



Task History

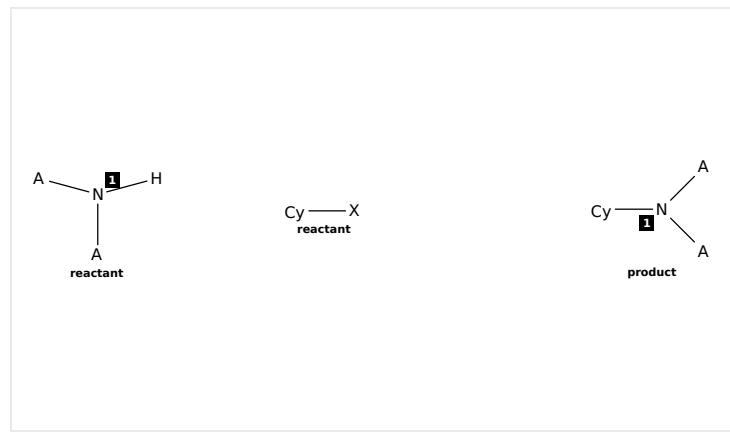
## Initiating Search

August 14, 2025, 4:58 PM

## • Search:

Filtered By:

Yield:	90-100%, 80-89%, 70-79%, 50-69%
Reaction Mapping:	Mapping Data Available
Catalyst:	Cuprous iodide, Copper, Cupric acetate, Copper oxide ( $\text{Cu}_2\text{O}$ ), Copper bromide ( $\text{CuBr}$ ), Cuprous chloride, Copper(II) triflate, Copper oxide ( $\text{CuO}$ ), Copper(1+), hexa- $\mu_3$ -chlorotetradecahydrohexakis[ $\mu$ -(2-methyl-2-propanethiolato)]eicosakis[ $\mu_3$ -(2-methyl-2-propanethiolato)]hexa- $\mu_4$ -thioxohenhexaonta-, chloride (1:1), (2-Thiophenecarboxylato- $\kappa O^2,\kappa S^1$ )copper, Copper(II) acetylacetone, Copper(1+), bis[2-(1H-imidazol-2-yl- $\kappa N^3$ )pyridine- $\kappa N$ ] (nitrate- $\kappa O,\kappa O'$ ), (OC-6-33)-, nitrate (1:1), Copper sulfate, Copper bromide ( $\text{CuBr}_2$ )
Document Type:	Journal
Publication Year:	2024



Structure Match: Substructure

## Search Tasks

Task	Result Type	View
Exported: Returned Reaction Results + Filters (806)	Reactions	<a href="#">View Results</a>

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## Reactions (306)

[View in CAS SciFinder](#)

Scheme 1 (1 Reaction)


[Suppliers \(75\)](#)

31-614-CAS-40304507

Steps: 1 Yield: 71%

1.1 Reagents: Potassium carbonate  
Catalysts: Copper, 18-Crown-6  
Solvents: 1,2-Dichlorobenzene; 24 h, reflux

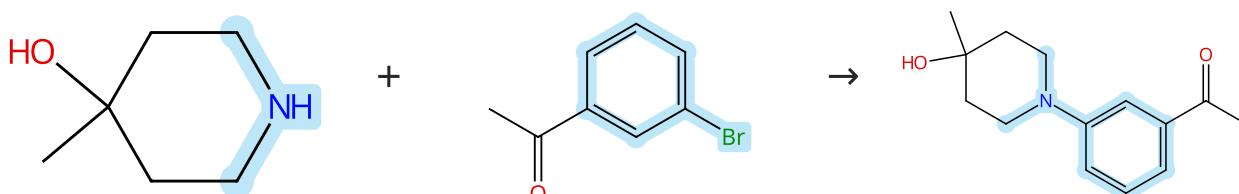
Substituents and Resonance Effects on the Electrochemical Stability of Polyelectrochromic Triarylamine-Based Polymers

By: Chern, Yaw-Terng; et al

ACS Applied Polymer Materials (2024), 6(9), 5256-5267.

Experimental Protocols

Scheme 2 (1 Reaction)


[Suppliers \(76\)](#)
[Suppliers \(86\)](#)
[Supplier \(1\)](#)

31-614-CAS-40801495

Steps: 1 Yield: 71%

1.1 Reagents: Sodium trimethylsilanolate  
Catalysts: Cuprous iodide, 1,2-Benzenediamine, *N*<sup>1</sup>,*N*<sup>2</sup>-bis(2-phenyl-1-naphthalenyl)-  
Solvents: Dimethyl sulfoxide; 24 °C; 16 h, 24 °C

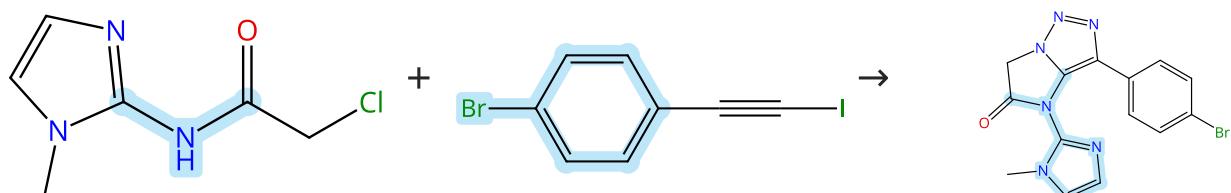
Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols

By: Strauss, Michael J.; et al

Journal of the American Chemical Society (2024), 146(27), 18616-18625.

Experimental Protocols

Scheme 3 (1 Reaction)


[Suppliers \(5\)](#)
[Suppliers \(6\)](#)

31-614-CAS-40408109

Steps: 1 Yield: 71%

**1.1 Reagents:** Potassium *tert*-butoxide, Sodium azide  
**Catalysts:** Cuprous iodide  
**Solvents:** Polyethylene glycol; 60 min, 80 °C

Experimental Protocols

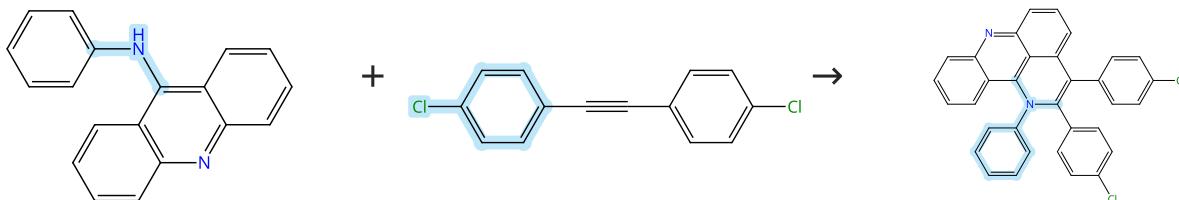
**Synthesis and anti-breast cancer evaluation of fused imidazole-imidazo[1,2-c][1,2,3]triazoles: PEG-400 mediated one-pot reaction under ultrasonic irradiation**

By: Johnpasha, Shaik; et al

Journal of Molecular Structure (2024), 1312(Part\_2), 138440.

**Scheme 4 (1 Reaction)**

Steps: 1 Yield: 71%



Suppliers (10)

Suppliers (41)

31-614-CAS-40795773

Steps: 1 Yield: 71%

**1.1 Catalysts:** Cupric acetate, Bis[dichloro[η<sup>5</sup>-(pentamethylcyclopentadienyl)]rhodium]  
**Solvents:** *o*-Xylene; 24 h, 100 °C

Experimental Protocols

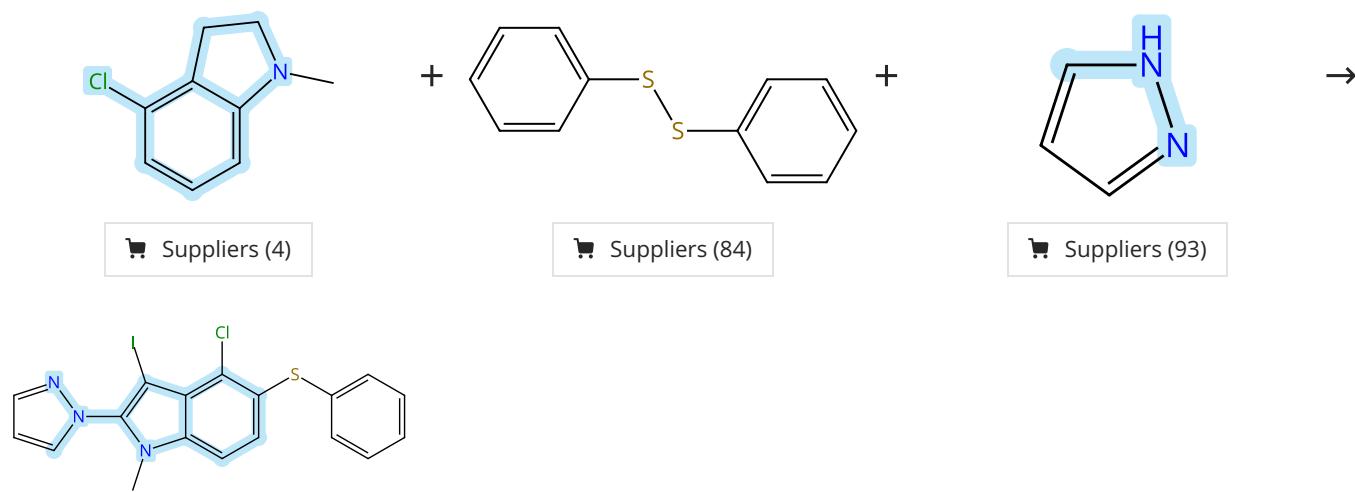
**Harnessing the benzyne insertion consequence to enable π-extended pyrido-acridine and quinazolino-phenanthridine**

By: Ghosh, Swarnali; et al

Organic &amp; Biomolecular Chemistry (2024), 22(27), 5591-5602.

**Scheme 5 (1 Reaction)**

Steps: 1 Yield: 71%



Suppliers (4)

Suppliers (84)

Suppliers (93)

31-614-CAS-39675931

Steps: 1 Yield: 71%

**1.1 Reagents:** Iodine, Oxygen  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene, 1,4-Dioxane; 24 h, 80 °C

Experimental Protocols

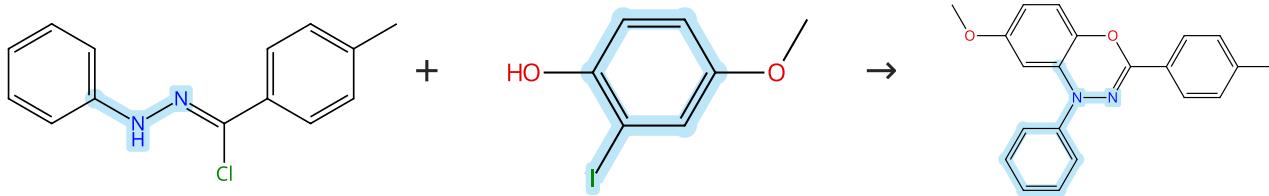
**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

**Scheme 6 (1 Reaction)**

Steps: 1 Yield: 71%



Suppliers (7)

Suppliers (42)

31-614-CAS-42420852

Steps: 1 Yield: 71%

- 1.1 **Reagents:** Triethylamine  
**Solvents:** Acetonitrile; 10 min, rt
- 1.2 **Catalysts:** Cuprous iodide  
**Solvents:** Acetonitrile; rt; 5 h, rt

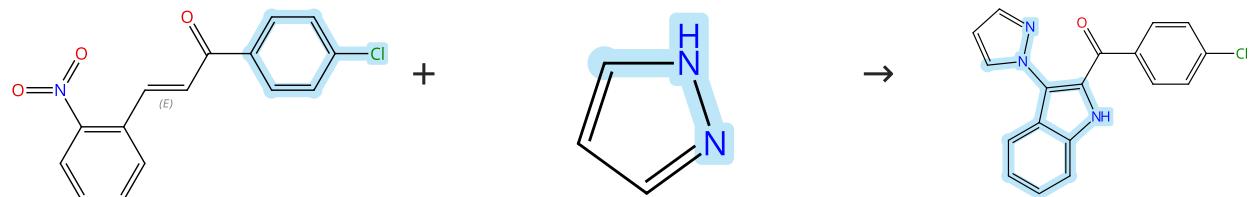
**A new route for the synthesis of substituted benzo [1,3,4]oxadiazine derivatives via copper-catalyzed N-arylation-cyclization of hydrazonoyl chlorides and 2-iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 7 (1 Reaction)**

Steps: 1 Yield: 71%



Double bond geometry shown

Suppliers (93)

Suppliers (7)

31-614-CAS-42761449

Steps: 1 Yield: 71%

- 1.1 **Reagents:** 1,8-Diazabicyclo[5.4.0]undec-7-ene  
**Catalysts:** Cuprous iodide  
**Solvents:** Tetrahydrofuran; 16 h, 1 atm, 100 °C

Experimental Protocols

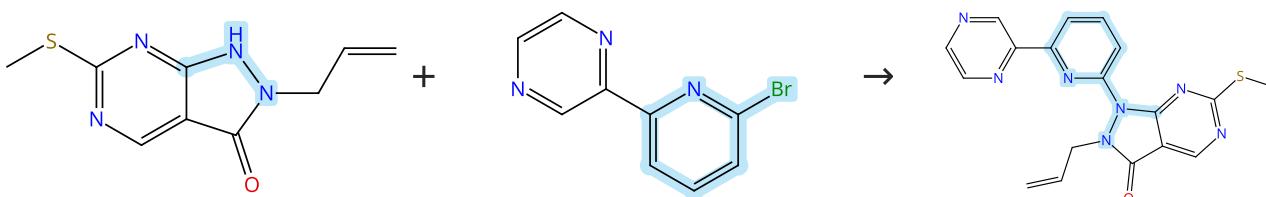
**Copper-Catalyzed Cascade Cyclization of 2-Nitrochalcones with NH-Heterocycles**

By: Ly, Thang M.; et al

Journal of Organic Chemistry (2024), 89(23), 17346-17354.

**Scheme 8 (1 Reaction)**

Steps: 1 Yield: 71%



Suppliers (60)

Suppliers (5)

31-614-CAS-40870528

Steps: 1 Yield: 71%

- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, (1S,2S)-N<sup>1</sup>,N<sup>2</sup>-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** 1,4-Dioxane; overnight, 95 °C

Experimental Protocols

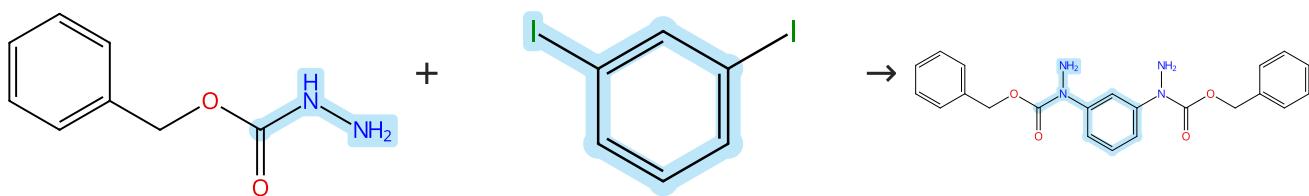
**Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy**

By: Wang, Yong; et al

Journal of Medicinal Chemistry (2024), 67(12), 9927-9949.

**Scheme 9 (1 Reaction)**

Steps: 1 Yield: 71%



Suppliers (73)

Suppliers (87)

31-614-CAS-41194616

Steps: 1 Yield: 71%

1.1 Reagents: Cesium carbonate  
Catalysts: 1,10-Phenanthroline, Cuprous iodide  
Solvents: Dimethylformamide; 4 h, 90 °C

Electronic and Magnetic Interactions in 6-Oxoverdazyl Diradicals: Connection through N(1) vs C(3) Revisited

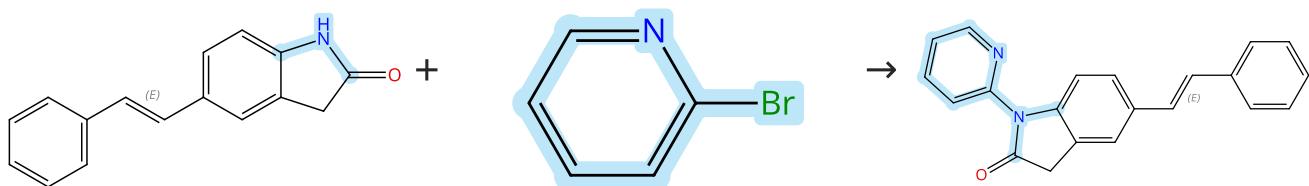
By: Bodzioch, Agnieszka; et al

Journal of Organic Chemistry (2024), 89(9), 6306-6321.

Experimental Protocols

**Scheme 10 (1 Reaction)**

Steps: 1 Yield: 70%



Double bond geometry shown

Suppliers (86)

Double bond geometry shown

31-614-CAS-41757715

Steps: 1 Yield: 70%

1.1 Reagents: Potassium carbonate  
Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
Solvents: 1,4-Dioxane; 90 °C

Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives

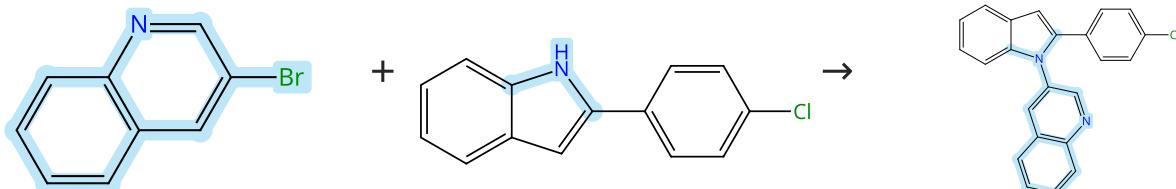
By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Experimental Protocols

**Scheme 11 (1 Reaction)**

Steps: 1 Yield: 70%



Suppliers (96)

Suppliers (67)

31-614-CAS-38860365

Steps: 1 Yield: 70%

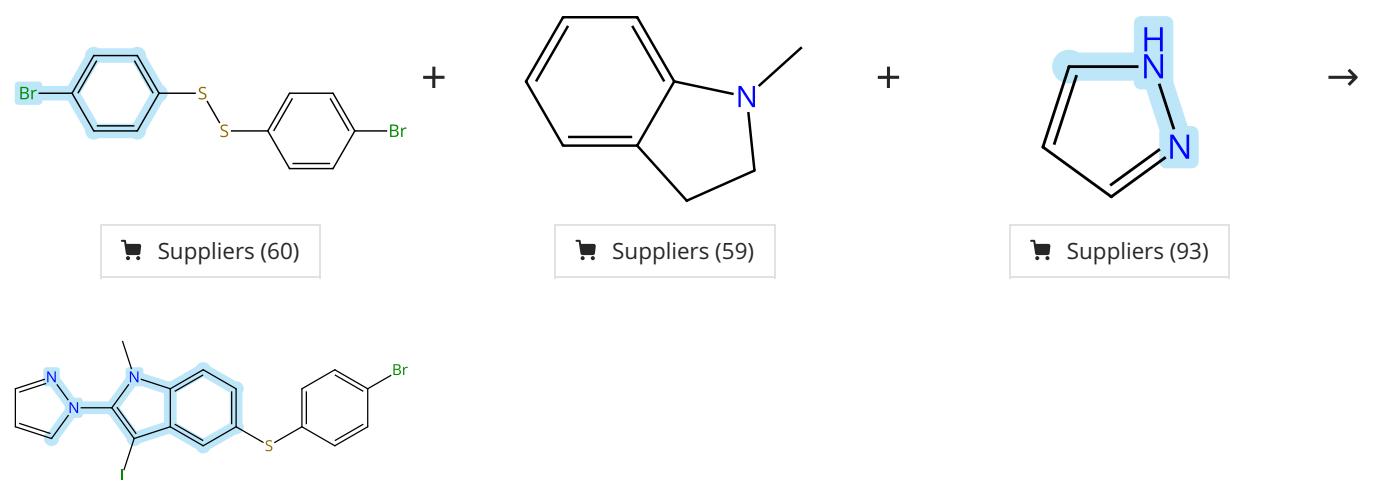
1.1 Reagents: Potassium carbonate  
Catalysts: Cuprous iodide  
Solvents: 1,3-Dimethyl-3,4,5,6-tetrahydro-2(1*H*)-pyrimidinone; 14 h, 140 °C

Enantioselective synthesis of 3-(N-indolyl)quinolines containing axial and central chiralities

By: Yamanomoto, Ken; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(5), 582-585.

Experimental Protocols

**Scheme 12 (1 Reaction)**

31-614-CAS-39675964

Steps: 1 Yield: 70%

1.1 Reagents: Iodine, Oxygen  
Catalysts: Cuprous iodide

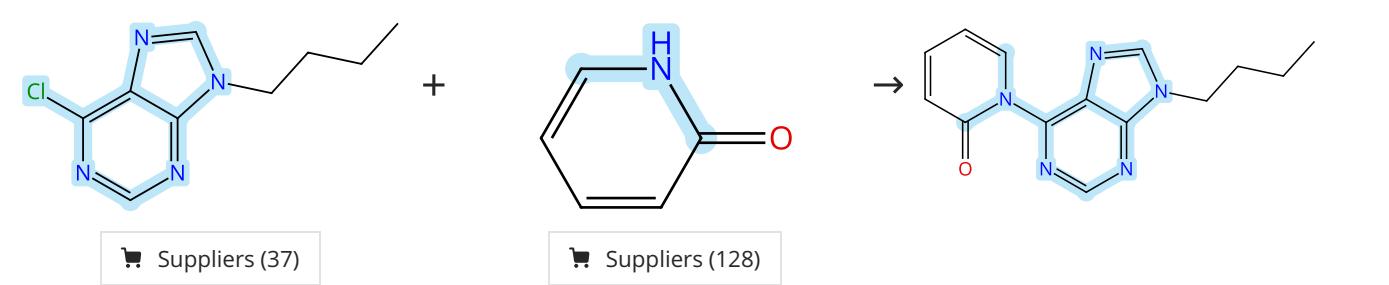
Solvents: Toluene, 1,4-Dioxane; 24 h, 80 °C

Experimental Protocols

**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

**Scheme 13 (1 Reaction)**

31-614-CAS-42413567

Steps: 1 Yield: 70%

1.1 Reagents: Tripotassium phosphate

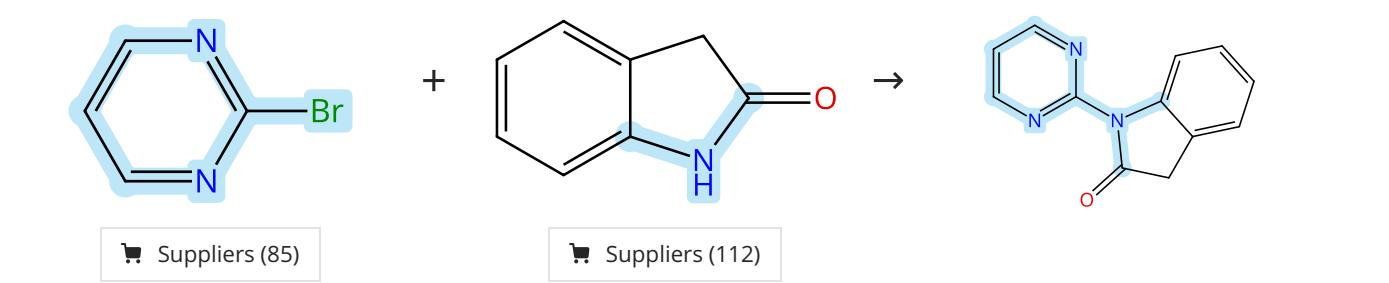
Catalysts: *N,N'*-Dimethylethylenediamine, Cuprous iodide

Solvents: Toluene; 15 - 20 h, 120 °C

**Nickel Catalyzed Aryl-Aryl Bridging C-N Bond Activation of 2-Pyridylpyridones and 6-Purinylpyridones**

By: Prusty, Namrata; et al

Organic Letters (2024), 26(44), 9466-9470.

**Scheme 14 (1 Reaction)**

31-614-CAS-41757724

Steps: 1 Yield: 70%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine

Solvents: 1,4-Dioxane; 90 °C

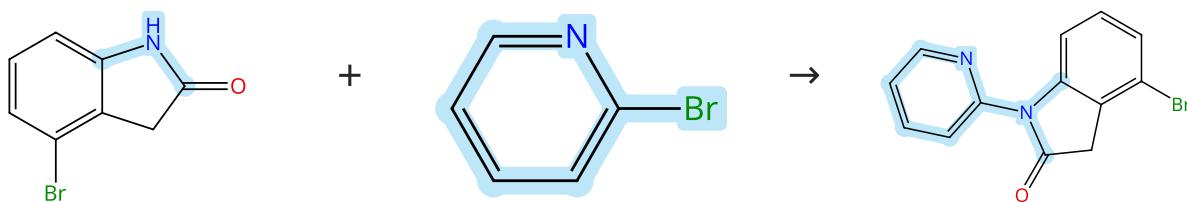
Experimental Protocols

**Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives**

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Scheme 15 (1 Reaction)



Suppliers (81)

Suppliers (86)

Steps: 1 Yield: 70%

31-614-CAS-41757720

Steps: 1 Yield: 70%

Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives

By: Das, Sarbojit; et al

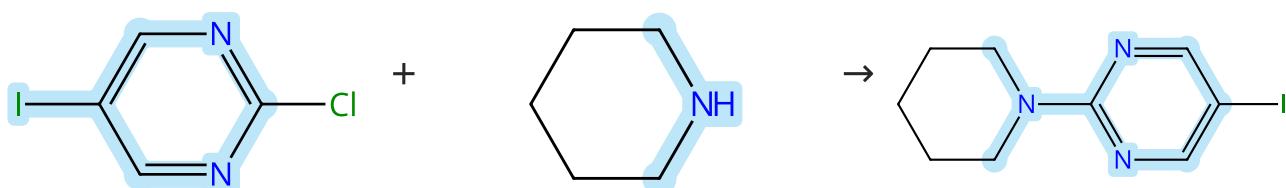
Organic Letters (2024), 26(38), 8051-8056.

1.1 Reagents: Potassium carbonate  
Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
Solvents: 1,4-Dioxane; 90 °C

Experimental Protocols

Scheme 16 (1 Reaction)

Steps: 1 Yield: 70%



Suppliers (84)

Suppliers (50)

Suppliers (24)

31-614-CAS-40743594

Steps: 1 Yield: 70%

Cu(II)/PTABS-Promoted, Chemoselective Amination of Halo Pyrimidines

By: Phulwale, Vikram; et al

Journal of Organic Chemistry (2024), 89(13), 9243-9254.

1.1 Catalysts: Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatircyclo[3.3.1.1<sup>3,7</sup>]decane, 1-(4-sulfobutyl)-, inner salt  
Solvents: Water; 5 min, 30 °C  
1.2 5 min, 30 °C  
1.3 Reagents: Tripotassium phosphate  
Solvents: Water; 3 h, 30 °C

Experimental Protocols

Scheme 17 (1 Reaction)

Steps: 1 Yield: 70%



Suppliers (67)

Suppliers (86)

31-614-CAS-41757711

Steps: 1 Yield: 70%

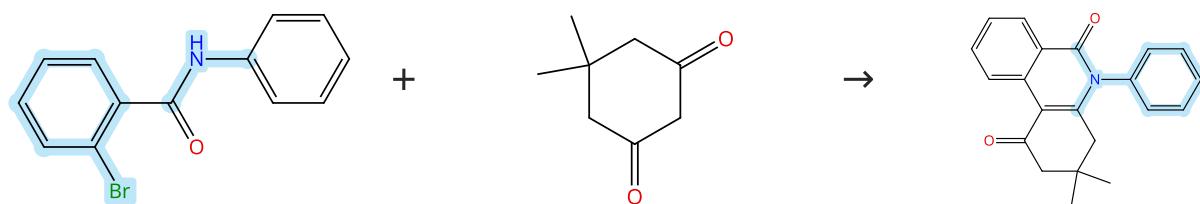
Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

1.1 Reagents: Potassium carbonate  
Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
Solvents: 1,4-Dioxane; 90 °C

Experimental Protocols

**Scheme 18 (1 Reaction)**

Suppliers (16)

Suppliers (100)

Supplier (1)

31-614-CAS-38062406

Steps: 1 Yield: 70%

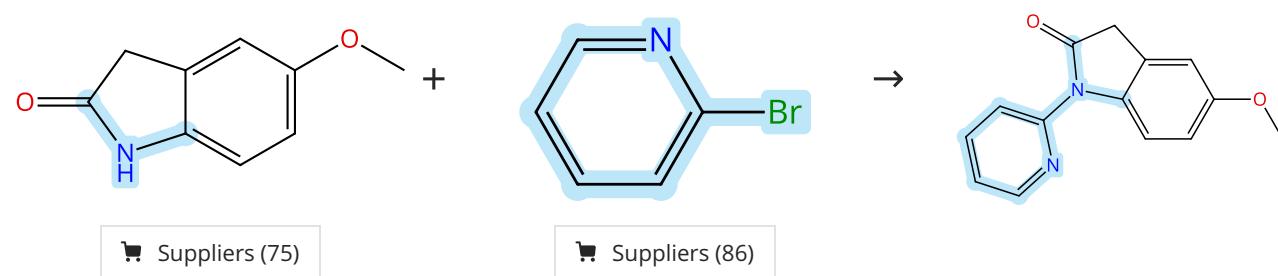
**1.1 Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide, 2999684-17-0  
**Solvents:** Dimethylformamide; 12 h, 110 °C

**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

Synthesis (2024), 56(6), 975-988.

Experimental Protocols

**Scheme 19 (1 Reaction)**

Suppliers (75)

Suppliers (86)

31-614-CAS-41757709

Steps: 1 Yield: 70%

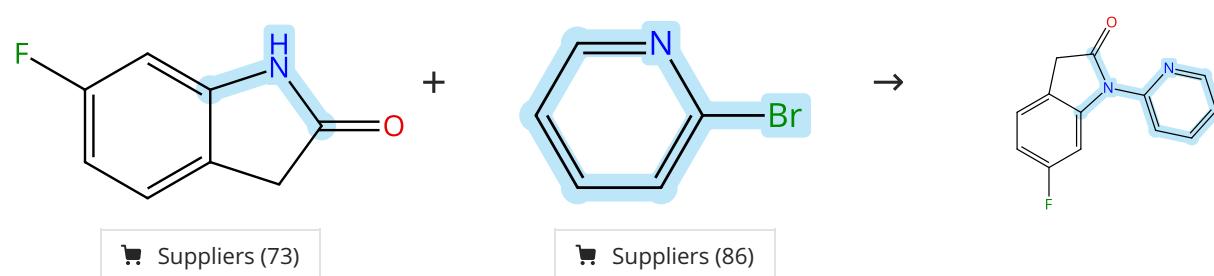
**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** 1,4-Dioxane; 90 °C

**Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives**

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Experimental Protocols

**Scheme 20 (1 Reaction)**

Suppliers (73)

Suppliers (86)

31-614-CAS-41757719

Steps: 1 Yield: 70%

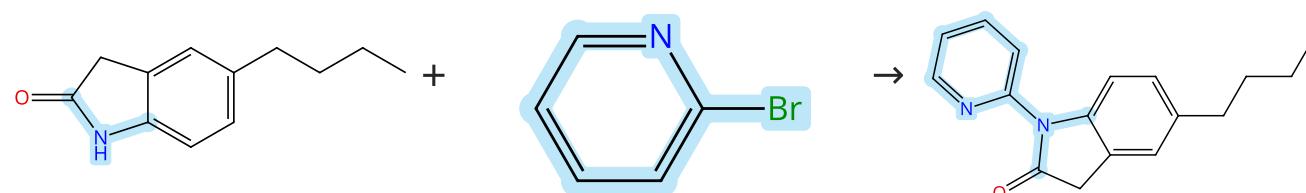
**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** 1,4-Dioxane; 90 °C

**Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives**

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Experimental Protocols

**Scheme 21 (1 Reaction)**

Suppliers (7)

Suppliers (86)

31-614-CAS-41757710

Steps: 1 Yield: 70%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine

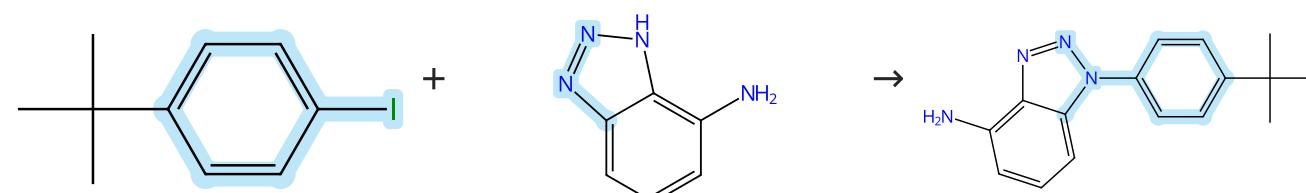
Solvents: 1,4-Dioxane; 90 °C

Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Experimental Protocols

**Scheme 22 (1 Reaction)**

Suppliers (69)

Suppliers (53)

31-614-CAS-39121987

Steps: 1 Yield: 70%

1.1 Reagents: Potassium carbonate

Catalysts: L-Proline, Cuprous iodide

Solvents: Dimethyl sulfoxide; 3 h, 120 °C

C7-Regioselective C-H Fluorination of Benzotriazole Amides and Sulfonamides with NFSI under Metal-Free Conditions

By: Li, Chengqian; et al

Asian Journal of Organic Chemistry (2024), 13(1), e202300506.

**Scheme 23 (1 Reaction)**

Suppliers (5)

Suppliers (86)

31-614-CAS-41757712

Steps: 1 Yield: 70%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine

Solvents: 1,4-Dioxane; 90 °C

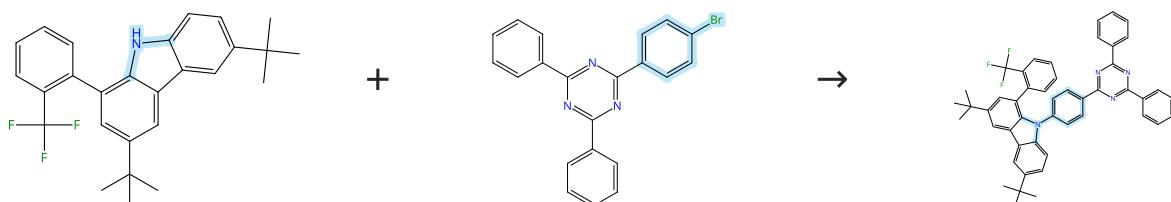
Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Experimental Protocols

Scheme 24 (1 Reaction)



Suppliers (70)

31-614-CAS-41704917

Steps: 1 Yield: 70%

1.1 Reagents: Potassium carbonate  
Catalysts: Cuprous iodide, 18-Crown-6  
Solvents: 1,2-Dichlorobenzene; 20 h, 190 °C

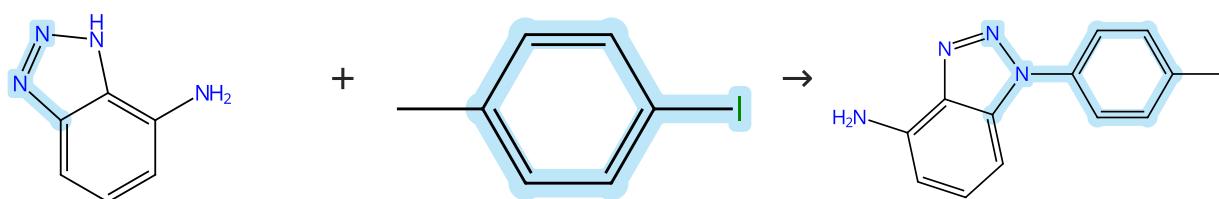
Experimental Protocols

Fine tuning of excited states by trifluoromethylphenyl for blue-shifted color and enhanced EQEs in thermally activated delayed fluorescence emitters

By: Sun, Haiyan; et al

Dyes and Pigments (2024), 228, 112233.

Scheme 25 (1 Reaction)



Suppliers (53)

Suppliers (82)

31-614-CAS-39121984

Steps: 1 Yield: 70%

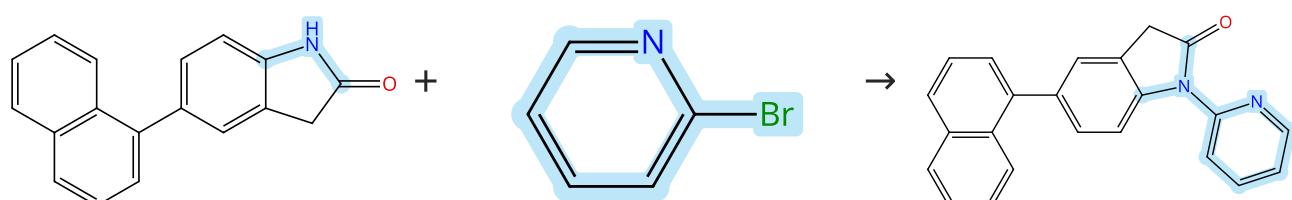
1.1 Reagents: Potassium carbonate  
Catalysts: L-Proline, Cuprous iodide  
Solvents: Dimethyl sulfoxide; 3 h, 120 °C

C7-Regioselective C-H Fluorination of Benzotriazole Amides and Sulfonamides with NFSI under Metal-Free Conditions

By: Li, Chengqian; et al

Asian Journal of Organic Chemistry (2024), 13(1), e202300506.

Scheme 26 (1 Reaction)



Suppliers (86)

31-614-CAS-41757713

Steps: 1 Yield: 70%

1.1 Reagents: Potassium carbonate  
Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
Solvents: 1,4-Dioxane; 90 °C

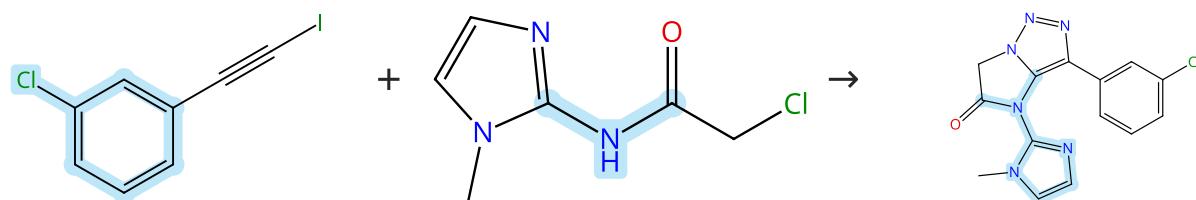
Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Experimental Protocols

Scheme 27 (1 Reaction)



Suppliers (10)

Suppliers (5)

31-614-CAS-40408102

Steps: 1 Yield: 70%

1.1 **Reagents:** Potassium *tert*-butoxide, Sodium azide  
**Catalysts:** Cuprous iodide  
**Solvents:** Polyethylene glycol; 60 min, 80 °C

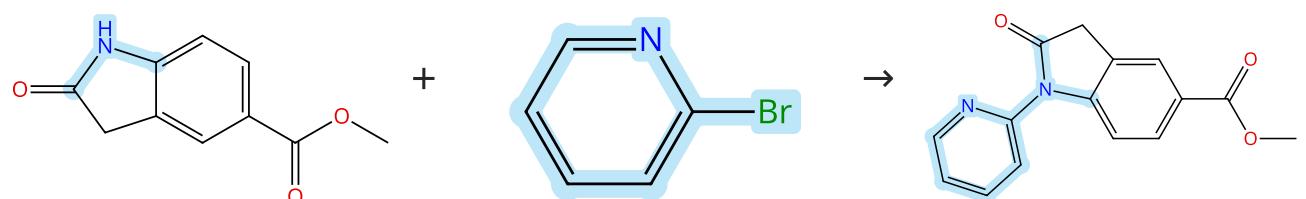
Experimental Protocols

**Synthesis and anti-breast cancer evaluation of fused imidazole-imidazo[1,2-c][1,2,3]triazoles: PEG-400 mediated one-pot reaction under ultrasonic irradiation**

By: Johnpasha, Shaik; et al

Journal of Molecular Structure (2024), 1312(Part\_2), 138440.

