed Selective Mono- and Diamin ation of Arenes with Single Directing Site "On Water"

By: Ali, Ashif Md; et al

Organic Letters (2016), 18(6), 1386-1389.

Scheme 181 (1 Reaction)

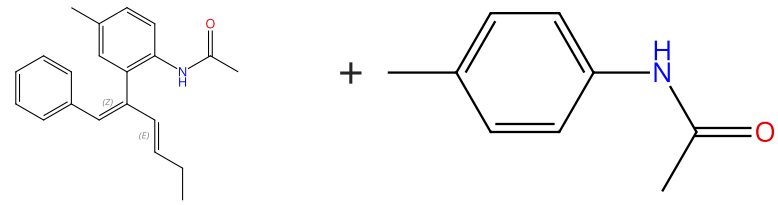
Steps: **1**



Suppliers (3)

Suppliers (85)

Double bond geometry shown



Double bond geometry shown

31-614-CAS-27133754

Steps: **1**

1.1 **Reagents:** Silver acetate
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], *N*-(2,2-Dimethyl-1-oxopropyl)glycine, Silver hexafluoroantimonate
Solvents: Methanol-d_4, Water-d_2; rt → 70 °C; 12 h, 70 °C

Experimental Protocols

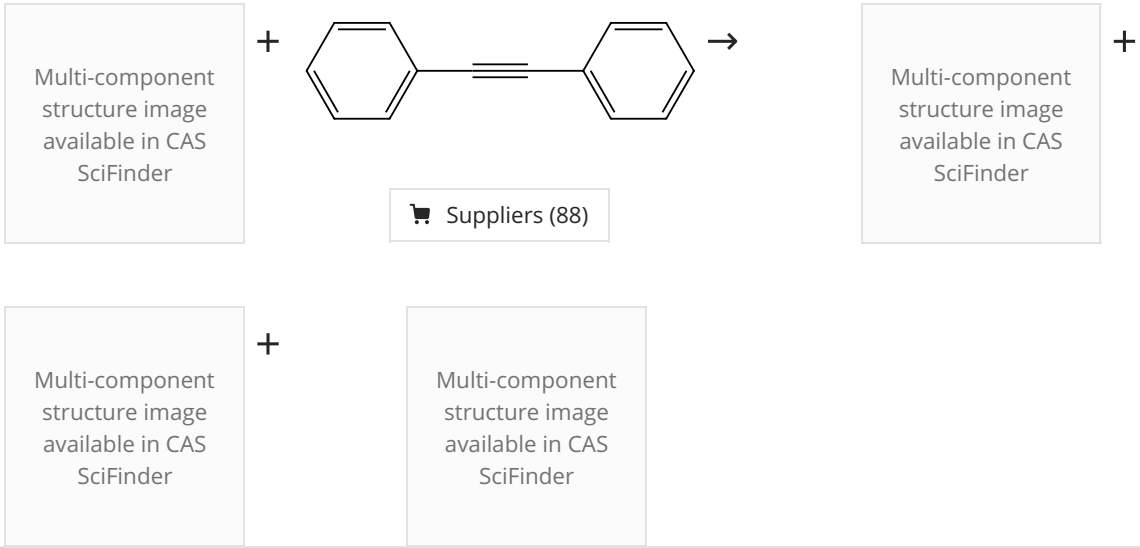
Rhodium(III)-Catalyzed Directed C-H Dienylation of Anilides with Allenes Leads to Highly Conjugated Systems

By: Ghosh, Chiranjit; et al

Organic Letters (2019), 21(9), 3237-3241.

Scheme 182 (1 Reaction)

Steps: **1**



31-116-CAS-17113836

Steps: **1**

1.1 **Reagents:** Sodium acetate, Cupric acetate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: 1,2-Dichloroethane; 3 h, 140 °C

