CAS SciFinder

Task History

Initiating Search

February 21, 2025, 7:38 PM

Substances:

Filtered By:

Structure Match: **As Drawn**

Search Tasks

Task	Search Type	View
Returned Substance Results + Filters (2,301)	Substances	View Results
Exported: Retrieved Related Reaction Results + Filters (483)	Reactions	View Results

Filtered By:

Substance Role: **Reagent**

Catalyst: **[1-[2,6-Bis(1-methylethyl)phenyl]-3,3,5,5-tetramethyl-2-pyrrolidinylidene]chloro[(1,2,5,6-η)-1,5-cyclooctadiene]rhodium, (1,2-Bis((*S*,*S*)-2,5-diethyl-1-phospholidinyl)benzene)(1,5-cyclooctadiene)rhodium(1+) trifluoromethanesulfonate, [2-[2,6-Bis(1-methylethyl)phenyl]-3,3-dimethyl-2-azaspiro[4.5]dec-1-ylidene]chloro[(1,2,5,6-η)-1,5-cyclooctadiene]rhodium, Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Chloro[[2-[(2,6-dimethylphenyl)methylphosphino-κ*P*]-3-methylphenyl]methyl-κ*C*][(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]rhodium, Dicarbonylrhodium acetylacetonate, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium, Di-μ-chlorotetrakis(η^2-ethene)dirhodium, Dirhodium tetraacetate, Hydro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl][2-(2-pyridinyl-κ*N*)phenyl-κ*C*]rhodium, Rhodium, Rhodium(1+), [1,1'-(1,4-butanediyl)bis[1,1-diphenylphosphine-κ*P*]][(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), Rhodium(1+),**

[(11a*S*)-4,8-bis(1,1-dimethylethyl)-6-[2-[(1,1-dimethylethyl)methylphosphino-κ*P*]ethoxy]-1,2,10,11-tetramethyldibenzo[*d*,*f*][1,3,2]dioxaphosphepin-κP^6][(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), 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][1,1'-[(5a*S*,8a*S*,14a*S*)-5a,6,7,8,8a,9-hexahydro-5*H*-[1]benzopyrano[3,2-*d*]xanthene-1,13-diyl]bis[1,1-diphenylphosphine-κ*P*]]-, (*OC*-6-11)-hexafluoroantimonate(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+), [(1,2,5,6-η)-1,5-cyclooctadiene][(1*R*,2*R*)-2-[(3,5-dimethylphenyl)thio-κ*S*]-1,3-dimethylbutyl diphenylphosphinite-κ*P*]-, (*OC*-6-11)-hexafluoroantimonate(1-), Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][(1*S*,1'*S*)-1,2-ethanediylbis[(2-methoxyphenyl)phenylphosphine-κ*P*]]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][(2*R*,2'*R*,5*R*,5'*R*)-1,1'-(1,2-ethanediyl)bis[2,5-diphenylphospholane-κ*P*]]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][(2*R*,2'*R*,5*R*,5'*R*)-1,1'-(1,2-phenylene)bis[2,5-dimethylphospholane-κ*P*]]-, perchlorate, Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][(2*S*,2'*S*,5*S*,5'*S*)-1,1'-(1,2-ethanediyl)bis[2,5-diphenylphospholane-κ*P*]]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene][(2*S*,2'*S*,5*S*,5'*S*)-1,1'-(1,2-phenylene)bis[2,5-dimethylphospholane-κ*P*]]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene][1,1'-(1,2-ethanediyl)bis[1,1-diphenylphosphine-κ*P*]]-, 1,1,1-trifluoromethanesulfonate (1:1), Rhodium(1+), [(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene][1,1'-[(1*R*)-1-methyl-1,2-ethanediyl]bis[1,1-diphenylphosphine-κ*P*]]-, perchlorate (1:1), Rhodium(1+), [(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene][1,1'-(1*R*,1'*R*)-1,2-ethanediylbis[1-(1,1-dimethylethyl)-1-methylphosphine-κ*P*]]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene][1,1'-[(1*S*,2*S*)-1,2-dimethyl-1,2-ethanediyl]bis[1,1-diphenylphosphine-κ*P*]]-, perchlorate (1:1), Rhodium(1+), [(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene][(11a*R*)-4,8-bis(1,1-dimethylethyl)-6-[2-(diphenylphosphino-κ*P*)phenoxy]-1,2,10,11-tetramethyldibenzo[*d*,*f*][1,3,2]dioxaphosphepin-κP^6]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene][(11a*S*)-4,8-bis(1,1-dimethylethyl)-6-[2-

(diphenylphosphino-κ*P*)ethoxy]-1,2,10,11-tetramethyldibenzo[*d*,*f*][1,3,2]dioxaphosphepin-κP^6]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene][(11a*S*)-6-[2-[bis(4-methylphenyl)phosphino-κ*P*]ethoxy]-4,8-bis(1,1-dimethylethyl)-1,2,10,11-tetramethyldibenzo[*d*,*f*][1,3,2]dioxaphosphepin-κP^6]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), [(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene][(2*R*,2'*R*,3*S*,3'*S*)-3,3'-bis(1,1-dimethylethyl)-2,2',3,3'-tetrahydro-4,4'-bis[(1*R*)-2-methyl-1-phenylpropoxy]-2,2'-bi-1,3-benzoxaphosphole-κP^3,κP^3']-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:1), Rhodium(1+), [(2,3,5,6-η)-bicyclo[2.2.1]hepta-2,5-diene]bis(methyldiphenylphosphine)-, tetrafluoroborate(1-), Rhodium(1+), [η^3-1-[(2,6-dimethylphenyl)methylphosphino-κ*P*]-2-methyl-6-methylene-2,4-cyclohexadien-1-yl][(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-) (1:1), Rhodium(1+), (η^6-fluorobenzene)[1,1'-(1,3-propanediyl)bis[1,1-diphenylphosphine-κ*P*]]-, tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-) (1:1), Rhodium(1+), (acetonitrile)[[2-[(2,6-dimethylphenyl)methylphosphino-κ*P*]-3-methylphenyl]methyl-κ*C*][(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, stereoisomer, tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-) (1:1), Rhodium(1+), [bicyclo[2.2.1]heptane-*2,2,3,3,5,5,6,6-d*$_8$-κC^2,κC^3,κD^2,κD^3][1,1'-(1,2-ethanediyl)bis[1,1-dicyclohexylphosphine-κ*P*]]-, stereoisomer, tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(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]-, (*OC*-6-11)-hexafluoroantimonate(1-) (1:1), Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(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)[(1,6-η)-2'-(dicyclohexylphosphino-κ*P*)-*N*,*N*-dimethyl[1,1'-biphenyl]-2-amine]-, tetrafluoroborate(1-) (1:1), Rhodium(1+), carbonyl[[2-[(2,6-dimethylphenyl)methylphosphino-κ*P*]-3-methylphenyl]methyl-κ*C*][(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl]-, stereoisomer, tetrakis[3,5-bis(trifluoromethyl)phenyl]borate(1-) (1:1), 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, dicarbonylbis[μ-[methylenebis[diphenylphosphine]-*P*:*P*']][μ-(phenylethenylidene)]di-, Rhodium, dicarbonyl-μ-chlorobis[5-methyl-2-(1-methylethyl)cyclohexyl diphenylphosphinite-*P*][μ-[2-(triethoxysilyl)ethanethiolato-*S*:*S*]]di-, stereoisomer, Rhodium, di-μ-chlorobis[2,3-dimethylphenyl bis(1-methylethyl)phosphinite-κ*P*]bis(triphenylphosphine)di-, stereoisomer, Rhodium iodide (RhI_3), Rhodium oxide (Rh_2O_3), Rhodium, tri-μ-carbonylnonacarbonyltetra-, *tetrahedro*, Rhodium trichloride, Rhodium trichloride trihydrate, (*SP*-4-2)-Chlorotris[(3,5-difluorophenyl)diphenylphosphine-κ*P*]rhodium, (*SP*-4-2)-Chlorotris[diphenyl[4-(trifluoromethyl)phenyl]phosphine-κ*P*]rhodium, (*SP*-4-2)-Chlorotris[phenylbis[4-(trifluoromethyl)phenyl]phosphine-κ*P*]rhodium, (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, (*SP*-4-2)-Chlorotris[tris[3,5-bis(trifluoromethyl)phenyl]phosphine-κ*P*]rhodium, (*SP*-4-2)-Chlorotris[tris(3,5-difluorophenyl)phosphine-κ*P*]rhodium, (*SP*-4-2)-Chlorotris[tris(3,5-dimethylphenyl)phosphine]rhodium, (*SP*-4-2)-Chlorotris[tris(4-methylphenyl)phosphine]rhodium, (*SP*-4-2)-Chlorotris[tris[4-(trifluoromethyl)phenyl]phosphine-κ*P*]rhodium, (*SP*-4-2)-Iodotris(triphenylphosphine)rhodium, (*SP*-4-2)-Tris[[3,5-bis(trifluoromethyl)phenyl]diphenylphosphine-κ*P*]chlororhodium, (*SP*-4-2)-Tris[bis[3,5-bis(trifluoromethyl)phenyl]phenylphosphine-κ*P*]chlororhodium, (*SP*-4-2)-Tris[bis(3,5-difluorophenyl)phenylphosphine-κ*P*]chlororhodium, (*SP*-5-33)-Chlorobis[(2,2-dimethyl-1,2-ethanediyl)[3-(1,1-dimethylethyl)-1*H*-imidazol-1-yl-2(3*H*)-ylidene]]rhodium, Stereoisomer of chloro[*N*-[(1*R*,2*R*)-2-[(*S*)-[[5-methoxy-2-[(1,2,3,4,5-η)-2,3,4,5-tetramethyl-2,4-cyclopentadien-1-yl]phenyl]methyl]amino-κ*N*]-1,2-diphenylethyl]-4-methylbenzenesulfonamidato(2-)-κ*N*]rhodium