Scheme 28 (1 Reaction)



Suppliers (68)

Suppliers (86)

31-614-CAS-41757729

Steps: 1 Yield: 70%

1.1 **Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** 1,4-Dioxane; 90 °C

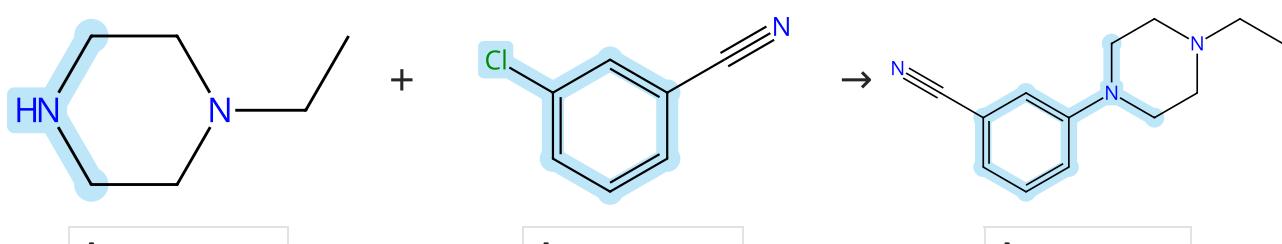
Experimental Protocols

**Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives**

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Scheme 29 (1 Reaction)



Suppliers (72)

Suppliers (75)

Suppliers (4)

31-614-CAS-41756913

Steps: 1 Yield: 70%

1.1 **Reagents:** Sodium methoxide  
**Catalysts:** Copper bromide (Cu Br), 1,2-Benzenediamine, *N*<sup>1</sup>-[3',5'-bis(1,1-dimethylethyl)[1,1'-biphenyl]-2-yl]-*N*<sup>2</sup>-[2-[3,5-bis(1,1-dimethylethyl)phenyl]-1-naphthalenyl]-  
**Solvents:** Dimethyl sulfoxide, Toluene; 5 min

1.2 24 h, 40 °C

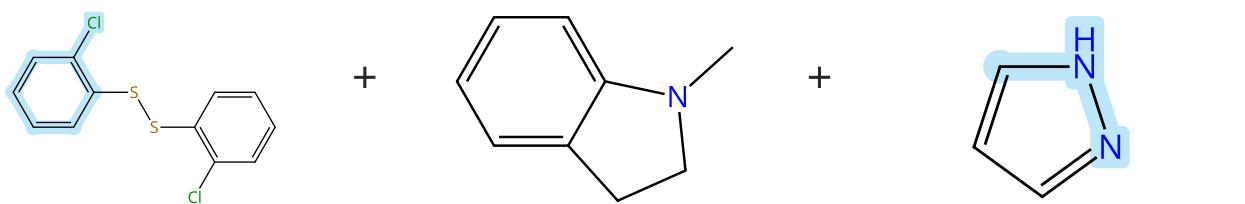
Experimental Protocols

**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

Journal of the American Chemical Society (2024), 146(38), 25949-25955.

Scheme 30 (1 Reaction)



31-614-CAS-39026162

Steps: 1 Yield: 70%

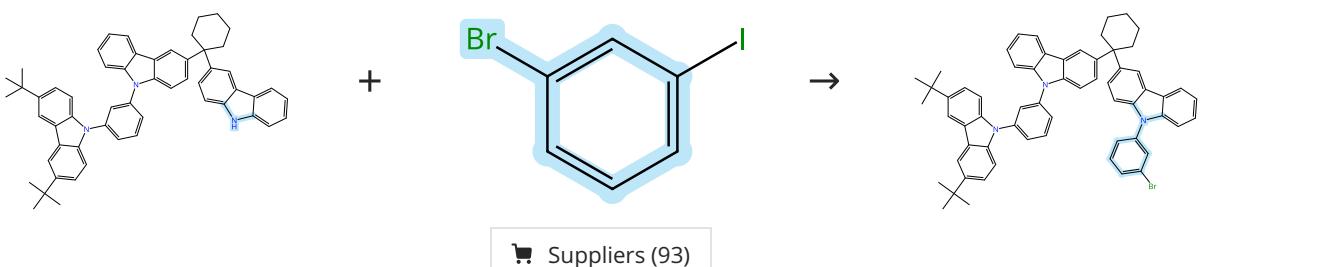
**Iodine-dependent oxidative regioselective aminochalcogenation of indolines**

By: Zhang, Xiaoxiang; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(9), 1152-1155.

Experimental Protocols

Scheme 31 (1 Reaction)



31-614-CAS-41059995

Steps: 1 Yield: 70%

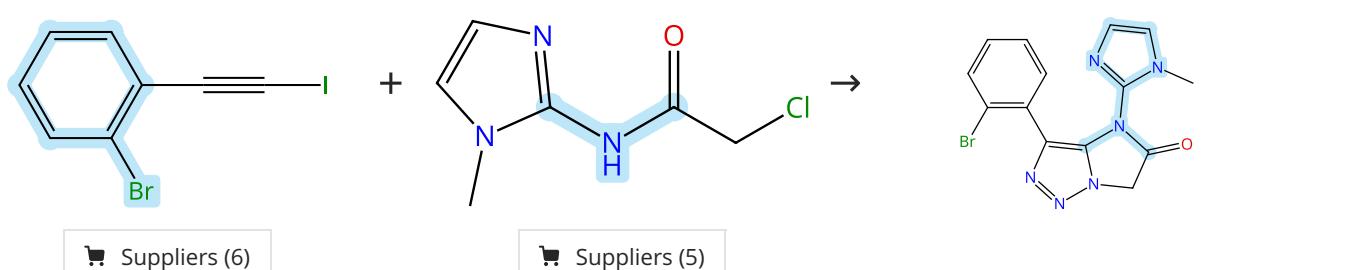
**Effect of intramolecular energy transfer in a dual-functional molecular dyad on the performance of solution-processed TADF OLEDs**

By: Kwon, Na Yeon; et al

Chemical Science (2024), 15(31), 12361-12368.

Experimental Protocols

Scheme 32 (1 Reaction)



31-614-CAS-40408112

Steps: 1 Yield: 70%

**1.1 Reagents:** Potassium *tert*-butoxide, Sodium azide  
**Catalysts:** Cuprous iodide  
**Solvents:** Polyethylene glycol; 60 min, 80 °C

Experimental Protocols

**Synthesis and anti-breast cancer evaluation of fused imidazole-imidazo[1,2-c][1,2,3]triazoles: PEG-400 mediated one-pot reaction under ultrasonic irradiation**

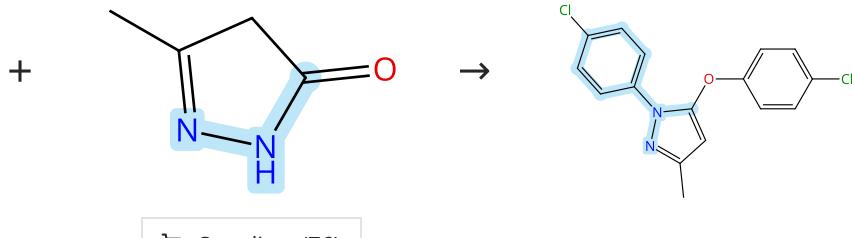
By: Johnpasha, Shaik; et al

Journal of Molecular Structure (2024), 1312(Part\_2), 138440.

**Scheme 33 (1 Reaction)**

Steps: 1 Yield: 70%

Multi-component structure image available in CAS SciFinder



Suppliers (76)

Suppliers (28)

31-614-CAS-38961900

Steps: 1 Yield: 70%

**1.1 Reagents:** Sodium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 3 h, 110 °C

**1.2 Reagents:** Water

Experimental Protocols

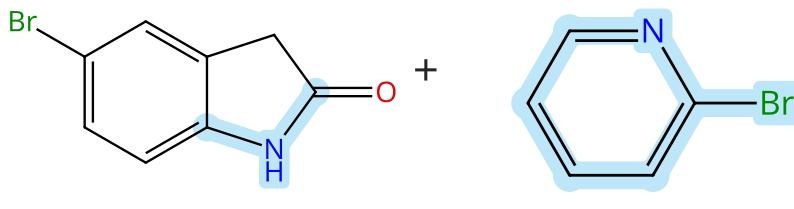
**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

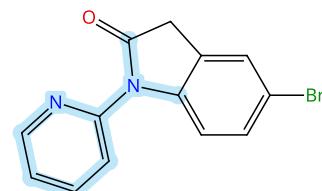
**Scheme 34 (1 Reaction)**

Steps: 1 Yield: 70%



Suppliers (102)

Suppliers (86)



31-614-CAS-41757718

Steps: 1 Yield: 70%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** 1,4-Dioxane; 90 °C

Experimental Protocols

**Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives**

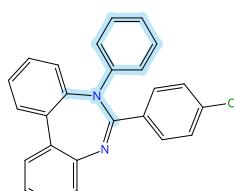
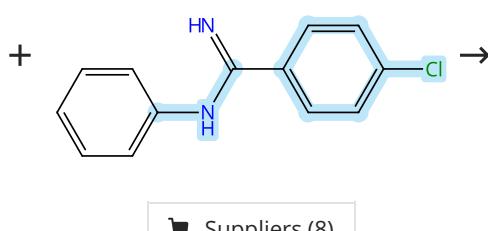
By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

**Scheme 35 (1 Reaction)**

Steps: 1 Yield: 70%

Multi-component structure image available in CAS SciFinder



Suppliers (30)

Suppliers (8)

31-614-CAS-42088099

Steps: 1 Yield: 70%

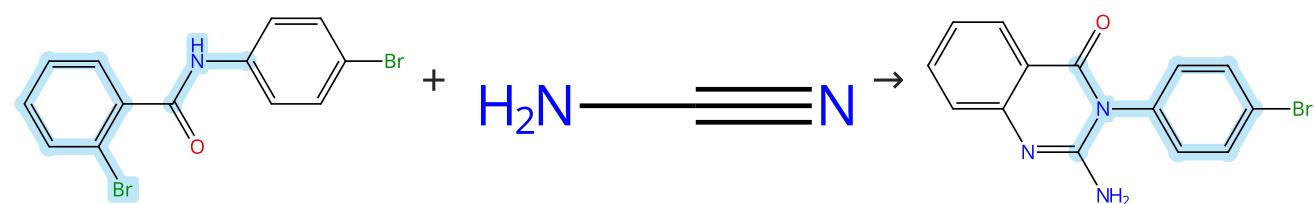
**1.1 Reagents:** Potassium acetate  
**Catalysts:** Cuprous iodide  
**Solvents:** Acetonitrile; 6 h, 80 °C

Experimental Protocols

**Practical Copper-Catalyzed Double N-Arylation of Cyclic Diaryliodoniums: Synthesis of 5H-Dibenzo[*d,f*][1,3]Diazepine, and Benzo[*c*]Cinnoline Derivatives**

By: Zhang, Lianji; et al

Journal of Heterocyclic Chemistry (2024), 61(12), 1942-1953.

**Scheme 36 (1 Reaction)**

Suppliers (10)

Suppliers (60)

31-614-CAS-42982617

Steps: 1 Yield: 70%

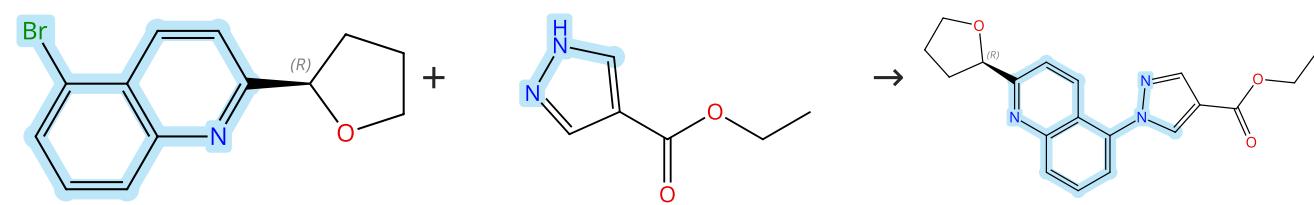
**1.1 Reagents:** Potassium *tert*-butoxide  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

Experimental Protocols

**Synthesis of 2-Amino-quinazolin-4(3*H*)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

Journal of Organic Chemistry (2024), 89(24), 18255-18268.

**Scheme 37 (1 Reaction)**Absolute stereochemistry shown,  
Rotation (+)

Suppliers (92)

Absolute stereochemistry shown

31-614-CAS-41868709

Steps: 1 Yield: 70%

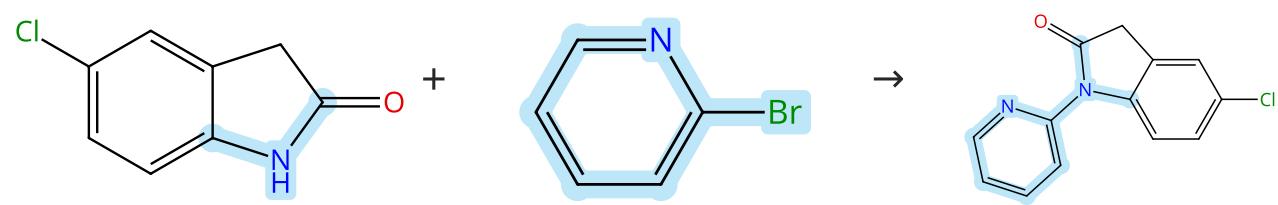
**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, *N<sup>1,N<sup>2</sup></sup>*-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** Toluene; 72 h, 110 °C

Experimental Protocols

**Enantioselective reductive C-O bond cleavage driven by photoinduced electron transfer**

By: Wang, Wen-Yao; et al

Chem (2024), 10(12), 3667-3677.

**Scheme 38 (1 Reaction)**

Suppliers (92)

Suppliers (86)

31-614-CAS-41757725

Steps: 1 Yield: 70%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** 1,4-Dioxane; 90 °C

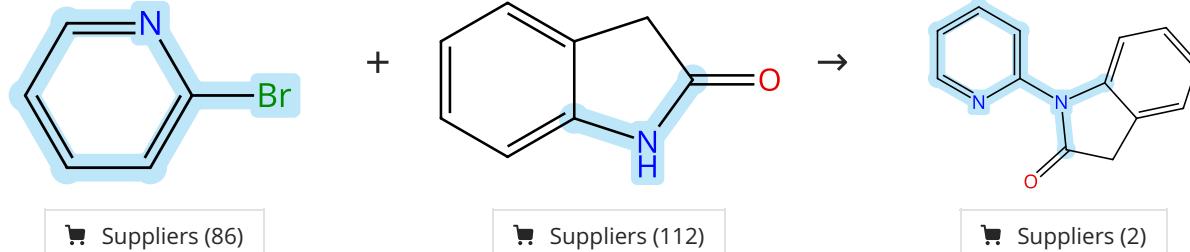
Experimental Protocols

Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Scheme 39 (1 Reaction)



Steps: 1 Yield: 70%

31-614-CAS-41757717

Steps: 1 Yield: 70%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** 1,4-Dioxane; 90 °C

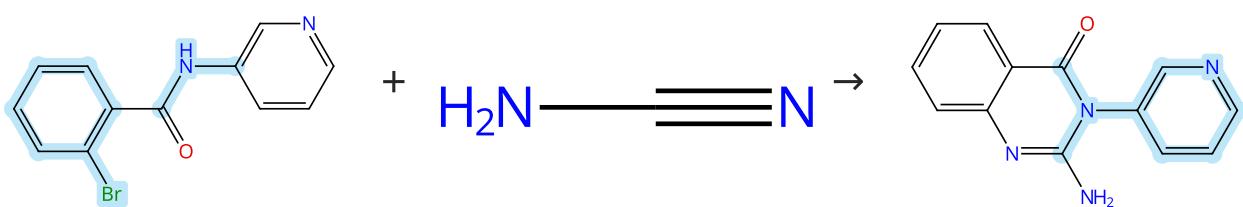
Experimental Protocols

Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

Scheme 40 (1 Reaction)



Steps: 1 Yield: 70%

31-614-CAS-42982627

Steps: 1 Yield: 70%

**1.1 Reagents:** Potassium *tert*-butoxide  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

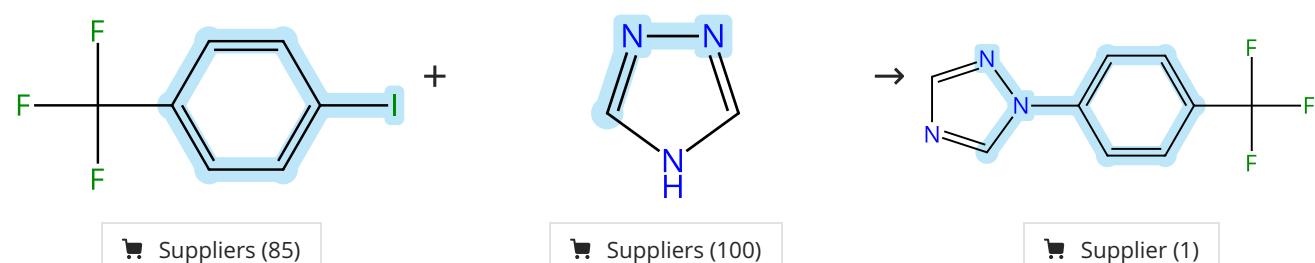
Experimental Protocols

Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling

By: Wang, Zhongjie; et al

Journal of Organic Chemistry (2024), 89(24), 18255-18268.

Scheme 41 (1 Reaction)



Steps: 1 Yield: 70%

31-614-CAS-40887386

Steps: 1 Yield: 70%

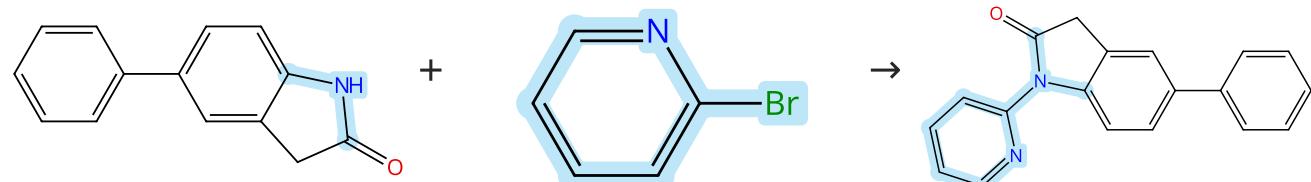
1.1 **Catalysts:** 1*H*-Benzotriazole, Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 5 min, rt1.2 **Reagents:** Potassium *tert*-butoxide; 24 h, 110 °C

Experimental Protocols

**Orchestrated Octuple C-H Activation: A Bottom-Up Topology Engineering Approach toward Stimuli-Responsive Double-Heptagon-Embedded Wavy Polycyclic Heteroaromatics**

By: Rana, Samim Sohel; et al

Angewandte Chemie, International Edition (2024), 63(31), e202406514.

**Scheme 42 (1 Reaction)**

Suppliers (10)

Suppliers (86)

31-614-CAS-41757716

Steps: 1 Yield: 70%

1.1 **Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** 1,4-Dioxane; 90 °C

Experimental Protocols

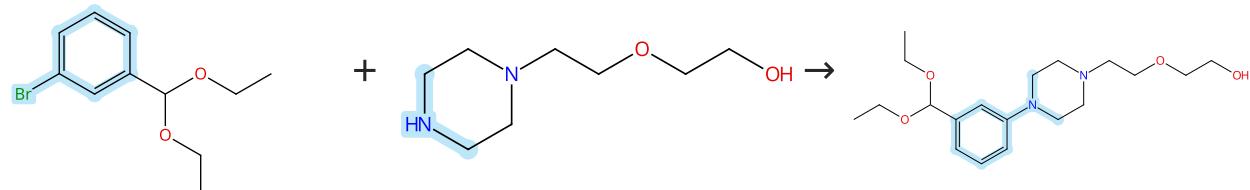
**Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives**

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

**Scheme 43 (1 Reaction)**

Steps: 1 Yield: 70%



Suppliers (66)

Suppliers (81)

31-614-CAS-40801463

Steps: 1 Yield: 70%

1.1 **Reagents:** Sodium trimethylsilanolate  
**Catalysts:** Cuprous iodide, 1,2-Benzenediamine, *N¹,N²*-bis(2-phenyl-1-naphthalenyl)-  
**Solvents:** Dimethyl sulfoxide; 50 °C; 16 h, 50 °C

Experimental Protocols

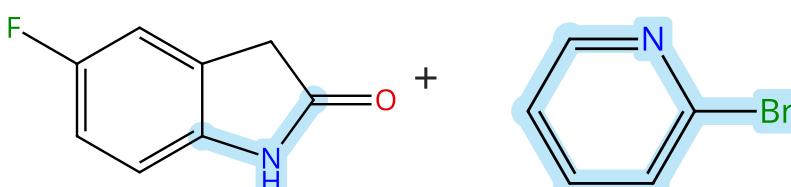
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

Journal of the American Chemical Society (2024), 146(27), 18616-18625.

**Scheme 44 (1 Reaction)**

Steps: 1 Yield: 70%



Suppliers (109)

Suppliers (86)

31-614-CAS-41757714

Steps: 1 Yield: 70%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine

Solvents: 1,4-Dioxane; 90 °C

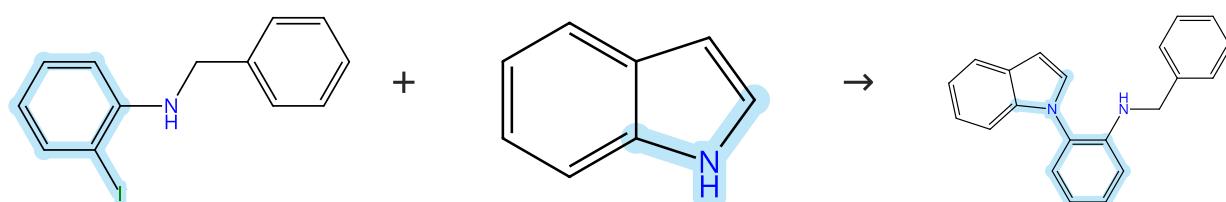
Experimental Protocols

Ru(II)-Catalyzed Skeletal Editing of Oxindole with Internal Alkyne To Synthesize C7-Alkylated Indole Derivatives

By: Das, Sarbojit; et al

Organic Letters (2024), 26(38), 8051-8056.

## Scheme 45 (1 Reaction)



Suppliers (15)

Suppliers (109)

31-614-CAS-38073293

Steps: 1 Yield: 70%

A simple method for N-arylation of secondary amides/amines through a NaH-initiated aryne generation strategy

1.1 Reagents: *N,N'*-Dimethylethylenediamine, Cesium carbonate

Catalysts: Cuprous iodide

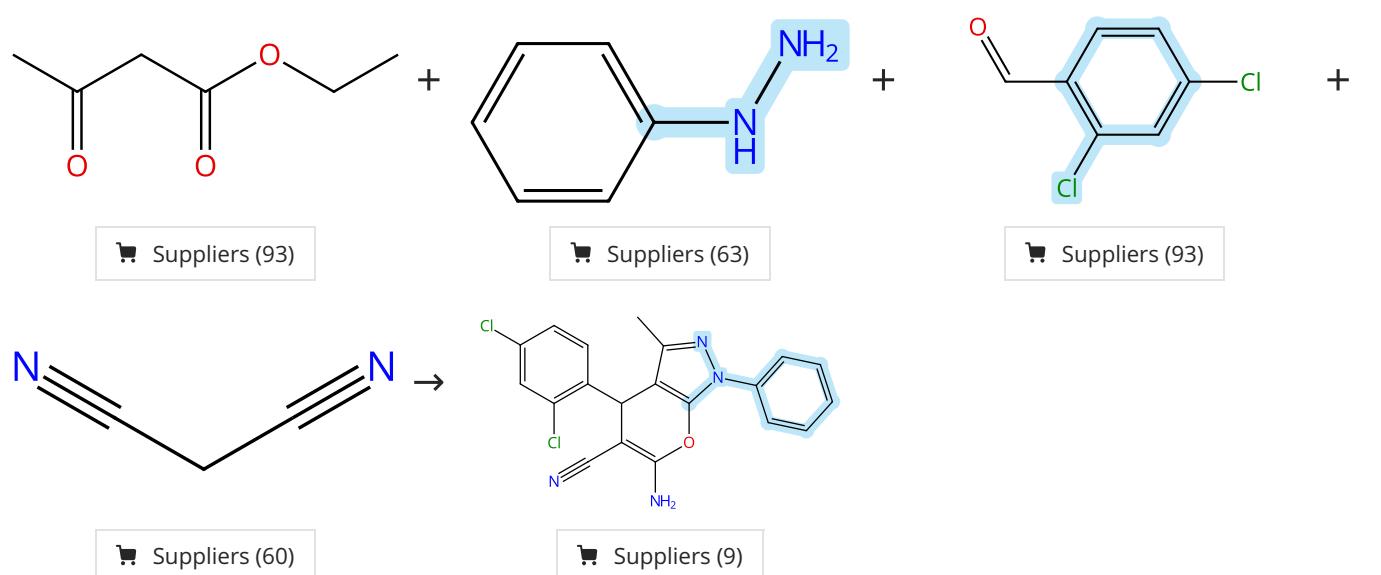
Solvents: Dimethylformamide; 12 h, 120 °C

Experimental Protocols

By: Jiang, Yuanrui; et al

Organic Chemistry Frontiers (2024), 11(1), 12-20.

## Scheme 46 (1 Reaction)



Suppliers (93)

Suppliers (63)

Suppliers (93)

Suppliers (60)

Suppliers (9)

31-614-CAS-35485660

Steps: 1 Yield: 70%

Fabrication of Copper(II)-coated Magnetic Core-shell Nanoparticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives

1.1 Catalysts: Cupric acetate (complex with bis (2-thienylmethylene)melamine supported on silica-coated...), 1,3,5-Triazine-2,4,6-triamine, *N*<sup>2</sup>,*N*<sup>4</sup>-bis(2-thienylmethylene)-*N*<sup>6</sup>-[3-(triethoxysilyl)propyl]- (copper(II) complex, supported on silica-coated Fe<sub>3</sub>O<sub>4</sub>); 10 min, rt

1.2 9 min, 65 °C

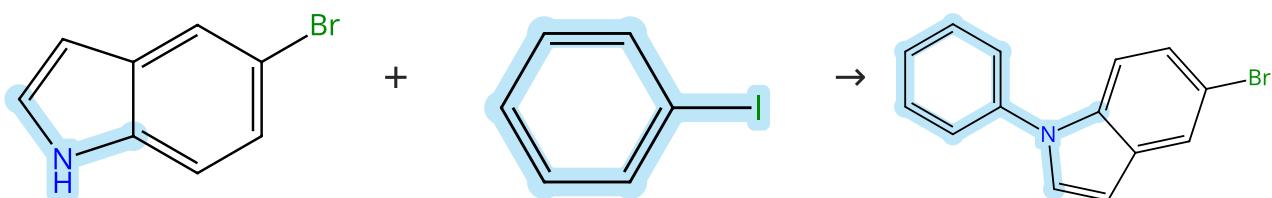
Experimental Protocols

By: Soleimani, Maryam; et al

Polycyclic Aromatic Compounds (2024), 44(1), 90-116.

**Scheme 47 (1 Reaction)**

Steps: 1 Yield: 70%



Suppliers (109)

Suppliers (93)

Suppliers (9)

31-614-CAS-39303579

Steps: 1 Yield: 70%

1.1 Reagents: Cesium carbonate

Catalysts: Cuprous iodide

Solvents: Dimethylformamide; overnight, 120 °C

**Tosylazide as N1-Synthon: Iron-Catalyzed Nitrogenative Dimerization of Indoles to p-Bisindolopyrazine Derivatives**

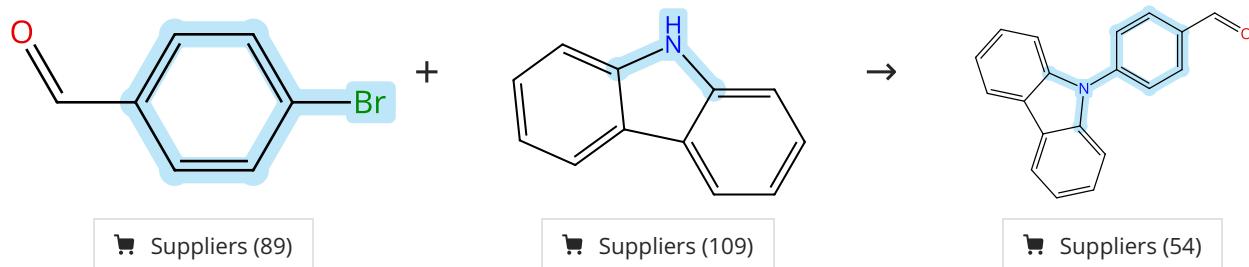
By: Li, Jianan; et al

Organic Letters (2024), 26(5), 1046-1050.

Experimental Protocols

**Scheme 48 (1 Reaction)**

Steps: 1 Yield: 70%



Suppliers (89)

Suppliers (109)

Suppliers (54)

31-614-CAS-39173976

Steps: 1 Yield: 70%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide

Solvents: Dimethylformamide; 30 min, rt; 24 h, 140 °C

**Ultrafast and highly selective gold recovery with high capture capacity from electronic waste by upconversion of a silsesquioxane-based hybrid luminescent aerogel**

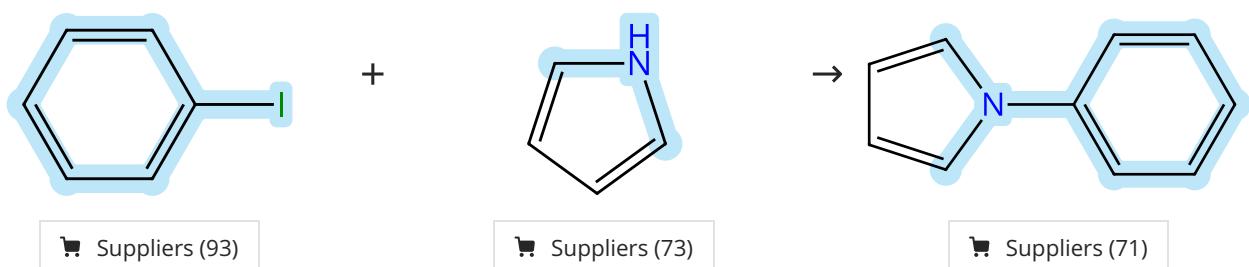
By: Wang, Qingzheng; et al

Journal of Materials Chemistry A: Materials for Energy and Sustainability (2024), 12(10), 5679-5691.

Experimental Protocols

**Scheme 49 (1 Reaction)**

Steps: 1 Yield: 69%



Suppliers (93)

Suppliers (73)

Suppliers (71)

31-614-CAS-38943857

Steps: 1 Yield: 69%

**Application of 1,4-pentanediol as a renewable solvent for copper-catalyzed Ullmann-type coupling reactions**

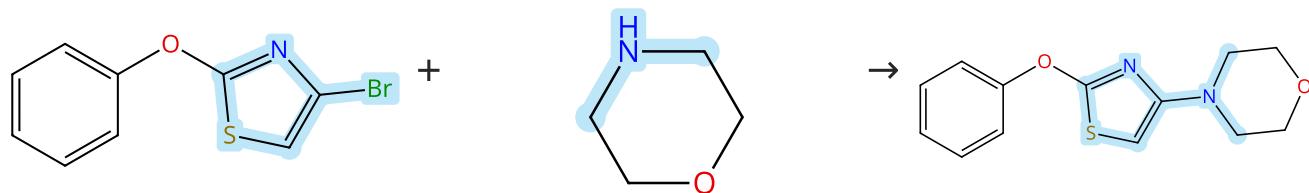
By: Arvai, Csaba; et al

Journal of Organometallic Chemistry (2024), 1005, 122976.

Experimental Protocols

## Scheme 50 (1 Reaction)

Steps: 1 Yield: 69%



Suppliers (42)

Suppliers (83)

31-614-CAS-40801484

Steps: 1 Yield: 69%

1.1 Reagents: Sodium trimethylsilanolate

Catalysts: Cuprous iodide, 1,2-Benzenediamine, *N*<sup>1</sup>,*N*<sup>2</sup>-bis(2-phenyl-1-naphthalenyl)-

Solvents: Dimethyl sulfoxide; 50 °C; 16 h, 50 °C

Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols

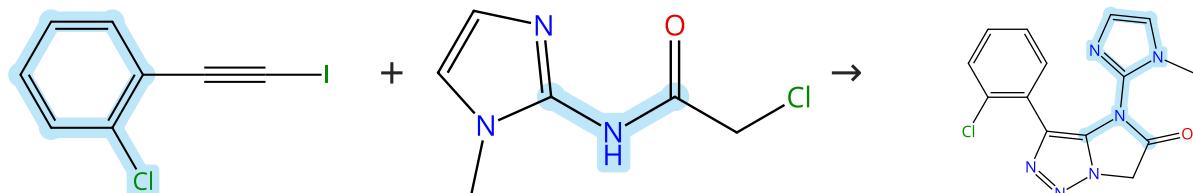
By: Strauss, Michael J.; et al

Journal of the American Chemical Society (2024), 146(27), 18616-18625.

Experimental Protocols

## Scheme 51 (1 Reaction)

Steps: 1 Yield: 69%



Suppliers (6)

Suppliers (5)

31-614-CAS-40408101

Steps: 1 Yield: 69%

1.1 Reagents: Potassium *tert*-butoxide, Sodium azide

Catalysts: Cuprous iodide

Solvents: Polyethylene glycol; 60 min, 80 °C

Synthesis and anti-breast cancer evaluation of fused imidazole-imidazo[1,2-c][1,2,3]triazoles: PEG-400 mediated one-pot reaction under ultrasonic irradiation

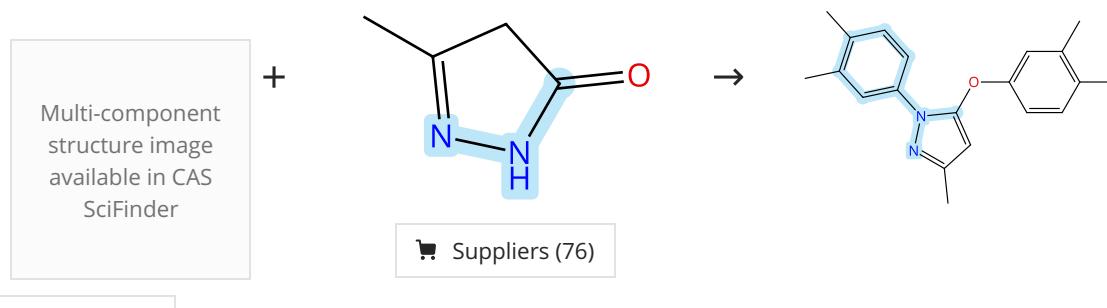
By: Johnpasha, Shaik; et al

Journal of Molecular Structure (2024), 1312(Part\_2), 138440.

Experimental Protocols

## Scheme 52 (1 Reaction)

Steps: 1 Yield: 69%



Supplier (1)

31-614-CAS-38961906

Steps: 1 Yield: 69%

Sequential regioselective arylation of pyrazolones with diaryliodonium salts

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

1.1 Reagents: Sodium carbonate

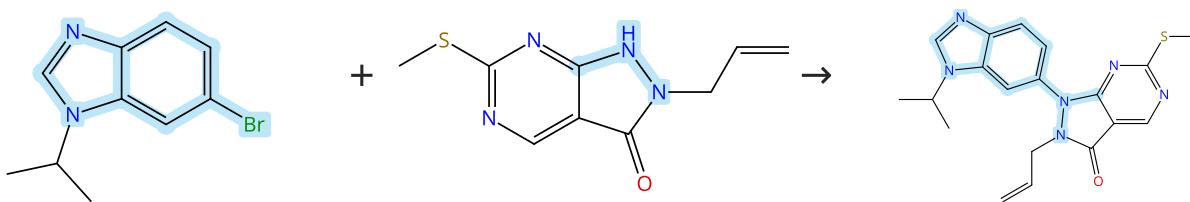
Catalysts: Cuprous iodide

Solvents: Toluene; 3 h, 110 °C

1.2 Reagents: Water

Experimental Protocols

Scheme 53 (1 Reaction)



Suppliers (37)

Suppliers (60)

31-614-CAS-40870487

Steps: 1 Yield: 69%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, (1S,2S)-N<sup>1</sup>,N<sup>2</sup>-Dimethyl-1,2-cyclohexanediamine

Solvents: 1,4-Dioxane; overnight, 95 °C

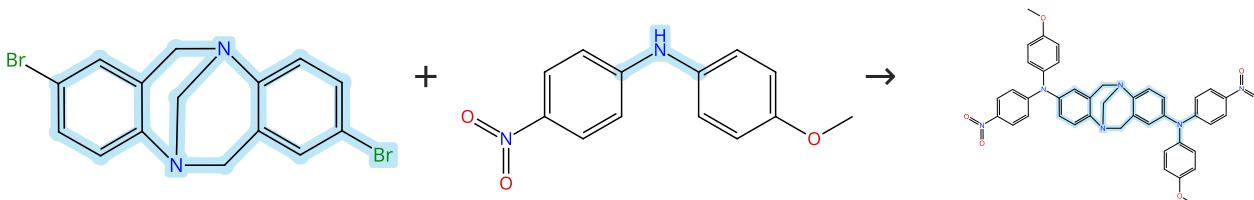
Experimental Protocols

Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy

By: Wang, Yong; et al

Journal of Medicinal Chemistry (2024), 67(12), 9927-9949.

Scheme 54 (1 Reaction)



Suppliers (6)

Suppliers (15)

31-614-CAS-38780010

Steps: 1 Yield: 69%

1.1 Reagents: Potassium carbonate

Catalysts: Copper, 18-Crown-6

Solvents: 1,2-Dichlorobenzene; rt → 160 °C; 2 d, 160 °C

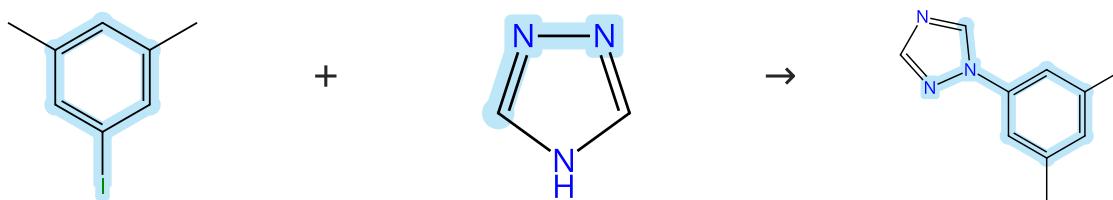
Experimental Protocols

Troger's Base-Cored Triarylamine Polyamide for Electrochromic Response Capability Enhancement

By: Tu, Min-Hsiu; et al

ACS Applied Polymer Materials (2024), 6(1), 658-668.

Scheme 55 (1 Reaction)



Suppliers (83)

Suppliers (100)

Supplier (1)

31-614-CAS-42047582

Steps: 1 Yield: 69%

1.1 Reagents: Potassium carbonate

Catalysts: Dimethylethylamine, Cuprous iodide

Solvents: Dimethylformamide; 36 h, 150 °C

Experimental Protocols

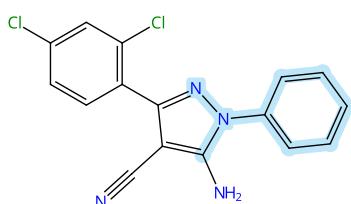
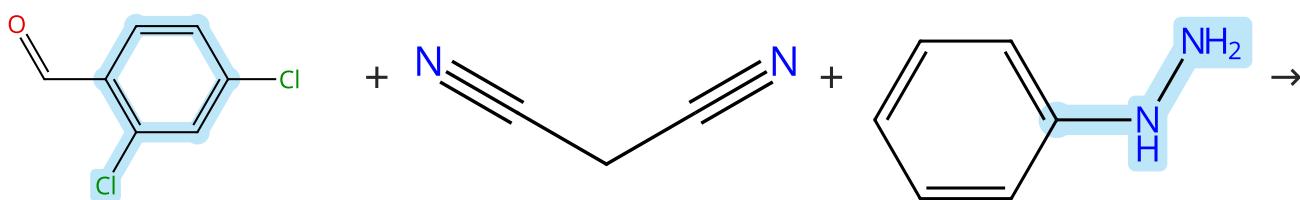
Cd(II)-Based Coordination Polymer as a Multiresponsive Fluorescent Sensor for Efficiently Detecting Zn<sup>2+</sup>, Cr<sub>2</sub>O<sub>7</sub><sup>2-</sup>, and Phenylglyoxylic Acid

By: Gang, Ruo-Tong; et al

Crystal Growth &amp; Design (2024), 24(17), 7212-7221.