Experimental Protocols

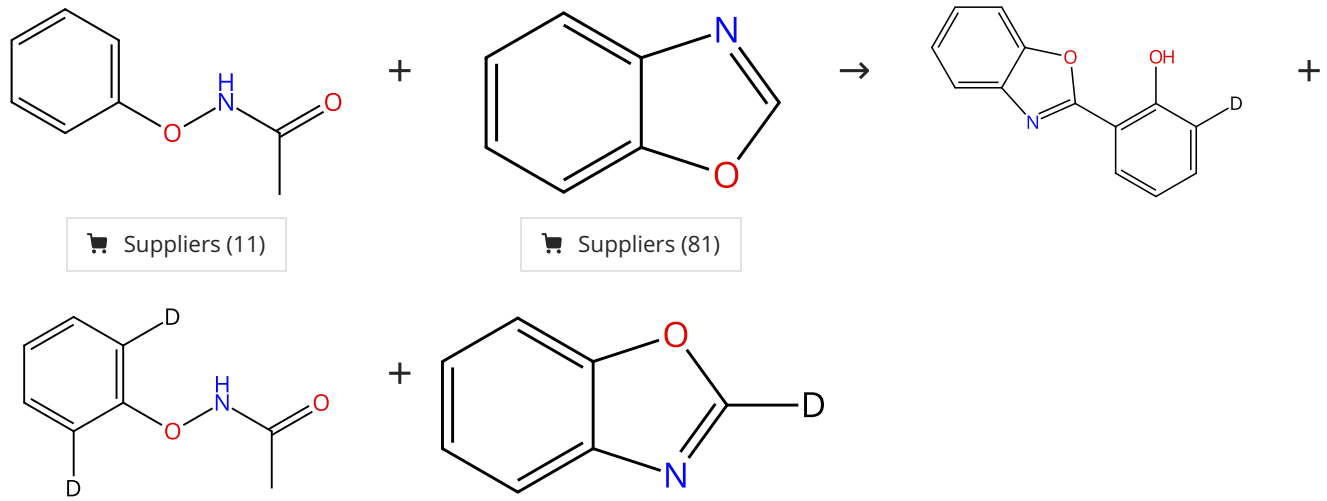
A facile access to substituted cationic 12-azapyrene salts by rhodium(III)-catalyzed C-H annulation of N-arylpyridinium salts

By: Feng, Boya; et al

RSC Advances (2016), 6(71), 66407-66411.

Scheme 183 (1 Reaction)

Steps: **1**



31-116-CAS-7648848

Steps: **1**

1.1 **Reagents:** Pivalic acid, Silver carbonate, Water-d_2, Propanoic acid, 2,2-dimethyl-, cesium salt (1:1)
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium], Silver hexafluoroantimonate
Solvents: Dimethylformamide; 0.5 h, 140 °C

Experimental Protocols

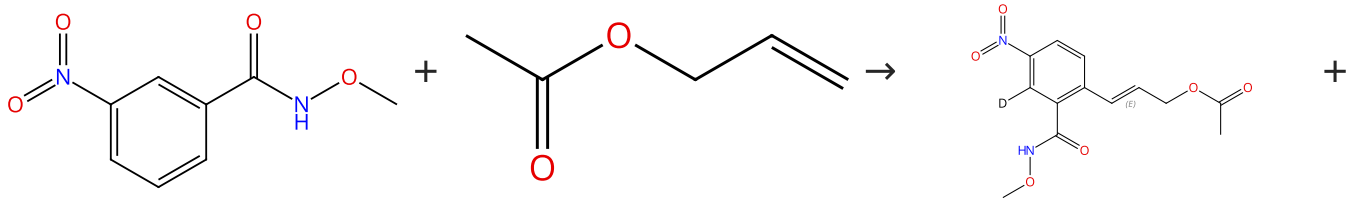
Rhodium(III)-Catalyzed ortho-Heteroarylation of Phenols through Internal Oxidative C-H Activation: Rapid Screening of Single-Molecular White-Light-Emitting Materials

By: Li, Bijin; et al

Angewandte Chemie, International Edition (2015), 54(47), 14008-14012.

Scheme 184 (1 Reaction)

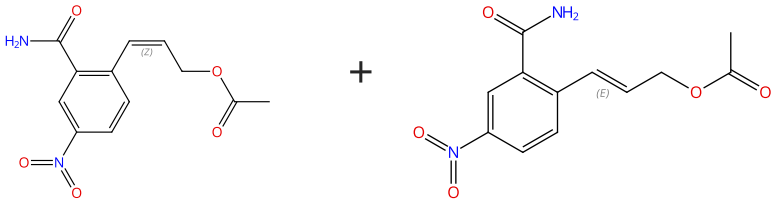
Steps: **1**



Suppliers (4)

Suppliers (50)

Double bond geometry shown



Double bond geometry shown

Double bond geometry shown

31-116-CAS-15767369

Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)] rhodium]
Solvents: Tetrahydrofuran; 12 h, 80 °C

Experimental Protocols

Solvent-Controlled, Tunable β-OAc and β-H Elimination in Rh(III)-Catalyzed Allyl Acetate and Aryl Amide Coupling via C- H Activation

By: Dai, Huimin; et al

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