Document Type: Journal

Language: English

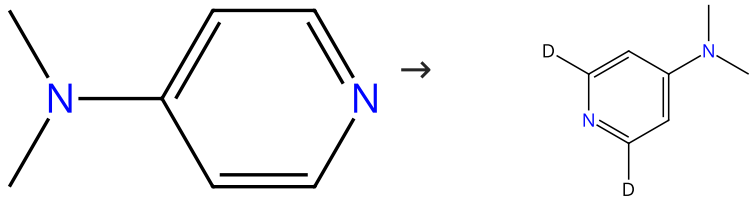
CAS SciFinder

Reactions (74)

View in CAS SciFinder

Scheme 1 (1 Reaction)

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



Suppliers (154)

Supplier (1)

31-116-CAS-4477734

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

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

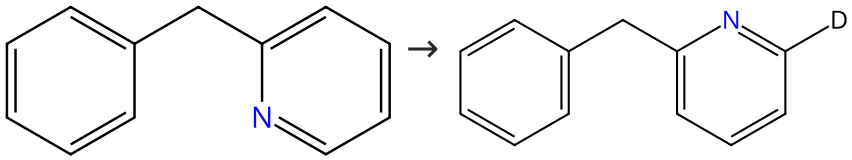
One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 2 (1 Reaction)

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



Suppliers (66)

31-116-CAS-11325637

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

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

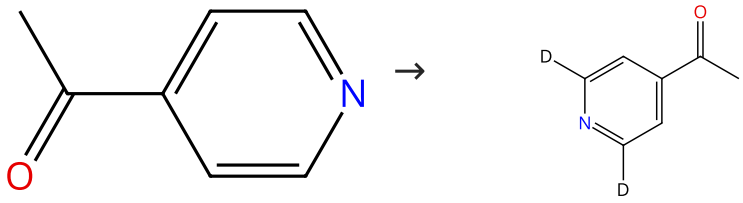
One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 3 (2 Reactions)

Steps: **1** Yield: **83-99%**



Suppliers (88)

31-116-CAS-516363 Steps: **1** Yield: **99%**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

31-116-CAS-2673984 Steps: **1** Yield: **83%**

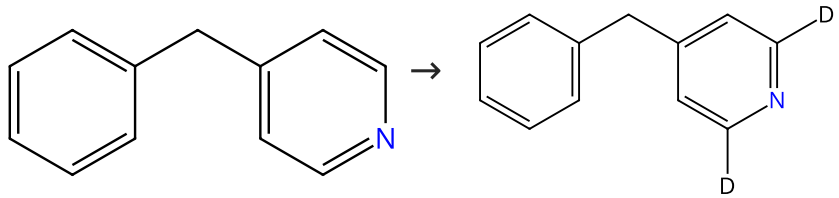
1.1 **Reagents:** Deuterium
Catalysts: Alumina, Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 4 (2 Reactions) Steps: **1** Yield: **76-99%**



Suppliers (65)

31-116-CAS-13331834 Steps: **1** Yield: **99%**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

31-116-CAS-15453373 Steps: **1** Yield: **76%**

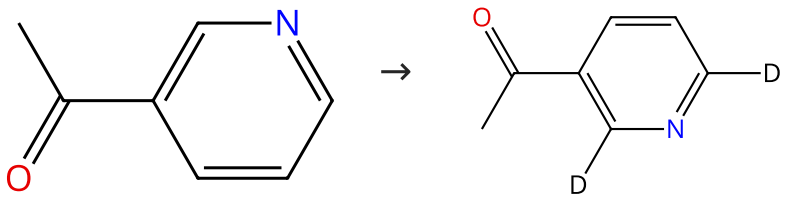
1.1 **Reagents:** Deuterium
Catalysts: Alumina, Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 5 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (106)

31-116-CAS-6655355 Steps: **1** Yield: **99%**

1.1 **Reagents:** Deuterium
Catalysts: Alumina, Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

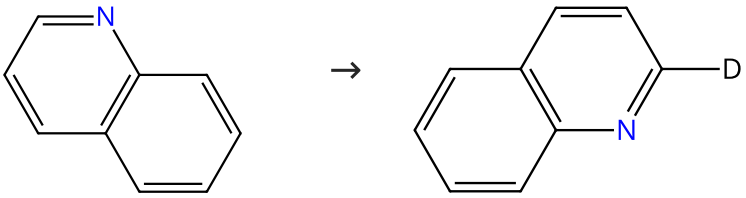
One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 6 (1 Reaction)

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



Suppliers (124)

Suppliers (14)

31-116-CAS-11707277

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

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

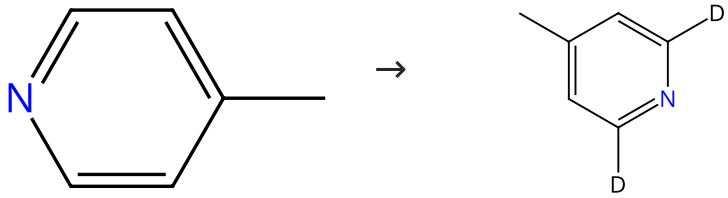
One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 7 (2 Reactions)

Steps: **1** Yield: **83-98%**



Suppliers (65)

31-116-CAS-10842921

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

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

31-116-CAS-15135221

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

1.1 **Reagents:** Deuterium
Catalysts: Alumina, Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

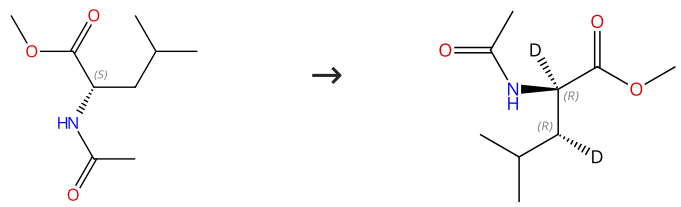
One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 8 (1 Reaction)

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



Absolute stereochemistry shown, Rotation (-)

Relative stereochemistry shown

Suppliers (49)

31-116-CAS-3934401 Steps: **1** Yield: **97%**

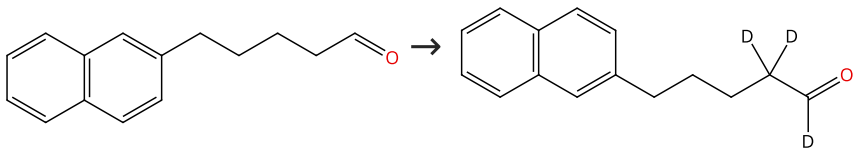
1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium
Solvents: Methanol-*d*; 2 d, 1 atm, rt

Asymmetric conjugate reductions with samarium diiodide: asymmetric synthesis of (2S,3R)- and (2S,3S)-[2-^{2}H,3-^{2}H]-leucine-(S)-phenylalanine dipeptides and (2S,3R)-[2-^{2}H,3-^{2}H]-phenylalanine methyl ester

By: Davies, Stephen G.; et al

Organic & Biomolecular Chemistry (2005), 3(8), 1435-1447.

Scheme 9 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (3)

31-116-CAS-16610340 Steps: **1** Yield: **92%**

1.1 **Reagents:** Carbon dioxide, Deuterium, Poly(methylhydrosiloxane)
Catalysts: Potassium fluoride, Dicarbonylrhodium acetylacetonate, Phosphinous acid, *P*,*P*-di-1*H*-pyrrol-1-yl-, (5a*R*,7a*R*)-12-[(di-1*H*-pyrrol-1-ylphosphino)oxy]-5,5a,6,7,7a,8-hexahydrobenzo[5,6]pentaleno[6a,1-*a*]inden-1-yl ester, *rel*-
Solvents: Toluene, *N*-Methyl-2-pyrrolidone; 5 bar; 20 bar; 12 h, 100 °C

Experimental Protocols

Rhodium-Complex-Catalyzed Hydroformylation of Olefins with CO_2 and Hydrosilane

By: Ren, Xinyi; et al

Angewandte Chemie, International Edition (2017), 56(1), 310-313.