Scheme 56 (1 Reaction)

Steps: 1 Yield: 69%



31-614-CAS-35485676

Steps: 1 Yield: 69%

**1.1 Catalysts:** Cupric acetate (complex with bis (2-thienylm ethylene)melamine supported on silica-coate...), 1,3,5-Triazine-2,4,6-triamine,  $N^2,N^4$ -bis(2-thienylmethylene)- $N^6$ -[3-(triethoxysilyl)propyl]- (copper(II) complex, supported on silica-coated Fe<sub>3</sub>O<sub>4</sub>); 15 min, 65 °C

**Fabrication of Copper(II)-coated Magnetic Core-shell Nanoparticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives**

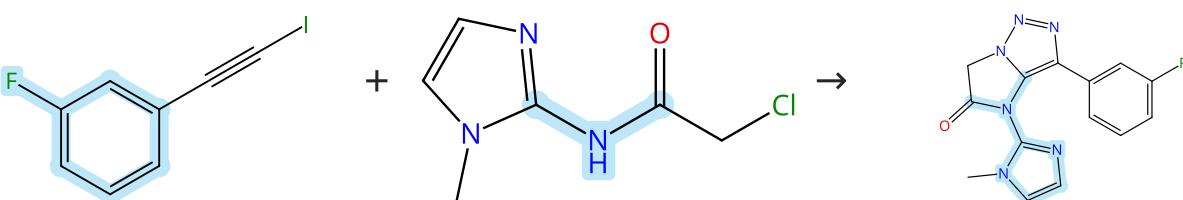
By: Soleimani, Maryam; et al

Polycyclic Aromatic Compounds (2024), 44(1), 90-116.

Experimental Protocols

Scheme 57 (1 Reaction)

Steps: 1 Yield: 69%



31-614-CAS-40408107

Steps: 1 Yield: 69%

**1.1 Reagents:** Potassium *tert*-butoxide, Sodium azide  
**Catalysts:** Cuprous iodide  
**Solvents:** Polyethylene glycol; 60 min, 80 °C

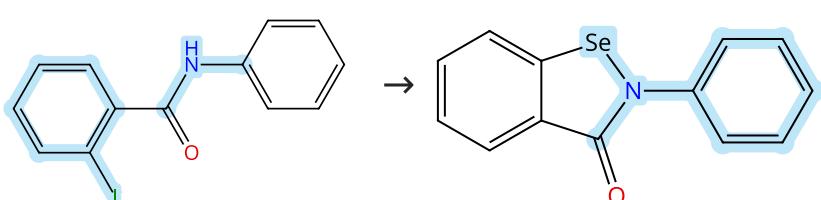
**Synthesis and anti-breast cancer evaluation of fused imidazole-imidazo[1,2-c][1,2,3]triazoles: PEG-400 mediated one-pot reaction under ultrasonic irradiation**

By: Johnpasha, Shaik; et al

Journal of Molecular Structure (2024), 1312(Part\_2), 138440.

Scheme 58 (1 Reaction)

Steps: 1 Yield: 69%



31-614-CAS-40261292

Steps: 1 Yield: 69%

- 1.1 **Catalysts:** 1,10-Phenanthroline, Cuprous iodide  
**Solvents:** Dimethylformamide; 15 min, rt
- 1.2 **Reagents:** Potassium carbonate, Selenium; 8 h, 110 °C
- Experimental Protocols

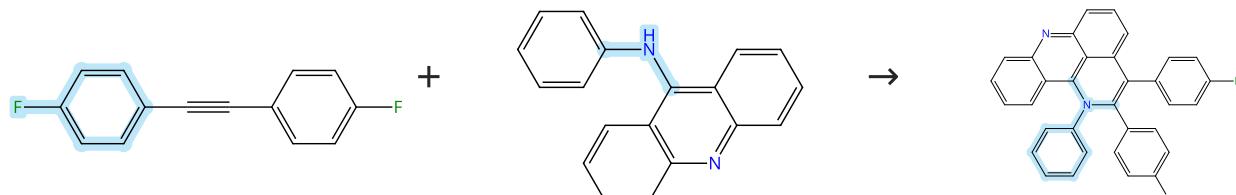
Fingerprints of Chalcogen Bonding Revealed Through  $^{77}\text{Se-N}$  MR

By: Fellowes, Thomas; et al

Chemistry - A European Journal (2024), 30(30), e202400385.

**Scheme 59 (1 Reaction)**

Steps: 1 Yield: 68%



Suppliers (54)

Suppliers (10)

31-614-CAS-40795774

Steps: 1 Yield: 68%

- 1.1 **Catalysts:** Cupric acetate, Bis[dichloro[ $\eta^5$ -(pentamethylcyclopentadienyl)]rhodium]  
**Solvents:** *o*-Xylene; 24 h, 100 °C

Experimental Protocols

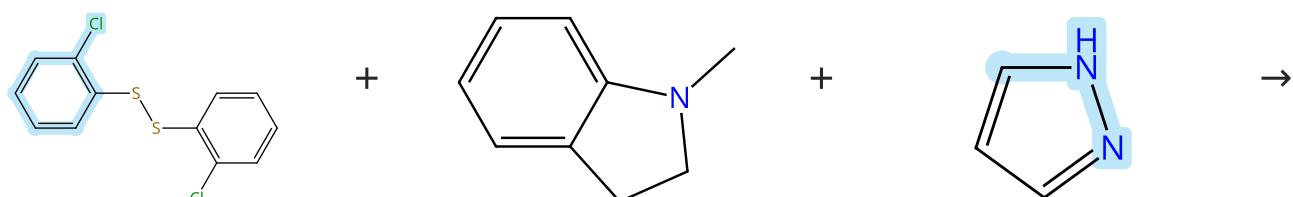
Harnessing the benzyne insertion consequence to enable  $\pi$ -extended pyrido-acridine and quinazolino-phenanthridine

By: Ghosh, Swarnali; et al

Organic & Biomolecular Chemistry (2024), 22(27), 5591-5602.

**Scheme 60 (1 Reaction)**

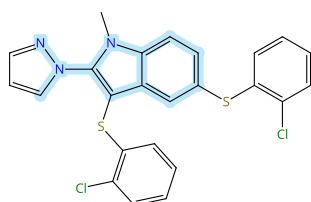
Steps: 1 Yield: 68%



Suppliers (44)

Suppliers (59)

Suppliers (93)



31-614-CAS-39675969

Steps: 1 Yield: 68%

- 1.1 **Reagents:** Iodine, Oxygen  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide, 1,4-Dioxane; 24 h, 80 °C

Experimental Protocols

Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines

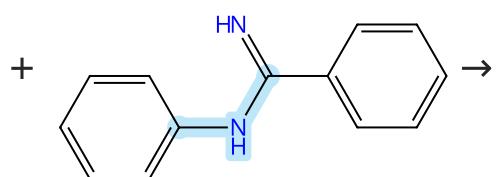
By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

**Scheme 61 (1 Reaction)**

Steps: 1 Yield: 68%

Multi-component  
structure image  
available in CAS  
SciFinder



Suppliers (62)

Suppliers (3)

31-614-CAS-42088107

Steps: 1 Yield: 68%

1.1 Reagents: Potassium acetate  
Catalysts: Cuprous iodide  
Solvents: Acetonitrile; 6 h, 80 °C

Experimental Protocols

Practical Copper-Catalyzed Double N - Arylation of Cyclic  
Diaryliodoniums: Synthesis of 5H -Dibenzo[ d, f ][ 1,3 ]  
Diazepine, and Benzo[ c ]Cinnoline Derivatives

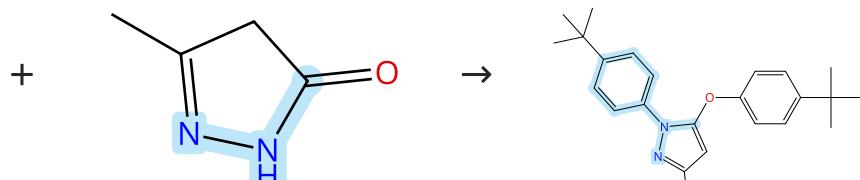
By: Zhang, Lianji; et al

Journal of Heterocyclic Chemistry (2024), 61(12), 1942-1953.

**Scheme 62 (1 Reaction)**

Steps: 1 Yield: 68%

Multi-component  
structure image  
available in CAS  
SciFinder



Suppliers (76)

Suppliers (56)

31-614-CAS-38961901

Steps: 1 Yield: 68%

1.1 Reagents: Sodium carbonate  
Catalysts: Cuprous iodide  
Solvents: Toluene; 3 h, 110 °C

1.2 Reagents: Water

Experimental Protocols

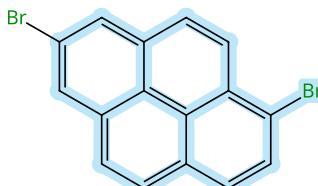
Sequential regioselective arylation of pyrazolones with diaryliodonium salts

By: Liao, Wenbo; et al

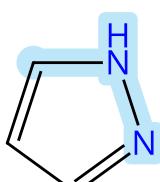
Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

**Scheme 63 (1 Reaction)**

Steps: 1 Yield: 68%



+



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Suppliers (93)

31-614-CAS-41137272

Steps: 1 Yield: 68%

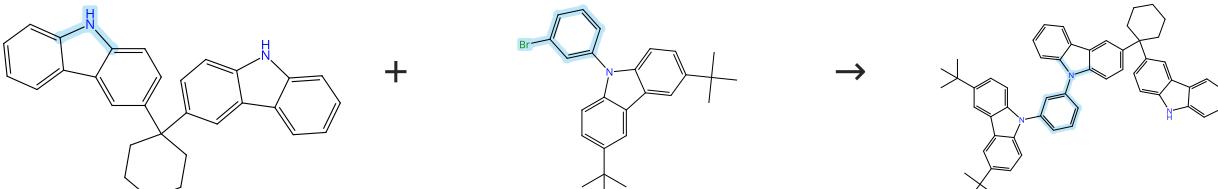
**1.1 Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethylformamide; 48 h, 120 °C

Experimental Protocols

**Pyrene-pyrazole systems-Elucidating the impact of substitution patterns in the group of Mono-, Di-, Tri- and tetrasubstituted derivatives on emission behaviour through experimental and theoretical approaches**

By: Zych, Dawid; et al

Journal of Molecular Liquids (2024), 407, 125250.

**Scheme 64 (1 Reaction)**

Suppliers (28)

31-614-CAS-41059990

Steps: 1 Yield: 68%

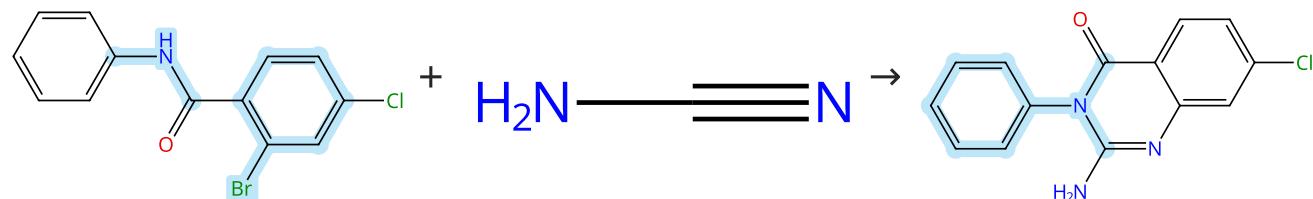
**1.1 Reagents:** Tripotassium phosphate  
**Catalysts:** *trans*-1,2-Diaminocyclohexane, Cuprous iodide  
**Solvents:** Toluene; 12 h, 120 °C

Experimental Protocols

**Effect of intramolecular energy transfer in a dual-functional molecular dyad on the performance of solution-processed TADF OLEDs**

By: Kwon, Na Yeon; et al

Chemical Science (2024), 15(31), 12361-12368.

**Scheme 65 (1 Reaction)**

Suppliers (5)

Suppliers (60)

Supplier (1)

31-614-CAS-42982640

Steps: 1 Yield: 68%

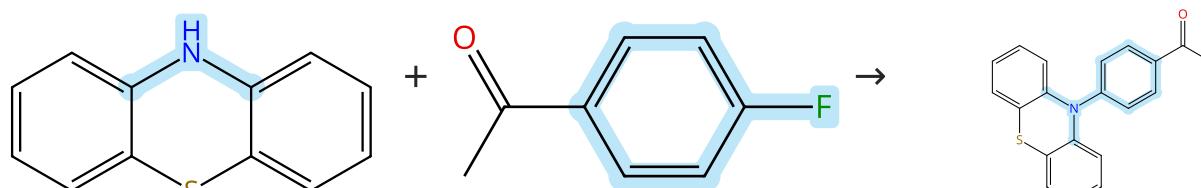
**1.1 Reagents:** Potassium *tert*-butoxide  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

Experimental Protocols

**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

Journal of Organic Chemistry (2024), 89(24), 18255-18268.

**Scheme 66 (1 Reaction)**

Suppliers (96)

Suppliers (88)

31-614-CAS-38261580

Steps: 1 Yield: 68%

- 1.1 **Reagents:** Potassium *tert*-butoxide  
**Catalysts:** Cuprous iodide, 18-Crown-6  
**Solvents:** Dimethylformamide; 30 min, 100 °C
- 1.2 100 °C; 12 h, 120 °C
- Experimental Protocols

Mechanochromism, tunable pure organic room temperature phosphorescence, single-molecule near-white emission, digital encryption, and anti-counterfeiting

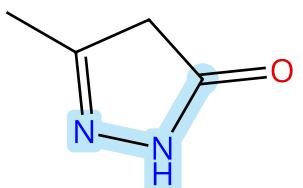
By: Guo, Jianmei; et al

Dyes and Pigments (2024), 221, 111760.

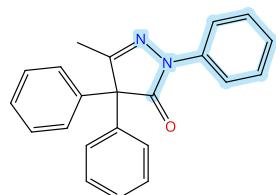
## Scheme 67 (1 Reaction)

Multi-component structure image available in CAS SciFinder

+



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Steps: 1 Yield: 68%

Suppliers (76)

Suppliers (67)

31-614-CAS-38961914

Steps: 1 Yield: 68%

- 1.1 **Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 6 h, 110 °C
- 1.2 **Reagents:** Water

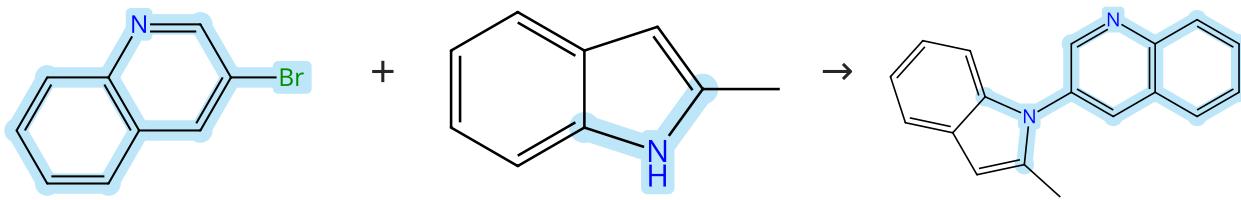
Experimental Protocols

Sequential regioselective arylation of pyrazolones with diaryliodonium salts

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

## Scheme 68 (1 Reaction)



Suppliers (96)

Suppliers (89)

Steps: 1 Yield: 68%

31-614-CAS-38860364

Steps: 1 Yield: 68%

- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** 1,3-Dimethyl-3,4,5,6-tetrahydro-2(1*H*)-pyrimidinone; 14 h, 140 °C

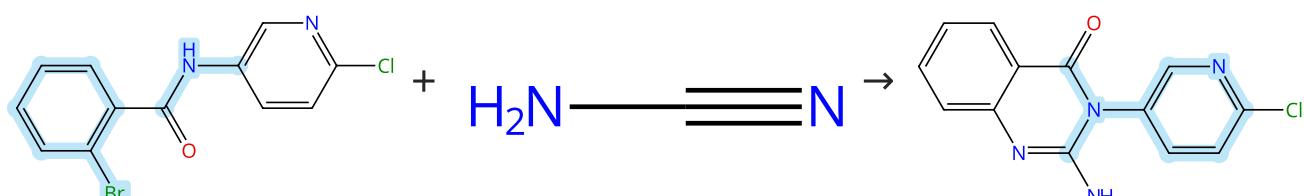
Experimental Protocols

Enantioselective synthesis of 3-(*N*-indolyl)quinolines containing axial and central chiralities

By: Yamanomoto, Ken; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(5), 582-585.

## Scheme 69 (1 Reaction)



Supplier (1)

Suppliers (60)

Steps: 1 Yield: 68%

31-614-CAS-42982630

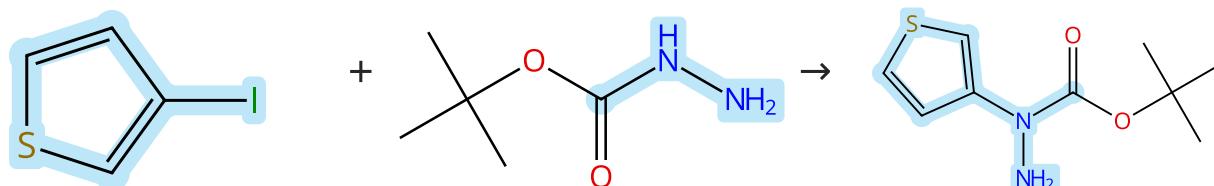
Steps: 1 Yield: 68%

**1.1 Reagents:** Potassium *tert*-butoxide  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

Experimental Protocols

**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**  
By: Wang, Zhongjie; et al  
Journal of Organic Chemistry (2024), 89(24), 18255-18268.

## Scheme 70 (1 Reaction)



Suppliers (70)

Suppliers (96)

Suppliers (11)

31-614-CAS-41148466

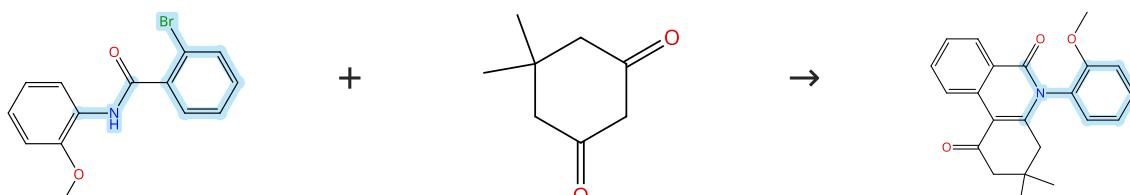
Steps: 1 Yield: 68%

**1.1 Reagents:** Cesium carbonate  
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide  
**Solvents:** Dimethylformamide; 14 h, 80 °C

Experimental Protocols

**Aryl Azocyclopropeniums: Minimalist, Visible-Light Photoswitches**  
By: Fink, Moritz; et al  
Journal of the American Chemical Society (2024), 146(14), 9519-9525.

## Scheme 71 (1 Reaction)



Suppliers (14)

Suppliers (100)

31-614-CAS-38062408

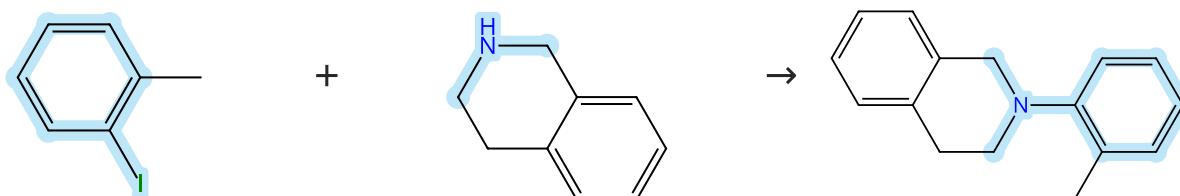
Steps: 1 Yield: 68%

**1.1 Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide, 2999684-17-0  
**Solvents:** Dimethylformamide; 12 h, 110 °C

Experimental Protocols

**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**  
By: Singh, Sumit K.; et al  
Synthesis (2024), 56(6), 975-988.

## Scheme 72 (1 Reaction)



Suppliers (75)

Suppliers (92)

Suppliers (2)

31-614-CAS-41429338

Steps: 1 Yield: 68%

1.1 Reagents: Tripotassium phosphate

Catalysts: Cuprous iodide

Solvents: Isopropanol, Ethylene glycol; 24 h, 90 °C

Experimental Protocols

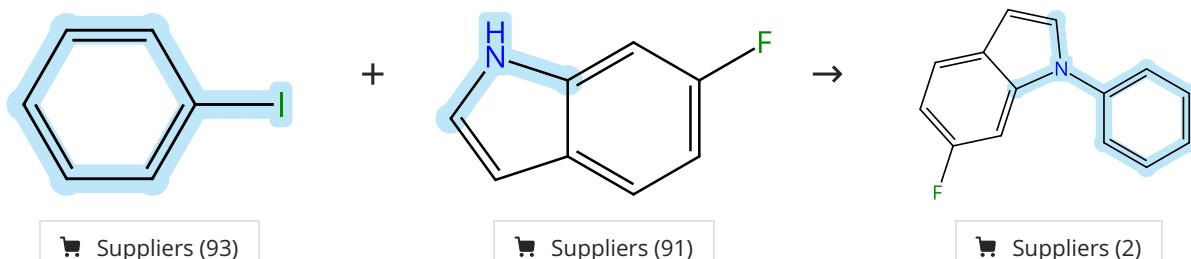
**Green approach to the synthesis of  $\alpha$ -aminophosphonate-tetrahydroisoquinoline hybrids and their anti-cholinesterase activity**

By: Marchan-Garcia, Joaquin; et al

Bioorganic Chemistry (2024), 143, 107008.

**Scheme 73 (1 Reaction)**

Steps: 1 Yield: 68%



31-614-CAS-39303573

Steps: 1 Yield: 68%

1.1 Reagents: Cesium carbonate

Catalysts: Cuprous iodide

Solvents: Dimethylformamide; overnight, 120 °C

Experimental Protocols

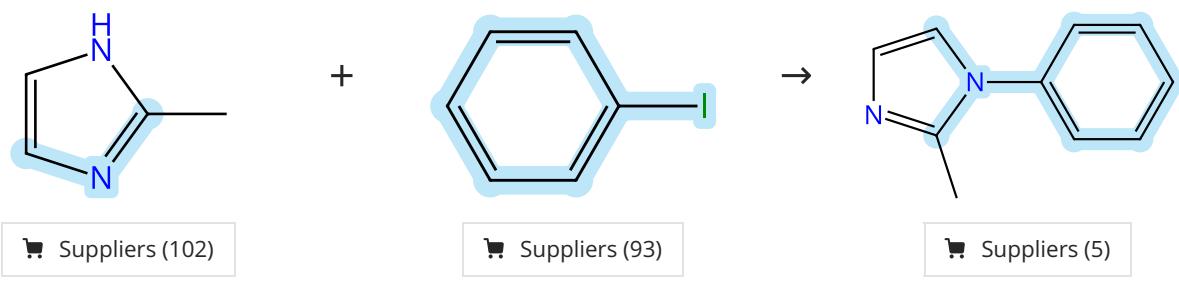
**Tosylazide as N1-Synthon: Iron-Catalyzed Nitrogenative Dimerization of Indoles to p-Bisindolopyrazine Derivatives**

By: Li, Jianan; et al

Organic Letters (2024), 26(5), 1046-1050.

**Scheme 74 (1 Reaction)**

Steps: 1 Yield: 68%



31-614-CAS-35838771

Steps: 1 Yield: 68%

1.1 Reagents: Potassium hydroxide

Catalysts: Copper oxide ( $Cu_2O$ ), Copper iron oxide ( $CuFe_2O_4$ ),

Polyaniline

Solvents: Dimethyl sulfoxide; 11 h, 100 °C

Experimental Protocols

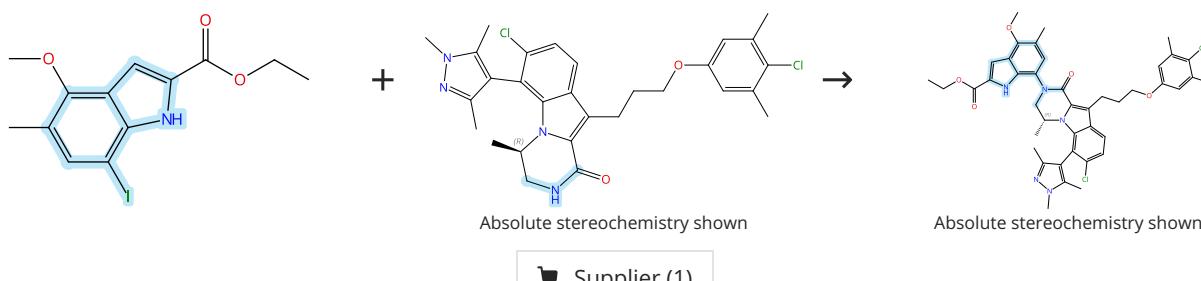
**Polyaniline-encapsulating  $CuFe_2O_4/Cu_2O$  composite: a simple, effective and reusable heterogeneous catalyst for ligand-free N-arylation of amines and nitrogen heterocycles**

By: Ahrari, Vahide; et al

Inorganic and Nano-Metal Chemistry (2024), 54(12), 1211-1220.

**Scheme 75 (1 Reaction)**

Steps: 1 Yield: 67%



31-614-CAS-42896055

Steps: 1 Yield: 67%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine

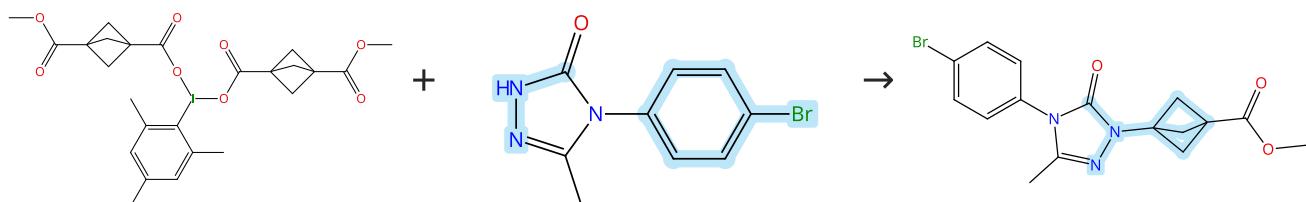
Solvents: Toluene; 48 h, rt → 100 °C

Experimental Protocols

**Discovery of a Myeloid Cell Leukemia 1 (Mcl-1) Inhibitor That Demonstrates Potent In Vivo Activities in Mouse Models of Hematological and Solid Tumors**

By: Tarr, James C.; et al

Journal of Medicinal Chemistry (2024), 67(16), 14370-14393.

**Scheme 76 (1 Reaction)**

Suppliers (4)

Suppliers (36)

31-614-CAS-39519424

Steps: 1 Yield: 67%

1.1 Catalysts: Copper(II) acetylacetone, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,\kappa N^1$ ']bis[2-(2-pyridinyl- $\kappa M$ )phenyl- $\kappa C$ ]-, (OC-6-33)-, hexafluorophosphate(1-) (1:1)

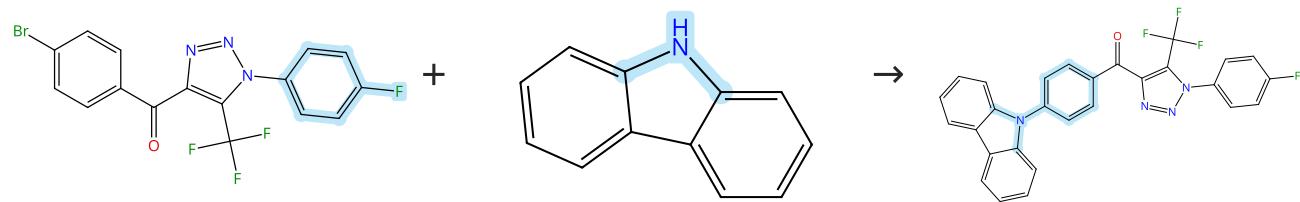
Solvents: Acetonitrile; 2.5 h, 24 °C

Experimental Protocols

**Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-F<sub>2</sub>) Building Blocks**

By: Ma, Xiaoshen; et al

Organic Letters (2024), 26(9), 1947-1951.

**Scheme 77 (1 Reaction)**

Suppliers (109)

31-614-CAS-40506663

Steps: 1 Yield: 67%

1.1 Reagents: Potassium carbonate

Catalysts: 1,10-Phenanthroline, Copper, Cuprous iodide

Solvents: Xylene; 36 - 48 h, 150 °C

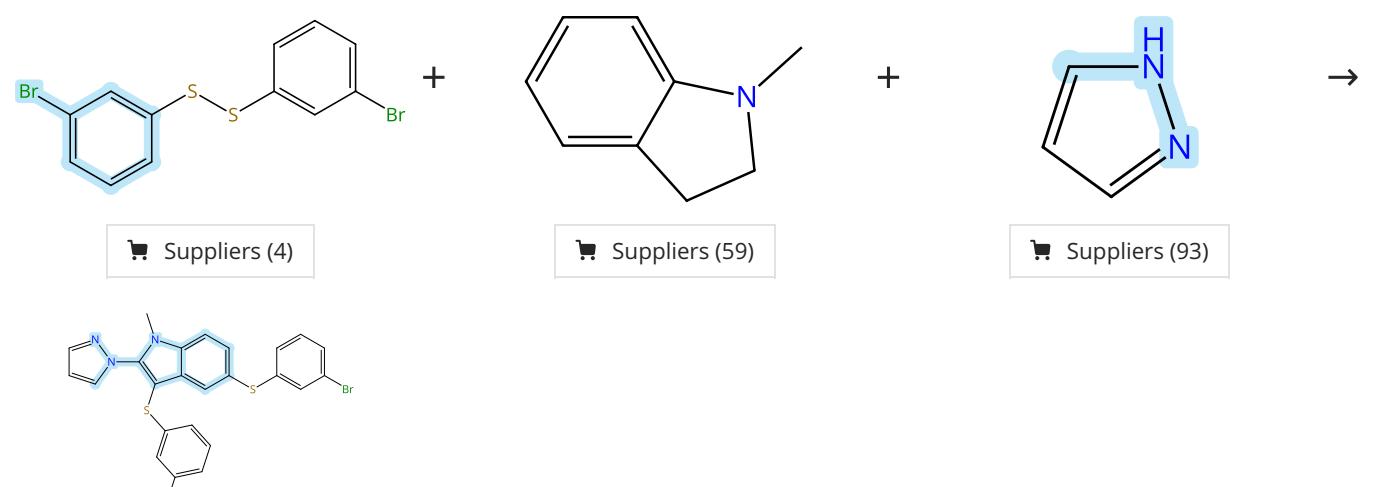
Experimental Protocols

**Effects of Electron-Withdrawing Strengths of the Substituents on the Properties of 4-(Carbazolyl-R-benzoyl)-5-CF<sub>3</sub>-1H-1,2,3-triazole Derivatives as Blue Emitters for Doping-Free Electroluminescence Devices**

By: Stanitska, Mariia; et al

ACS Omega (2024), 9(12), 14613-14626.

Scheme 78 (1 Reaction)



31-614-CAS-39675976

Steps: 1 Yield: 67%

1.1 Reagents: Iodine, Oxygen  
Catalysts: Cuprous iodide

Solvents: Dimethyl sulfoxide, 1,4-Dioxane; 24 h, 80 °C

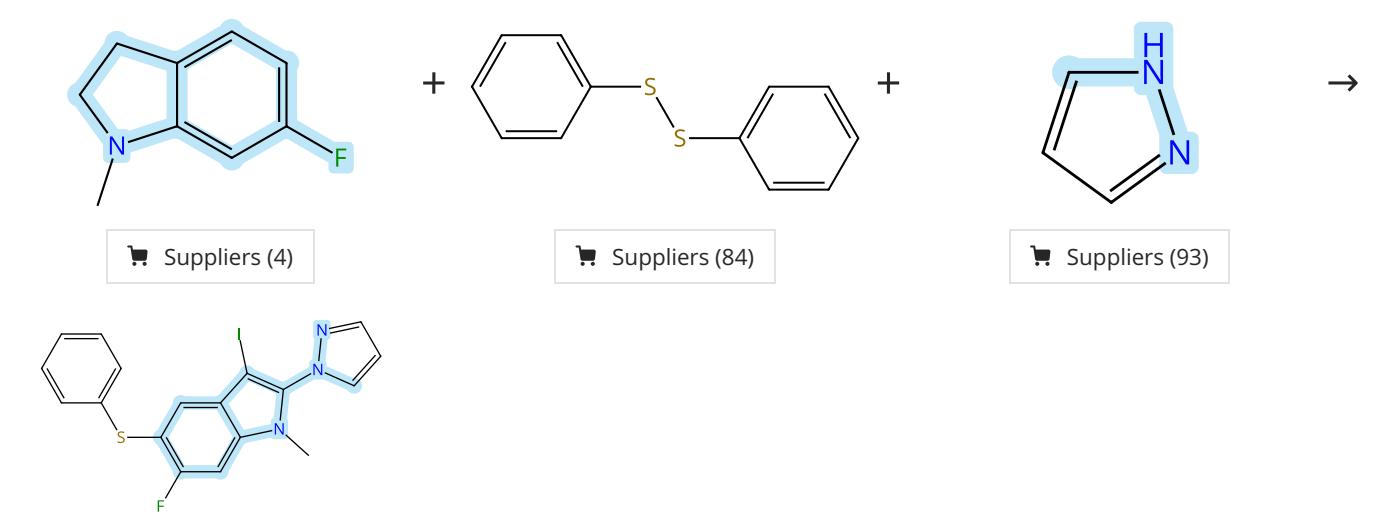
Experimental Protocols

**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

Scheme 79 (1 Reaction)



31-614-CAS-39675942

Steps: 1 Yield: 67%

1.1 Reagents: Iodine, Oxygen  
Catalysts: Cuprous iodide

Solvents: Toluene, 1,4-Dioxane; 24 h, 80 °C

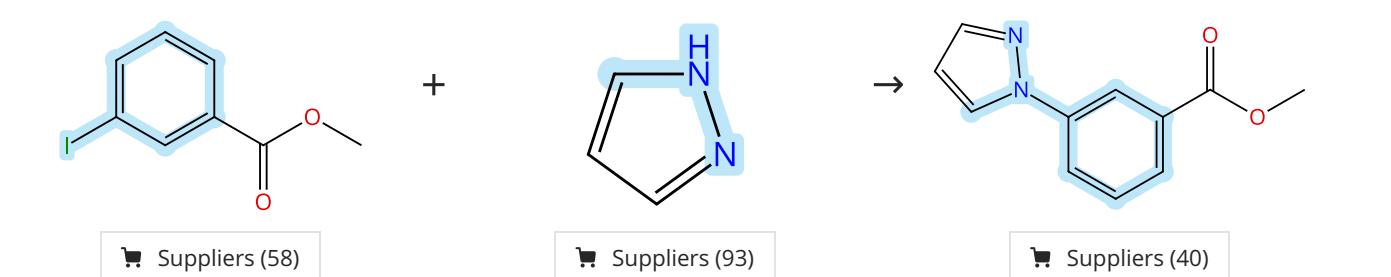
Experimental Protocols

**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

Scheme 80 (1 Reaction)



31-614-CAS-43143910

Steps: 1 Yield: 67%

1.1 Reagents: Cesium carbonate  
Catalysts: Cuprous iodide

Solvents: Dimethylformamide; 24 h, 120 °C

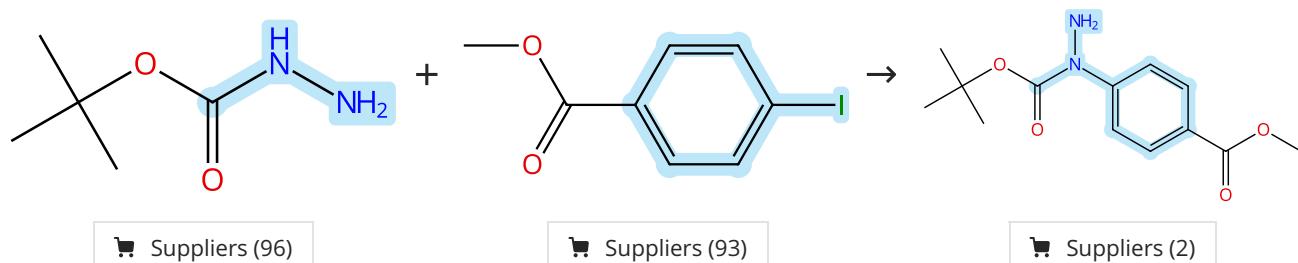
Experimental Protocols

Organophotocatalytic Reduction of Benzenes to Cyclohexenes

By: Devi, Kirti; et al

Journal of the American Chemical Society (2024), 146(50), 34304-34310.

## Scheme 81 (1 Reaction)



31-614-CAS-41148467

Steps: 1 Yield: 67%

1.1 Reagents: Cesium carbonate

Catalysts: 1,10-Phenanthroline, Cuprous iodide

Solvents: Dimethylformamide; 21 h, 80 °C

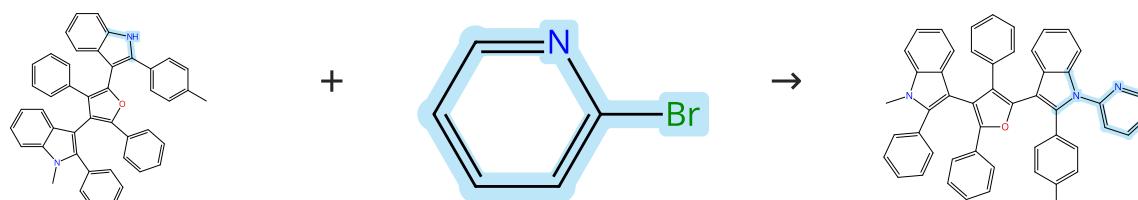
Experimental Protocols

Aryl Azocyclopropeniums: Minimalist, Visible-Light Photoswitches

By: Fink, Moritz; et al

Journal of the American Chemical Society (2024), 146(14), 9519-9525.

## Scheme 82 (1 Reaction)



31-614-CAS-42506480

Steps: 1 Yield: 67%

1.1 Reagents: Tripotassium phosphate

Catalysts: N,N'-Dimethylethylenediamine, Cuprous iodide

Solvents: Toluene; 24 h, 120 °C

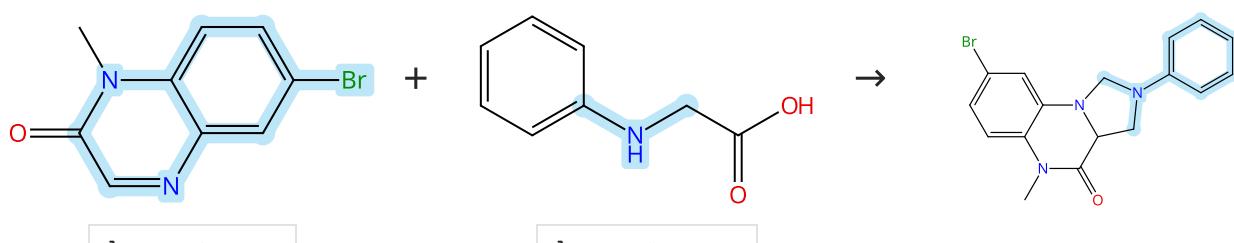
Experimental Protocols

Two-Fold Oxidative Coupling of Furan with Indole Provides Modular Access to a New Class of Tetra-(Hetero)Arylated Furans with Up to Four Different Substituents

By: Mhaske, Krishna; et al

Chemistry - A European Journal (2024), 30(70), e202402929.

## Scheme 83 (1 Reaction)



31-614-CAS-39663070

Steps: 1 Yield: 67%

1.1 Reagents: Oxygen

Catalysts: Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride

Solvents: 1,2-Dichloroethane; 12 h, rt

Experimental Protocols

**Visible-light-promoted tandem decarboxylation coupling/cyclization of N-aryl glycines with quinoxalinones: easy access to tetrahydroimidazo[1,5-a]quinoxalin-4(5H)-ones**

By: Tang, Zhen; et al

Green Synthesis and Catalysis (2024), 5(1), 31-34.

**Scheme 84 (1 Reaction)**

Suppliers (41)

Suppliers (82)

Suppliers (4)

31-614-CAS-39284873

Steps: 1 Yield: 67%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, *trans*-N,N-Dimethyl-1,2-cyclohexanediamine

Solvents: Dimethylformamide; 24 h, 100 °C; 100 °C → rt

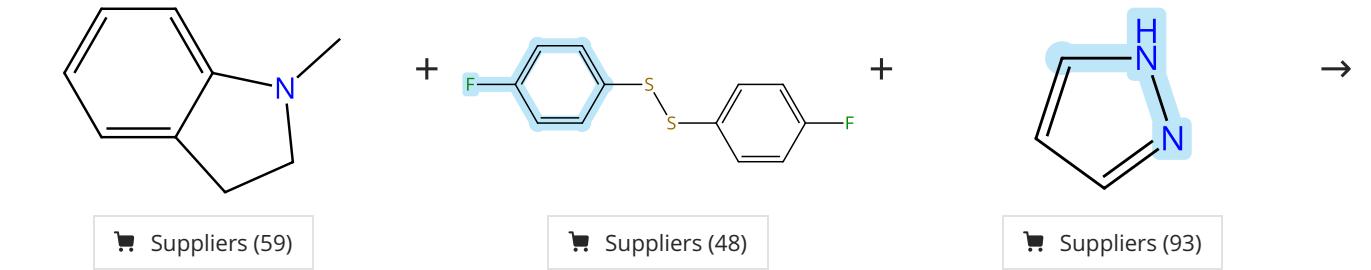
1.2 Reagents: Water; rt

Experimental Protocols

**The base-promoted cyclization of N-Boc arylimidrazone toward 1,2-dihydro 3H-1,2,4-triazol-3-ones**

By: Hu, Xinyue; et al

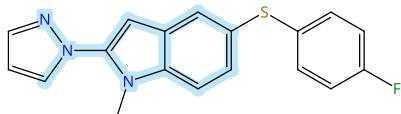
Tetrahedron Letters (2024), 136, 154910.

**Scheme 85 (1 Reaction)**

Suppliers (59)

Suppliers (48)

Suppliers (93)



31-614-CAS-39026165

Steps: 1 Yield: 67%

1.1 Reagents: Oxygen

Catalysts: Iodine, Cuprous iodide

Solvents: 1,2-Dichloroethane; 12 h, 80 °C

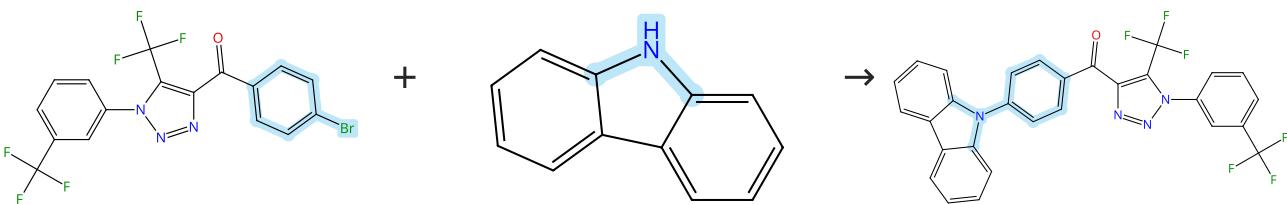
Experimental Protocols

**Iodine-dependent oxidative regioselective aminochalcogenation of indolines**

By: Zhang, Xiaoxiang; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(9), 1152-1155.

Scheme 86 (1 Reaction)



Suppliers (109)

31-614-CAS-40506665

Steps: 1 Yield: 67%

- 1.1 Reagents: Potassium carbonate  
Catalysts: 1,10-Phenanthroline, Copper, Cuprous iodide  
Solvents: Xylene; 36 - 48 h, 150 °C

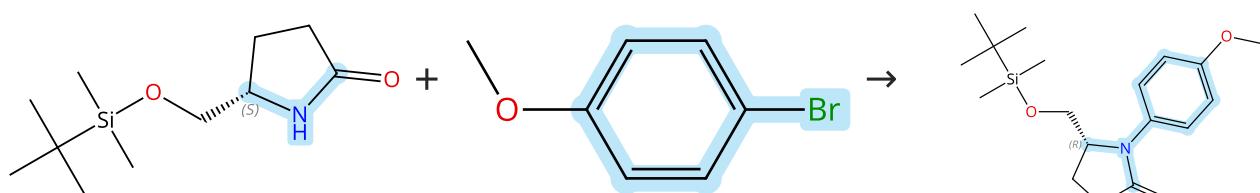
## Experimental Protocols

Effects of Electron-Withdrawing Strengths of the Substituents on the Properties of 4-(Carbazolyl-R-benzoyl)-5-CF<sub>3</sub>-1H-1,2,3-triazole Derivatives as Blue Emitters for Doping-Free Electroluminescence Devices

By: Stanitska, Mariia; et al

ACS Omega (2024), 9(12), 14613-14626.

Scheme 87 (1 Reaction)



Suppliers (69)

Absolute stereochemistry shown,  
Rotation (+)Absolute stereochemistry shown,  
Rotation (-)

Suppliers (40)

31-614-CAS-41685942

Steps: 1 Yield: 66%

- 1.1 Reagents: *N,N'*-Dimethylethylenediamine, Potassium carbonate  
Catalysts: Cuprous iodide  
Solvents: Toluene; 24 h, 100 °C

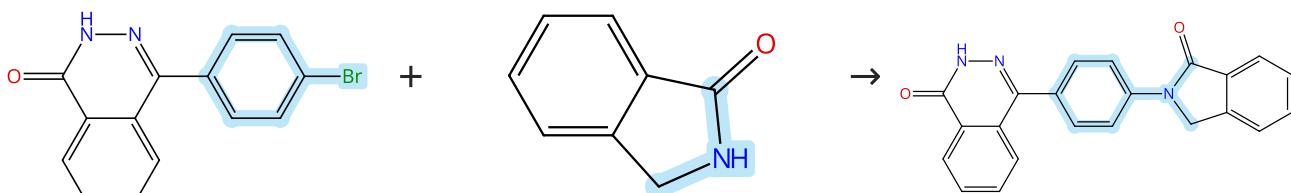
## Experimental Protocols

Formation of All-Carbon Quaternary Centers via Enantioselective Pd-Catalyzed  $\alpha$ -Vinylation of  $\gamma$ -Lactams

By: Moghadam, Farbod A.; et al

Organic Letters (2024), 26(36), 7551-7554.

Scheme 88 (1 Reaction)



Suppliers (96)

Supplier (1)

31-614-CAS-41277525

Steps: 1 Yield: 66%

- 1.1 Catalysts: Kanamycin A, Copper sulfate  
Solvents: Water; 5 - 10 min, rt  
1.2 10 min, rt  
1.3 Reagents: Potassium carbonate; 25 min, rt

## Experimental Protocols

Kanamycin-Cu(II) Complex Catalyzed Ullmann Amine Synthesis at Room Temperature: A Tool for Mechanistic Insights into Methylene Blue Degradation

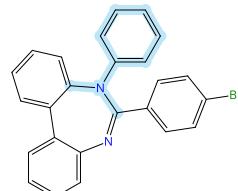
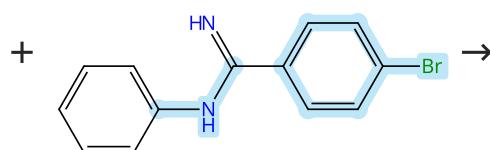
By: Basheer, Huma; et al

European Journal of Organic Chemistry (2024), 27(29), e202400328.

## Scheme 89 (1 Reaction)

Steps: 1 Yield: 66%

Multi-component  
structure image  
available in CAS  
SciFinder



Suppliers (7)

Suppliers (30)

31-614-CAS-42088097

Steps: 1 Yield: 66%

1.1 Reagents: Potassium acetate  
Catalysts: Cuprous iodide  
Solvents: Acetonitrile; 6 h, 80 °C

Experimental Protocols

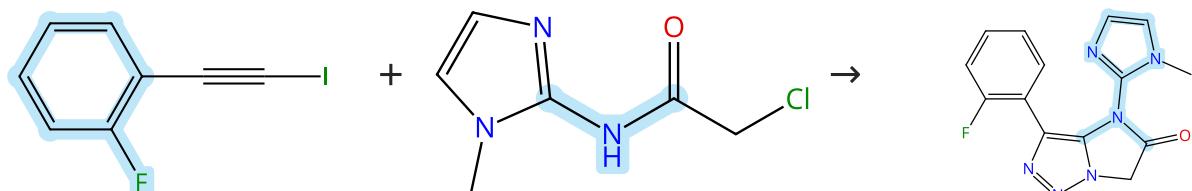
Practical Copper-Catalyzed Double N - Arylation of Cyclic Diaryliodoniums: Synthesis of 5H -Dibenzo[ d, f ][ 1,3 ] Diazepine, and Benzo[ c ]Cinnoline Derivatives

By: Zhang, Lianji; et al

Journal of Heterocyclic Chemistry (2024), 61(12), 1942-1953.

## Scheme 90 (1 Reaction)

Steps: 1 Yield: 66%



Suppliers (8)

Suppliers (5)

31-614-CAS-40408105

Steps: 1 Yield: 66%

1.1 Reagents: Potassium *tert*-butoxide, Sodium azide  
Catalysts: Cuprous iodide  
Solvents: Polyethylene glycol; 60 min, 80 °C

Experimental Protocols

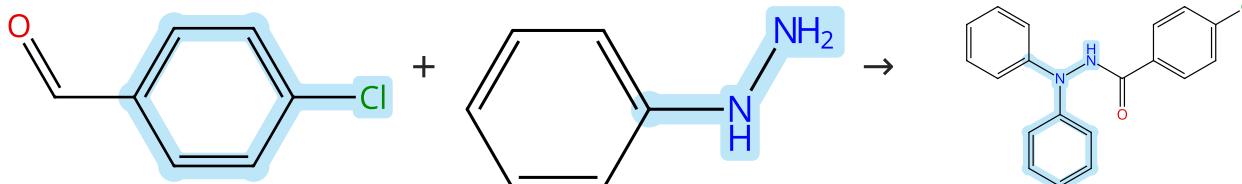
Synthesis and anti-breast cancer evaluation of fused imidazole-imidazo[1,2-c][1,2,3]triazoles: PEG-400 mediated one-pot reaction under ultrasonic irradiation

By: Johnpasha, Shaik; et al

Journal of Molecular Structure (2024), 1312(Part\_2), 138440.

## Scheme 91 (1 Reaction)

Steps: 1 Yield: 66%



Suppliers (90)

Suppliers (63)

Suppliers (4)

31-614-CAS-39391294

Steps: 1 Yield: 66%

1.1 Reagents: Dipotassium phosphate  
Catalysts: Copper(II) triflate  
Solvents: Acetonitrile; 12 h, 0 °C

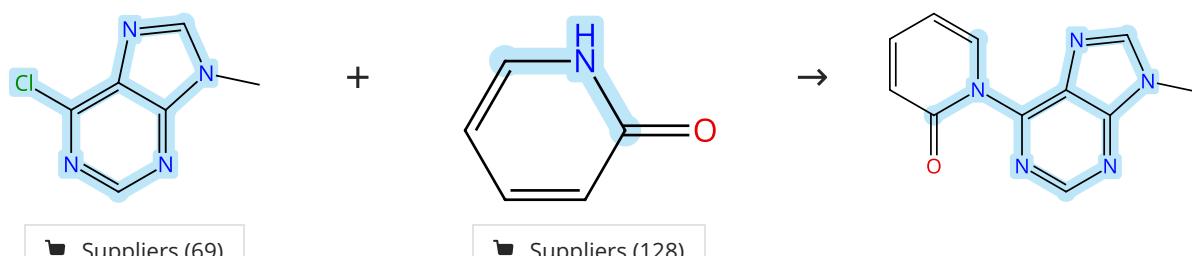
Experimental Protocols

An aerobic copper-catalyzed multi-component reaction strategy for N,N'-diaryl acylhydrazine synthesis: reactions and mechanism

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

Scheme 92 (1 Reaction)



31-614-CAS-42413566

Steps: 1 Yield: 66%

1.1 Reagents: Tripotassium phosphate

Catalysts: *N,N'*-Dimethylethylenediamine, Cuprous iodide

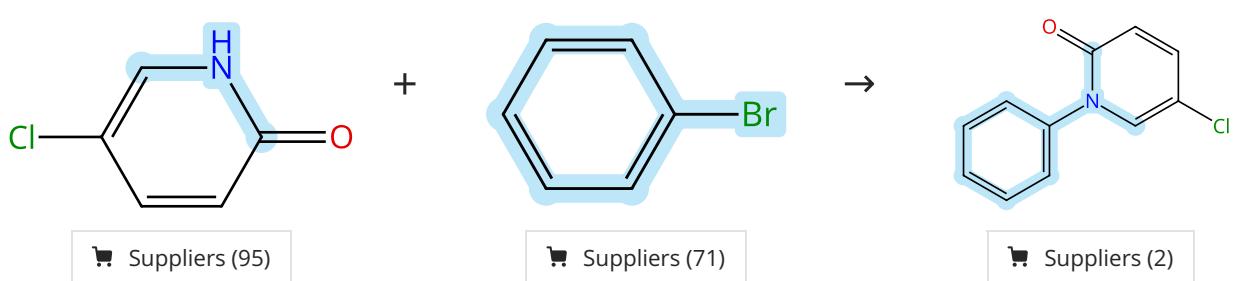
Solvents: Toluene; 15 - 20 h, 120 °C

Nickel Catalyzed Aryl-Aryl Bridging C-N Bond Activation of 2-Pyridylpyridones and 6-Purinylpyridones

By: Prusty, Namrata; et al

Organic Letters (2024), 26(44), 9466-9470.

Scheme 93 (1 Reaction)



31-614-CAS-43193390

Steps: 1 Yield: 66%

1.1 Reagents: Potassium carbonate, Calcium chloride  
Solvents: Dimethylformamide; 5 min, rt

1.2 Catalysts: Cuprous iodide; 22 h, 150 °C

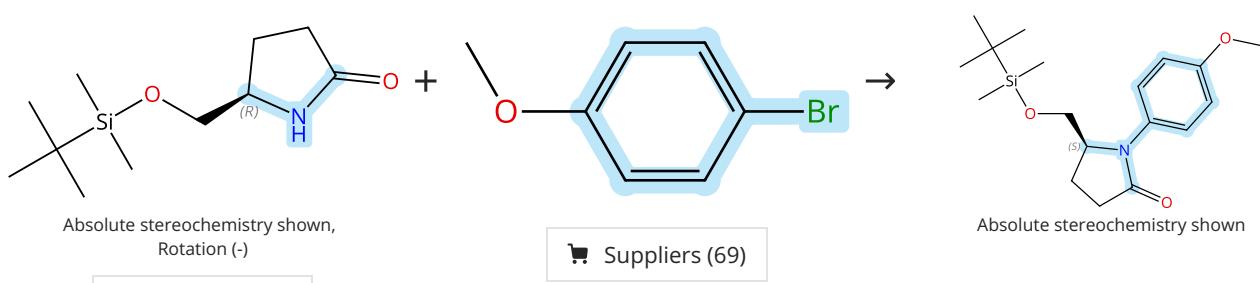
Experimental Protocols

Direct Synthesis of Benzhydryl-Functionalized 3,4-Dihydropyridin-2-ones from 2-Pyridones and Their Use in the Formation of Bridged  $\delta$ -Lactams

By: Myk, Zofia M.; et al

Molecules (2024), 29(22), 5274.

Scheme 94 (1 Reaction)



31-614-CAS-41685941

Steps: 1 Yield: 66%

1.1 Reagents: *N,N'*-Dimethylethylenediamine, Potassium carbonate

Catalysts: Cuprous iodide

Solvents: Toluene; 24 h, 100 °C

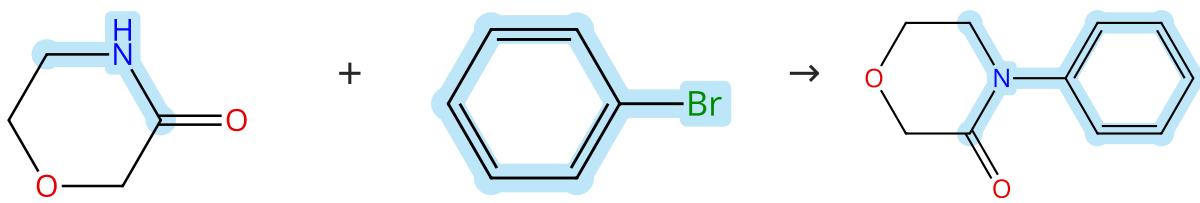
Experimental Protocols

Formation of All-Carbon Quaternary Centers via Enantioselective Pd-Catalyzed  $\alpha$ -Vinylation of  $\gamma$ -Lactams

By: Moghadam, Farbod A.; et al

Organic Letters (2024), 26(36), 7551-7554.

Scheme 95 (1 Reaction)



Suppliers (91)

Suppliers (71)

Suppliers (62)

31-614-CAS-40029726

Steps: 1 Yield: 66%

1.1 Reagents: Potassium carbonate, 1,2-Diaminocyclohexane  
 Catalysts: Cuprous iodide  
 Solvents: 1,4-Dioxane; 32 h, 120 °C

Experimental Protocols

Palladium-Catalyzed Weak Chelation-Assisted Site-Selective C-H Arylation of N-Aryl Pyridones via 2-fold C-H Activation

By: Nanjegowda, Maniya V.; et al

Journal of Organic Chemistry (2024), 89(9), 6564-6574.

Scheme 96 (1 Reaction)



Suppliers (54)

Suppliers (93)

31-614-CAS-42346810

Steps: 1 Yield: 66%

1.1 Reagents: Tripotassium phosphate  
 Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine  
 Solvents: Toluene; 24 h, 110 °C

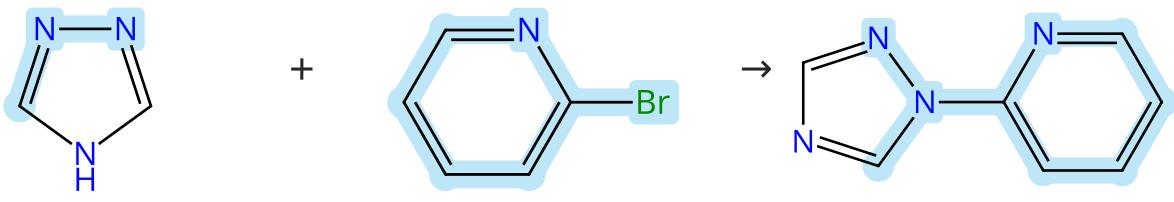
Experimental Protocols

N-Halosuccinimide enables cascade oxidative trifluorination and halogenative cyclization of tryptamine-derived isocyanides

By: Wu, Jun-Yunzi; et al

Nature Communications (2024), 15(1), 8917.

Scheme 97 (1 Reaction)



Suppliers (100)

Suppliers (86)

Suppliers (16)

31-614-CAS-43179351

Steps: 1 Yield: 66%

1.1 Reagents: Potassium carbonate  
 Catalysts: L-Proline, Cuprous iodide  
 Solvents: Dimethyl sulfoxide; 72 h, 60 °C

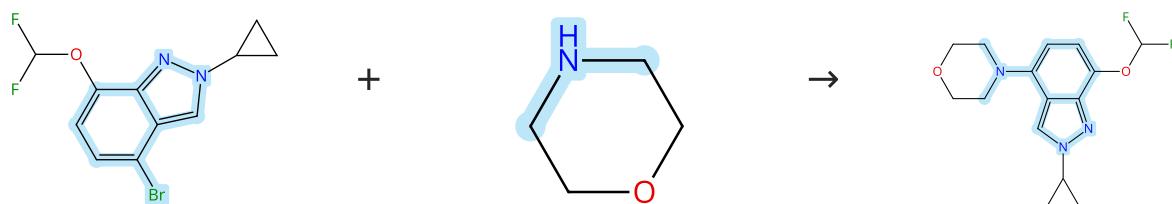
Experimental Protocols

Experimental and theoretical studies of pH-responsive iridium(III) complexes of azole and N-heterocyclic carbene ligands

By: Hashemzadeh, Tahmineh; et al

Dalton Transactions (2024), 53(19), 8478-8493.

Scheme 98 (1 Reaction)



Suppliers (83)

31-614-CAS-41361726

Steps: 1 Yield: 66%

1.1 Reagents: Potassium carbonate  
Catalysts: L-Proline, Cuprous iodide  
Solvents: Dimethyl sulfoxide; 24 h, 80 °C

Experimental Protocols

Discovery of novel N<sup>2</sup>-indazole derivatives as phosphodiesterase 4 inhibitors for the treatment of inflammatory bowel disease

By: Zheng, Lei; et al

European Journal of Medicinal Chemistry (2024), 277, 116710.

Scheme 99 (1 Reaction)

Steps: 1 Yield: 66%



Suppliers (65)

Suppliers (89)

31-614-CAS-40650422

Steps: 1 Yield: 66%

1.1 Reagents: Tripotassium phosphate  
Catalysts: 2,2,6,6-Tetramethyl-3,5-heptanedione, Cuprous iodide  
Solvents: Toluene; 24 h, reflux

Experimental Protocols

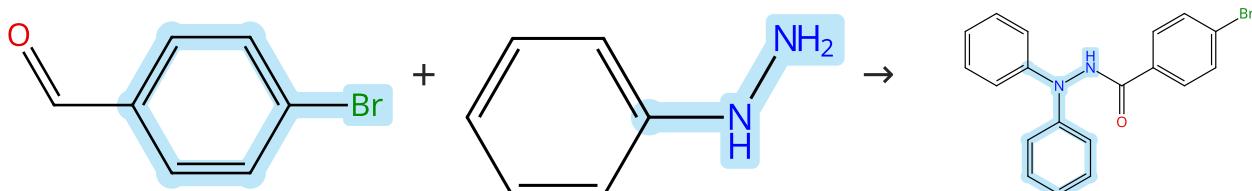
One-pot C(sp<sup>3</sup>)-H difluoroalkylation of tetrahydroisoquinolines and isochromans via electrochemical oxidation and organozinc alkylation

By: Kamata, Kazuya; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(50), 6395-6398.

Scheme 100 (1 Reaction)

Steps: 1 Yield: 66%



Suppliers (89)

Suppliers (63)

Supplier (1)

31-614-CAS-39391295

Steps: 1 Yield: 66%

1.1 Reagents: Dipotassium phosphate  
Catalysts: Copper(II) triflate  
Solvents: Acetonitrile; 12 h, 0 °C

Experimental Protocols

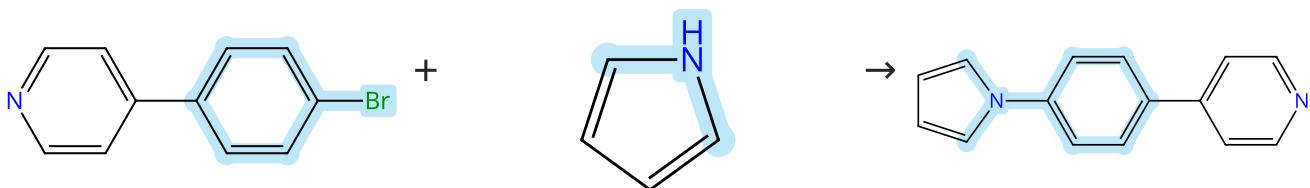
An aerobic copper-catalyzed multi-component reaction strategy for N',N'-diaryl acylhydrazine synthesis: reactions and mechanism

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

Scheme 101 (1 Reaction)

Steps: 1 Yield: 66%



Suppliers (65)

Suppliers (73)

31-614-CAS-38965984

Steps: 1 Yield: 66%

**A Broad Survey of Selectivity in the Heterogeneous Hydrogenation of Heterocycles**

1.1 Reagents: Cesium carbonate

Catalysts: Cuprous iodide, 5-(Diphenylphosphino)-2-thiazoline

Solvents: Acetonitrile; 15 h, 80 °C

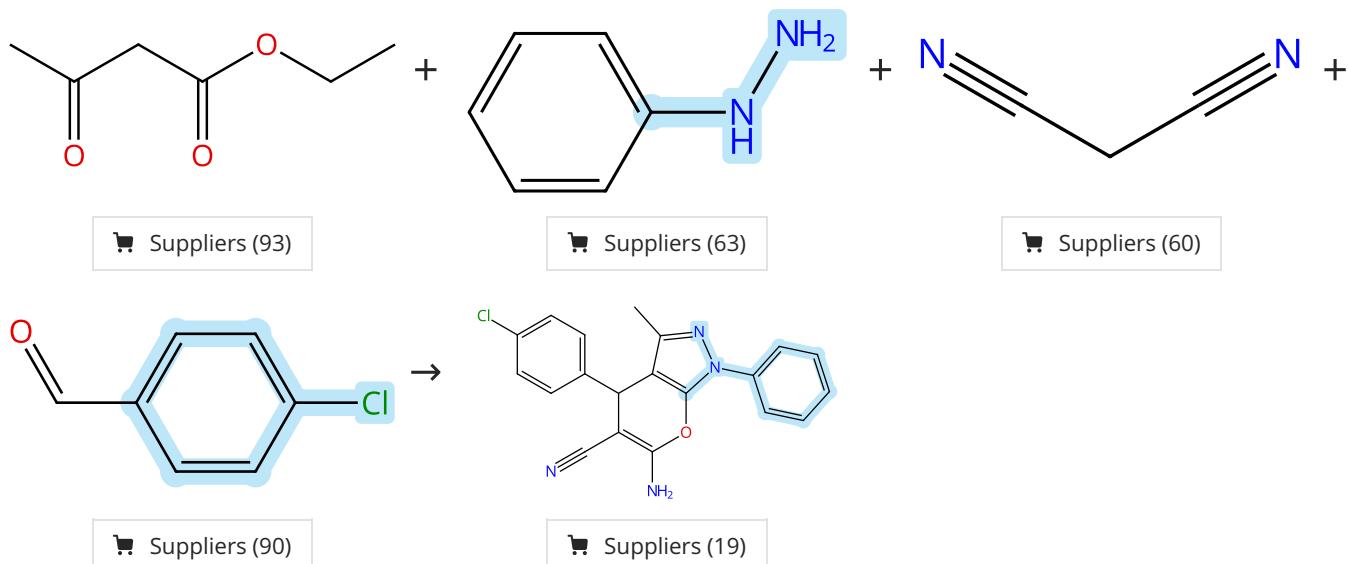
By: Lyons, Thomas W.; et al

Journal of Organic Chemistry (2024), 89(3), 1438-1445.

Experimental Protocols

Scheme 102 (1 Reaction)

Steps: 1 Yield: 65%



Suppliers (93)

Suppliers (63)

Suppliers (60)

Suppliers (90)

Suppliers (19)

31-614-CAS-35485661

Steps: 1 Yield: 65%

**Fabrication of Copper(II)-coated Magnetic Core-shell Nanoparticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives**1.1 Catalysts: Cupric acetate (complex with bis(2-thienylmethylene)melamine supported on silica-coated...), 1,3,5-Triazine-2,4,6-triamine,  $N^2,N^4$ -bis(2-thienylmethylene)- $N^6$ -(3-(triethoxysilyl)propyl)-(copper(II)) complex, supported on silica-coated Fe<sub>3</sub>O<sub>4</sub>; 10 min, rt

By: Soleimani, Maryam; et al

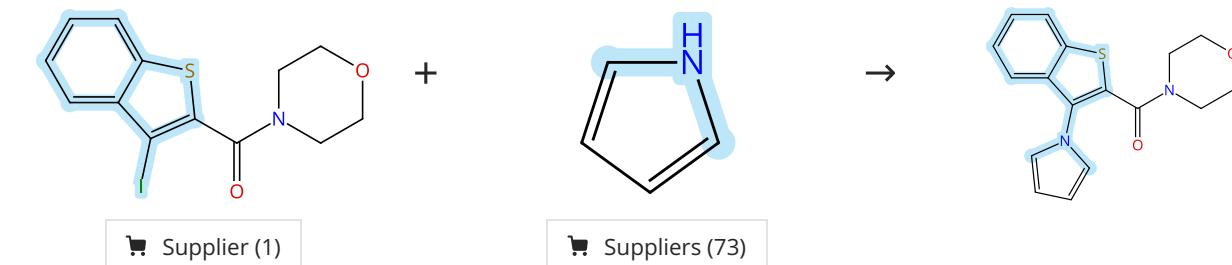
Polycyclic Aromatic Compounds (2024), 44(1), 90-116.

1.2 7 min, 65 °C

Experimental Protocols

Scheme 103 (1 Reaction)

Steps: 1 Yield: 65%



Supplier (1)

Suppliers (73)

31-614-CAS-40981139

Steps: 1 Yield: 65%

1.1 Reagents: Cesium carbonate

Catalysts: Copper oxide ( $\text{Cu}_2\text{O}$ )

Solvents: Dimethyl sulfoxide; 32 h, 120 °C

Experimental Protocols

**Deprotonative Metallation of Benzofuran and Benzothiophene Derivatives for the Formation of Tetracyclic and Pentacyclic Heteroaromatic Compounds**

By: Elmira, Loubna; et al

European Journal of Organic Chemistry (2024), 27(27), e202400374.

**Scheme 104 (1 Reaction)**

Suppliers (52)

Suppliers (93)

Steps: 1 Yield: 65%

31-614-CAS-40260502

Steps: 1 Yield: 65%

1.1 Reagents: Cesium carbonate

Catalysts: Cupric acetate

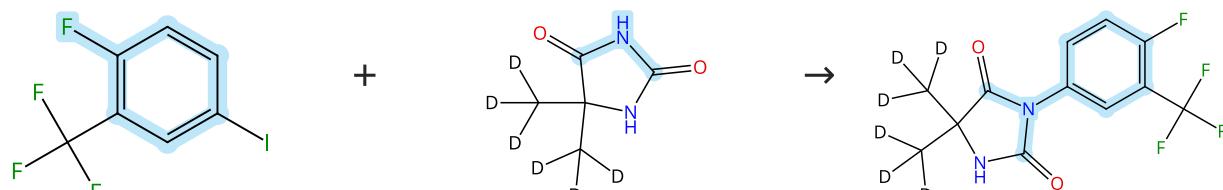
Solvents: Dimethylformamide; 24 h, 110 °C

Experimental Protocols

**One-Pot Rh(III)-Catalyzed Twofold C-H Activation/Oxidative Annulation of N-Arylpyrroles with Alkynes to Fluorescent Ullazines**

By: Otero-Riesgo, Sergio; et al

Advanced Synthesis &amp; Catalysis (2024), 366(10), 2312-2323.

**Scheme 105 (1 Reaction)**

Suppliers (63)

Steps: 1 Yield: 65%

31-614-CAS-42372619

Steps: 1 Yield: 65%

1.1 Catalysts: Copper oxide ( $\text{Cu}_2\text{O}$ )

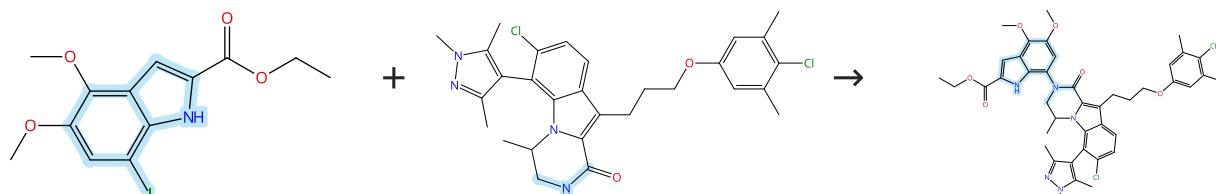
Solvents: Dimethylacetamide; 48 h, rt → 170 °C

Experimental Protocols

**Single-Dose Drug Development Candidate for Schistosomiasis**

By: Leas, Derek A.; et al

ACS Infectious Diseases (2024), 10(11), 3963-3972.

**Scheme 106 (1 Reaction)**

Steps: 1 Yield: 65%

31-614-CAS-42896043

Steps: 1 Yield: 65%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, *trans*-*N,N*-Dimethyl-1,2-cyclohexanediamine

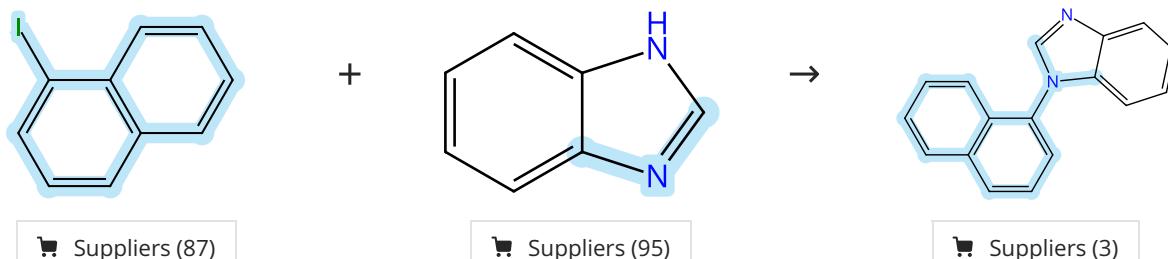
Solvents: Toluene; 48 h, rt → 100 °C

Experimental Protocols

**Discovery of a Myeloid Cell Leukemia 1 (Mcl-1) Inhibitor That Demonstrates Potent In Vivo Activities in Mouse Models of Hematological and Solid Tumors**

By: Tarr, James C.; et al

Journal of Medicinal Chemistry (2024), 67(16), 14370-14393.

**Scheme 107 (1 Reaction)**

31-614-CAS-39810100

Steps: 1 Yield: 65%

1.1 Reagents: Potassium *tert*-butoxideCatalysts: 1*H*-Benzotriazole, Cuprous iodide

Solvents: Dimethyl sulfoxide; 48 h, 140 °C

Experimental Protocols

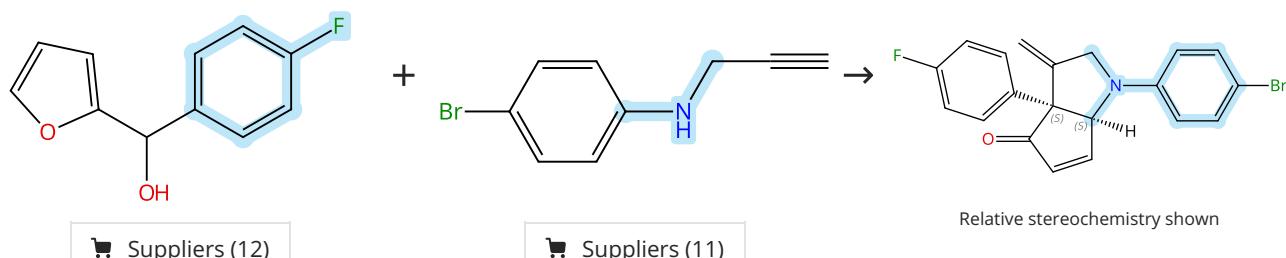
**Nickel-Catalyzed Atroposelective C-H Alkylation Enabled by Bimetallic Catalysis with Air-Stable Heteroatom-Substituted Secondary Phosphine Oxide Preligands**

By: Zhang, Zi-Jing; et al

Journal of the American Chemical Society (2024), 146(13), 9172-9180.

**Scheme 108 (1 Reaction)**

Steps: 1 Yield: 65%



Relative stereochemistry shown

31-614-CAS-39895302

Steps: 1 Yield: 65%

1.1 Catalysts: Tris(pentafluorophenyl)borane

Solvents: 1,4-Dioxane; 1.5 h, 60 °C

1.2 Reagents: Triethylamine

Catalysts: Triphenylphosphine, Copper(II) triflate; 4 h, 90 °C

Experimental Protocols

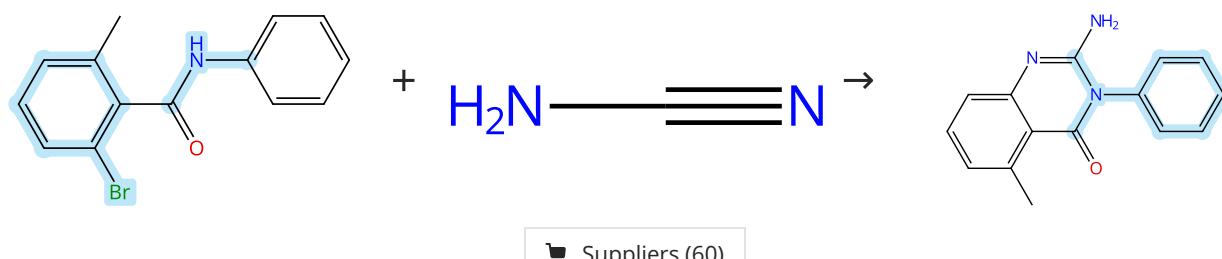
**Synthesis of cis-fused cyclopentenone-pyrrolidine scaffolds via sequential aza-Piancatelli and Conia-ene type reactions in one pot**

By: Solanke, Pooja R.; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(31), 4234-4237.

**Scheme 109 (1 Reaction)**

Steps: 1 Yield: 65%



31-614-CAS-42982634

Steps: 1 Yield: 65%

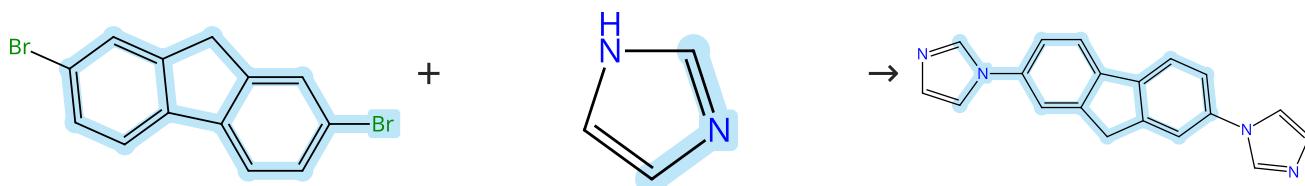
**1.1 Reagents:** Potassium *tert*-butoxide  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

Experimental Protocols

**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**  
By: Wang, Zhongjie; et al  
Journal of Organic Chemistry (2024), 89(24), 18255-18268.

## Scheme 110 (1 Reaction)

Steps: 1 Yield: 65%



Suppliers (87)

Suppliers (201)

Suppliers (2)

31-614-CAS-44937006

Steps: 1 Yield: 65%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Copper sulfate; 48 h, 200 °C

Experimental Protocols

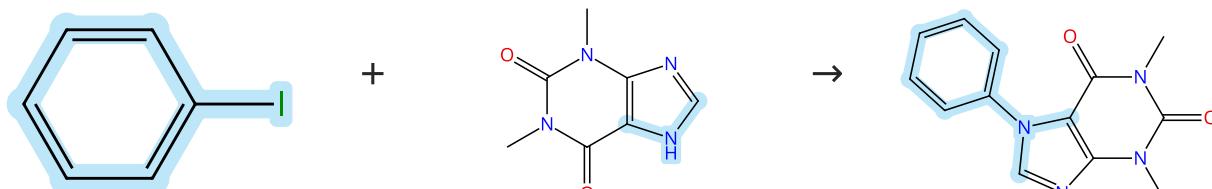
**Synthesis of a Metalla[2]catenane, Metallarectangles and Polynuclear Assemblies from Di(N-Heterocyclic Carbene) Ligands**

By: Chang, Jin-Ping; et al

Angewandte Chemie, International Edition (2024), 63(39), e202409664.

## Scheme 111 (1 Reaction)

Steps: 1 Yield: 65%



Suppliers (93)

Suppliers (130)

Suppliers (4)

31-614-CAS-42726940

Steps: 1 Yield: 65%

**1.1 Reagents:** Potassium hydroxide  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 36 h, 120 °C

Experimental Protocols

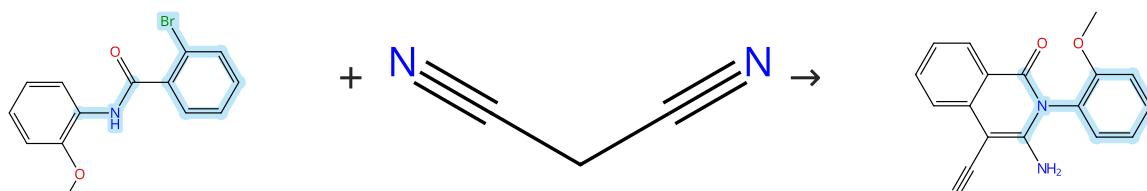
**Synthesis of π-Extended Imidazo[1,2-a]quinolines via Carboxylic Acid-Assisted Ru(II)-Catalyzed Dual C–H Activation and Alkyne Annulation**

By: Hazarika, Nitumoni; et al

Organic Letters (2024), 26(49), 10447-10452.