Scheme 10 (1 Reaction) Steps: **1** Yield: **90%**

Suppliers (98) Supplier (1)

31-116-CAS-6612374 Steps: **1** Yield: **90%**

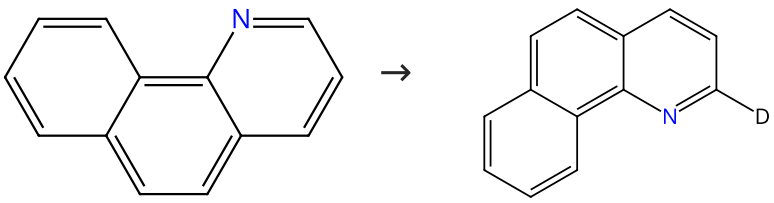
1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterogeneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 11 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (81)

31-116-CAS-9072324 Steps: **1** Yield: **90%**

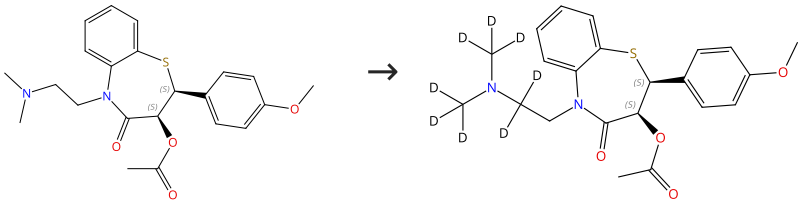
1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 12 (1 Reaction) Steps: **1** Yield: **90%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (44)

31-614-CAS-31530450 Steps: **1** Yield: **90%**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2, 4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: Tetrahydrofuran; 5 min; 12 h, 1 atm, rt

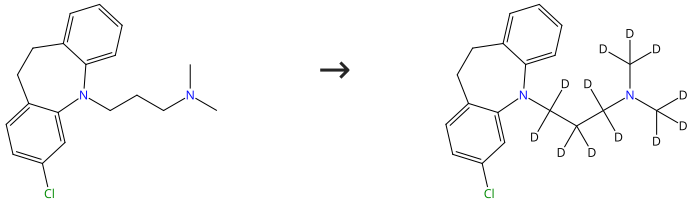
Experimental Protocols

Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 13 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (43)

31-614-CAS-31530449 Steps: **1** Yield: **86%**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2, 4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: Tetrahydrofuran; 5 min; 12 h, 1 atm, rt

Experimental Protocols

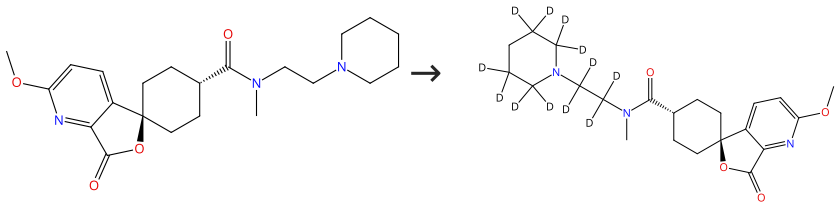
Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 14 (1 Reaction)

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



Relative stereochemistry shown

Relative stereochemistry shown

Suppliers (6)

31-614-CAS-31530453

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

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2,4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: Tetrahydrofuran; 5 min; 12 h, 1 atm, rt

Experimental Protocols

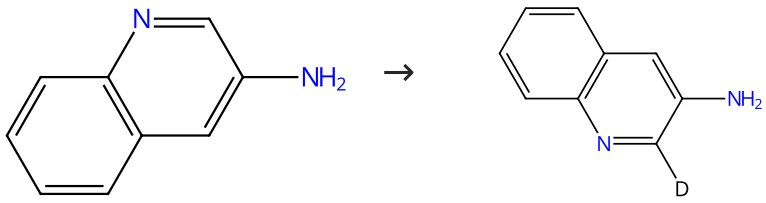
Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 15 (1 Reaction)

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



Suppliers (85)

31-116-CAS-4809509

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

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

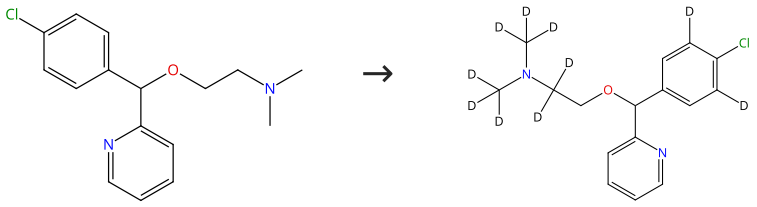
One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 16 (1 Reaction)

Steps: **1** Yield: **78%**



Suppliers (37)

31-614-CAS-31530443

Steps: **1** Yield: **78%**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2,4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: Tetrahydrofuran; 5 min; 12 h, 1 atm, rt

Experimental Protocols

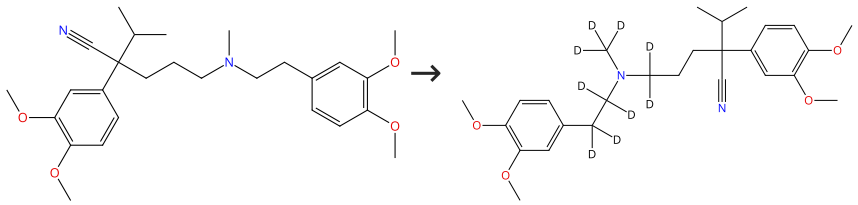
Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 17 (1 Reaction)

Steps: **1** Yield: **78%**



Suppliers (57)

31-614-CAS-31530446

Steps: **1** Yield: **78%**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2,4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: Dimethyl sulfoxide; 5 min; 12 h, 1 atm, rt

Experimental Protocols

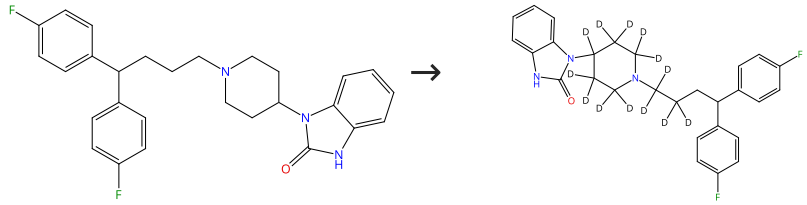
Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 18 (1 Reaction)

Steps: **1** Yield: **76%**



Suppliers (61)

31-614-CAS-31530451

Steps: **1** Yield: **76%**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2,4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: Tetrahydrofuran; 5 min; 12 h, 1 atm, rt

Experimental Protocols

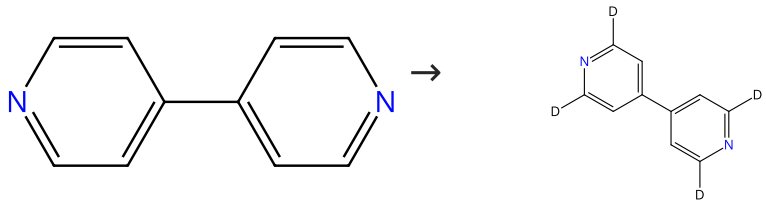
Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 19 (2 Reactions)

Steps: **1** Yield: **75%**



Suppliers (95)

31-116-CAS-578180

Steps: **1** Yield: **75%**

1.1 **Reagents:** Deuterium
Catalysts: Alumina, Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

31-116-CAS-13611432 Steps: **1** Yield: **75%**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 20 (1 Reaction) Steps: **1** Yield: **68%**

• HCl • HCl

Suppliers (78)

31-614-CAS-31530458 Steps: **1** Yield: **68%**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2, 4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: *N*-Methyl-2-pyrrolidone; 5 min; 12 h, 1 atm, rt

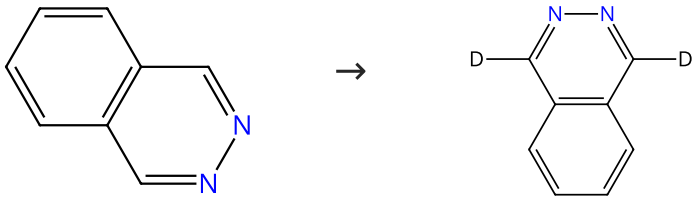
Experimental Protocols

Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 21 (1 Reaction) Steps: **1** Yield: **61%**



Suppliers (86)

31-116-CAS-9571249 Steps: **1** Yield: **61%**

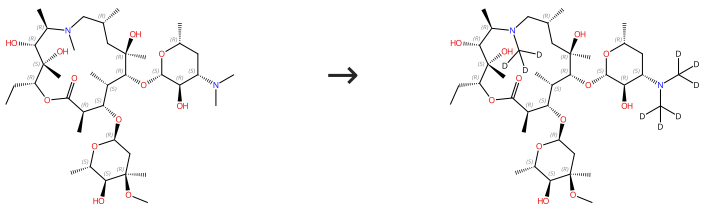
1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 22 (1 Reaction) Steps: **1** Yield: **55%**



Absolute stereochemistry shown Absolute stereochemistry shown

Suppliers (95)

31-614-CAS-31530457 Steps: **1** Yield: **55%**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2,4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: Dimethyl sulfoxide; 5 min; 12 h, 1 atm, rt

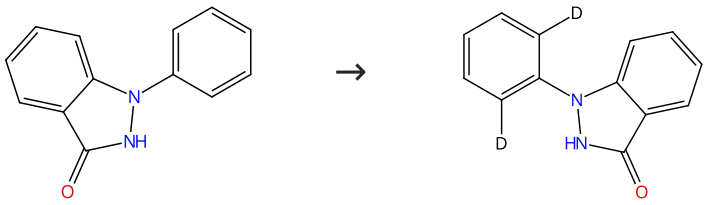
Experimental Protocols

Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 23 (1 Reaction) Steps: **1** Yield: **52%**



Suppliers (15)

31-614-CAS-35846620 Steps: **1** Yield: **52%**

1.1 **Reagents:** 1-Adamantanecarboxylic acid, Deuterium
Catalysts: Bis[dichloro[η^5-(pentamethylcyclopentadienyl)]rhodium], Silver hexafluoroantimonate
Solvents: Acetonitrile; 16 h, 100 °C

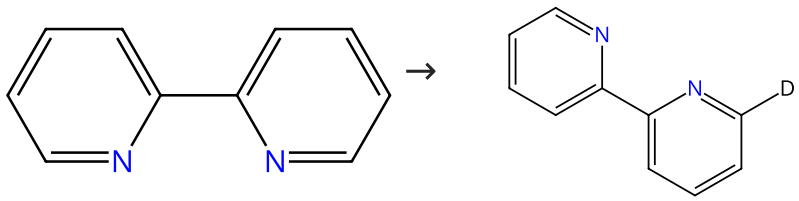
Experimental Protocols

Rh(III)-Catalyzed C-H Functionalization/Annulation of 1-Arylindazolones: Divergent Synthesis of Fused Indazolones and Allyl Indazolones

By: Shu, Bing; et al

Journal of Organic Chemistry (2023), 88(6), 3499-3508.