## Scheme 112 (1 Reaction)

Steps: 1 Yield: 65%



Suppliers (14)

Suppliers (60)

31-614-CAS-38062440

Steps: 1 Yield: 65%

**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

Synthesis (2024), 56(6), 975-988.

1.1 Reagents: Cesium carbonate  
Catalysts: Cuprous iodide, 2999684-17-0  
Solvents: Dimethylformamide; 12 h, 90 °C

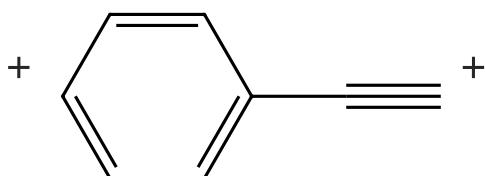
Experimental Protocols

**Scheme 113 (1 Reaction)**

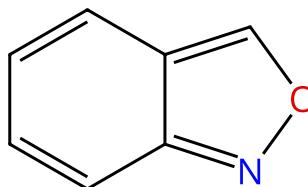
Steps: 1 Yield: 65%



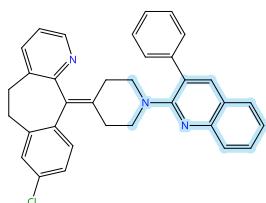
Suppliers (98)



Suppliers (66)



Suppliers (69)



31-614-CAS-38203226

Steps: 1 Yield: 65%

**Copper-catalyzed C(sp)-H aryl amination enables modular synthesis of quinolines and 2-quinolinones**

By: Gao, Yang; et al

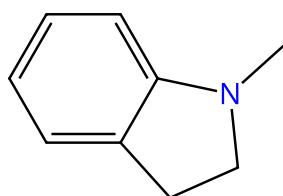
Science China: Chemistry (2024), 67(2), 595-603.

1.1 Catalysts: 1,10-Phenanthroline, Cupric acetate  
Solvents: Dimethyl sulfoxide; 12 h, 60 °C1.2 Reagents: Lithium chloride  
Solvents: Water

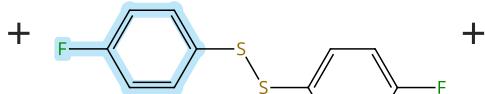
Experimental Protocols

**Scheme 114 (1 Reaction)**

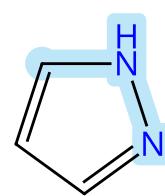
Steps: 1 Yield: 65%



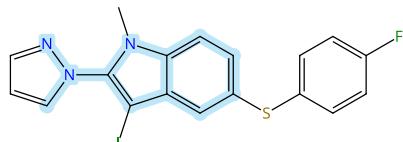
Suppliers (59)



Suppliers (48)



Suppliers (93)



31-614-CAS-39675966

Steps: 1 Yield: 65%

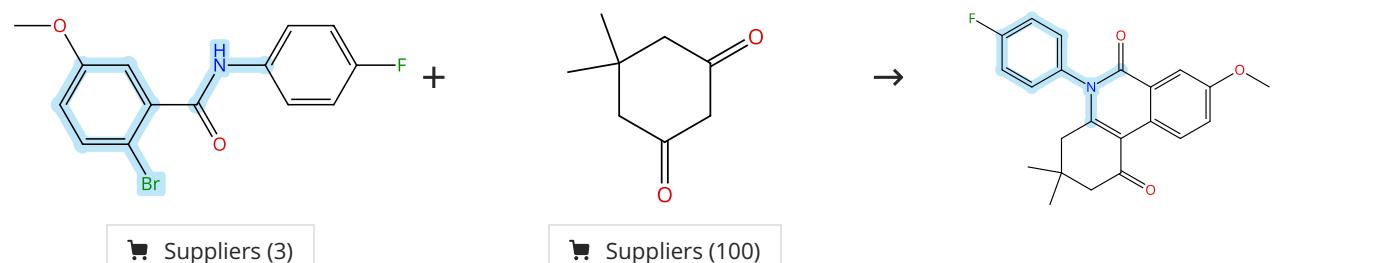
**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

1.1 Reagents: Iodine, Oxygen  
Catalysts: Cuprous iodide  
Solvents: Toluene, 1,4-Dioxane; 24 h, 80 °C

Experimental Protocols

**Scheme 115 (1 Reaction)**

31-614-CAS-38062412

Steps: 1 Yield: 65%

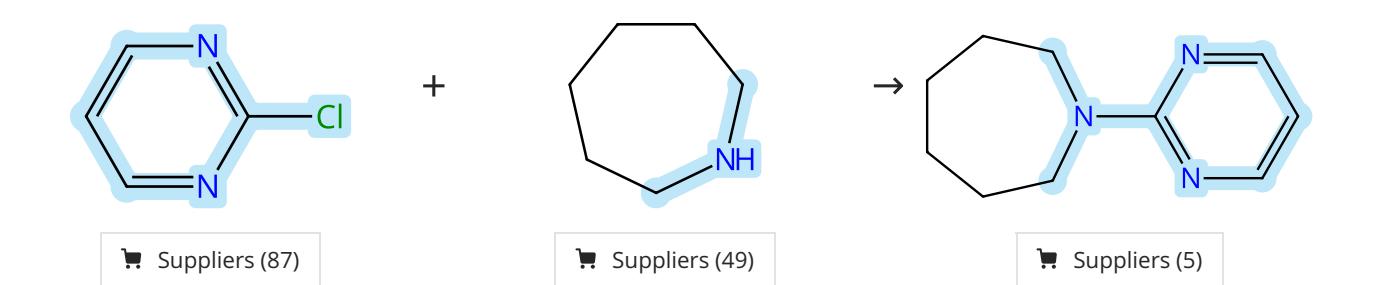
- 1.1 **Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide, 2999684-17-0  
**Solvents:** Dimethylformamide; 12 h, 110 °C

**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

Synthesis (2024), 56(6), 975-988.

Experimental Protocols

**Scheme 116 (1 Reaction)**

31-614-CAS-40748952

Steps: 1 Yield: 65%

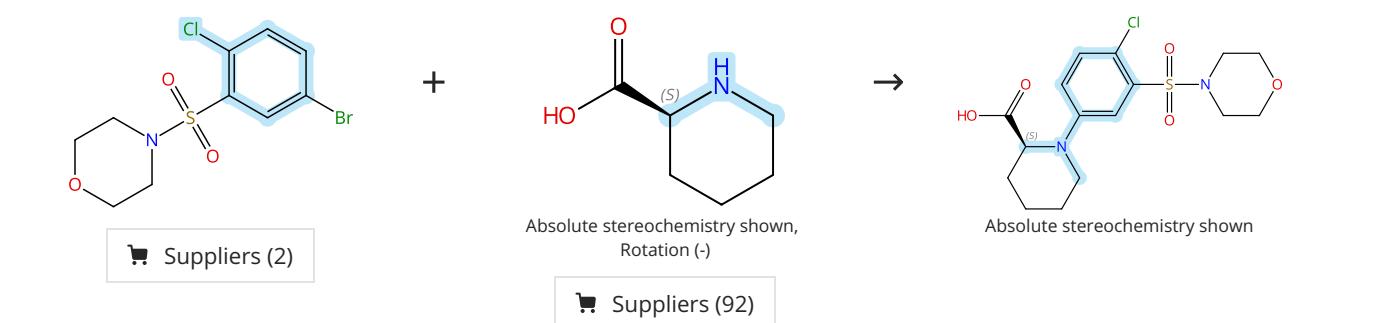
- 1.1 **Reagents:** *S*-Methylisothiourea hemisulfate, Sodium hydroxide  
**Solvents:** 1,4-Dioxane, Water; 6 h, 30 °C
- 1.2 **Reagents:** *m*-Chloroperbenzoic acid  
**Solvents:** 1,4-Dioxane; 0 °C; 1 h, 30 °C
- 1.3 **Reagents:** Tripotassium phosphate  
**Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphat recyclo[3.3.1.1<sup>3,7</sup>]decane, 1-(4-sulfonylbutyl)-, inner salt; 18 h, 50 °C

**Ambient Temperature Metal-Free Thiomethylation of Chloroheteroarenes and Chloropurines**

By: Patel, Manisha A.; et al

Chemistry - An Asian Journal (2024), 19(11), e202400114.

Experimental Protocols

**Scheme 117 (1 Reaction)**

31-614-CAS-40096259

Steps: 1 Yield: 65%

Activity refinement of aryl amino acetamides that target the Plasmodium falciparum STAR-related lipid transfer 1 protein

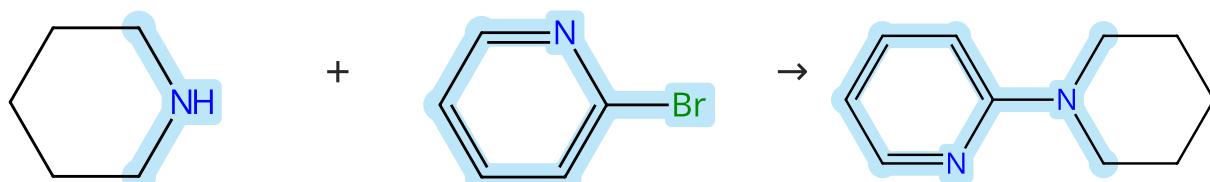
By: Nguyen, William; et al

European Journal of Medicinal Chemistry (2024), 270, 116354.

- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 16 h, 90 °C
- 1.2 **Reagents:** Hydrochloric acid  
**Solvents:** Water; pH 3

Experimental Protocols

## Scheme 118 (1 Reaction)



Suppliers (50)

Suppliers (86)

Suppliers (30)

31-614-CAS-44139313

Steps: 1 Yield: 65%

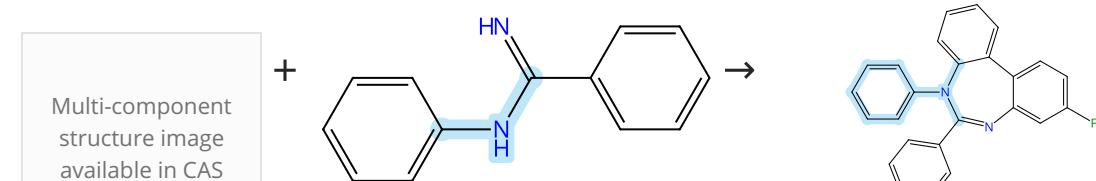
On the mechanism of  $sp^2$  C-H borylation using ortho-N-substituted pyridinium cations

By: Slesarchuk, Nikita; et al

Dalton Transactions (2024), 53(22), 9590-9595.

Experimental Protocols

## Scheme 119 (1 Reaction)



Multi-component structure image available in CAS SciFinder

Supplier (1)

Suppliers (62)

31-614-CAS-42088109

Steps: 1 Yield: 65%

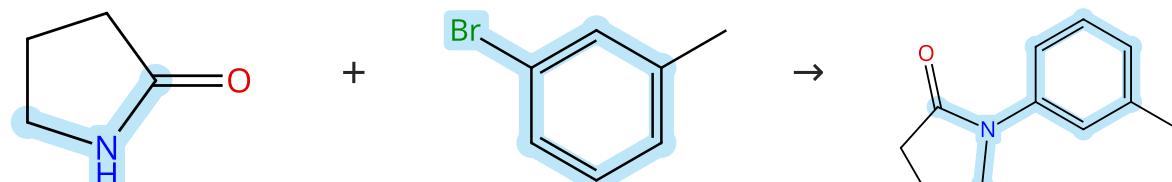
Practical Copper-Catalyzed Double N - Arylation of Cyclic Diaryliodoniums: Synthesis of 5H -Dibenzo[ d, f ][ 1,3 ] Diazepine, and Benzo[ c ]Cinnoline Derivatives

By: Zhang, Lianji; et al

Journal of Heterocyclic Chemistry (2024), 61(12), 1942-1953.

Experimental Protocols

## Scheme 120 (1 Reaction)



Suppliers (66)

Suppliers (57)

Suppliers (36)

31-614-CAS-41277506

Steps: 1 Yield: 65%

1.1 **Catalysts:** Kanamycin A, Copper sulfate  
**Solvents:** Water; 5 - 10 min, rt

1.2 10 min, rt

1.3 **Reagents:** Potassium carbonate; 30 min, rt

Experimental Protocols

**Kanamycin-Cu(II) Complex Catalyzed Ullmann Amine Synthesis at Room Temperature: A Tool for Mechanistic Insights into Methylene Blue Degradation**

By: Basheer, Huma; et al

European Journal of Organic Chemistry (2024), 27(29), e202400328.

## Scheme 121 (1 Reaction)



31-614-CAS-41704774

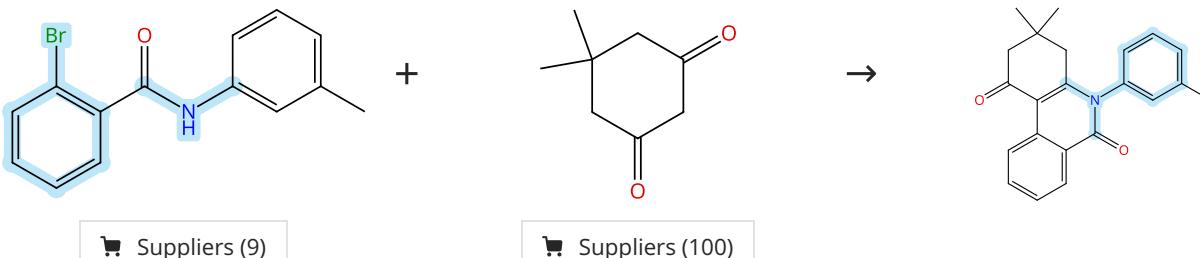
Steps: 1 Yield: 65%

1.1 **Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethylformamide; 24 h, 180 °C

Experimental Protocols

**Direct Population of Triplet States for Efficient Organic Afterglow through the Intra/Intermolecular Heavy-Atom Effect**  
By: Yuan, Jie; et al  
Molecules (2024), 29(5), 1014.

## Scheme 122 (3 Reactions)



31-614-CAS-38062430

Steps: 1 Yield: 64%

1.1 **Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide, 2999684-18-1  
**Solvents:** Dimethylformamide; 12 h, 90 °C

Experimental Protocols

**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**  
By: Singh, Sumit K.; et al  
Synthesis (2024), 56(6), 975-988.

31-614-CAS-38062433

Steps: 1 Yield: 56%

1.1 **Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide, 2999684-16-9  
**Solvents:** Dimethylformamide; 12 h, 90 °C

Experimental Protocols

**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**  
By: Singh, Sumit K.; et al  
Synthesis (2024), 56(6), 975-988.

31-614-CAS-38062438

Steps: 1 Yield: 52%

1.1 **Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide,  $N^2,N^6$ -Bis[[1-(2,3,4,6-tetra-O-acetyl- $\beta$ -D-glucopyranosyl)-1H-1,2,3-triazol-4-yl]methyl]-2,6-pyridinedicarboxamide  
**Solvents:** Dimethylformamide; 12 h, 90 °C

Experimental Protocols

**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**  
By: Singh, Sumit K.; et al  
Synthesis (2024), 56(6), 975-988.

## Scheme 123 (1 Reaction)

Steps: 1 Yield: 64%



Suppliers (89)

Suppliers (49)

Supplier (1)

31-614-CAS-41175789

Steps: 1 Yield: 64%

 **$\alpha$ -Amino bicycloalkylation through organophotoredox catalysis**

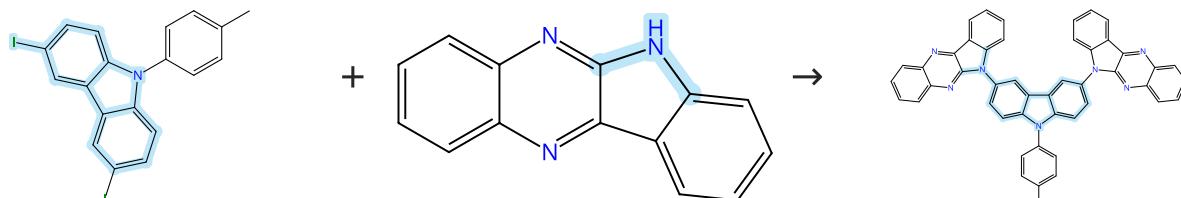
By: Nugent, Jeremy; et al

Chemical Science (2024), 15(28), 10918-10925.

Experimental Protocols

## Scheme 124 (1 Reaction)

Steps: 1 Yield: 64%



Suppliers (6)

Suppliers (50)

31-614-CAS-40980691

Steps: 1 Yield: 64%

**PIFA-mediated intramolecular N-arylation of 2-aminoquin oxalines to afford indolo[2,3-b]quinoxaline derivatives**

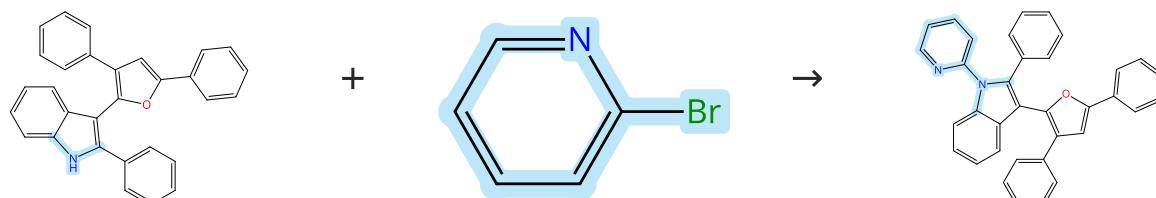
By: Subramaniam, Subhashini V.; et al

Organic &amp; Biomolecular Chemistry (2024), 22(28), 5803-5808.

Experimental Protocols

## Scheme 125 (1 Reaction)

Steps: 1 Yield: 64%



Suppliers (86)

31-614-CAS-39205902

Steps: 1 Yield: 64%

**Aerobic Catalytic Cross-Dehydrogenative Coupling of Furans with Indoles Provides Access to Fluorophores with Large Stokes Shift**

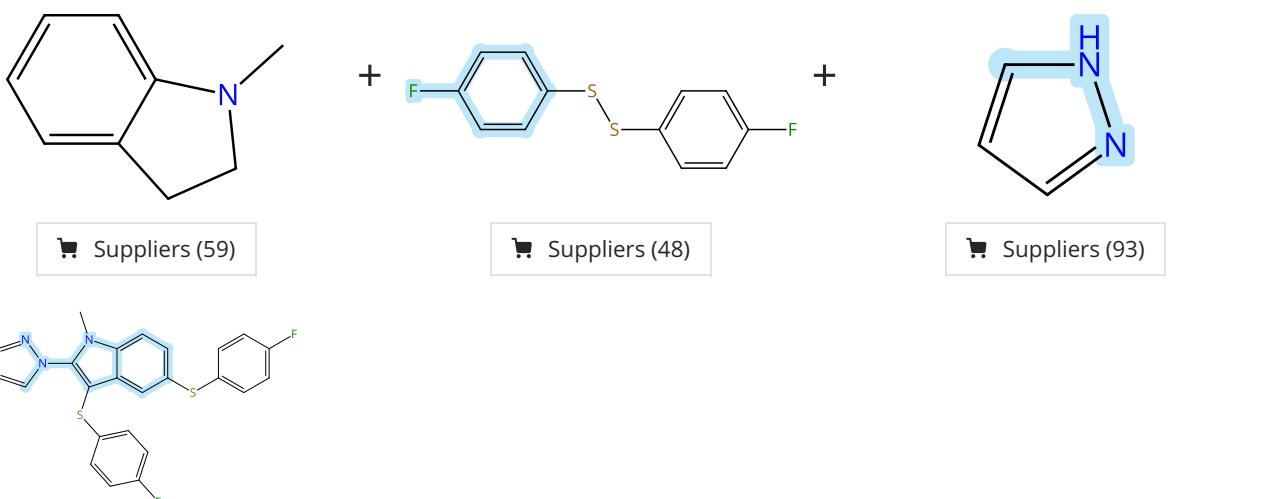
By: Mhaske, Krishna; et al

Chemistry - A European Journal (2024), 30(10), e202302929.

Experimental Protocols

Scheme 126 (1 Reaction)

Steps: 1 Yield: 64%



31-614-CAS-39675974

Steps: 1 Yield: 64%

**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

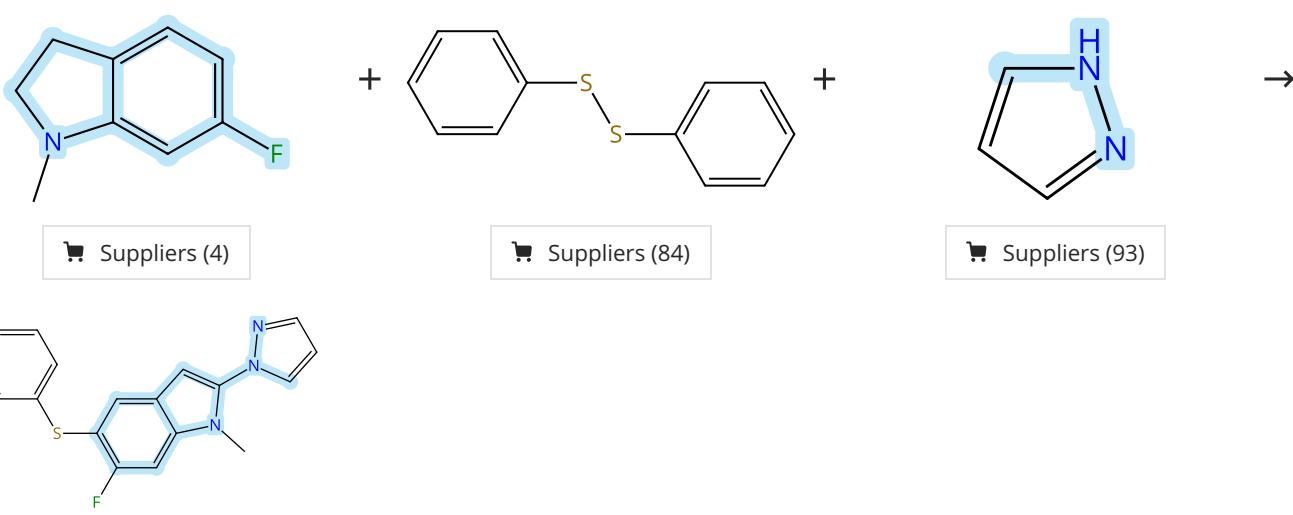
By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

Experimental Protocols

Scheme 127 (1 Reaction)

Steps: 1 Yield: 64%



31-614-CAS-39026150

Steps: 1 Yield: 64%

**Iodine-dependent oxidative regioselective aminochalcogenation of indolines**

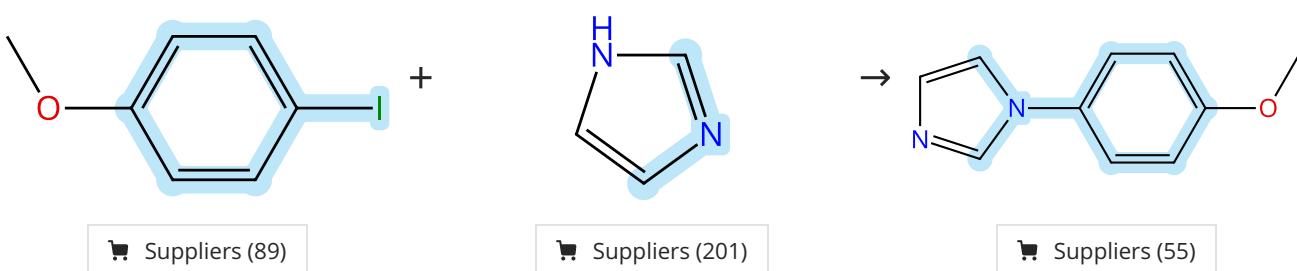
By: Zhang, Xiaoxiang; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(9), 1152-1155.

Experimental Protocols

Scheme 128 (2 Reactions)

Steps: 1 Yield: 54-63%

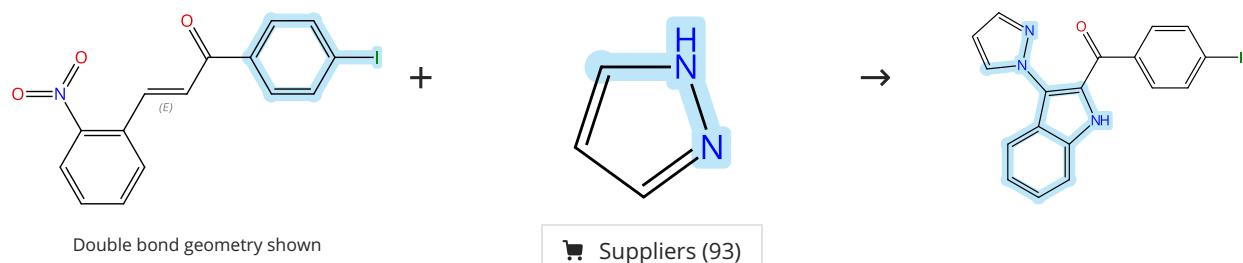


31-614-CAS-38947749	Steps: 1 Yield: 63%	Room-Temperature CuI-Catalyzed N-Arylation of Cyclopro pylamine By: Hong, Peng; et al Journal of Organic Chemistry (2024), 89(1), 57-67.
1.1 Reagents: Potassium carbonate Catalysts: Cuprous iodide, <i>N</i> -9- <i>H</i> -Carbazol-9-yl-1- <i>H</i> -pyrrole-2- carboxamide Solvents: Diethylene glycol; 5 d, rt	Experimental Protocols	

31-614-CAS-40989814	Steps: 1 Yield: 54%	Internal 2D networking of silver bromide with a bidentate N- heterocyclic carbene ligand enables the formation of an inherently heterogeneous reusable catalyst for multicomponent A <sup>3</sup> coupling By: Nallappan, Sundaravelu; et al New Journal of Chemistry (2024), 48(28), 12800-12806.
1.1 Reagents: Sodium hydride Solvents: Dimethyl sulfoxide; 30 min, 25 °C	1.2 Catalysts: Cuprous iodide; 24 h, 120 °C	Experimental Protocols

Scheme 129 (1 Reaction)



31-614-CAS-42761451

Steps: 1 Yield: 63%

- 1.1 Reagents: 1,8-Diazabicyclo[5.4.0]undec-7-ene  
Catalysts: Cuprous iodide  
Solvents: Tetrahydrofuran; 16 h, 1 atm, 100 °C

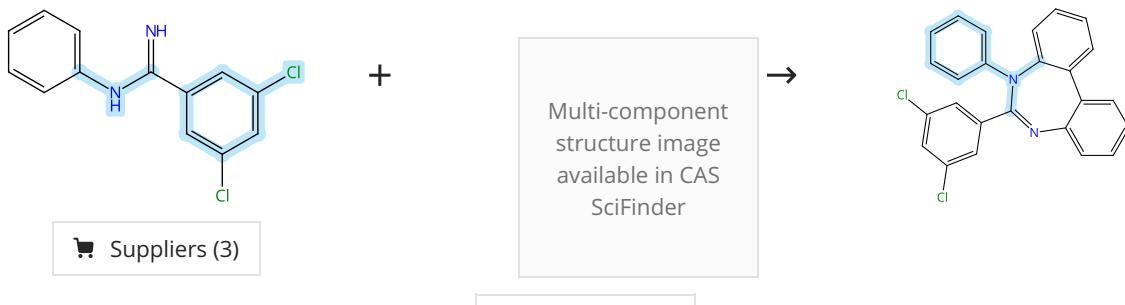
Experimental Protocols

## Copper-Catalyzed Cascade Cyclization of 2-Nitrochalcones with NH-Heterocycles

By: Ly, Thang M.; et al

Journal of Organic Chemistry (2024), 89(23), 17346-17354.

Scheme 130 (1 Reaction)



31-614-CAS-42088094

Steps: 1 Yield: 63%

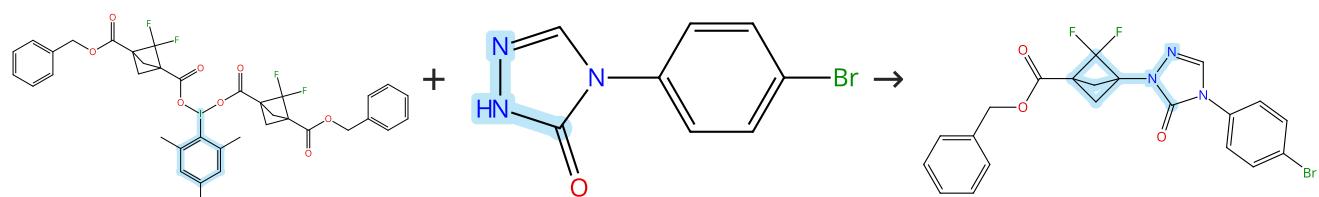
- 1.1 Reagents: Potassium acetate  
Catalysts: Cuprous iodide  
Solvents: Acetonitrile; 6 h, 80 °C

Experimental Protocols

Practical Copper-Catalyzed Double N - Arylation of Cyclic Diaryliodoniums: Synthesis of 5*H* -Dibenzo[ d, f ][ 1,3 ] Diazepine, and Benzo[ c ] Cinnoline Derivatives

By: Zhang, Lianji; et al

Journal of Heterocyclic Chemistry (2024), 61(12), 1942-1953.

**Scheme 131 (1 Reaction)**

Suppliers (63)

**31-614-CAS-39519430**

Steps: 1 Yield: 63%

**1.1 Catalysts:** Copper(II) acetylacetone, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,N^1'$ ]bis[2-(2-pyridinyl- $\kappa M$ )phenyl- $\kappa C$ ]-, (*OC*-6-33)-, hexafluorophosphate(1-) (1:1)  
**Solvents:** Acetonitrile; 2.5 h, 24 °C

**Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-F<sub>2</sub>) Building Blocks**

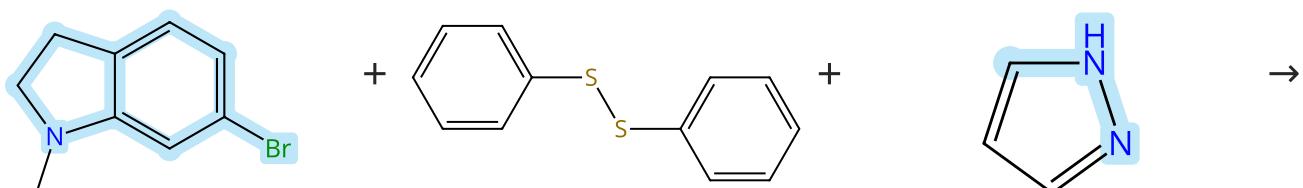
By: Ma, Xiaoshen; et al

Organic Letters (2024), 26(9), 1947-1951.

Experimental Protocols

**Scheme 132 (1 Reaction)**

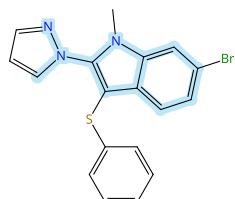
Steps: 1 Yield: 63%



Suppliers (31)

Suppliers (84)

Suppliers (93)

**31-614-CAS-39026176**

Steps: 1 Yield: 63%

**1.1 Reagents:** 2,3-Dichloro-5,6-dicyano-1,4-benzoquinone, Oxygen  
**Catalysts:** Iodine, Cuprous iodide  
**Solvents:** 1,4-Dioxane; 12 h, 80 °C

**Iodine-dependent oxidative regioselective aminochalcogenation of indolines**

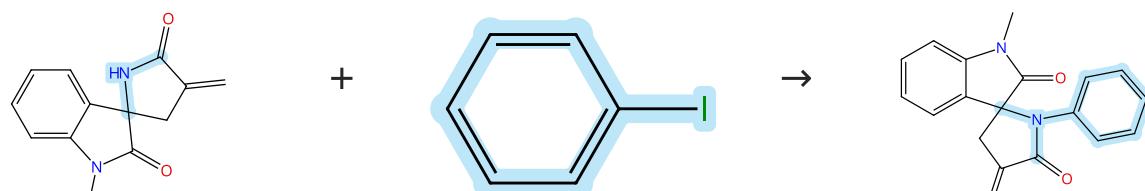
By: Zhang, Xiaoxiang; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(9), 1152-1155.

Experimental Protocols

**Scheme 133 (1 Reaction)**

Steps: 1 Yield: 63%



Suppliers (93)

31-614-CAS-41868500

Steps: 1 Yield: 63%

1.1 Reagents: Tripotassium phosphate

Catalysts: *N,N'*-Dimethylethylenediamine, Cuprous iodide

Solvents: Toluene; 20 h, 100 °C

Experimental Protocols

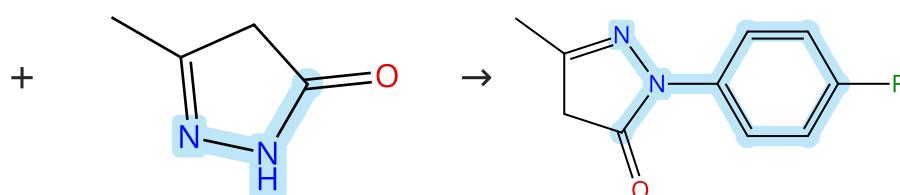
**Domino Reactions Enable Zn-Mediated Direct Synthesis of Spiro-Fused 2-Oxindole- $\alpha$ -Methylene- $\gamma$ -Butyrolactones/Lactams from Isatin Derivatives and 2-(Bromomethyl)acrylates**

By: Mukthapuram, Prathap Reddy; et al

Molecules (2024), 29(15), 3612.

**Scheme 134 (1 Reaction)**

Multi-component structure image available in CAS SciFinder



Suppliers (76)

Suppliers (52)

Suppliers (53)

31-614-CAS-38961887

Steps: 1 Yield: 63%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide

Solvents: Toluene; 3 h, 110 °C

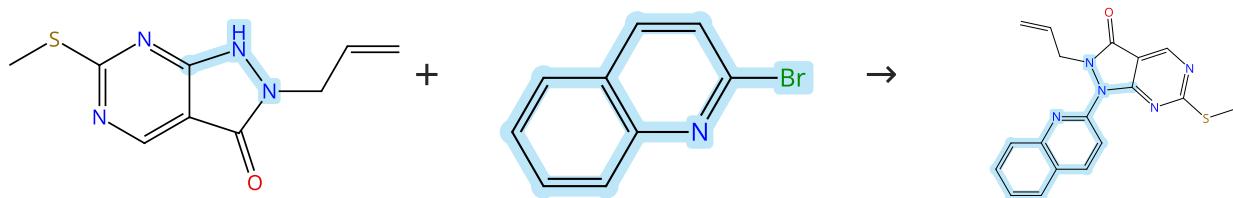
1.2 Reagents: Water

Experimental Protocols

**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

**Scheme 135 (1 Reaction)**

Suppliers (60)

Suppliers (81)

31-614-CAS-40870495

Steps: 1 Yield: 63%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, (1*S*,2*S*)-*N*<sup>1</sup>,*N*<sup>2</sup>-Dimethyl-1,2-cyclohexanediamine

Solvents: 1,4-Dioxane; overnight, 95 °C

Experimental Protocols

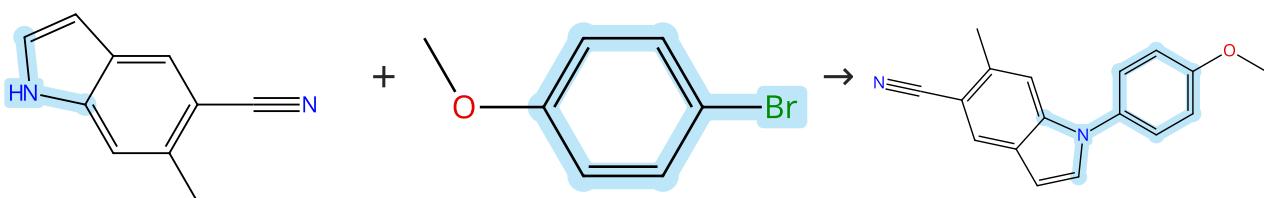
**Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy**

By: Wang, Yong; et al

Journal of Medicinal Chemistry (2024), 67(12), 9927-9949.

**Scheme 136 (1 Reaction)**

Steps: 1 Yield: 63%



Suppliers (57)

Suppliers (69)

31-614-CAS-43493332

Steps: 1 Yield: 63%

Discovery of Novel 5-Cyano-3-phenylindole-Based LSD1/HDA C Dual Inhibitors for Colorectal Cancer Treatment

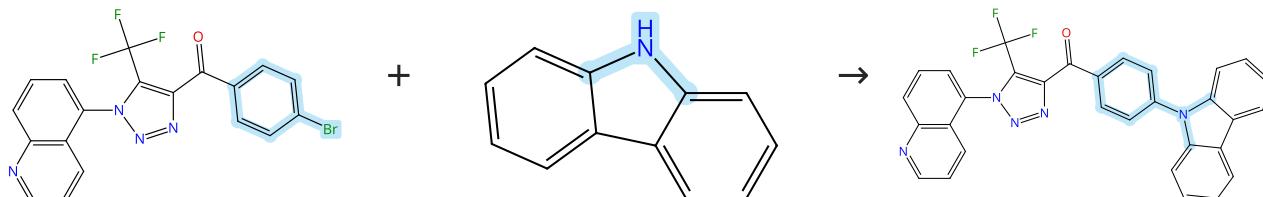
By: Zhu, Hui-Juan; et al

Journal of Medicinal Chemistry (2024), 67(22), 20172-20202.

Experimental Protocols

Scheme 137 (1 Reaction)

Steps: 1 Yield: 63%



Suppliers (109)

31-614-CAS-40506667

Steps: 1 Yield: 63%

Effects of Electron-Withdrawing Strengths of the Substituents on the Properties of 4-(Carbazolyl-R-benzoyl)-5-CF<sub>3</sub>-1H-1,2,3-triazole Derivatives as Blue Emitters for Doping-Free Electroluminescence Devices

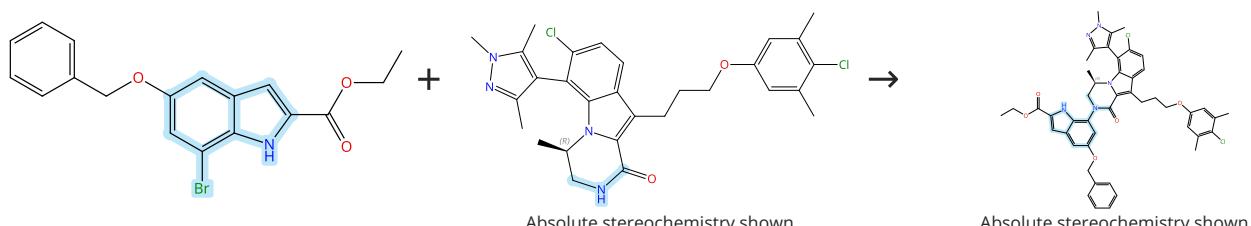
By: Stanitska, Mariia; et al

ACS Omega (2024), 9(12), 14613-14626.

Experimental Protocols

Scheme 138 (1 Reaction)

Steps: 1 Yield: 63%



Supplier (1)

31-614-CAS-42896051

Steps: 1 Yield: 63%

Discovery of a Myeloid Cell Leukemia 1 (Mcl-1) Inhibitor That Demonstrates Potent In Vivo Activities in Mouse Models of Hematological and Solid Tumors

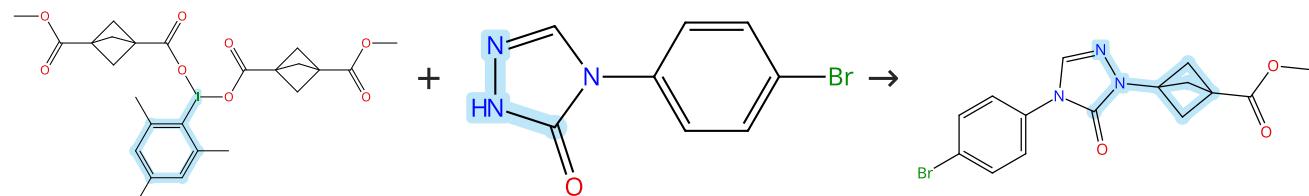
By: Tarr, James C.; et al

Journal of Medicinal Chemistry (2024), 67(16), 14370-14393.

Experimental Protocols

Scheme 139 (1 Reaction)

Steps: 1 Yield: 63%



Suppliers (4)

Suppliers (63)

31-614-CAS-39519413

Steps: 1 Yield: 63%

**1.1 Catalysts:** Copper(II) acetylacetone, Iridium(1+), [4,4'-bis(1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,\kappa N^1$ ]bis[2-(2-pyridinyl- $\kappa M$ )phenyl- $\kappa C$ ]-, (*OC*-6-33)-, hexafluorophosphate(1-) (1:1)  
**Solvents:** Acetonitrile; 2.5 h, 24 °C

Experimental Protocols

**Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-F<sub>2</sub>) Building Blocks**

By: Ma, Xiaoshen; et al

Organic Letters (2024), 26(9), 1947-1951.

Scheme 140 (1 Reaction)



Suppliers (87)

Suppliers (83)

Suppliers (48)

31-614-CAS-40748946

Steps: 1 Yield: 63%

**1.1 Reagents:** *S*-Methylisothiourea hemisulfate, Sodium hydroxide  
**Solvents:** 1,4-Dioxane, Water; 6 h, 30 °C

**1.2 Reagents:** *m*-Chloroperbenzoic acid  
**Solvents:** 1,4-Dioxane; 0 °C; 1 h, 30 °C

**1.3 Reagents:** Tripotassium phosphate  
**Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphat ricyclo[3.3.1.1<sup>3,7</sup>]decane, 1-(4-sulfonylbutyl)-, inner salt; 18 h, 50 °C

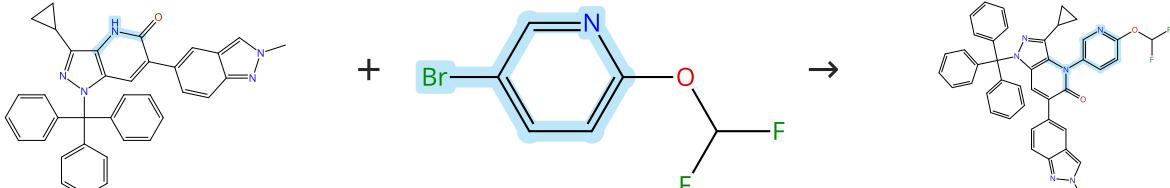
Experimental Protocols

**Ambient Temperature Metal-Free Thiomethylation of Chloroheteroarenes and Chloropurines**

By: Patel, Manisha A.; et al

Chemistry - An Asian Journal (2024), 19(11), e202400114.

Scheme 141 (1 Reaction)



Suppliers (67)

31-614-CAS-39638274

Steps: 1 Yield: 63%

**1.1 Reagents:** Potassium carbonate, *N,N*-Dimethylglycine  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 12 h, 120 °C

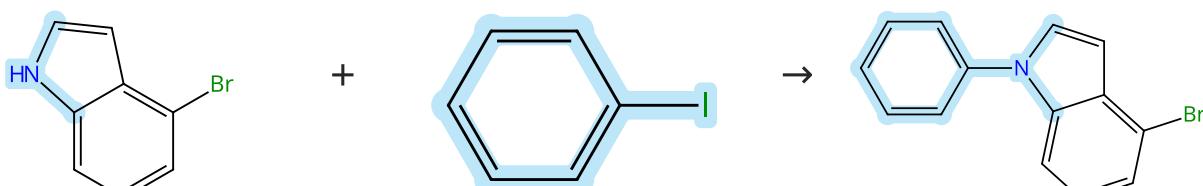
Experimental Protocols

**Development of a Series of Pyrrolopyridone MAT2A Inhibitors**

By: Atkinson, Stephen J.; et al

Journal of Medicinal Chemistry (2024), 67(6), 4541-4559.

Scheme 142 (1 Reaction)



Suppliers (93)

Suppliers (93)

Suppliers (2)

31-614-CAS-39109823

Steps: 1 Yield: 63%

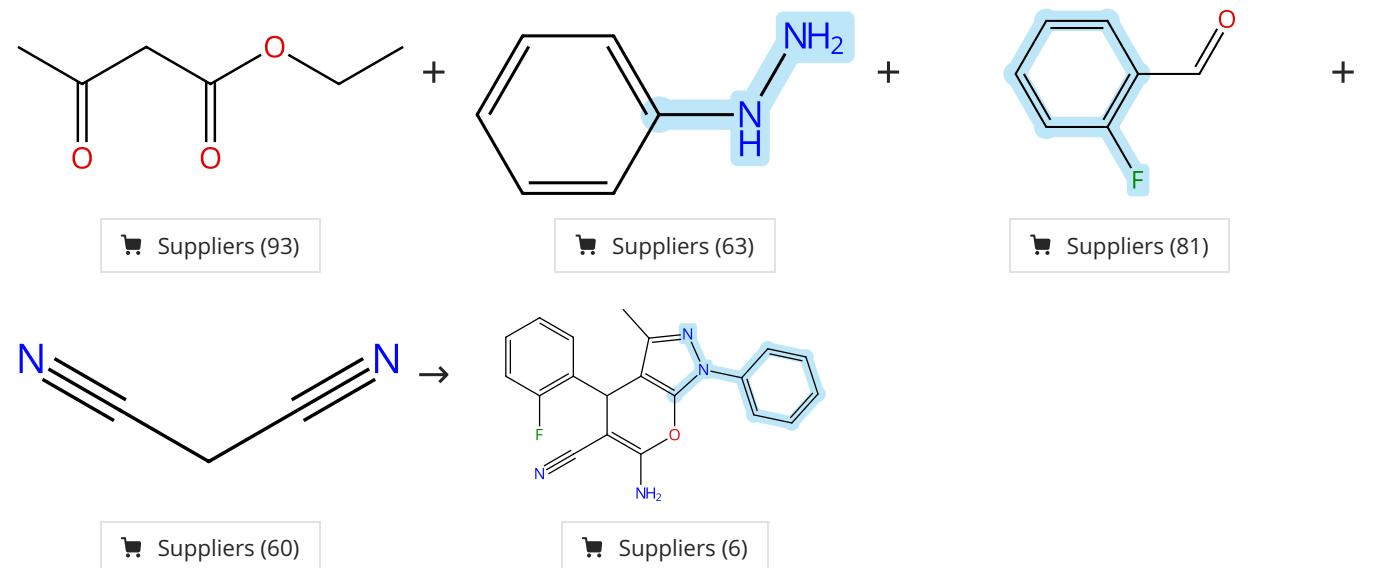
- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** L-Proline, Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 10 min, 100 °C
- 1.2 20 min, 100 °C; 24 h, 100 °C
- Experimental Protocols

**In Continuo Pd-Catalysed Cross Coupling Reactions of Organolithium Reagents with Aryl Bromides Under Aerobic Conditions**

By: Brucoli, Jacopo; et al

European Journal of Organic Chemistry (2024), 27(6), e202301289.

Scheme 143 (1 Reaction)



31-614-CAS-35485664

Steps: 1 Yield: 63%

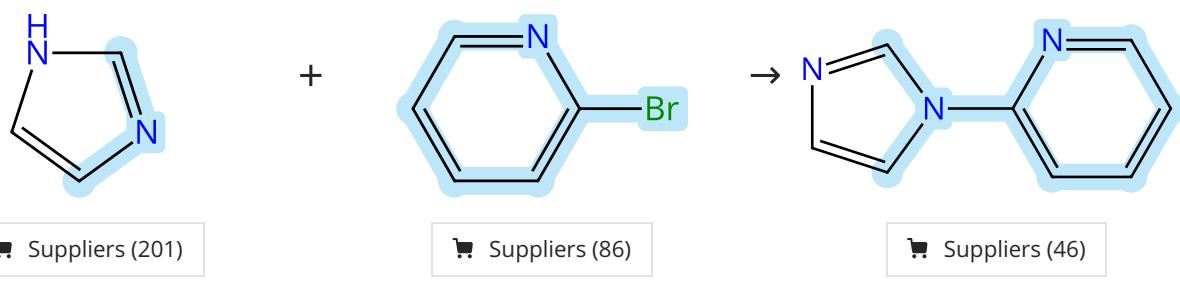
- 1.1 **Catalysts:** Cupric acetate (complex with bis (2-thienylm ethylene)melamine supported on silica-coate...), 1,3,5-Triazine-2,4,6-triamine,  $N^2,N^4$ -bis(2-thienylmethylen)- $N^6$ -[3-(triethoxysilyl)propyl]- (copper(II) complex, supported on silica-coated Fe<sub>3</sub>O<sub>4</sub>); 10 min, rt
- 1.2 8 min, 65 °C
- Experimental Protocols

**Fabrication of Copper(II)-coated Magnetic Core-shell Nanoparticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives**

By: Soleimani, Maryam; et al

Polycyclic Aromatic Compounds (2024), 44(1), 90-116.

Scheme 144 (1 Reaction)



31-614-CAS-43179346

Steps: 1 Yield: 63%

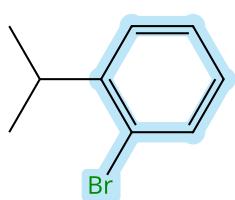
- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** L-Proline, Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 72 h, 60 °C
- Experimental Protocols

**Experimental and theoretical studies of pH-responsive iridium(III) complexes of azole and N-heterocyclic carbene ligands**

By: Hashemzadeh, Tahmineh; et al

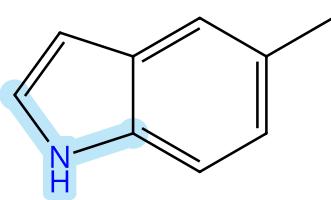
Dalton Transactions (2024), 53(19), 8478-8493.

Scheme 145 (1 Reaction)



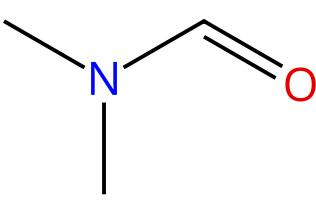
Suppliers (72)

+



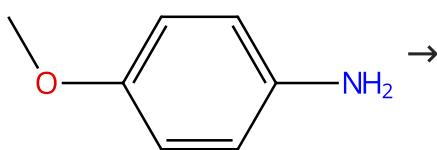
Suppliers (86)

+

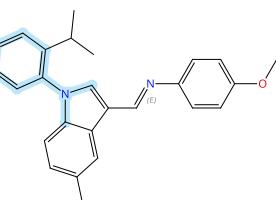


Steps: 1 Yield: 62%

+



Suppliers (78)



Double bond geometry shown

31-614-CAS-40180110

Steps: 1 Yield: 62%

- 1.1 Reagents: Tripotassium phosphate  
Catalysts: 1,2-Diaminocyclohexane, Cuprous iodide  
Solvents: *p*-Xylene; 24 h, 160 °C; 160 °C → rt
- 1.2 Reagents: Ammonium chloride  
Solvents: Water; rt
- 1.3 Reagents: Phosphorus oxychloride  
Solvents: Dimethylformamide; 0 °C; 2 h, rt
- 1.4 Reagents: Sodium hydroxide  
Solvents: Water; pH 8 - 9, 0 °C
- 1.5 Solvents: Toluene; 16 h, reflux

Iron-catalyzed stereoselective C-H alkylation for simultaneous construction of C-N axial and C-central chirality

By: Zhang, Zi-Jing; et al

Nature Communications (2024), 15(1), 3503.

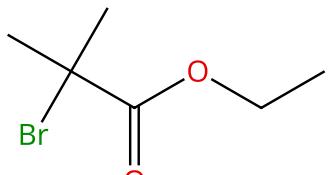
#### Experimental Protocols

Scheme 146 (1 Reaction)



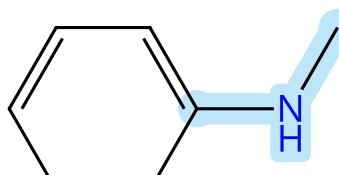
Suppliers (87)

+



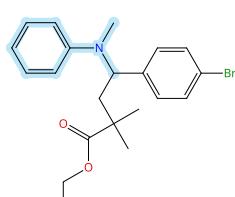
Suppliers (60)

+



Steps: 1 Yield: 62%

→



Suppliers (69)

31-614-CAS-41720177

Steps: 1 Yield: 62%

- 1.1 Reagents: Tripotassium phosphate  
Catalysts: 2,2'-Bipyridine, Copper(II) triflate  
Solvents: 1,2-Dichloroethane; 24 h, 80 °C

Cu-Catalyzed Three-Component Alkene Carboamination: Mechanistic Insights and Rational Design to Overcome Limitations

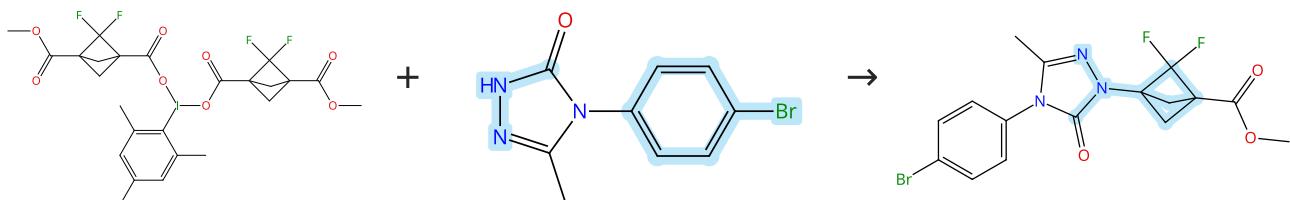
By: Ho, Tam D.; et al

Journal of the American Chemical Society (2024), 146(36), 25176-25189.

#### Experimental Protocols

**Scheme 147 (1 Reaction)**

Steps: 1 Yield: 62%



Suppliers (36)

31-614-CAS-39519418

Steps: 1 Yield: 62%

**1.1 Reagents:** Copper(II) acetylacetone, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,N^1']\text{bis}[2-(2-pyridinyl-}\kappa M\text{ phenyl-} \kappa C]-, (\text{OC-6-33})\text{-, hexafluorophosphate(1-)} (1:1)$

**Catalysts:** Copper(II) acetylacetone, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,N^1']\text{bis}[2-(2-pyridinyl-}\kappa M\text{ phenyl-} \kappa C]-, (\text{OC-6-33})\text{-, hexafluorophosphate(1-)} (1:1)$

**Solvents:** Acetonitrile; 2.5 h, 24 °C

**Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-F2) Building Blocks**

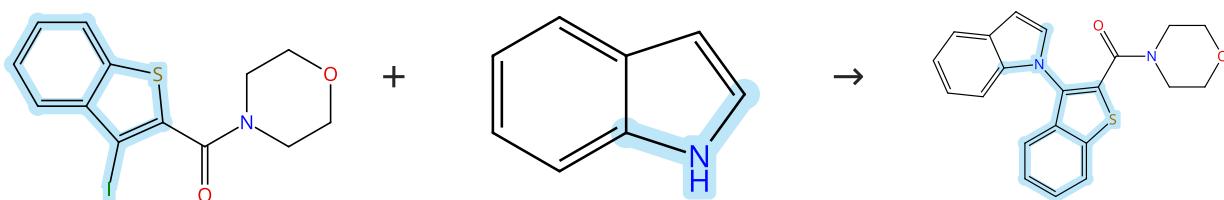
By: Ma, Xiaoshen; et al

Organic Letters (2024), 26(9), 1947-1951.

Experimental Protocols

**Scheme 148 (1 Reaction)**

Steps: 1 Yield: 62%



Supplier (1)

Suppliers (109)

31-614-CAS-40981142

Steps: 1 Yield: 62%

**1.1 Reagents:** Cesium carbonate  
**Catalysts:** Copper oxide (Cu<sub>2</sub>O)  
**Solvents:** Dimethyl sulfoxide; 32 h, 120 °C

**Deprotonative Metallation of Benzofuran and Benzothiophene Derivatives for the Formation of Tetracyclic and Pentacyclic Heteroaromatic Compounds**

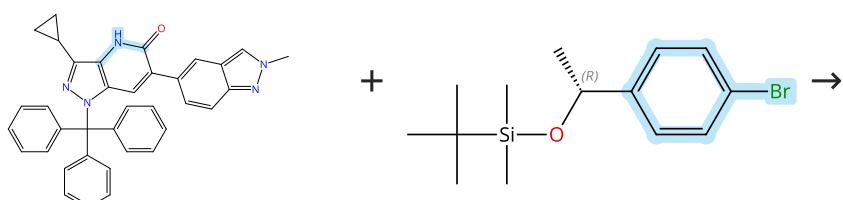
By: Elmira, Loubna; et al

European Journal of Organic Chemistry (2024), 27(27), e202400374.

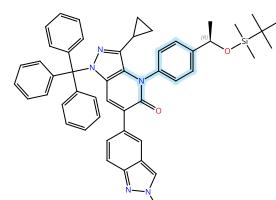
Experimental Protocols

**Scheme 149 (1 Reaction)**

Steps: 1 Yield: 62%



Absolute stereochemistry shown



Absolute stereochemistry shown

Supplier (1)

31-614-CAS-39638254

Steps: 1 Yield: 62%

**Development of a Series of Pyrrolopyridone MAT2A Inhibitors**

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; rt, 16 h, 140 °C

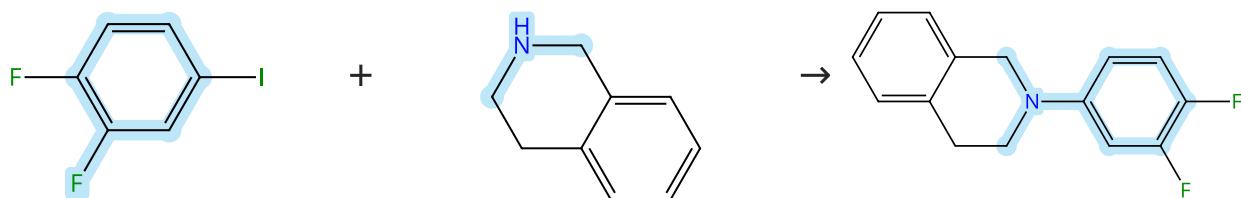
By: Atkinson, Stephen J.; et al

Journal of Medicinal Chemistry (2024), 67(6), 4541-4559.

Experimental Protocols

Scheme 150 (1 Reaction)

Steps: 1 Yield: 62%



Suppliers (78)

Suppliers (92)

Suppliers (3)

31-614-CAS-39281162

Steps: 1 Yield: 62%

1.1 Reagents: Ethylene glycol, Tripotassium phosphate  
 Catalysts: Cuprous iodide  
 Solvents: Isopropanol; 24 h, 90 °C

Experimental Protocols

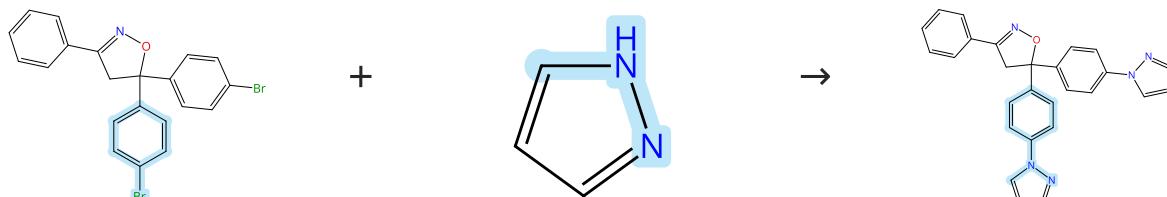
CBr<sub>4</sub> as a Mild Oxidant-Enabled Oxidation of a sp<sup>3</sup> C-H Bond:  
 A Facile Synthesis of the Persistent Iminium Salts of Tetrahyd-roisoquinolines

By: Chen, Yuqin; et al

Chemistry - A European Journal (2024), 30(14), e202303952.

Scheme 151 (1 Reaction)

Steps: 1 Yield: 62%



Suppliers (93)

31-614-CAS-39439118

Steps: 1 Yield: 62%

1.1 Reagents: Cesium carbonate  
 Catalysts: Cuprous iodide  
 Solvents: Dimethylformamide; 24 h, 140 °C

Experimental Protocols

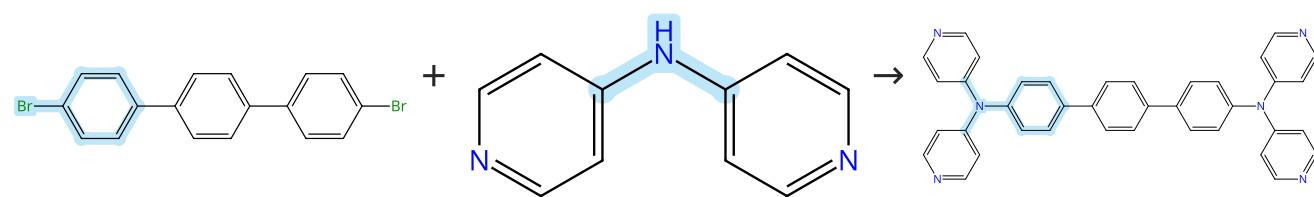
K<sub>2</sub>CO<sub>3</sub>-Mediated Intramolecular Oxa-Michael Cyclization of α,  
 β-Unsaturated Ketoximes: Synthesis of Densely Arene-Substi-tuted 2-Isoazolines Bearing a Quaternary Center

By: Jat, Ram Singh; et al

Synthesis (2024), 56(10), 1593-1600.

Scheme 152 (1 Reaction)

Steps: 1 Yield: 62%



Suppliers (68)

Suppliers (61)

Suppliers (9)

31-614-CAS-39857772

Steps: 1 Yield: 62%

1.1 Reagents: Potassium carbonate  
 Catalysts: Copper, 18-Crown-6  
 Solvents: Diphenyl ether; 5 d, 160 °C

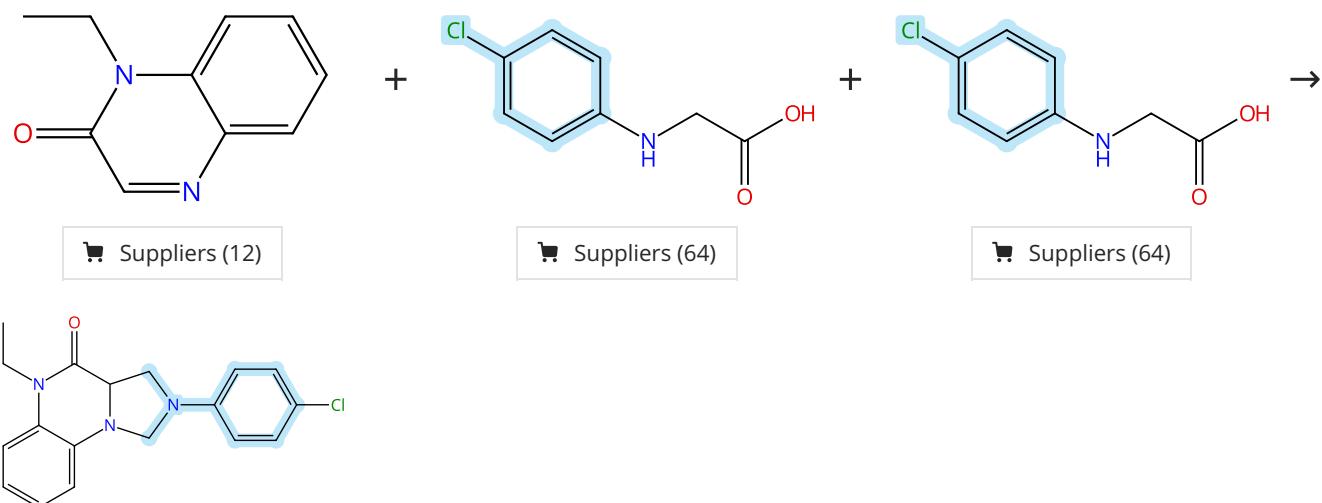
Experimental Protocols

Self-Assembly of an [M<sub>8</sub>L<sub>24</sub>]<sup>16+</sup> Intertwined Cube and a Giant [M<sub>12</sub>L<sub>16</sub>]<sup>24+</sup> Orthobicupola

By: Baby Sainaba, Arppitha; et al

Angewandte Chemie, International Edition (2024), 63(1),  
 e202315572.

Scheme 153 (1 Reaction)



31-614-CAS-39663054

Steps: 1 Yield: 62%

1.1 Reagents: Oxygen

Catalysts: Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride

Solvents: 1,2-Dichloroethane; 12 h, rt

Experimental Protocols

**Visible-light-promoted tandem decarboxylation coupling/cyclization of N-aryl glycines with quinoxalinones: easy access to tetrahydroimidazo[1,5-a]quinoxalin-4(5H)-ones**

By: Tang, Zhen; et al

Green Synthesis and Catalysis (2024), 5(1), 31-34.

Scheme 154 (1 Reaction)

Steps: 1 Yield: 62%



31-614-CAS-41757066

Steps: 1 Yield: 62%

1.1 Reagents: Sodium methoxide

Catalysts: Copper bromide (Cu Br), 1,2-Benzenediamine,  $N^1$ -[3',5'-bis(1,1-dimethylethyl)[1,1'-biphenyl]-2-yl]- $N^2$ -[2-[3,5-bis(1,1-dimethylethyl)phenyl]-1-naphthalenyl]-

Solvents: Dimethyl sulfoxide; 5 min

1.2 24 h, 55 °C

Experimental Protocols

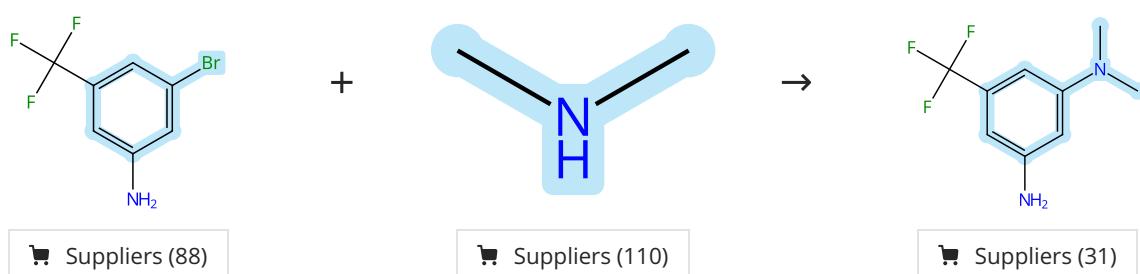
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

Journal of the American Chemical Society (2024), 146(38), 25949-25955.

Scheme 155 (1 Reaction)

Steps: 1 Yield: 62%



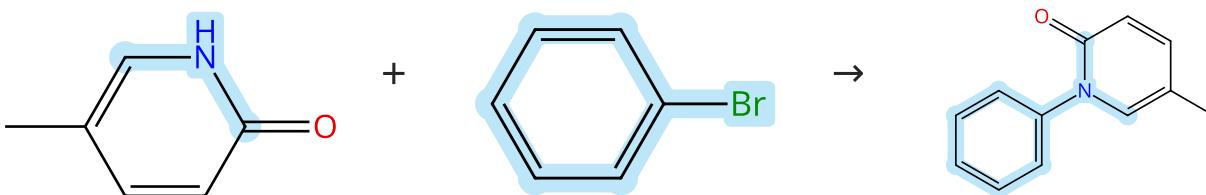
31-614-CAS-41986246

Steps: 1 Yield: 62%

**Development of Tailless Homologue Receptor (TLX) Agonist Chemical Tools**

By: Hank, Emily C.; et al

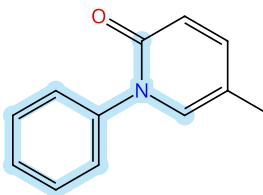
Journal of Medicinal Chemistry (2024), 67(18), 16598-16611.

**Scheme 156 (1 Reaction)**

Suppliers (85)

Suppliers (71)

Steps: 1 Yield: 62%



Suppliers (106)

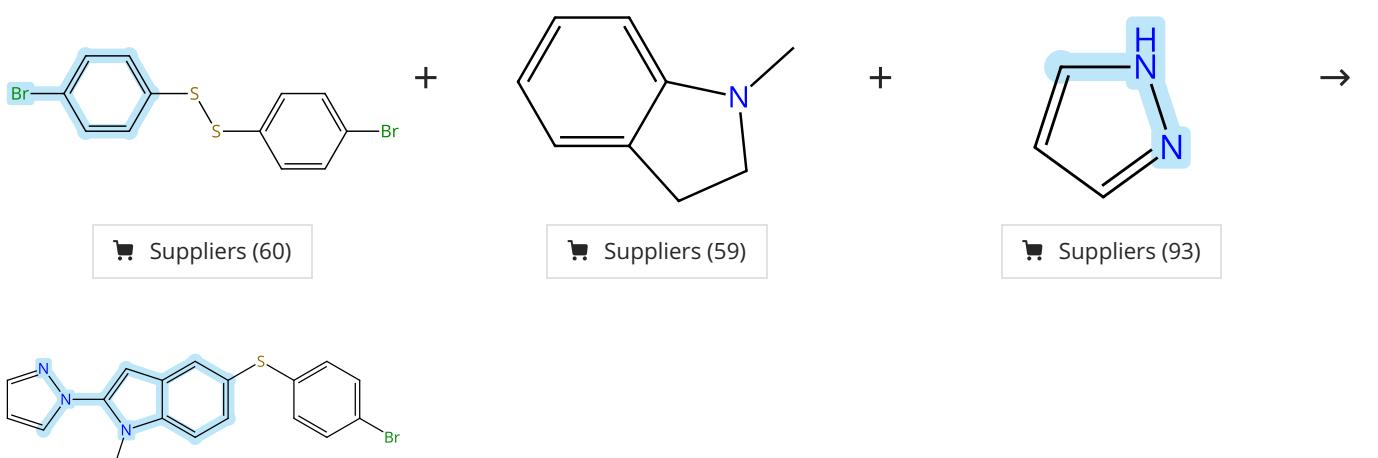
31-614-CAS-43193387

Steps: 1 Yield: 62%

**Direct Synthesis of Benzhydryl-Functionalized 3,4-Dihydropyridin-2-ones from 2-Pyridones and Their Use in the Formation of Bridged  $\delta$ -Lactams**

By: Myk, Zofia M.; et al

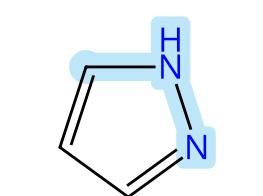
Molecules (2024), 29(22), 5274.

**Scheme 157 (1 Reaction)**

Suppliers (60)

Suppliers (59)

Steps: 1 Yield: 62%



Suppliers (93)

31-614-CAS-39026171

Steps: 1 Yield: 62%

**Iodine-dependent oxidative regioselective aminochalcogenation of indolines**

By: Zhang, Xiaoxiang; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(9), 1152-1155.

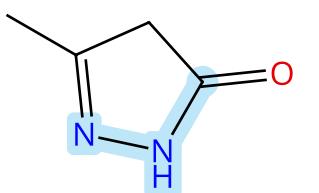
**Experimental Protocols**

## Scheme 158 (1 Reaction)

Steps: 1 Yield: 61%

Multi-component  
structure image  
available in CAS  
SciFinder

+



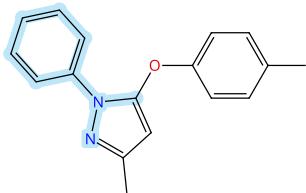
+

Multi-component  
structure image  
available in CAS  
SciFinder

→

Suppliers (76)

Suppliers (36)



31-614-CAS-38961924

Steps: 1 Yield: 61%

- 1.1 **Reagents:** Sodium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 3 h, 110 °C
- 1.2 3 h, 110 °C
- 1.3 **Reagents:** Water

Experimental Protocols

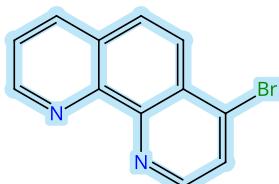
Sequential regioselective arylation of pyrazolones with diaryliodonium salts

By: Liao, Wenbo; et al

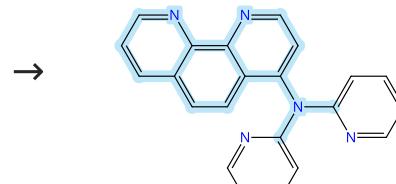
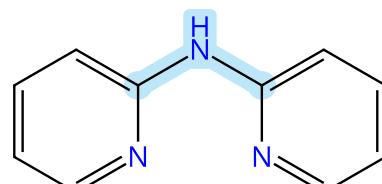
Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

## Scheme 159 (1 Reaction)

Steps: 1 Yield: 61%



+



Suppliers (51)

Suppliers (73)

31-614-CAS-41312614

Steps: 1 Yield: 61%

- 1.1 **Reagents:** Cesium carbonate  
**Catalysts:** Copper sulfate; 24 h, 210 °C

Experimental Protocols

Hybrid Catalysts in Photoredox Arylation of Sodium Arylsulfonates

By: Ionova, Violetta A.; et al

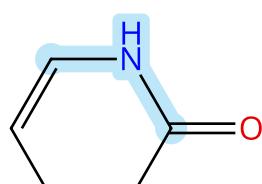
Advanced Synthesis &amp; Catalysis (2024), 366(14), 3173-3180.

## Scheme 160 (1 Reaction)

Steps: 1 Yield: 61%



+



Suppliers (11)

Suppliers (128)

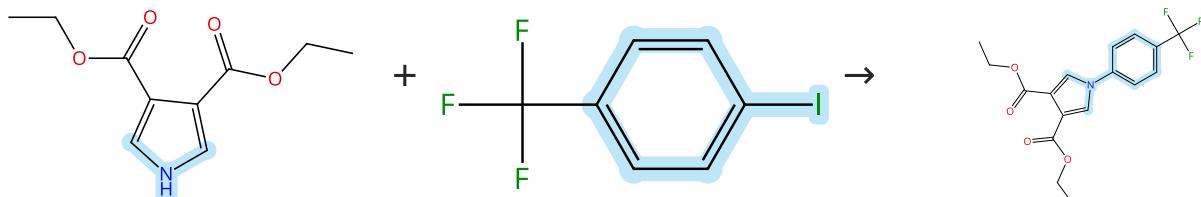
31-614-CAS-42413572

Steps: 1 Yield: 61%

**Nickel Catalyzed Aryl-Aryl Bridging C-N Bond Activation of 2-Pyridylpyridones and 6-Purinylpyridones**

By: Prusty, Namrata; et al

Organic Letters (2024), 26(44), 9466-9470.

**Scheme 161** (1 Reaction)

Suppliers (48)

Suppliers (85)

Steps: 1 Yield: 61%

31-614-CAS-40260519

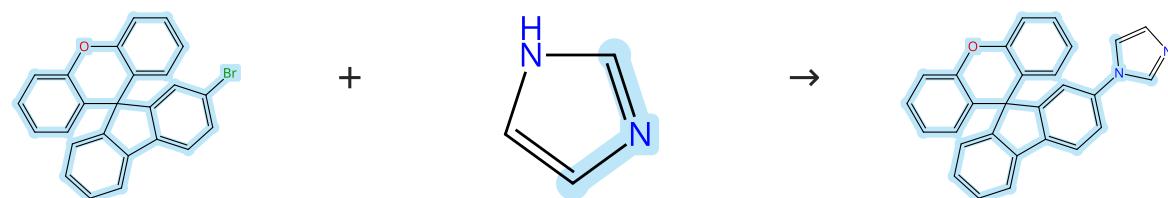
Steps: 1 Yield: 61%

**One-Pot Rh(III)-Catalyzed Twofold C-H Activation/Oxidative Annulation of N-Arylpurroles with Alkynes to Fluorescent Ullazines**

By: Otero-Riesgo, Sergio; et al

Advanced Synthesis &amp; Catalysis (2024), 366(10), 2312-2323.

Experimental Protocols

**Scheme 162** (1 Reaction)

Suppliers (57)

Suppliers (201)

Steps: 1 Yield: 61%

31-614-CAS-41764011

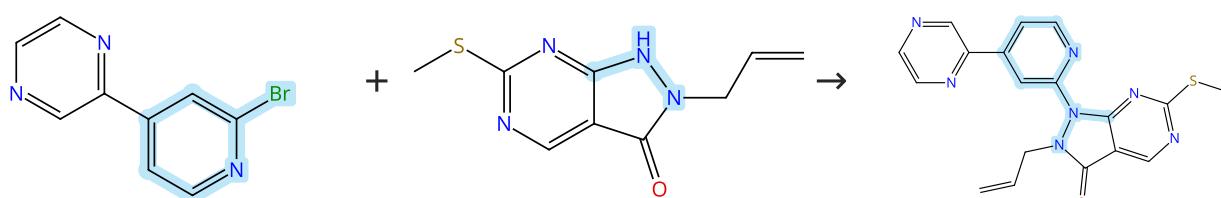
Steps: 1 Yield: 61%

**Phosphorescent Platinum(II) Complexes with a Spiro-fused Xanthene Unit: Synthesis and Photophysical Properties**

By: Riesebeck, Tim; et al

Chemistry - A European Journal (2024), 30(22), e202304263.

Experimental Protocols

**Scheme 163** (1 Reaction)

Suppliers (60)

Steps: 1 Yield: 61%

31-614-CAS-40870557

Steps: 1 Yield: 61%

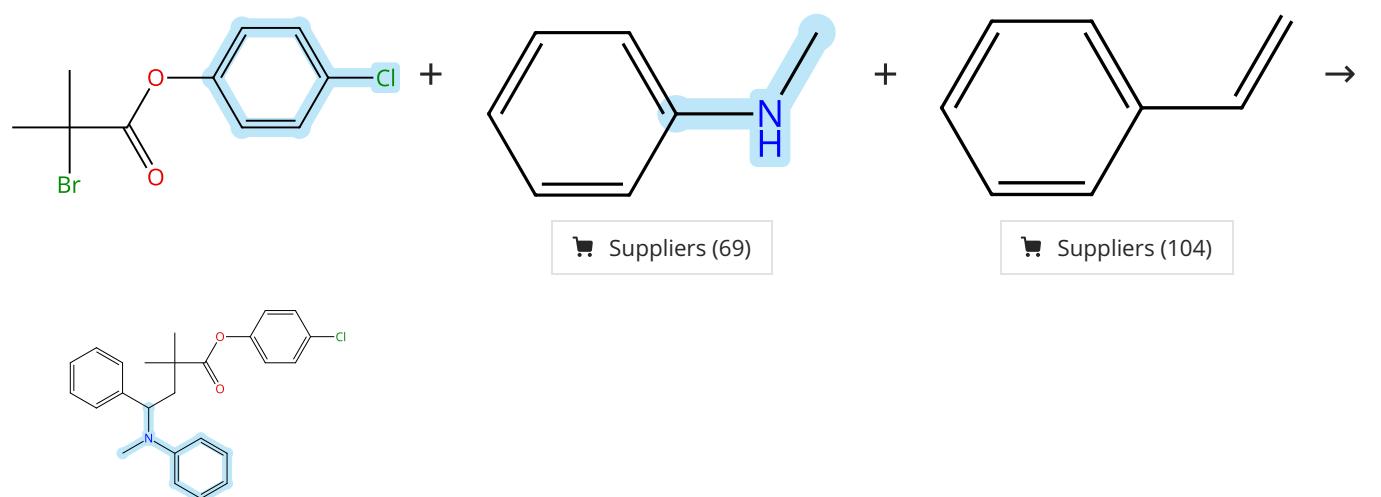
- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide, (1*S*,2*S*)-*N*<sup>1</sup>,*N*<sup>2</sup>-Dimethyl-1,2-cyclohexanediamine  
**Solvents:** 1,4-Dioxane; overnight, 95 °C

Experimental Protocols

Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy

By: Wang, Yong; et al

Journal of Medicinal Chemistry (2024), 67(12), 9927-9949.