Scheme 24 (2 Reactions) Steps: **1** Yield: **19-35%**



Suppliers (120)

31-116-CAS-2068788 Steps: **1** Yield: **35%**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterogeneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

31-116-CAS-4146488 Steps: **1** Yield: **19%**

1.1 **Reagents:** Deuterium
Catalysts: Alumina, Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

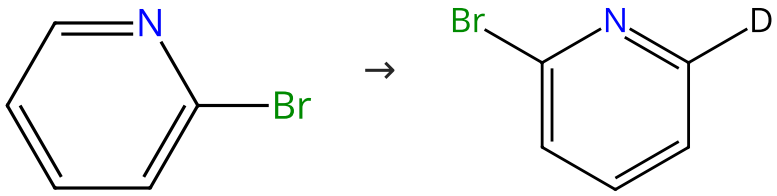
One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterogeneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 25 (1 Reaction)

Steps: **1** Yield: **28%**



Suppliers (94)

Suppliers (5)

31-116-CAS-2354327

Steps: **1** Yield: **28%**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

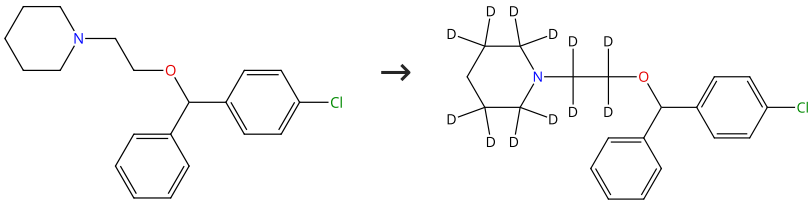
One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 26 (1 Reaction)

Steps: **1** Yield: **24%**



Suppliers (28)

31-614-CAS-31530452

Steps: **1** Yield: **24%**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2, 4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: Dimethyl sulfoxide; 5 min; 12 h, 1 atm, rt

Experimental Protocols

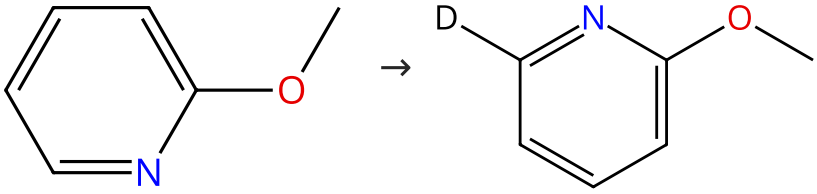
Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 27 (1 Reaction)

Steps: **1** Yield: **16%**



Suppliers (84)

31-116-CAS-8737757

Steps: **1** Yield: **16%**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

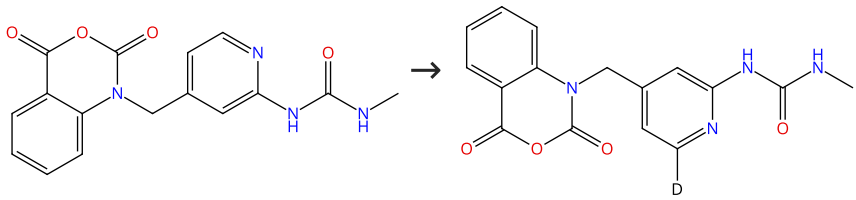
One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 28 (1 Reaction)

Steps: **1**



31-116-CAS-6694406

Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1457 - 1639 mbar, rt

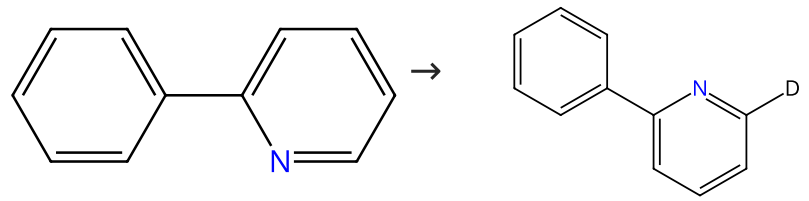
The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 29 (1 Reaction)

Steps: **1**



Suppliers (94)

Supplier (1)

31-116-CAS-2153748

Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

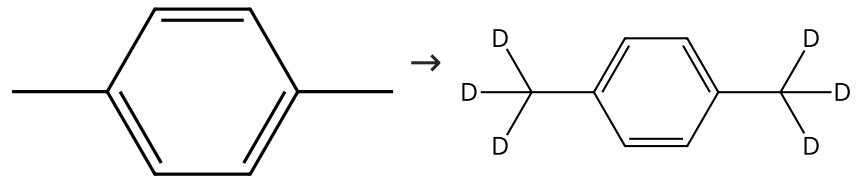
The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 30 (1 Reaction)

Steps: **1**



Suppliers (122)

Suppliers (23)

31-116-CAS-18476972

Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Silica
Solvents: Isopropanol; 15 min, 3 bar, 323 K

Experimental Protocols

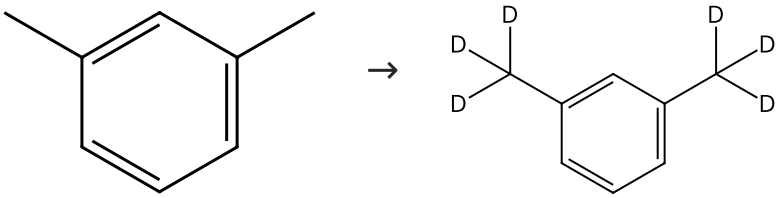
Hydrogenation of alkylaromatics over Rh/silica

By: Alshehri, Feras; et al

Reaction Kinetics, Mechanisms and Catalysis (2017), 122(2), 699-714.

Scheme 31 (1 Reaction)

Steps: **1**



Suppliers (104)

Suppliers (26)

31-116-CAS-18476971

Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Silica
Solvents: Isopropanol; 15 min, 3 bar, 323 K

Experimental Protocols

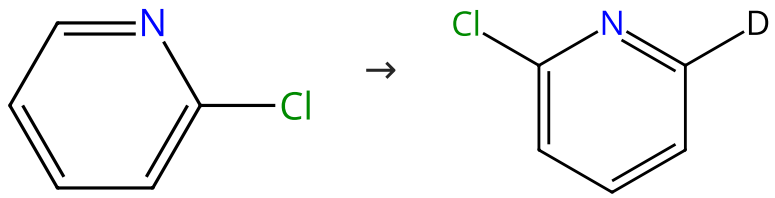
Hydrogenation of alkylaromatics over Rh/silica

By: Alshehri, Feras; et al

Reaction Kinetics, Mechanisms and Catalysis (2017), 122(2), 699-714.

Scheme 32 (1 Reaction)

Steps: **1**



Suppliers (70)

Suppliers (3)

31-116-CAS-8878827

Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

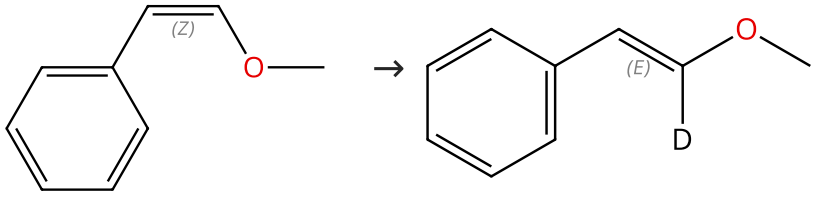
The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 33 (2 Reactions)

Steps: **1**



Double bond geometry shown

Double bond geometry shown

Suppliers (3)

31-116-CAS-4647001

Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris[tris(4-methylphenyl)phosphine]rhodium
Solvents: Benzene; 0.5 - 5 h, 1 atm, 24 °C

Experimental Protocols

Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation

By: Wu, Hai-Chen; et al

Journal of the American Chemical Society (2009), 131(28), 9604-9605.

31-116-CAS-7370184 Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris[tris(3,5-dimethylphenyl) phosphine]rhodium
Solvents: Benzene; 60 min, 1 atm, 24 °C

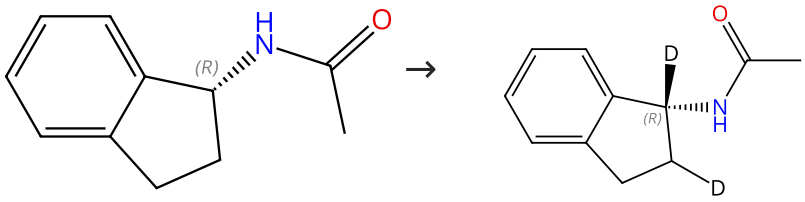
Experimental Protocols

Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation

By: Wu, Hai-Chen; et al

Journal of the American Chemical Society (2009), 131(28), 9604-9605.

Scheme 34 (1 Reaction) Steps: **1**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (6)

31-614-CAS-37556701 Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), 2981480-83-3
Solvents: Dichloromethane; 16 h, 10 atm, 25 °C

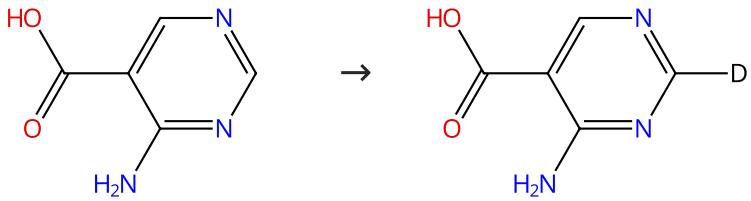
Experimental Protocols

Rh-Catalyzed Enantioselective Hydrogenation of Di- and Tri-Substituted Enamides Enabled by Easily Tunable P- Stereo genic N-Phosphinyl Phosphoramidite Ligands

By: Chakrabortty, Soumyadeep; et al

ACS Catalysis (2023), 13(18), 12030-12040.