**Scheme 164 (1 Reaction)**

31-614-CAS-41720185

Steps: 1 Yield: 61%

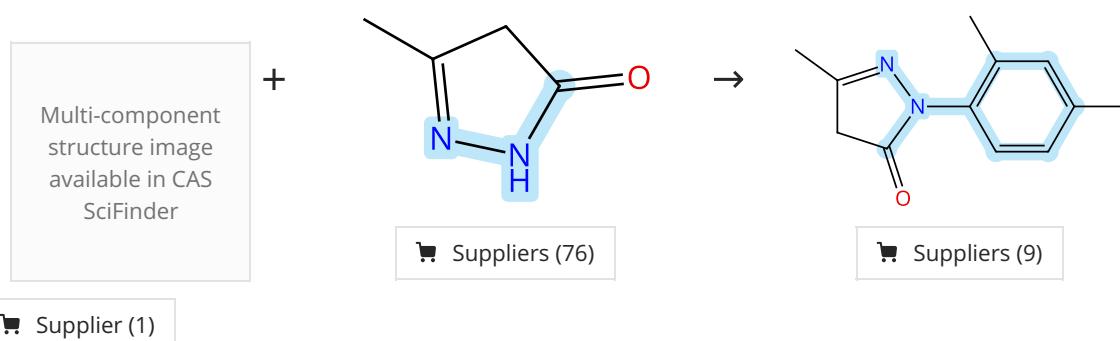
- 1.1 **Reagents:** Tripotassium phosphate  
**Catalysts:** 2,2'-Bipyridine, Copper(II) triflate  
**Solvents:** 1,2-Dichloroethane; 24 h, 80 °C

Experimental Protocols

Cu-Catalyzed Three-Component Alkene Carboamination: Mechanistic Insights and Rational Design to Overcome Limitations

By: Ho, Tam D.; et al

Journal of the American Chemical Society (2024), 146(36), 25176-25189.

**Scheme 165 (1 Reaction)**

31-614-CAS-38961890

Steps: 1 Yield: 61%

- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 3 h, 110 °C
- 1.2 **Reagents:** Water

Experimental Protocols

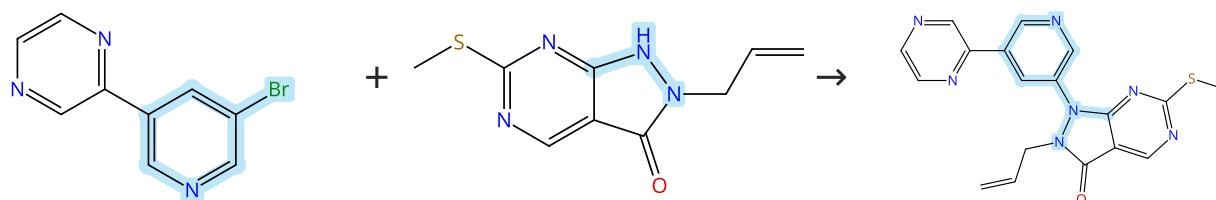
Sequential regioselective arylation of pyrazolones with diaryliodonium salts

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

Scheme 166 (1 Reaction)

Steps: 1 Yield: 61%



Suppliers (10)

Suppliers (60)

31-614-CAS-40870556

Steps: 1 Yield: 61%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide, (1*S*,2*S*)-*N*<sup>1</sup>,*N*<sup>2</sup>-Dimethyl-1,2-cyclohexanediamine

Solvents: 1,4-Dioxane; overnight, 95 °C

Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy

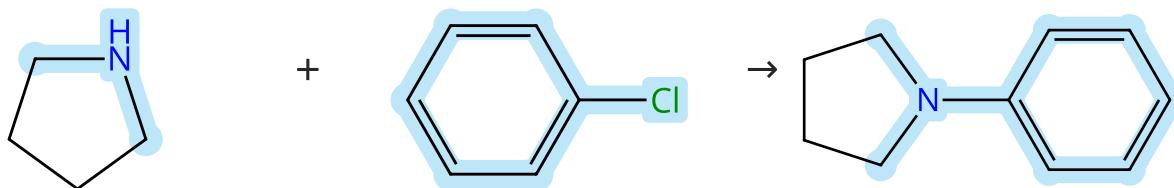
By: Wang, Yong; et al

Journal of Medicinal Chemistry (2024), 67(12), 9927-9949.

Experimental Protocols

Scheme 167 (1 Reaction)

Steps: 1 Yield: 61%



Suppliers (74)

Suppliers (119)

Suppliers (68)

31-614-CAS-42284200

Steps: 1 Yield: 61%

Copper(II)-Catalyzed Amination of Aryl Chlorides in Aqueous Ammonia

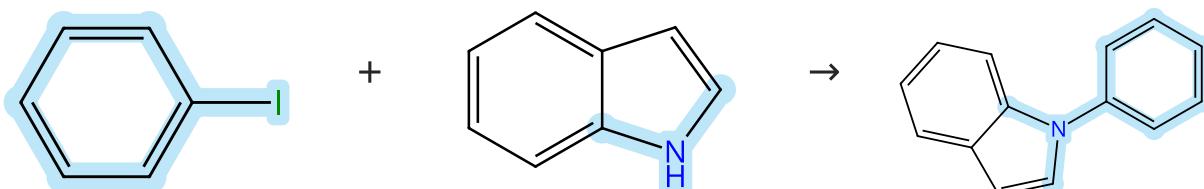
By: Mello, Lucas S.; et al

Chemistry - A European Journal (2024), 30(68), e202403023.

Experimental Protocols

Scheme 168 (2 Reactions)

Steps: 1 Yield: 51-60%



Suppliers (93)

Suppliers (109)

Suppliers (68)

31-614-CAS-38587751

Steps: 1 Yield: 60%

Organocatalytic Friedel-Crafts arylation of aldehydes with indoles utilizing N-heterocyclic iod(az)onium salts as halogen-bonding catalysts

By: Galathri, Eirini M.; et al

Green Chemistry (2024), 26(2), 825-831.

Experimental Protocols

31-614-CAS-35838767

Steps: 1 Yield: 51%

**1.1 Reagents:** Potassium hydroxide  
**Catalysts:** Copper oxide ( $\text{Cu}_2\text{O}$ ), Copper iron oxide ( $\text{CuFe}_2\text{O}_4$ ), Polyaniline  
**Solvents:** Dimethyl sulfoxide; 4 h, 100 °C

Experimental Protocols

Polyaniline-encapsulating  $\text{CuFe}_2\text{O}_4/\text{Cu}_2\text{O}$  composite: a simple, effective and reusable heterogeneous catalyst for ligand-free N-arylation of amines and nitrogen heterocycles

By: Ahrari, Vahide; et al

Inorganic and Nano-Metal Chemistry (2024), 54(12), 1211-1220.

## Scheme 169 (1 Reaction)



Suppliers (57)

Suppliers (93)

31-614-CAS-41356936

Steps: 1 Yield: 60%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide  
**Solvents:** Dimethylformamide; 20 min, rt  
  
**1.2** 10 min, rt; 18 h, rt → 160 °C  
  
**1.3 Reagents:** Water; cooled

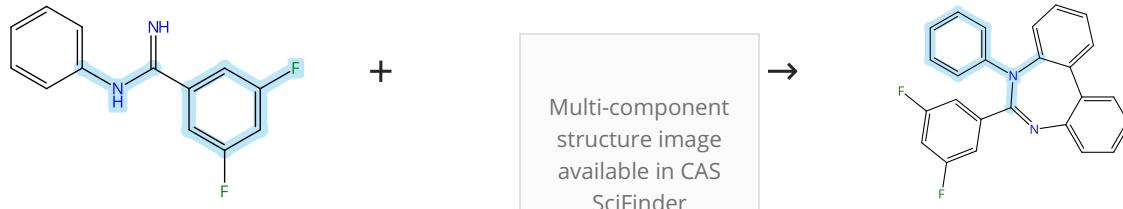
Experimental Protocols

A toolbox approach to revealing a series of naphthocarbazoles to showcase photocatalytic reductive syntheses

By: Das, Sharmila; et al

Chemical Science (2024), 15(33), 13466-13474.

## Scheme 170 (1 Reaction)



Multi-component structure image available in CAS SciFinder

Suppliers (30)

31-614-CAS-42088095

Steps: 1 Yield: 60%

**1.1 Reagents:** Potassium acetate  
**Catalysts:** Cuprous iodide  
**Solvents:** Acetonitrile; 6 h, 80 °C

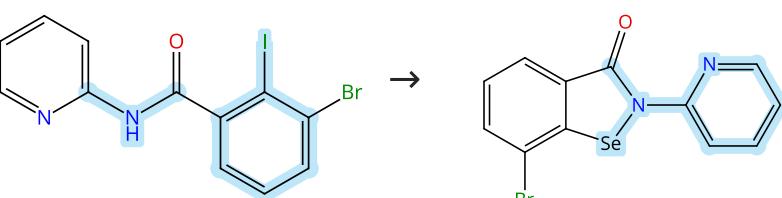
Experimental Protocols

Practical Copper-Catalyzed Double N-Arylation of Cyclic Diaryliodoniums: Synthesis of 5H-Dibenzo[ d, f ] [ 1,3 ] Diazepine, and Benzo[ c ] Cinnoline Derivatives

By: Zhang, Lianji; et al

Journal of Heterocyclic Chemistry (2024), 61(12), 1942-1953.

## Scheme 171 (1 Reaction)



31-614-CAS-40311279

Steps: 1 Yield: 60%

- 1.1 **Catalysts:** 1,10-Phenanthroline, Cuprous iodide  
**Solvents:** Dimethylformamide; 15 min, rt
- 1.2 **Reagents:** Potassium carbonate, Selenium; 8 h, 110 °C

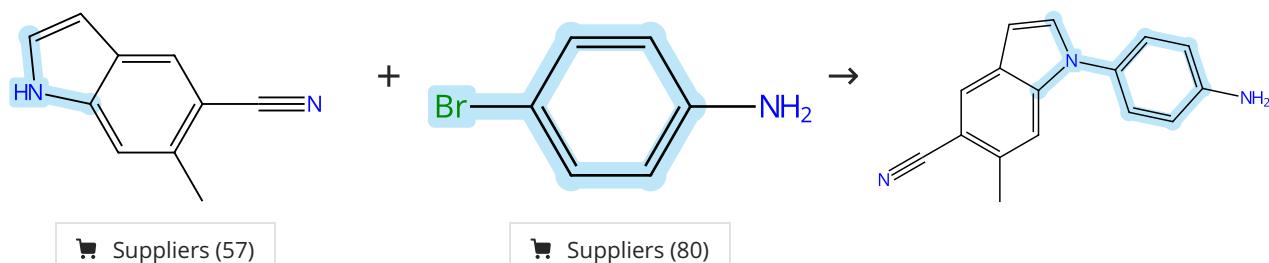
Experimental Protocols

Quantum chemistry calculation-aided discovery of potent small-molecule mimics of glutathione peroxidases for the treatment of cisplatin-induced hearing loss

By: Wang, Wentao; et al

European Journal of Medicinal Chemistry (2024), 271, 116404.

## Scheme 172 (1 Reaction)



31-614-CAS-43493331

Steps: 1 Yield: 60%

- 1.1 **Reagents:** Tetrabutylammonium fluoride  
**Catalysts:** 1,10-Phenanthroline, Copper oxide ( $\text{Cu}_2\text{O}$ )  
**Solvents:** Tetrahydrofuran; 12 h, rt  $\rightarrow$  150 °C

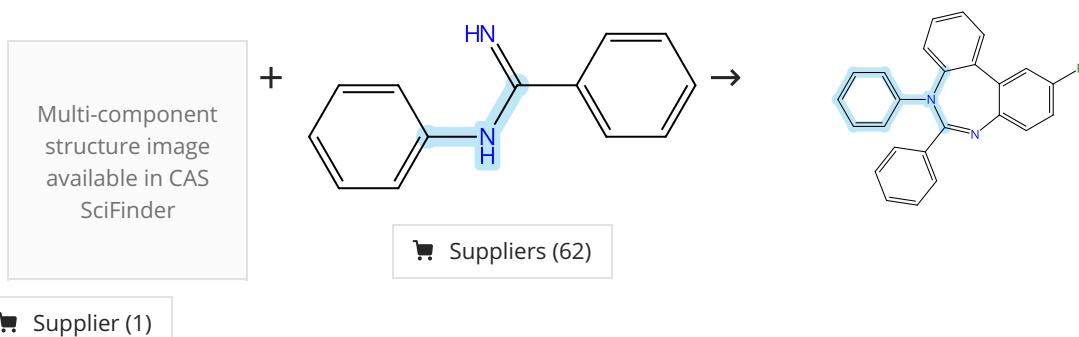
Experimental Protocols

Discovery of Novel 5-Cyano-3-phenylindole-Based LSD1/HDA C Dual Inhibitors for Colorectal Cancer Treatment

By: Zhu, Hui-Juan; et al

Journal of Medicinal Chemistry (2024), 67(22), 20172-20202.

## Scheme 173 (1 Reaction)



31-614-CAS-42088106

Steps: 1 Yield: 60%

- 1.1 **Reagents:** Potassium acetate  
**Catalysts:** Cuprous iodide  
**Solvents:** Acetonitrile; 6 h, 80 °C

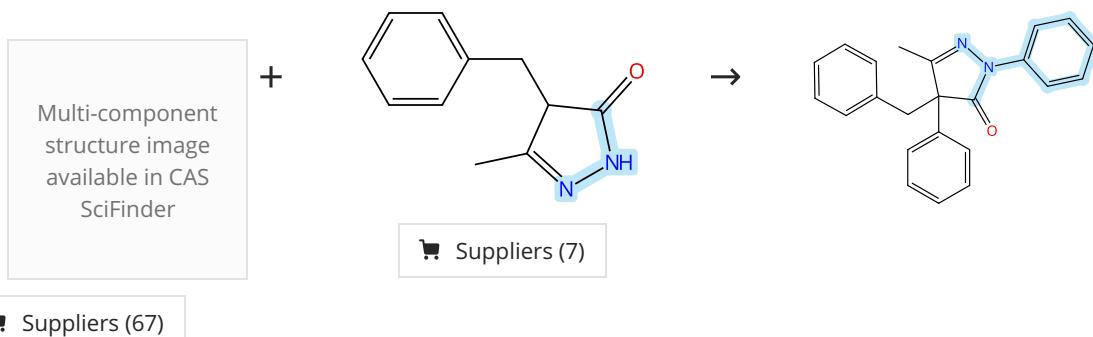
Experimental Protocols

Practical Copper-Catalyzed Double N-Arylation of Cyclic Diaryliodoniums: Synthesis of 5H-Dibenzo[ d, f ][ 1,3 ] Diazepine, and Benzo[ c ] Cinnoline Derivatives

By: Zhang, Lianji; et al

Journal of Heterocyclic Chemistry (2024), 61(12), 1942-1953.

## Scheme 174 (1 Reaction)



31-614-CAS-38961925

Steps: 1 Yield: 60%

**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

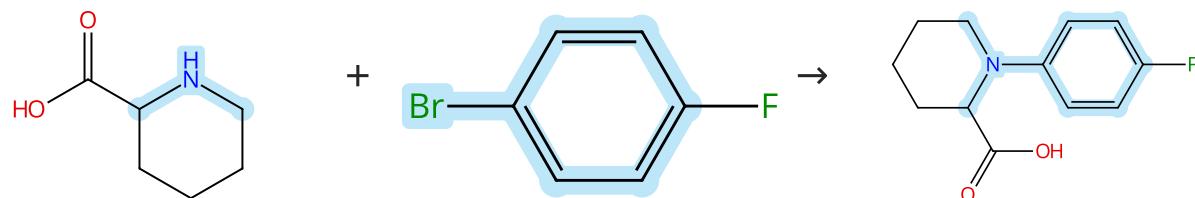
1.1 Reagents: Cesium carbonate

Catalysts: Cuprous iodide

Solvents: Toluene; 6 h, 110 °C

1.2 Reagents: Water

Experimental Protocols

**Scheme 175 (1 Reaction)**

Suppliers (113)

Suppliers (88)

Suppliers (28)

31-614-CAS-40985549

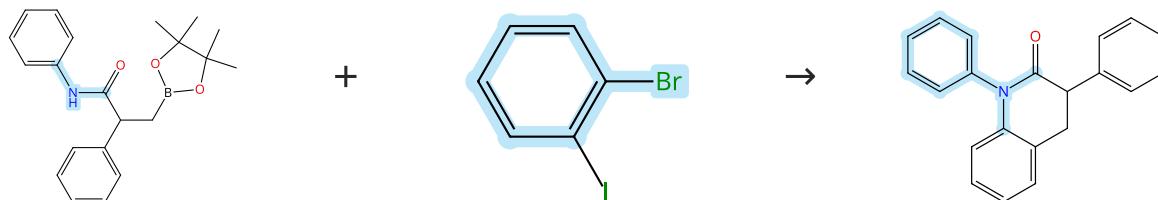
Steps: 1 Yield: 60%

**Mechanistic Investigation, Wavelength-Dependent Reactivity, and Expanded Reactivity of N-Aryl Azacycle Photomediated Ring Contractions**

By: Kim, Sojung F.; et al

Journal of the American Chemical Society (2024), 146(8), 5580-5596.

Experimental Protocols

**Scheme 176 (1 Reaction)**

Suppliers (95)

31-614-CAS-40567973

Steps: 1 Yield: 60%

**Cu (II)-Catalyzed Hydroboration Reactions of 1,1-Disubstituted α,β-Unsaturated Ketones, Esters and Amides in Pure Water**

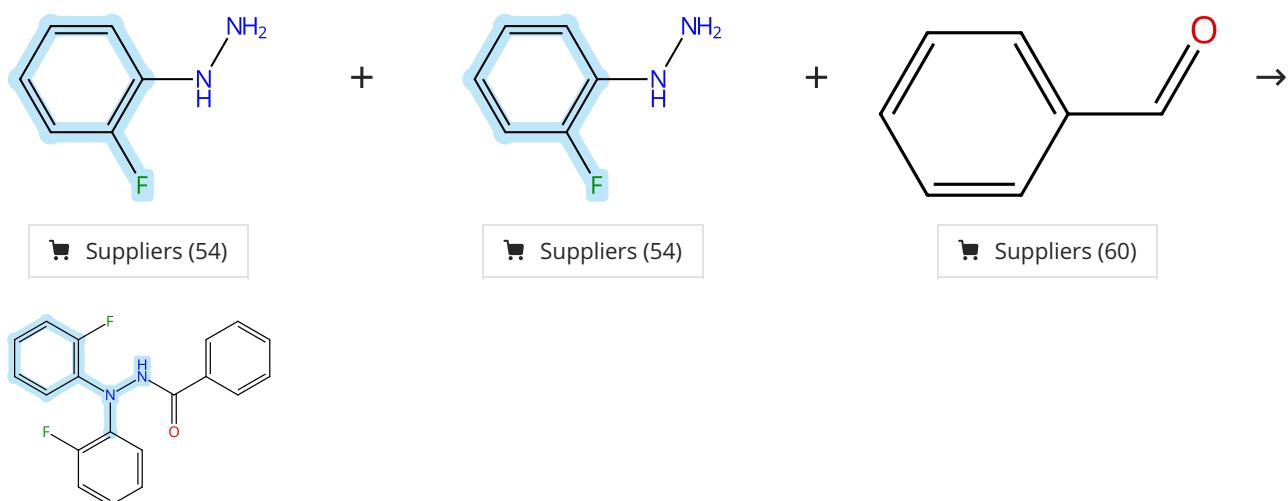
By: Zhao, Xue; et al

Journal of Organic Chemistry (2024), 89(12), 8334-8341.

Experimental Protocols

Scheme 177 (1 Reaction)

Steps: 1 Yield: 60%



31-614-CAS-39391320

Steps: 1 Yield: 60%

1.1 Reagents: Dipotassium phosphate  
Catalysts: Copper(II) triflate  
Solvents: Acetonitrile; 12 h, 0 °C

Experimental Protocols

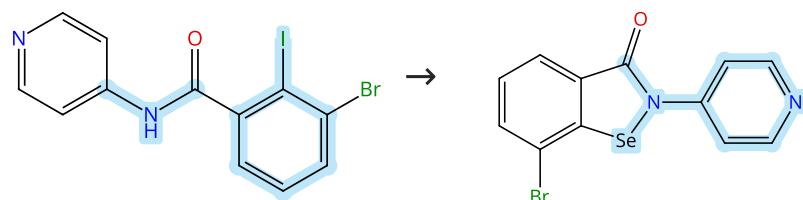
An aerobic copper-catalyzed multi-component reaction strategy for N,N'-diaryl acylhydrazine synthesis: reactions and mechanism

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

Scheme 178 (1 Reaction)

Steps: 1 Yield: 60%



31-614-CAS-40311280

Steps: 1 Yield: 60%

1.1 Catalysts: 1,10-Phenanthroline, Cuprous iodide  
Solvents: Dimethylformamide; 15 min, rt  
1.2 Reagents: Potassium carbonate, Selenium; 8 h, 110 °C

Experimental Protocols

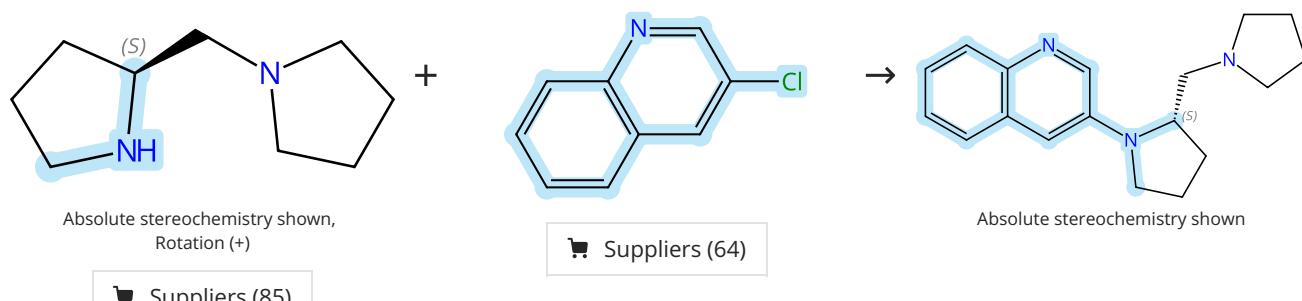
Quantum chemistry calculation-aided discovery of potent small-molecule mimics of glutathione peroxidases for the treatment of cisplatin-induced hearing loss

By: Wang, Wentao; et al

European Journal of Medicinal Chemistry (2024), 271, 116404.

Scheme 179 (1 Reaction)

Steps: 1 Yield: 60%



31-614-CAS-41756972

Steps: 1 Yield: 60%

1.1 Reagents: Sodium methoxide

Catalysts: Copper bromide (Cu Br), 1,2-Benzenediamine, *N*<sup>1</sup>-[3',5'-bis(1,1-dimethylethyl)[1,1'-biphenyl]-2-yl]-*N*<sup>2</sup>-[2-[3,5-bis(1,1-dimethylethyl)phenyl]-1-naphthalenyl]-

Solvents: Dimethyl sulfoxide; 5 min

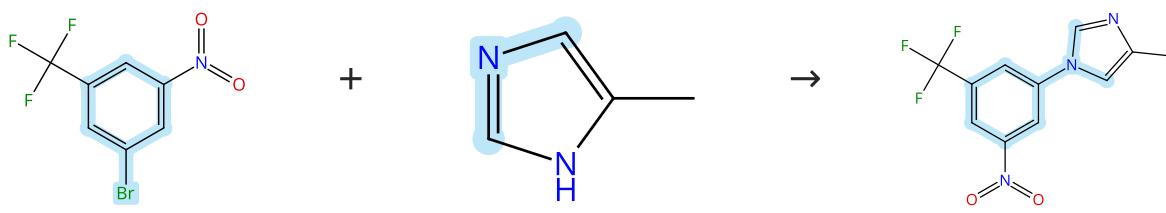
1.2 24 h, 55 °C

Experimental Protocols

**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

Journal of the American Chemical Society (2024), 146(38), 25949-25955.

**Scheme 180 (1 Reaction)**

Suppliers (75)

Suppliers (99)

Suppliers (38)

31-614-CAS-41843435

Steps: 1 Yield: 60%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide

Solvents: Dimethyl sulfoxide; 12 h, 120 °C

Experimental Protocols

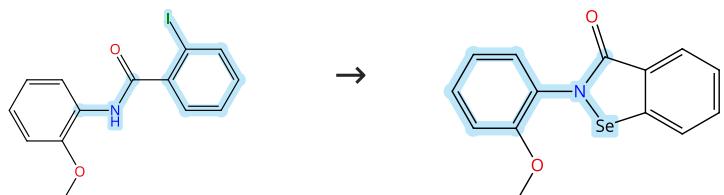
**Side Chain Investigation of Imidazopyridazine as a Hinge Binder for Targeting Actionable Mutations of RET Kinase**

By: Maturi, Arunkranthi; et al

ACS Medicinal Chemistry Letters (2024), 15(9), 1566-1574.

**Scheme 181 (1 Reaction)**

Steps: 1 Yield: 60%



Suppliers (17)

Supplier (1)

31-614-CAS-40311277

Steps: 1 Yield: 60%

1.1 Catalysts: 1,10-Phenanthroline, Cuprous iodide

Solvents: Dimethylformamide; 15 min, rt

1.2 Reagents: Potassium carbonate, Selenium; 8 h, 110 °C

Experimental Protocols

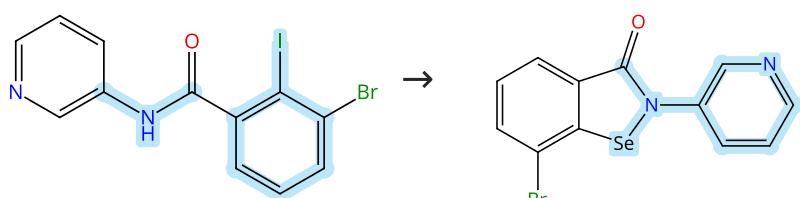
**Quantum chemistry calculation-aided discovery of potent small-molecule mimics of glutathione peroxidases for the treatment of cisplatin-induced hearing loss**

By: Wang, Wentao; et al

European Journal of Medicinal Chemistry (2024), 271, 116404.

**Scheme 182 (1 Reaction)**

Steps: 1 Yield: 60%



31-614-CAS-40311281

Steps: 1 Yield: 60%

- 1.1 **Catalysts:** 1,10-Phenanthroline, Cuprous iodide  
**Solvents:** Dimethylformamide; 15 min, rt
- 1.2 **Reagents:** Potassium carbonate, Selenium; 8 h, 110 °C

## Experimental Protocols

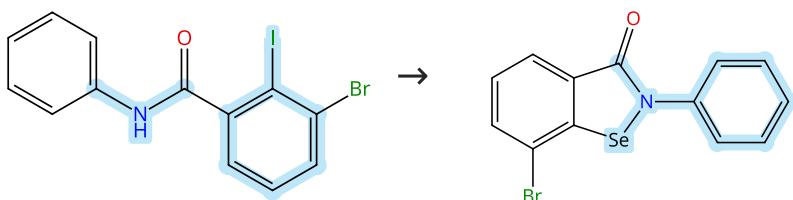
Quantum chemistry calculation-aided discovery of potent small-molecule mimics of glutathione peroxidases for the treatment of cisplatin-induced hearing loss

By: Wang, Wentao; et al

European Journal of Medicinal Chemistry (2024), 271, 116404.

## Scheme 183 (1 Reaction)

Steps: 1 Yield: 60%



31-614-CAS-40311276

Steps: 1 Yield: 60%

- 1.1 **Catalysts:** 1,10-Phenanthroline, Cuprous iodide  
**Solvents:** Dimethylformamide; 15 min, rt
- 1.2 **Reagents:** Potassium carbonate, Selenium; 8 h, 110 °C

## Experimental Protocols

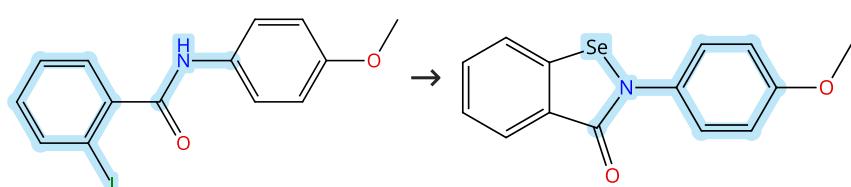
Quantum chemistry calculation-aided discovery of potent small-molecule mimics of glutathione peroxidases for the treatment of cisplatin-induced hearing loss

By: Wang, Wentao; et al

European Journal of Medicinal Chemistry (2024), 271, 116404.

## Scheme 184 (1 Reaction)

Steps: 1 Yield: 60%



Suppliers (14)

Suppliers (4)

31-614-CAS-40311278

Steps: 1 Yield: 60%

- 1.1 **Catalysts:** 1,10-Phenanthroline, Cuprous iodide  
**Solvents:** Dimethylformamide; 15 min, rt
- 1.2 **Reagents:** Potassium carbonate, Selenium; 8 h, 110 °C

## Experimental Protocols

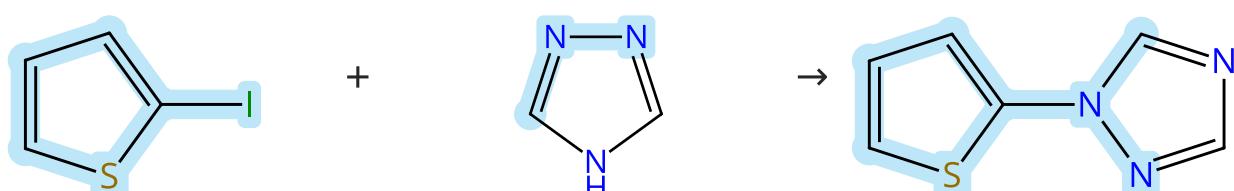
Quantum chemistry calculation-aided discovery of potent small-molecule mimics of glutathione peroxidases for the treatment of cisplatin-induced hearing loss

By: Wang, Wentao; et al

European Journal of Medicinal Chemistry (2024), 271, 116404.

## Scheme 185 (1 Reaction)

Steps: 1 Yield: 60%



Suppliers (80)

Suppliers (100)

Supplier (1)

31-614-CAS-40887399

Steps: 1 Yield: 60%

1.1 **Catalysts:** 1*H*-Benzotriazole, Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 5 min, rt1.2 **Reagents:** Potassium *tert*-butoxide; 24 h, 110 °C

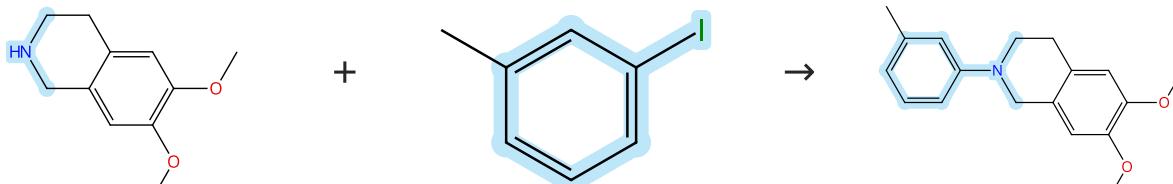
Experimental Protocols

**Orchestrated Octuple C-H Activation: A Bottom-Up Topology Engineering Approach toward Stimuli-Responsive Double-Heptagon-Embedded Wavy Polycyclic Heteroaromatics**

By: Rana, Samim Sohel; et al

Angewandte Chemie, International Edition (2024), 63(31), e202406514.

Scheme 186 (1 Reaction)



Suppliers (83)

Suppliers (74)

Steps: 1 Yield: 60%

31-614-CAS-41371849

Steps: 1 Yield: 60%

1.1 **Reagents:** Tripotassium phosphate  
**Catalysts:** Cuprous iodide**Solvents:** Isopropanol, Ethylene glycol; rt; overnight, 80 °C; 80 °C → rt1.2 **Reagents:** Water; rt

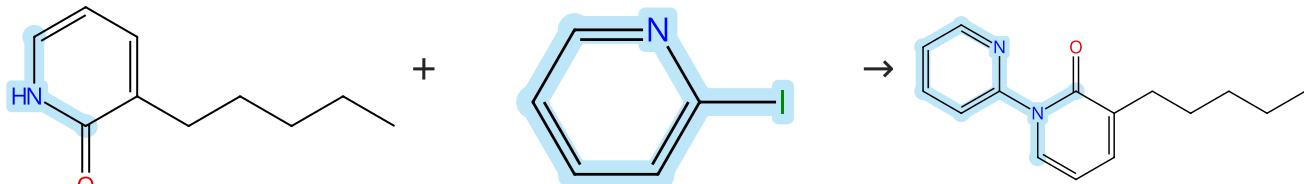
Experimental Protocols

**Cross Dehydrogenative Coupling of SF<sub>4</sub>-Alkyne with Tetrahyd roisoquinolines**

By: Yadav, Arvind Kumar; et al

Organic Letters (2024), 26(7), 1442-1446.

Scheme 187 (1 Reaction)



Suppliers (79)

Steps: 1 Yield: 60%

31-614-CAS-41547274

Steps: 1 Yield: 60%

1.1 **Reagents:** Potassium carbonate**Catalysts:** Cuprous iodide**Solvents:** Dimethylformamide; 24 h, 150 °C

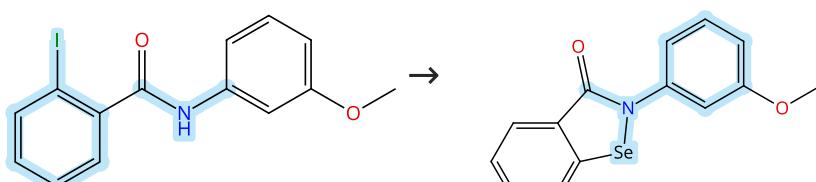
Experimental Protocols

**Streamlining the Synthesis of Pyridones through Oxidative Amination of Cyclopentenones**

By: Botlik, Bence B.; et al

Angewandte Chemie, International Edition (2024), 63(38), e202408230.

Scheme 188 (1 Reaction)



Suppliers (16)

Suppliers (2)

Steps: 1 Yield: 60%

31-614-CAS-40311275

Steps: 1 Yield: 60%

- 1.1 **Catalysts:** 1,10-Phenanthroline, Cuprous iodide  
**Solvents:** Dimethylformamide; 15 min, rt
- 1.2 **Reagents:** Potassium carbonate, Selenium; 8 h, 110 °C

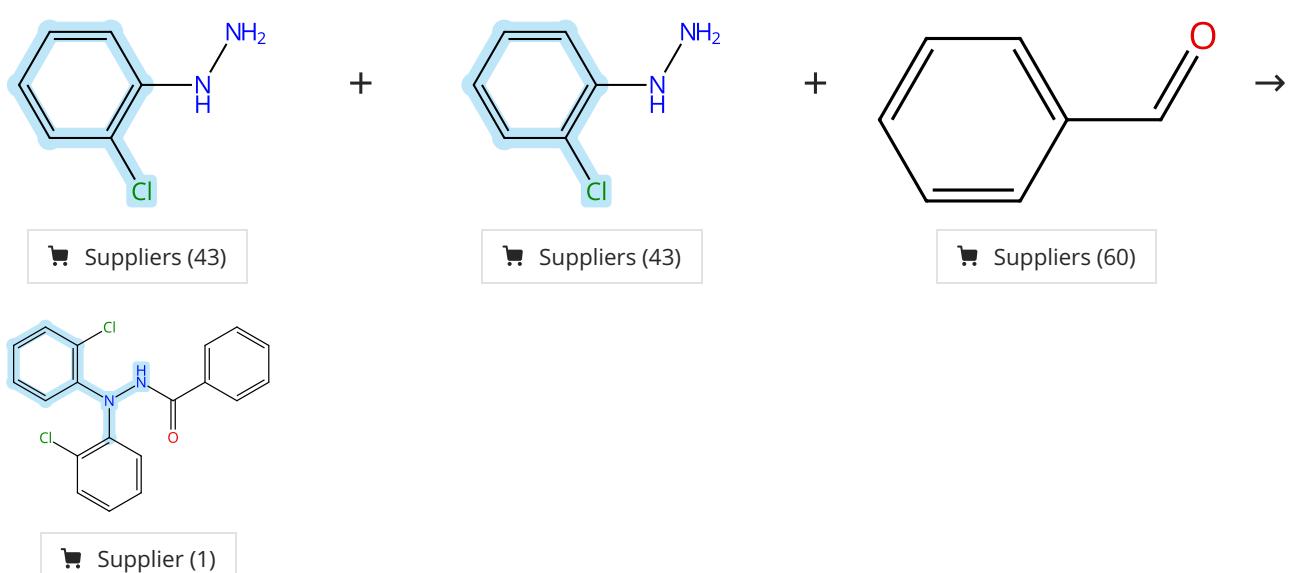
Experimental Protocols

Quantum chemistry calculation-aided discovery of potent small-molecule mimics of glutathione peroxidases for the treatment of cisplatin-induced hearing loss

By: Wang, Wentao; et al

European Journal of Medicinal Chemistry (2024), 271, 116404.

Scheme 189 (1 Reaction)



31-614-CAS-39391322

Steps: 1 Yield: 60%

- 1.1 **Reagents:** Dipotassium phosphate  
**Catalysts:** Copper(II) triflate  
**Solvents:** Acetonitrile; 12 h, 0 °C

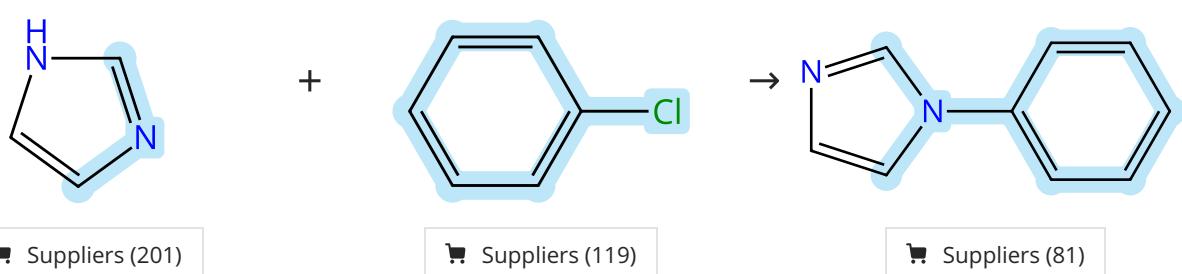
Experimental Protocols

An aerobic copper-catalyzed multi-component reaction strategy for N,N'- diaryl acylhydrazine synthesis: reactions and mechanism

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

Scheme 190 (1 Reaction)



31-614-CAS-41844052

Steps: 1 Yield: 60%

- 1.1 **Reagents:** Triethylamine  
**Catalysts:** Copper oxide (Cu O), Guar gum  
**Solvents:** Dimethylformamide; 15 h, 80 °C

Experimental Protocols

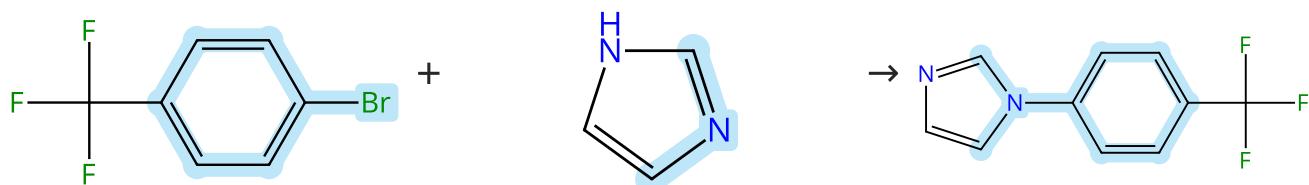
An eco-friendly convenient approach for the synthesis of guar gum integrated copper nanoparticles: Investigation of its catalytic activity in the C-N Ullmann coupling reactions and study of its anti-human kidney cancer effects

By: Li, Nana; et al

Journal of Organometallic Chemistry (2024), 1020, 123329.

**Scheme 191 (1 Reaction)**

Steps: 1 Yield: 60%



Suppliers (79)

Suppliers (201)

Suppliers (51)

31-614-CAS-40039622

Steps: 1 Yield: 60%

**1.1 Reagents:** Potassium hydroxide  
**Catalysts:** Copper oxide ( $\text{Cu}_2\text{O}$ )  
**Solvents:** Dimethyl sulfoxide; 48 h, 110 °C

Experimental Protocols

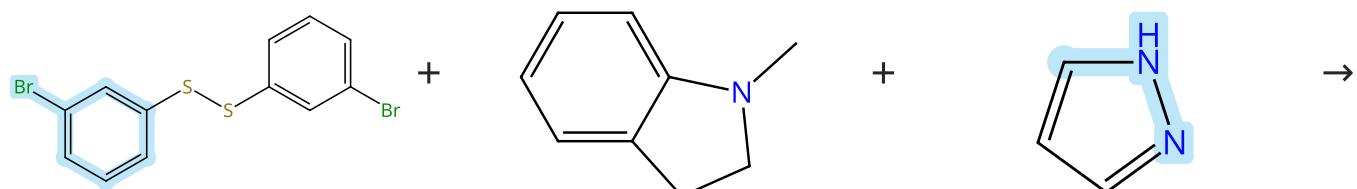
**Bifunctional Iodoazolium Salts: Searching for Cooperation Between Halogen Bonding and Hydrogen Bonding**

By: Givaudan, David; et al

European Journal of Organic Chemistry (2024), 27(15), e202300261.