Scheme 35 (1 Reaction) Steps: **1**



Suppliers (75)

31-116-CAS-10665266 Steps: **1**

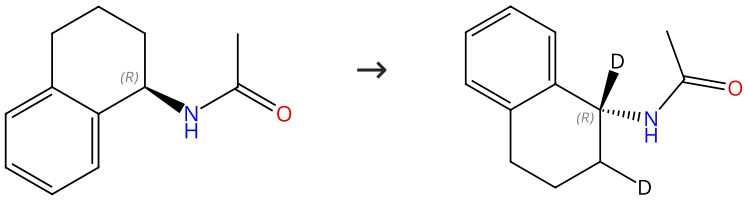
1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooc tadiene](pyridine)(tricyclohexylphosphine)-, hexafluoro phosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 36 (1 Reaction) Steps: **1**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (17)

31-614-CAS-37556704 Steps: 1

1.1 **Reagents:** Deuterium
Catalysts: Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), 2981480-83-3
Solvents: Dichloromethane; 16 h, 10 atm, 25 °C

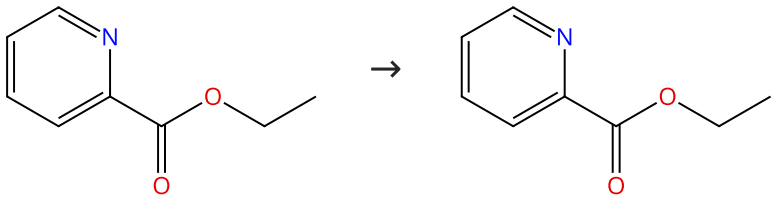
Experimental Protocols

Rh-Catalyzed Enantioselective Hydrogenation of Di- and Tri-Substituted Enamides Enabled by Easily Tunable P- Stereo genic N-Phosphinyl Phosphoramidite Ligands

By: Chakrabortty, Soumyadeep; et al

ACS Catalysis (2023), 13(18), 12030-12040.

Scheme 37 (1 Reaction) Steps: **1**



Suppliers (97) Suppliers (4)

31-614-CAS-30763773 Steps: 1

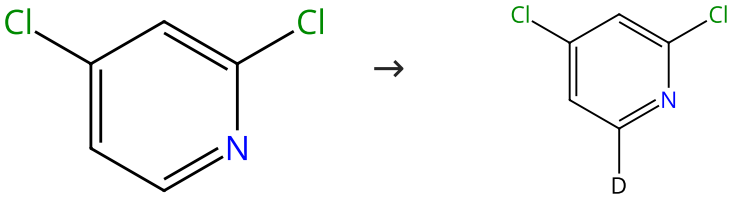
1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 38 (1 Reaction) Steps: **1**



Suppliers (107)

31-116-CAS-13135889 Steps: 1

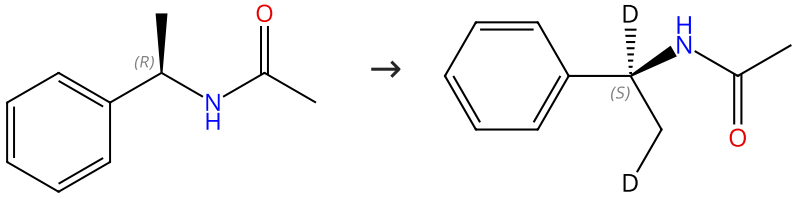
1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 39 (1 Reaction) Steps: **1**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (54)

31-614-CAS-37556702 Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1), 2981480-83-3
Solvents: Dichloromethane; 16 h, 10 atm, 25 °C

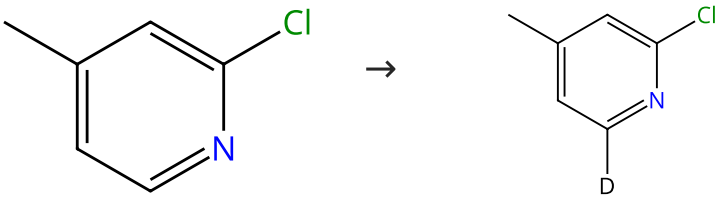
Experimental Protocols

Rh-Catalyzed Enantioselective Hydrogenation of Di- and Tri-Substituted Enamides Enabled by Easily Tunable P- Stereo genic N-Phosphinyl Phosphoramidite Ligands

By: Chakrabortty, Soumyadeep; et al

ACS Catalysis (2023), 13(18), 12030-12040.

Scheme 40 (1 Reaction) Steps: **1**



Suppliers (94)

31-116-CAS-9157821 Steps: **1**

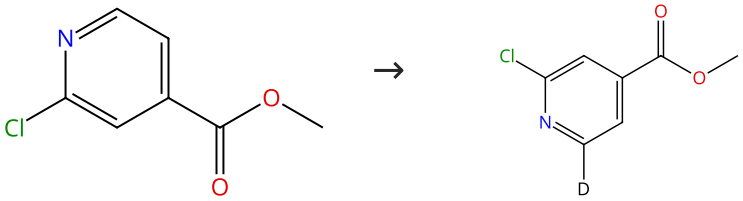
1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooc tadiene](pyridine)(tricyclohexylphosphine)-, hexafluoro phosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 41 (1 Reaction) Steps: **1**



Suppliers (79)

31-116-CAS-11297419 Steps: **1**

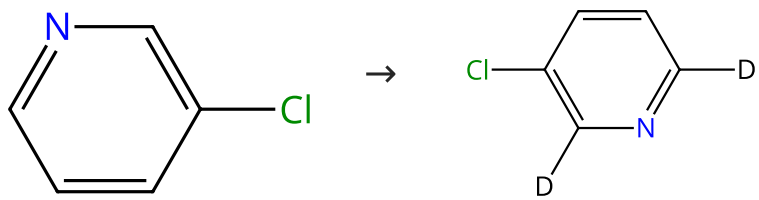
1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 42 (1 Reaction) Steps: **1**



Suppliers (84)

31-116-CAS-11006816 Steps: **1**

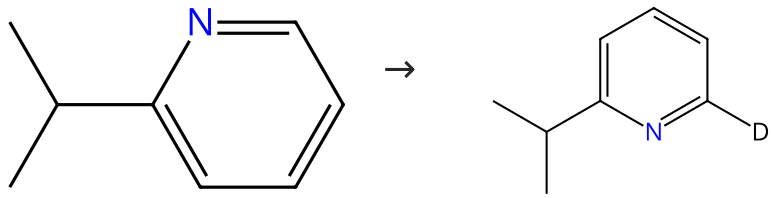
1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 43 (1 Reaction) Steps: **1**



Suppliers (64) Supplier (1)

31-116-CAS-4251612 Steps: **1**

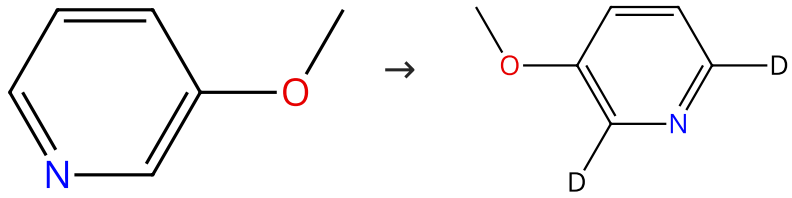
1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 44 (1 Reaction) Steps: **1**



Suppliers (80)

31-116-CAS-8551924 Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 45 (1 Reaction) Steps: **1**

Suppliers (119) Suppliers (23)

31-116-CAS-18476970 Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Silica
Solvents: Isopropanol; 15 min, 3 bar, 323 K

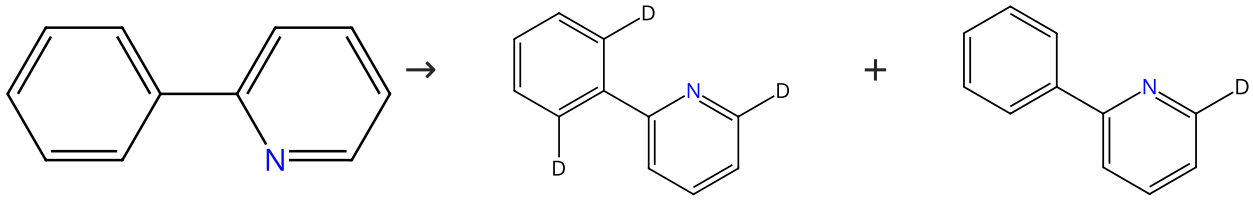
Experimental Protocols

Hydrogenation of alkylaromatics over Rh/silica

By: Alshehri, Feras; et al

Reaction Kinetics, Mechanisms and Catalysis (2017), 122(2), 699-714.

Scheme 46 (1 Reaction) Steps: **1** Yield: **35%**



Suppliers (94)

Supplier (1)

31-116-CAS-1757421 Steps: **1** Yield: **35%**

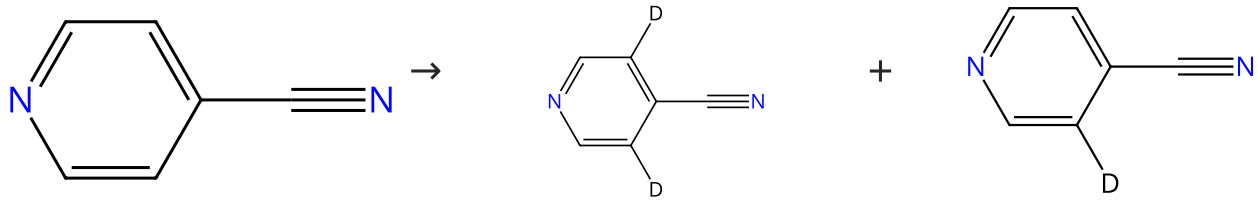
1.1 **Reagents:** Deuterium
Catalysts: Rhodium
Solvents: Tetrahydrofuran; 5 h, rt

One-step exchange-labelling of pyridines and other N-heteroaromatics using deuterium gas: catalysis by heterog eneous rhodium and ruthenium catalysts

By: Alexakis, Efstathios; et al

Tetrahedron Letters (2006), 47(29), 5025-5028.

Scheme 47 (1 Reaction) Steps: **1**



Suppliers (103)

31-116-CAS-5497 Steps: **1**

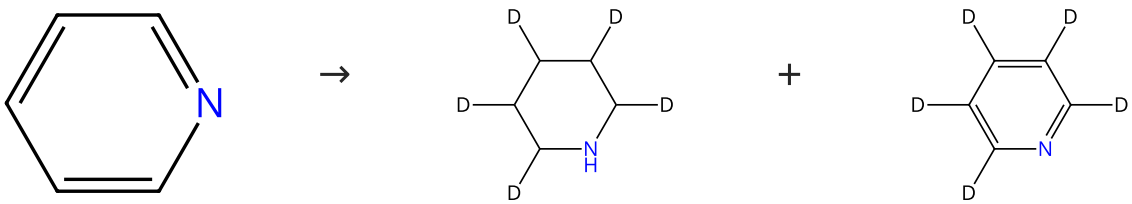
1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooc tadiene](pyridine)(tricyclohexylphosphine)-, hexafluoro phosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 48 (1 Reaction) Steps: **1**



Suppliers (221)

Suppliers (5)

Suppliers (161)

31-116-CAS-20728563 Steps: 1

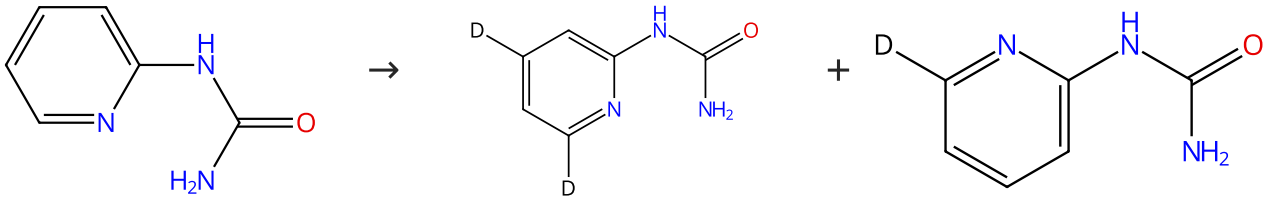
1.1 **Reagents:** Deuterium
Catalysts: Hydro[(1,2,3,4,5-η)-1,2,3,4,5-pentamethyl-2,4-cyclopentadien-1-yl][2-(2-pyridinyl-κ*N*)phenyl-κ*C*]rhodium; 4 atm, -78 °C; 48 h, 80 °C

Hydrogenation of N-Heteroarenes Using Rhodium Precatalysts: Reductive Elimination Leads to Formation of Multimetallic Clusters

By: Kim, Sangmin; et al

Journal of the American Chemical Society (2019), 141(44), 17900-17908.

Scheme 49 (1 Reaction) Steps: 1



Suppliers (55)

31-116-CAS-6425129 Steps: 1

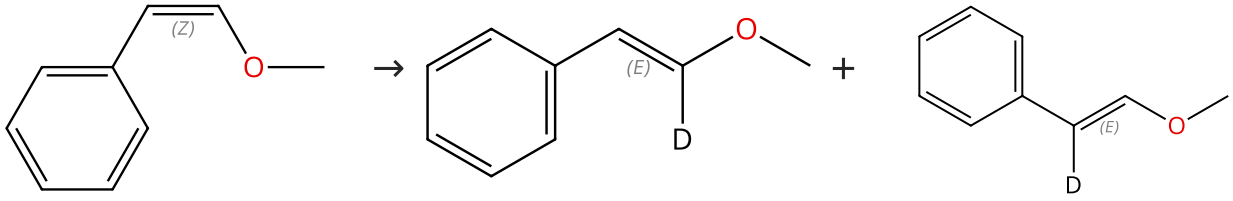
1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 50 (9 Reactions) Steps: 1



Double bond geometry shown

Double bond geometry shown

Double bond geometry shown

Suppliers (3)

31-116-CAS-8910192 Steps: 1

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris[tris[3,5-bis(trifluoromethyl)phenyl]phosphine-κ*P*]rhodium
Solvents: Benzene; 60 min, 1 atm, 24 °C

Experimental Protocols

Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation

By: Wu, Hai-Chen; et al

Journal of the American Chemical Society (2009), 131(28), 9604-9605.

31-116-CAS-13781810 Steps: 1

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris[phenylbis[4-(trifluoromethyl)phenyl]phosphine-κ*P*]rhodium
Solvents: Benzene; 60 min, 1 atm, 24 °C

Experimental Protocols

Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation

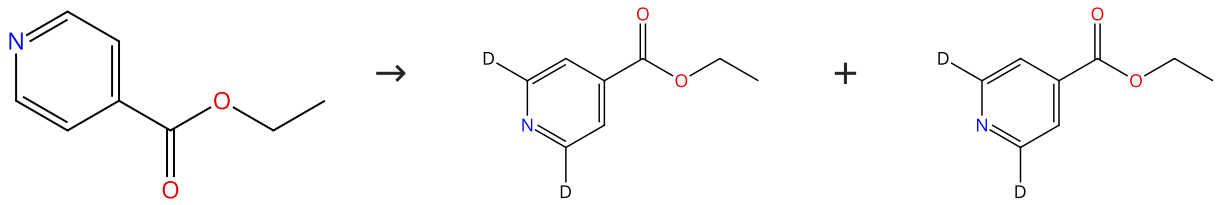
By: Wu, Hai-Chen; et al

Journal of the American Chemical Society (2009), 131(28), 9604-9605.

31-116-CAS-351261 Steps: **1** 1.1 **Reagents:** Deuterium **Catalysts:** (*SP*-4-2)-Chlorotris[(3,5-difluorophenyl)diphenylphosphine-κ*P*]rhodium **Solvents:** Benzene; 60 min, 1 atm, 24 °C Experimental Protocols	**Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation** By: Wu, Hai-Chen; et al Journal of the American Chemical Society (2009), 131(28), 9604-9605.
31-116-CAS-4927267 Steps: **1** 1.1 **Reagents:** Deuterium **Catalysts:** (*SP*-4-2)-Chlorotris[tris(3,5-difluorophenyl)phosphine-κ*P*]rhodium **Solvents:** Benzene; 60 min, 1 atm, 24 °C Experimental Protocols	**Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation** By: Wu, Hai-Chen; et al Journal of the American Chemical Society (2009), 131(28), 9604-9605.
31-116-CAS-11651824 Steps: **1** 1.1 **Reagents:** Deuterium **Catalysts:** (*SP*-4-2)-Chlorotris[diphenyl[4-(trifluoromethyl)phenyl]phosphine-κ*P*]rhodium **Solvents:** Benzene; 60 min, 1 atm, 24 °C Experimental Protocols	**Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation** By: Wu, Hai-Chen; et al Journal of the American Chemical Society (2009), 131(28), 9604-9605.
31-116-CAS-6784050 Steps: **1** 1.1 **Reagents:** Deuterium **Catalysts:** (*SP*-4-2)-Tris[bis[3,5-bis(trifluoromethyl)phenyl]phenylphosphine-κ*P*]chlororhodium **Solvents:** Benzene; 60 min, 1 atm, 24 °C Experimental Protocols	**Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation** By: Wu, Hai-Chen; et al Journal of the American Chemical Society (2009), 131(28), 9604-9605.
31-116-CAS-11042311 Steps: **1** 1.1 **Reagents:** Deuterium **Catalysts:** (*SP*-4-2)-Chlorotris[tris[4-(trifluoromethyl)phenyl]phosphine-κ*P*]rhodium **Solvents:** Benzene; 60 min, 1 atm, 24 °C Experimental Protocols	**Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation** By: Wu, Hai-Chen; et al Journal of the American Chemical Society (2009), 131(28), 9604-9605.
31-116-CAS-2515775 Steps: **1** 1.1 **Reagents:** Deuterium **Catalysts:** (*SP*-4-2)-Tris[bis(3,5-difluorophenyl)phenylphosphine-κ*P*]chlororhodium **Solvents:** Benzene; 60 min, 1 atm, 24 °C Experimental Protocols	**Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation** By: Wu, Hai-Chen; et al Journal of the American Chemical Society (2009), 131(28), 9604-9605.
31-116-CAS-9521440 Steps: **1** 1.1 **Reagents:** Deuterium **Catalysts:** (*SP*-4-2)-Tris[[3,5-bis(trifluoromethyl)phenyl]diphenylphosphine-κ*P*]chlororhodium **Solvents:** Benzene; 60 min, 1 atm, 24 °C Experimental Protocols	**Possible Origin of Electronic Effects in Rh(I)-Catalyzed Enantioselective Hydrogenation** By: Wu, Hai-Chen; et al Journal of the American Chemical Society (2009), 131(28), 9604-9605.

Scheme 51 (1 Reaction)

Steps: **1**



Suppliers (95)

31-614-CAS-27728730

Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

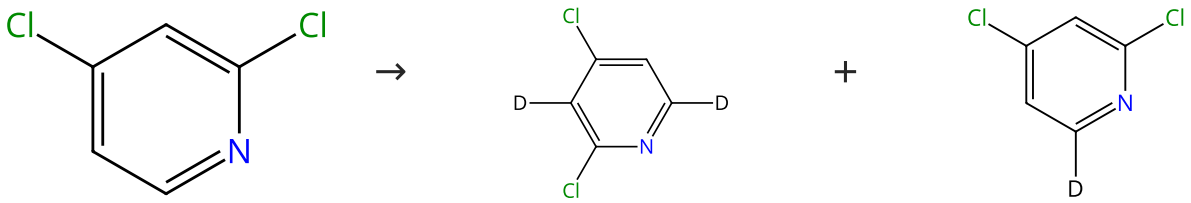
The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 52 (1 Reaction)

Steps: **1**



Suppliers (107)

31-116-CAS-7045145

Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

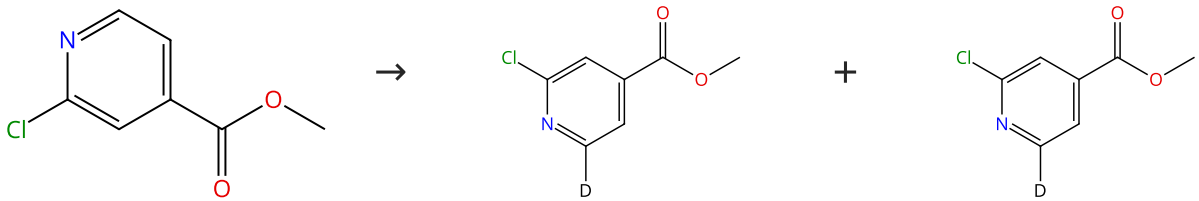
The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 53 (1 Reaction)

Steps: **1**



Suppliers (79)

31-614-CAS-30235760

Steps: **1**

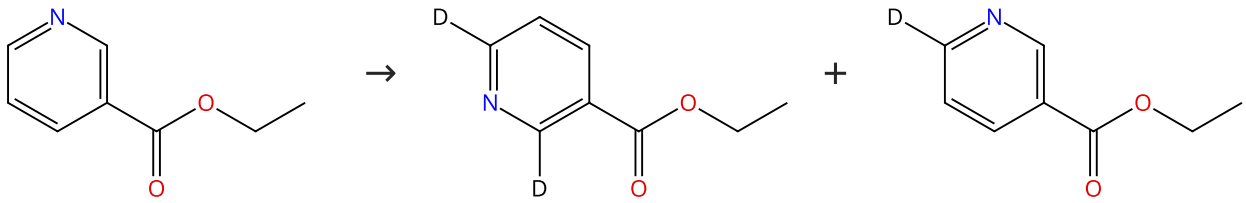
1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 54 (1 Reaction) Steps: **1**



Suppliers (109)

31-116-CAS-4626276 Steps: **1**

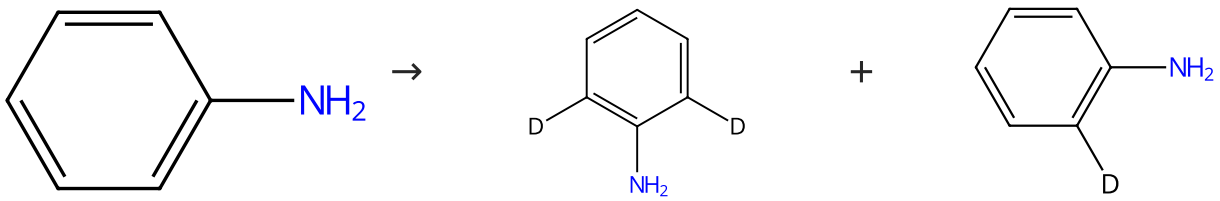
1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 55 (1 Reaction) Steps: **1**



Suppliers (120) Supplier (1) Supplier (1)

31-116-CAS-4572016 Steps: **1**

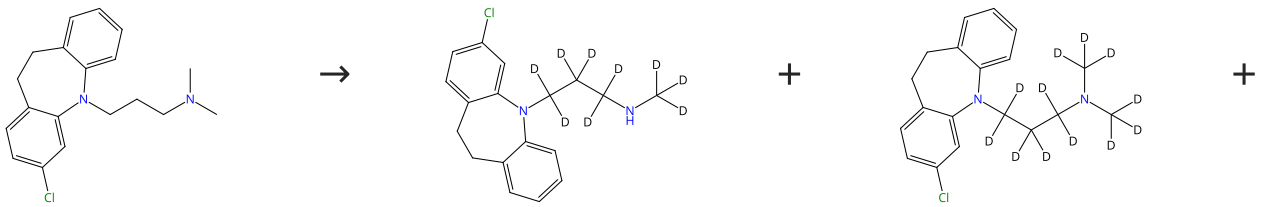
1.1 **Reagents:** Deuterium
Catalysts: Rhodium, Iridium(1+), [(1,2,5,6-η)-1,5-cyclooctadiene](pyridine)(tricyclohexylphosphine)-, hexafluorophosphate(1-) (1:1)
Solvents: Dichloromethane, Tetrahydrofuran; cooled; 4 h, 1342 - 1590 mbar, rt

The effect of adding Crabtree's catalyst to rhodium black in direct hydrogen isotope exchange reactions

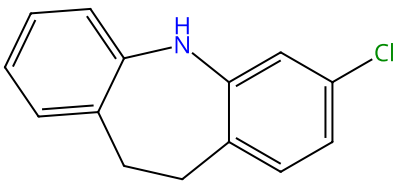
By: Schou, Soeren Christian

Journal of Labelled Compounds and Radiopharmaceuticals (2009), 52(9), 376-381.

Scheme 56 (1 Reaction) Steps: **1** Yield: **43%**



Suppliers (43)



Suppliers (91)

31-614-CAS-31530462 Steps: **1** Yield: **43%**

1.1 **Reagents:** Deuterium
Catalysts: (*SP*-4-2)-Chlorotris(triphenylphosphine)rhodium, 2,4,5,6-Tetra(9*H*-carbazol-9-yl)isophthalonitrile
Solvents: Tetrahydrofuran; 5 min; 12 h, 1 atm, rt

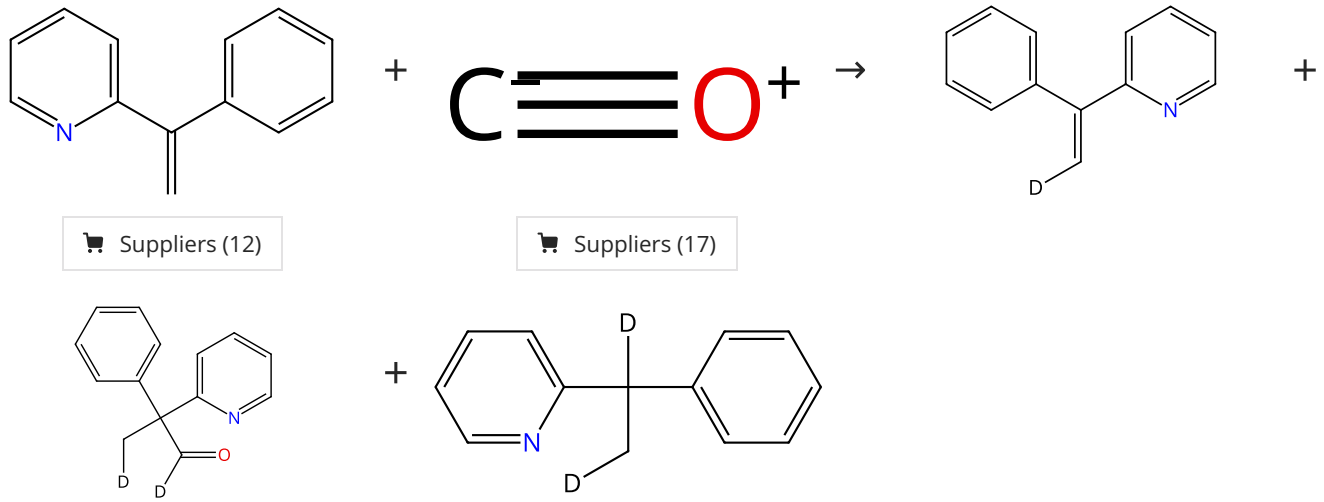
Experimental Protocols

Efficient Aliphatic Hydrogen-Isotope Exchange with Tritium Gas through the Merger of Photoredox and Hydrogenation Catalysts

By: Yang, Haifeng; et al

Journal of the American Chemical Society (2022), 144(11), 5010-5022.

Scheme 57 (1 Reaction) Steps: **1**



Suppliers (12)

Suppliers (17)

31-116-CAS-8776451 Steps: **1**

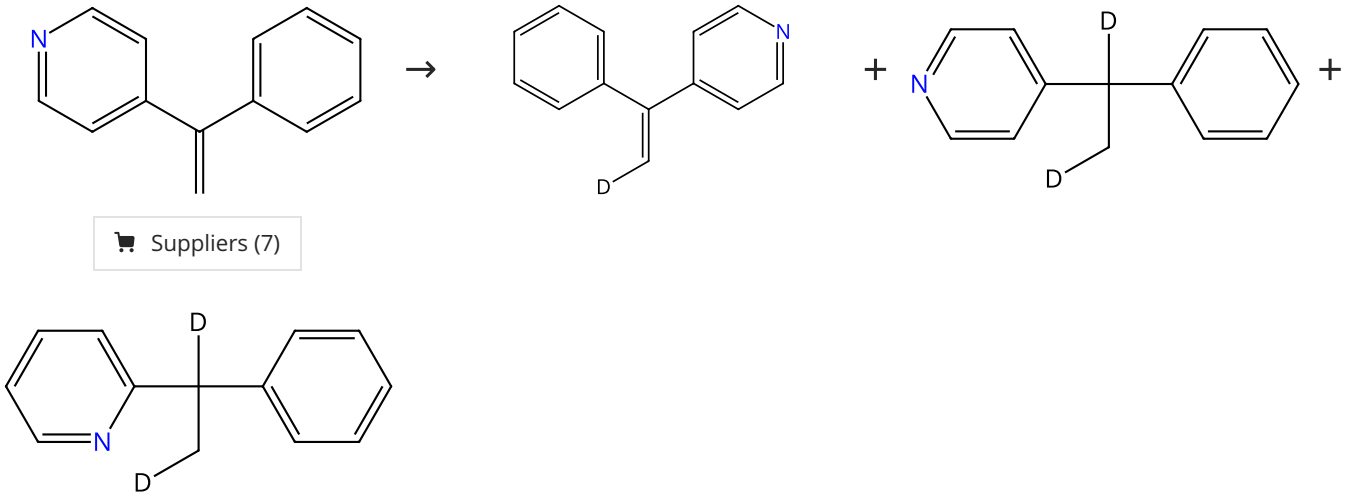
1.1 **Reagents:** Deuterium
Catalysts: Triphenylphosphine, Rhodium, tri-μ-carbonyln onacarbonyltetra-, *tetrahedro*
Solvents: Benzene; 100 atm, 80 °C

Evidence for formation and different evolution of tertiary rhodium alkyl intermediates under rhodium-catalyzed deuterio-(hydro)formylation of 1-(n-pyridyl)-1-phenylethenes

By: Lazzaroni, Raffaello; et al

Journal of Organometallic Chemistry (2005), 690(7), 1699-1704.

Scheme 58 (1 Reaction) Steps: **1**



Suppliers (7)

31-085-CAS-10911188 Steps: **1**

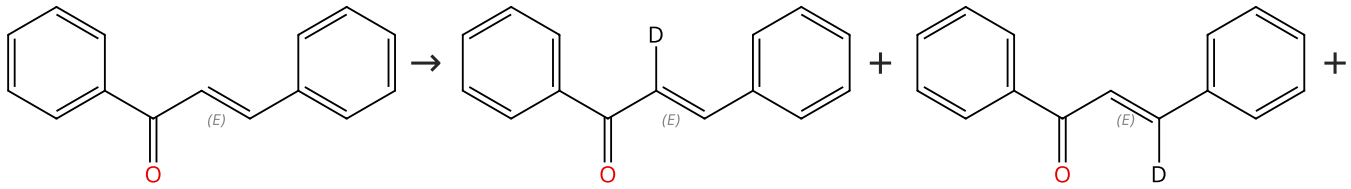
1.1 **Reagents:** Carbon monoxide, Deuterium
Catalysts: Triphenylphosphine, Rhodium, tri-μ-carbonyln onacarbonyltetra-, *tetrahedro*
Solvents: Benzene; 100 atm, 80 °C

Evidence for formation and different evolution of tertiary rhodium alkyl intermediates under rhodium-catalyzed deuterio-(hydro)formylation of 1-(n-pyridyl)-1-phenylethenes

By: Lazzaroni, Raffaello; et al

Journal of Organometallic Chemistry (2005), 690(7), 1699-1704.

Scheme 59 (1 Reaction) Steps: **1**



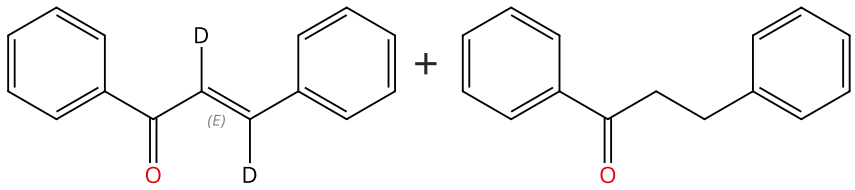
Double bond geometry shown

Double bond geometry shown

Double bond geometry shown

Suppliers (78)

Supplier (1)



Double bond geometry shown

Suppliers (76)

31-614-CAS-36007544 Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Triphenylphosphine, Rhodium(1+), bis[(1,2,5,6-η)-1,5-cyclooctadiene]-, tetrafluoroborate(1-) (1:1)
Solvents: Water; 4 h, 60 °C

Experimental Protocols

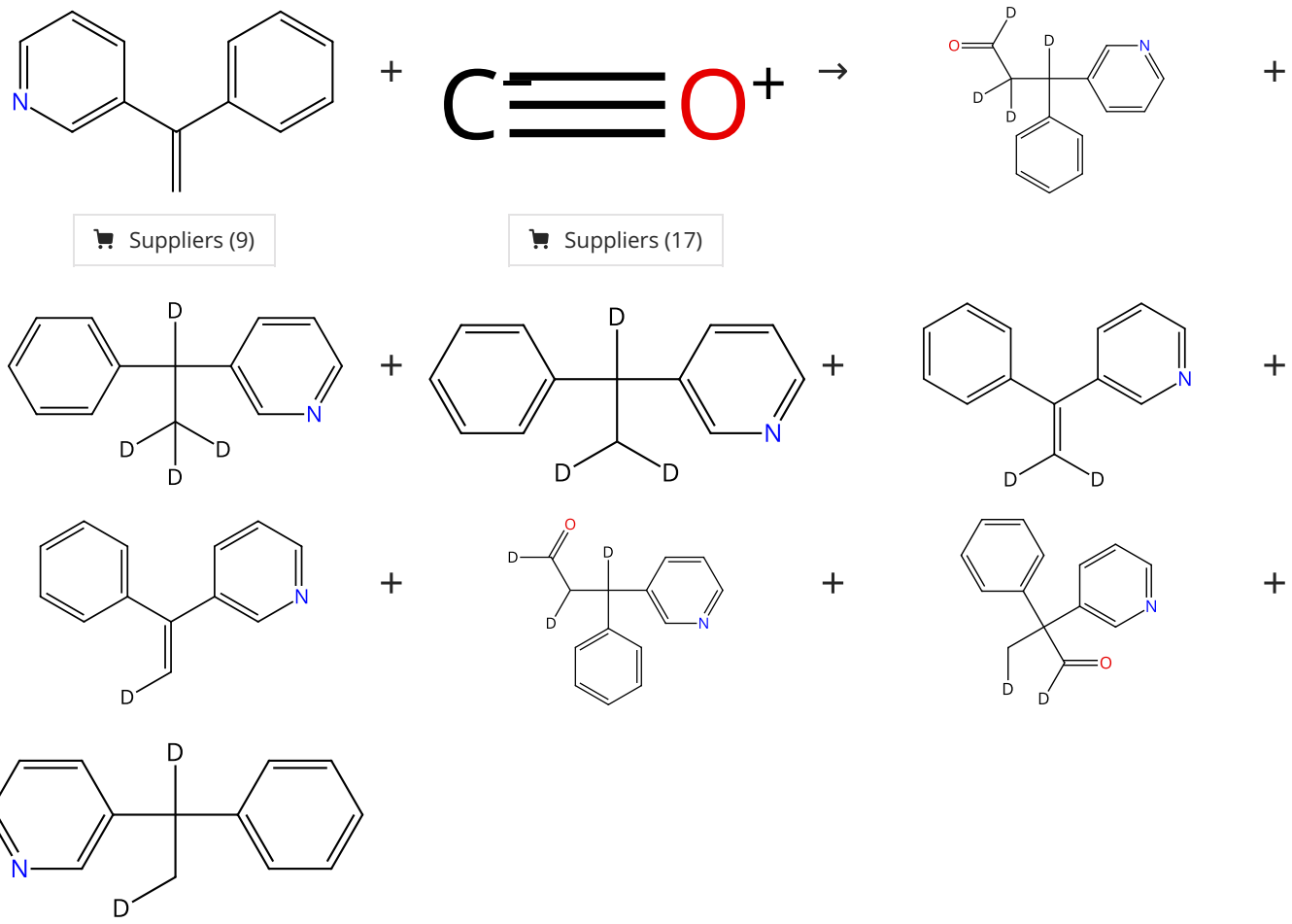
Kinetic and Mechanistic Studies of the Selective Hydroge nation of (E)-Chalcones in Biomass-Derived γ-Valerolactone Catalyzed by Rh-PPh_3 Complexes

By: Toth, Imre; et al

ChemCatChem (2023), 15(7), e202201480.

Scheme 60 (1 Reaction)

Steps: **1**



Suppliers (9)

Suppliers (17)

31-116-CAS-6654882

Steps: **1**

1.1 **Reagents:** Deuterium
Catalysts: Triphenylphosphine, Rhodium, tri-μ-carbonyln onacarbonyltetra-, *tetrahedro*
Solvents: Benzene; 100 atm, 80 °C

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