**Scheme 192 (1 Reaction)**

Steps: 1 Yield: 59%



Suppliers (4)

Suppliers (59)

Suppliers (93)

31-614-CAS-39026198

Steps: 1 Yield: 59%

**1.1 Reagents:** 2,3-Dichloro-5,6-dicyano-1,4-benzoquinone,  
 Oxygen  
**Catalysts:** Iodine, Cuprous iodide  
**Solvents:** 1,4-Dioxane; 12 h, 80 °C

Experimental Protocols

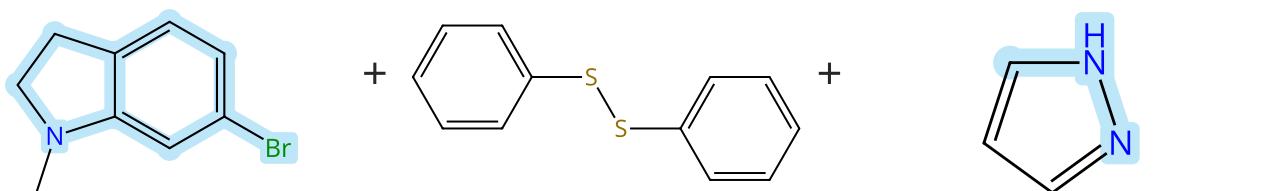
**Iodine-dependent oxidative regioselective aminochalcogenation of indolines**

By: Zhang, Xiaoxiang; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(9), 1152-1155.

Scheme 193 (1 Reaction)

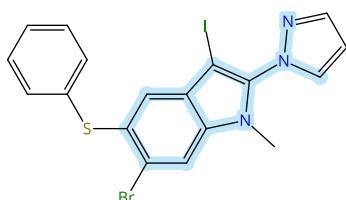
Steps: 1 Yield: 59%



Suppliers (31)

Suppliers (84)

Suppliers (93)



31-614-CAS-39675947

Steps: 1 Yield: 59%

1.1 Reagents: Iodine, Oxygen  
Catalysts: Cuprous iodide**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

By: Zhang, Xiaoxiang; et al

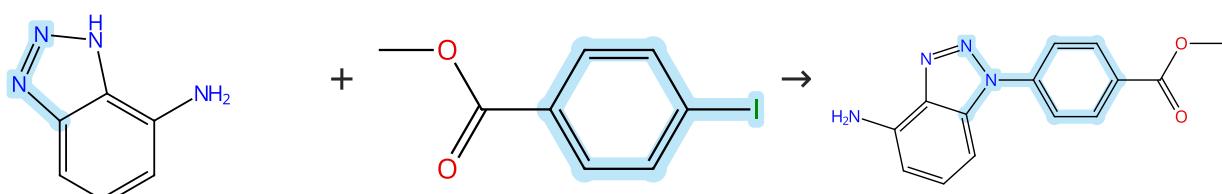
Solvents: Toluene, 1,4-Dioxane; 24 h, 80 °C

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

Experimental Protocols

Scheme 194 (1 Reaction)

Steps: 1 Yield: 59%



Suppliers (53)

Suppliers (93)

31-614-CAS-39121997

Steps: 1 Yield: 59%

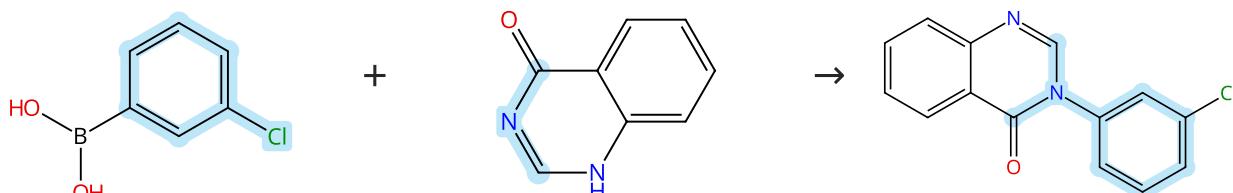
1.1 Reagents: Potassium carbonate  
Catalysts: L-Proline, Cuprous iodide  
Solvents: Dimethyl sulfoxide; 3 h, 120 °C**C7-Regioselective C-H Fluorination of Benzotriazole Amides and Sulfonamides with NFSI under Metal-Free Conditions**

By: Li, Chengqian; et al

Asian Journal of Organic Chemistry (2024), 13(1), e202300506.

Scheme 195 (1 Reaction)

Steps: 1 Yield: 59%



Suppliers (111)

Suppliers (120)

Suppliers (6)

31-614-CAS-39585644

Steps: 1 Yield: 59%

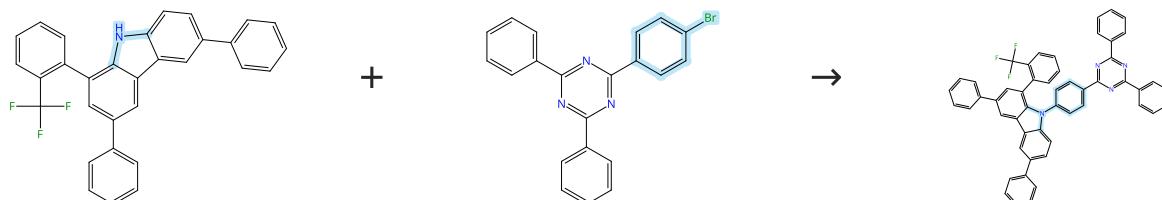
1.1 Reagents: Trifluoroacetic acid, Triethylamine  
Catalysts: Cupric acetate, Sodium bis(2-ethylhexyl) sulfosuccinate  
Solvents: Water; 4 h, rt**Cu(II)-catalyzed 'in-water' N-arylation of electron-deficient NH-heterocycles**

By: Sunny, Steeva; et al

Green Chemistry (2024), 26(6), 3149-3158.

Experimental Protocols

Scheme 196 (1 Reaction)



Suppliers (70)

31-614-CAS-41704927

Steps: 1 Yield: 59%

1.1 Reagents: Potassium carbonate  
Catalysts: Cuprous iodide, 18-Crown-6  
Solvents: 1,2-Dichlorobenzene; 20 h, 190 °C

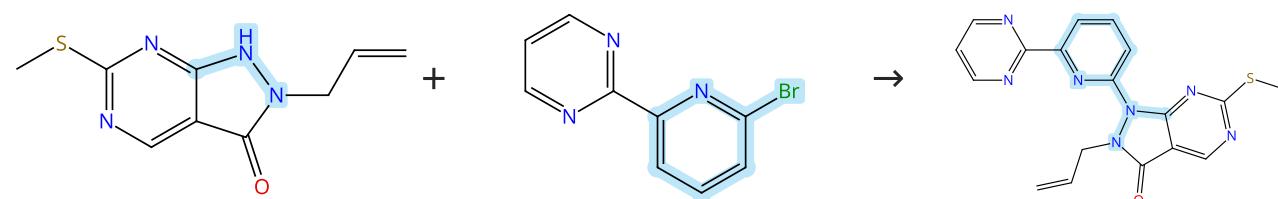
Experimental Protocols

Fine tuning of excited states by trifluoromethylphenyl for blue-shifted color and enhanced EQEs in thermally activated delayed fluorescence emitters

By: Sun, Haiyan; et al

Dyes and Pigments (2024), 228, 112233.

Scheme 197 (1 Reaction)



Suppliers (60)

Suppliers (20)

31-614-CAS-40870531

Steps: 1 Yield: 59%

1.1 Reagents: Potassium carbonate  
Catalysts: Cuprous iodide, (1S,2S)-N<sup>1</sup>,N<sup>2</sup>-Dimethyl-1,2-cyclohexanediamine  
Solvents: 1,4-Dioxane; overnight, 95 °C

Experimental Protocols

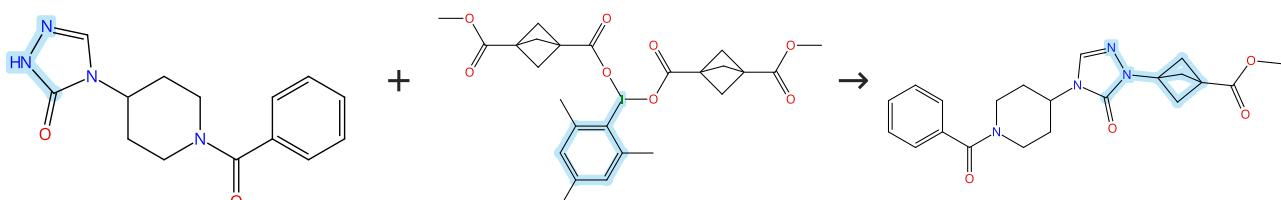
Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy

By: Wang, Yong; et al

Journal of Medicinal Chemistry (2024), 67(12), 9927-9949.

Scheme 198 (1 Reaction)

Steps: 1 Yield: 59%



Suppliers (4)

31-614-CAS-39519426

Steps: 1 Yield: 59%

1.1 Catalysts: Copper(II) acetylacetone, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,N^1'$ ]bis[2-(2-pyridinyl- $\kappa N$ )phenyl- $\kappa C$ ]-, (OC-6-33)-, hexafluorophosphate(1-) (1:1)  
Solvents: Acetonitrile; 2.5 h, 24 °C

Experimental Protocols

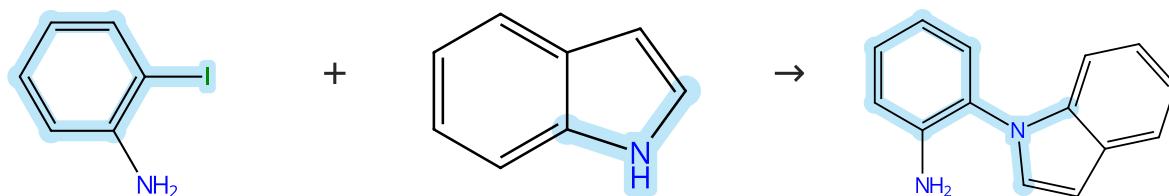
Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-F<sub>2</sub>) Building Blocks

By: Ma, Xiaoshen; et al

Organic Letters (2024), 26(9), 1947-1951.

Scheme 199 (1 Reaction)

Steps: 1 Yield: 58%



Suppliers (97)

Suppliers (109)

Suppliers (30)

31-614-CAS-39569374

Steps: 1 Yield: 58%

1.1 Reagents: Tripotassium phosphate

Catalysts: N,N'-Dimethylethylenediamine, Cuprous iodide

Solvents: Toluene; 24 h, 110 °C

Experimental Protocols

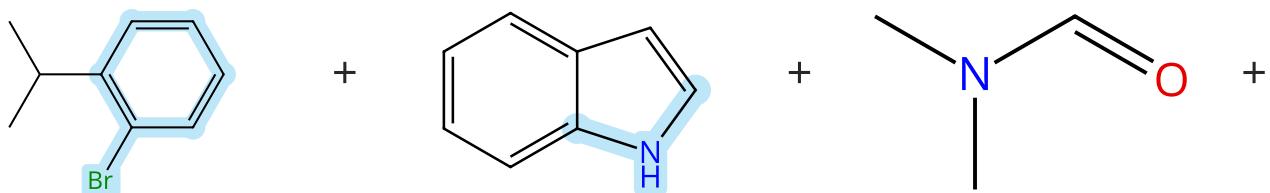
Copper-catalyzed oxidative cyclization of 2-(1H-pyrrol-1-yl) aniline and alkylsilyl peroxides: a route to pyrrolo[1,2-a] quinoxalines

By: An, Zhenyu; et al

Organic &amp; Biomolecular Chemistry (2024), 22(12), 2370-2374.

Scheme 200 (1 Reaction)

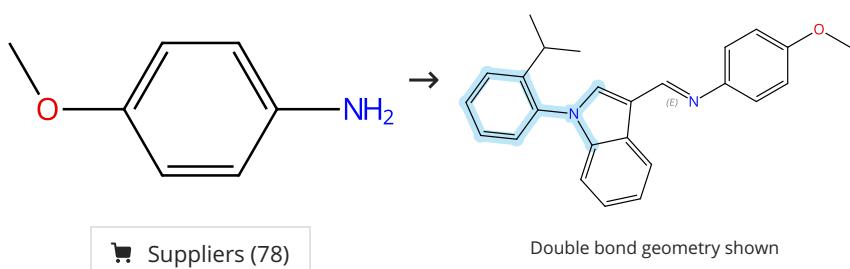
Steps: 1 Yield: 58%



Suppliers (72)

Suppliers (109)

Suppliers (298)



Suppliers (78)

Double bond geometry shown

31-614-CAS-40180068

Steps: 1 Yield: 58%

Iron-catalyzed stereoselective C-H alkylation for simultaneous construction of C-N axial and C-central chirality

By: Zhang, Zi-Jing; et al

Nature Communications (2024), 15(1), 3503.

1.1 Reagents: Tripotassium phosphate

Catalysts: 1,2-Diaminocyclohexane, Cuprous iodide

Solvents: p-Xylene; 24 h, 160 °C; 160 °C → rt

1.2 Reagents: Ammonium chloride

Solvents: Water; rt

1.3 Reagents: Phosphorus oxychloride

Solvents: Dimethylformamide; 0 °C; 2 h, rt

1.4 Reagents: Sodium hydroxide

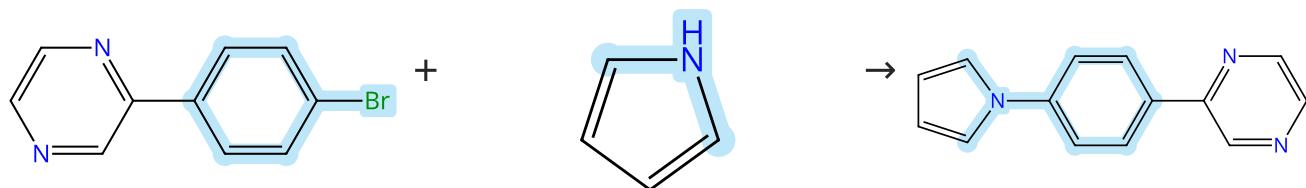
Solvents: Water; pH 8 - 9, 0 °C

1.5 Solvents: Toluene; 16 h, reflux

Experimental Protocols

## Scheme 201 (1 Reaction)

Steps: 1 Yield: 58%



Suppliers (4)

Suppliers (73)

31-614-CAS-38965982

Steps: 1 Yield: 58%

**A Broad Survey of Selectivity in the Heterogeneous Hydrogenation of Heterocycles**

**1.1 Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide, 5-(Diphenylphosphino)-2-thiazolamine  
**Solvents:** Acetonitrile; 15 h, 80 °C

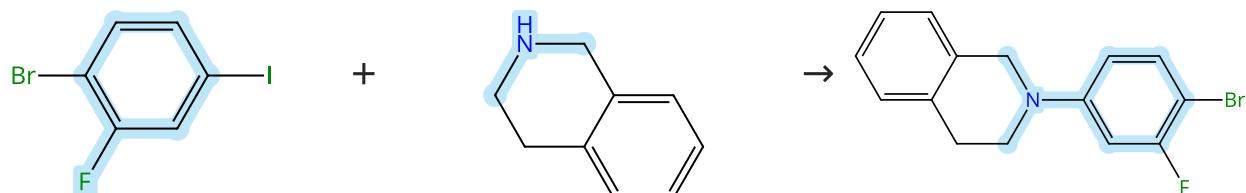
By: Lyons, Thomas W.; et al

Journal of Organic Chemistry (2024), 89(3), 1438-1445.

Experimental Protocols

## Scheme 202 (1 Reaction)

Steps: 1 Yield: 58%



Suppliers (88)

Suppliers (92)

Suppliers (3)

31-614-CAS-39281163

Steps: 1 Yield: 58%

**CBr<sub>4</sub> as a Mild Oxidant-Enabled Oxidation of a sp<sup>3</sup> C-H Bond: A Facile Synthesis of the Persistent Iminium Salts of Tetrahydroisoquinolines**

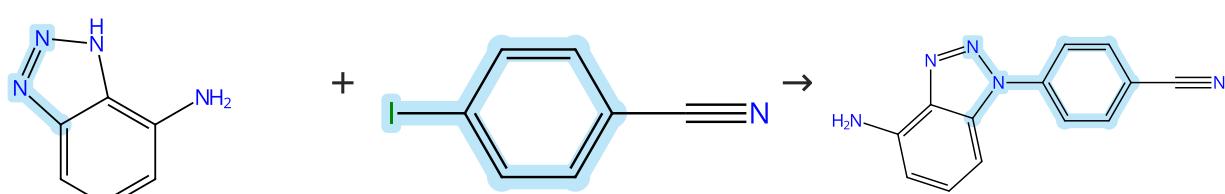
**1.1 Reagents:** Ethylene glycol, Tripotassium phosphate  
**Catalysts:** Cuprous iodide  
**Solvents:** Isopropanol; 24 h, 90 °C

By: Chen, Yuqin; et al

Chemistry - A European Journal (2024), 30(14), e202303952.

## Scheme 203 (1 Reaction)

Steps: 1 Yield: 58%



Suppliers (53)

Suppliers (79)

31-614-CAS-39121990

Steps: 1 Yield: 58%

**C7-Regioselective C-H Fluorination of Benzotriazole Amides and Sulfonamides with NFSI under Metal-Free Conditions**

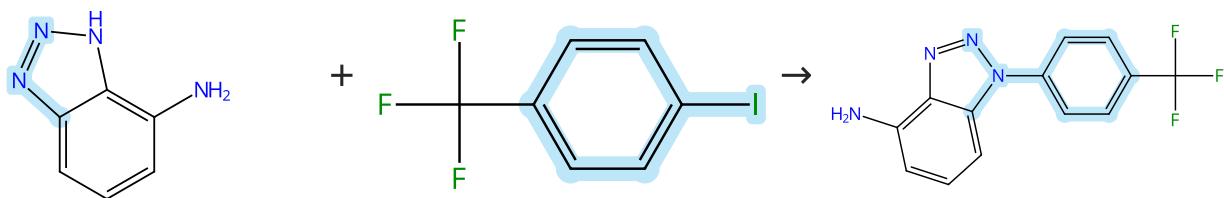
**1.1 Reagents:** Potassium carbonate  
**Catalysts:** L-Proline, Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 3 h, 120 °C

By: Li, Chengqian; et al

Asian Journal of Organic Chemistry (2024), 13(1), e202300506.

Scheme 204 (1 Reaction)

Steps: 1 Yield: 58%



Suppliers (53)

Suppliers (85)

31-614-CAS-39121998

Steps: 1 Yield: 58%

1.1 Reagents: Potassium carbonate  
Catalysts: L-Proline, Cuprous iodide  
Solvents: Dimethyl sulfoxide; 3 h, 120 °C

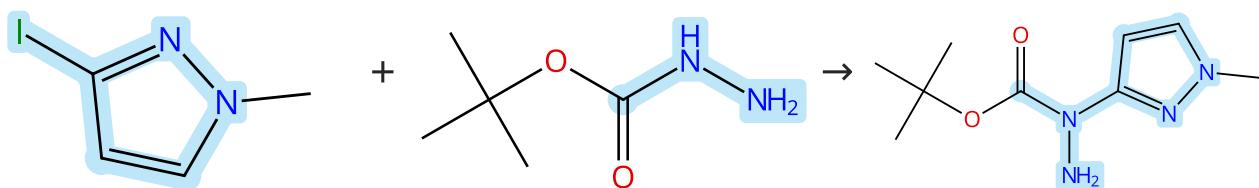
C7-Regioselective C-H Fluorination of Benzotriazole Amides and Sulfonamides with NFSI under Metal-Free Conditions

By: Li, Chengqian; et al

Asian Journal of Organic Chemistry (2024), 13(1), e202300506.

Scheme 205 (1 Reaction)

Steps: 1 Yield: 58%



Suppliers (75)

Suppliers (96)

31-614-CAS-41148468

Steps: 1 Yield: 58%

1.1 Reagents: Cesium carbonate  
Catalysts: 1,10-Phenanthroline, Cuprous iodide  
Solvents: Dimethylformamide; 5.5 h, 80 °C

Experimental Protocols

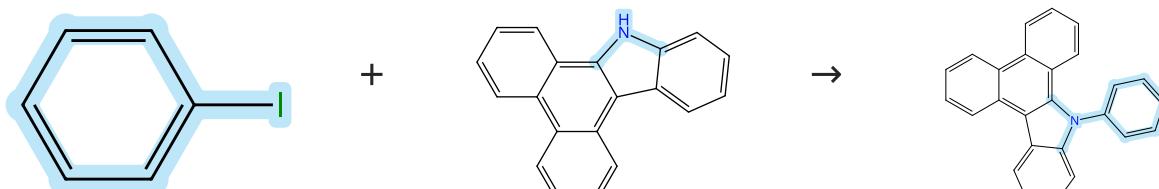
Aryl Azocyclopropeniums: Minimalist, Visible-Light Photoswitches

By: Fink, Moritz; et al

Journal of the American Chemical Society (2024), 146(14), 9519-9525.

Scheme 206 (1 Reaction)

Steps: 1 Yield: 58%



Suppliers (93)

Suppliers (35)

Supplier (1)

31-614-CAS-39557409

Steps: 1 Yield: 58%

1.1 Reagents: Potassium carbonate  
Catalysts: Copper, 18-Crown-6  
Solvents: 1,2-Dichlorobenzene; 72 h, 180 °C

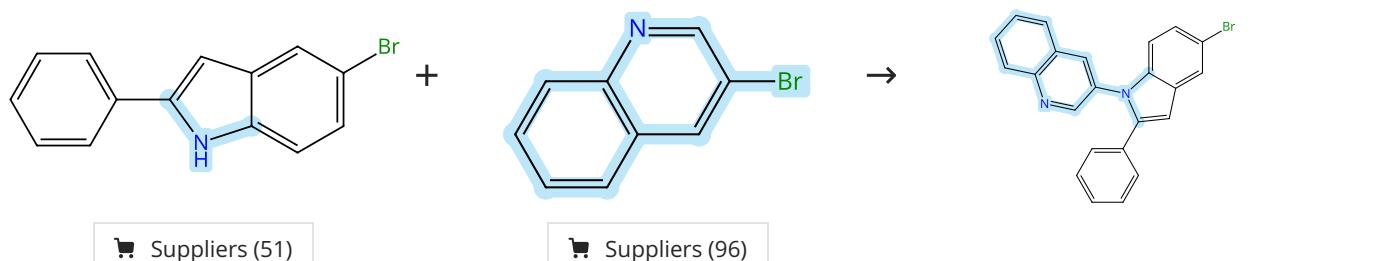
Experimental Protocols

Twofold rigidity activates ultralong organic high-temperature phosphorescence

By: Chen, Kaijun; et al

Nature Communications (2024), 15(1), 1269.

Scheme 207 (1 Reaction)



31-614-CAS-38860368

Steps: 1 Yield: 58%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide

Solvents: 1,3-Dimethyl-3,4,5,6-tetrahydro-2(1H)-pyrimidinone;  
14 h, 140 °C

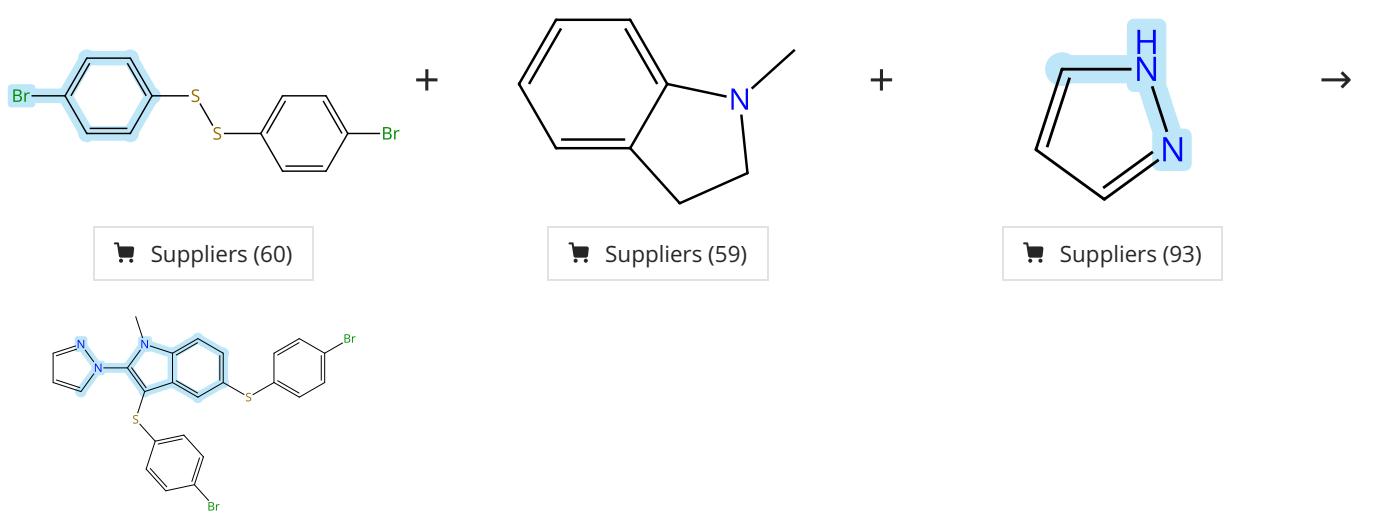
Enantioselective synthesis of 3-(N-indolyl)quinolines containing axial and central chiralities

By: Yamanomoto, Ken; et al

Chemical Communications (Cambridge, United Kingdom)  
(2024), 60(5), 582-585.

Experimental Protocols

Scheme 208 (1 Reaction)



31-614-CAS-39675972

Steps: 1 Yield: 58%

1.1 Reagents: Iodine, Oxygen

Catalysts: Cuprous iodide

Solvents: Dimethyl sulfoxide, 1,4-Dioxane; 24 h, 80 °C

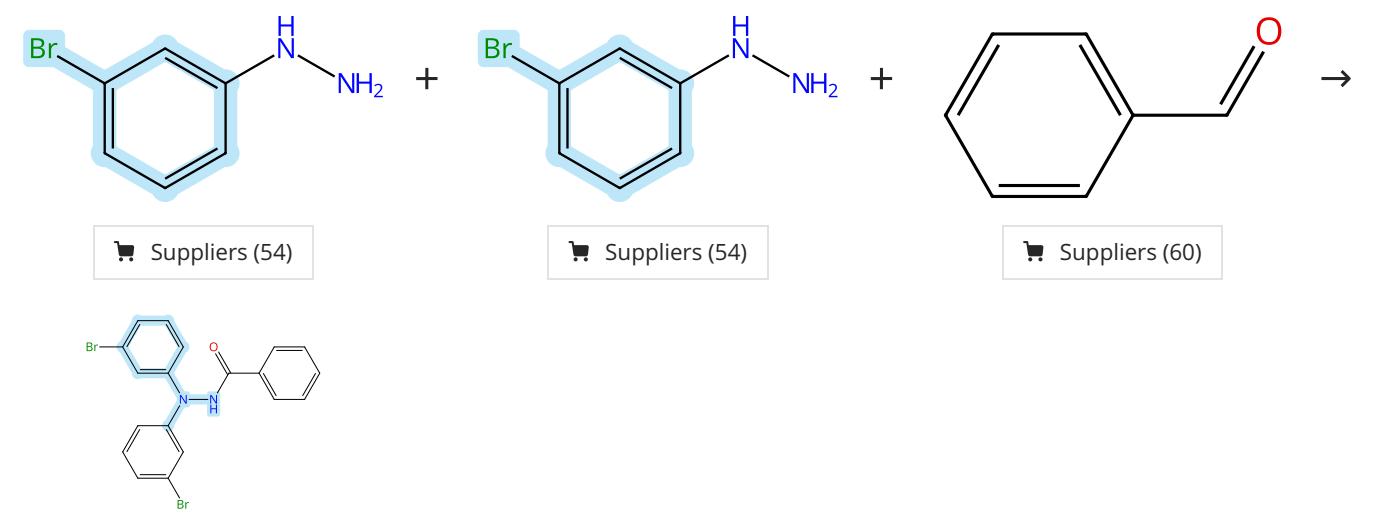
Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines

By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

Experimental Protocols

Scheme 209 (1 Reaction)



31-614-CAS-39391327

Steps: 1 Yield: 58%

1.1 Reagents: Dipotassium phosphate  
 Catalysts: Copper(II) triflate  
 Solvents: Acetonitrile; 12 h, 0 °C

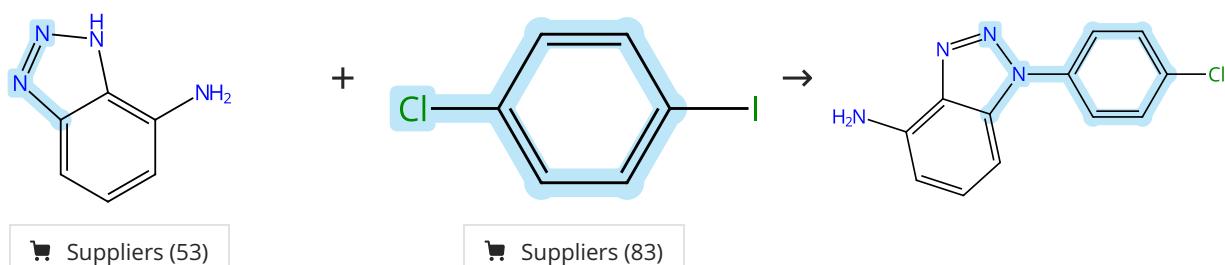
Experimental Protocols

An aerobic copper-catalyzed multi-component reaction strategy for N',N'-diaryl acylhydrazine synthesis: reactions and mechanism

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

## Scheme 210 (1 Reaction)



31-614-CAS-39121993

Steps: 1 Yield: 58%

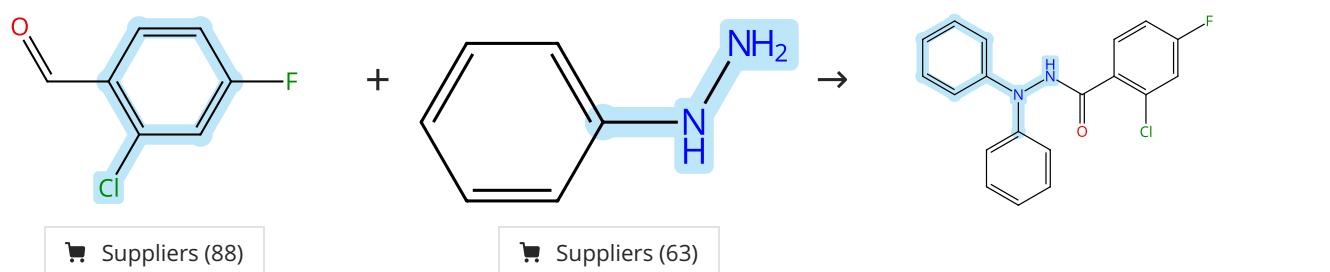
1.1 Reagents: Potassium carbonate  
 Catalysts: L-Proline, Cuprous iodide  
 Solvents: Dimethyl sulfoxide; 3 h, 120 °C

C7-Regioselective C-H Fluorination of Benzotriazole Amides and Sulfonamides with NFSI under Metal-Free Conditions

By: Li, Chengqian; et al

Asian Journal of Organic Chemistry (2024), 13(1), e202300506.

## Scheme 211 (1 Reaction)



31-614-CAS-39391301

Steps: 1 Yield: 57%

1.1 Reagents: Dipotassium phosphate  
 Catalysts: Copper(II) triflate  
 Solvents: Acetonitrile; 12 h, 0 °C

Experimental Protocols

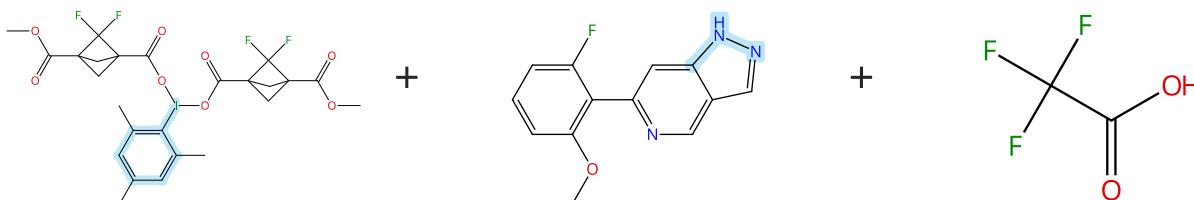
An aerobic copper-catalyzed multi-component reaction strategy for N',N'-diaryl acylhydrazine synthesis: reactions and mechanism

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

**Scheme 212 (1 Reaction)**

Steps: 1 Yield: 57%



Supplier (1)

Suppliers (186)

Multi-component structure image available in CAS SciFinder

**31-614-CAS-39519431**

Steps: 1 Yield: 57%

**1.1 Catalysts:** Copper(II) acetylacetone, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,\kappa N^1$ ]bis[2-(2-pyridinyl- $\kappa N$ )phenyl- $\kappa C$ ], (*OC*-6-33)-, hexafluorophosphate(1-) (1:1)  
**Solvents:** Acetonitrile; 2.5 h, 24 °C

1.2 -

Experimental Protocols

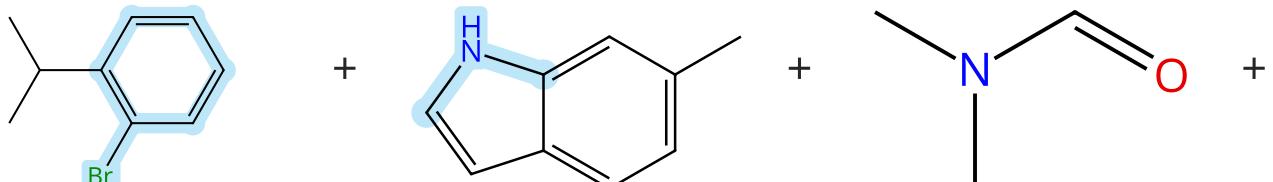
**Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-F<sub>2</sub>) Building Blocks**

By: Ma, Xiaoshen; et al

Organic Letters (2024), 26(9), 1947-1951.

**Scheme 213 (1 Reaction)**

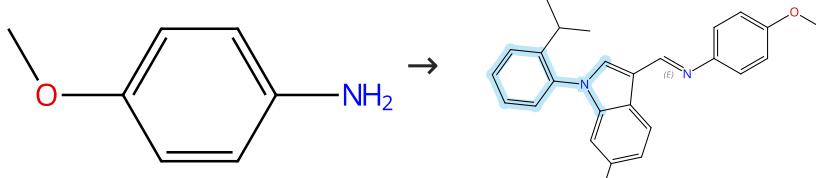
Steps: 1 Yield: 57%



Supplier (72)

Supplier (80)

Supplier (298)



Supplier (78)

Double bond geometry shown

31-614-CAS-40180145

Steps: 1 Yield: 57%

- 1.1 **Reagents:** Tripotassium phosphate  
**Catalysts:** 1,2-Diaminocyclohexane, Cuprous iodide  
**Solvents:** *p*-Xylene; 24 h, 160 °C; 160 °C → rt
- 1.2 **Reagents:** Ammonium chloride  
**Solvents:** Water; rt
- 1.3 **Reagents:** Phosphorus oxychloride  
**Solvents:** Dimethylformamide; 0 °C; 2 h, rt
- 1.4 **Reagents:** Sodium hydroxide  
**Solvents:** Water; pH 8 - 9, 0 °C
- 1.5 **Solvents:** Toluene; 16 h, reflux

Experimental Protocols

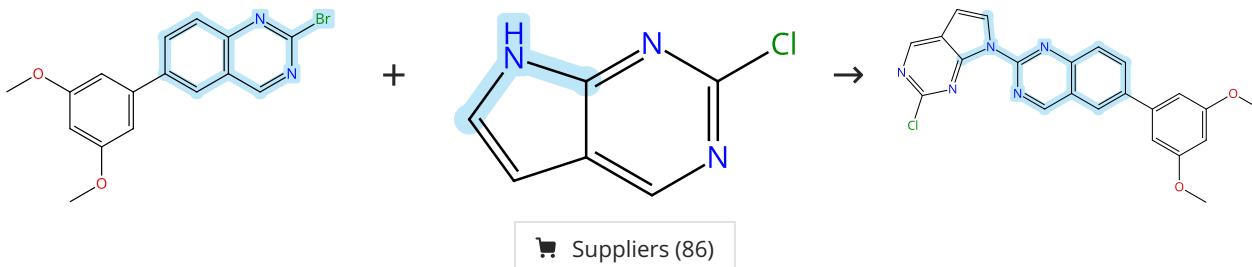
**Iron-catalyzed stereoselective C-H alkylation for simultaneous construction of C-N axial and C-central chirality**

By: Zhang, Zi-Jing; et al

Nature Communications (2024), 15(1), 3503.

**Scheme 214 (1 Reaction)**

Steps: 1 Yield: 57%



Suppliers (86)

31-614-CAS-39949374

Steps: 1 Yield: 57%

- 1.1 **Reagents:** Potassium carbonate, Bromotrimethylsilane  
**Catalysts:** *trans*-1,2-Diaminocyclohexane, Cuprous iodide  
**Solvents:** 1,4-Dioxane; 4 h, 100 °C

Experimental Protocols

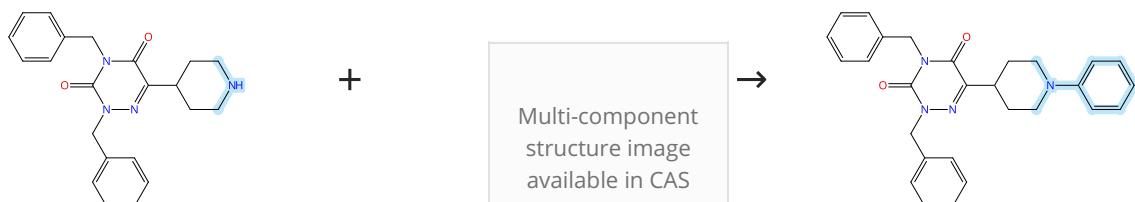
**Development of Highly Potent and Selective Covalent FGFR4 Inhibitors Based on S<sub>N</sub>Ar Electrophiles**

By: Schwarz, Moritz; et al

Journal of Medicinal Chemistry (2024), 67(8), 6549-6569.

**Scheme 215 (1 Reaction)**

Steps: 1 Yield: 57%



Multi-component structure image available in CAS SciFinder

Suppliers (67)

31-614-CAS-41547074

Steps: 1 Yield: 57%

- 1.1 **Reagents:** Triethylamine  
**Catalysts:** Cuprous chloride  
**Solvents:** Dichloromethane; 3 h, rt

Experimental Protocols

**Electrochemical C-H Alkylation of Azauracils Using N-(Acyloxy)phthalimides**

By: Dash, Rupashri; et al

Organic Letters (2024), 26(34), 7227-7232.

Scheme 216 (1 Reaction)

Steps: 1 Yield: 57%



Suppliers (60)

Suppliers (86)

31-614-CAS-41277569

Steps: 1 Yield: 57%

**Palladium-Catalyzed Direct Alkynylation of Carbazoles with Alkynyl Bromides**

By: Dharaniyedath, Jyothis; et al

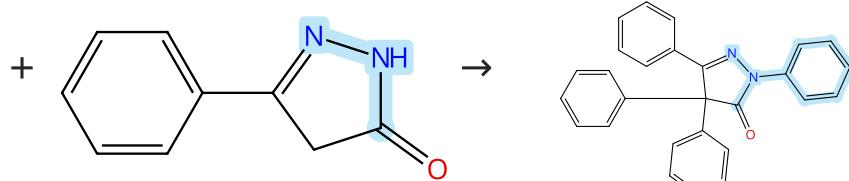
European Journal of Organic Chemistry (2024), 27(40), e202400649.

## Experimental Protocols

Scheme 217 (1 Reaction)

Steps: 1 Yield: 57%

Multi-component structure image available in CAS SciFinder



Suppliers (54)

Suppliers (67)

31-614-CAS-38961931

Steps: 1 Yield: 57%

**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

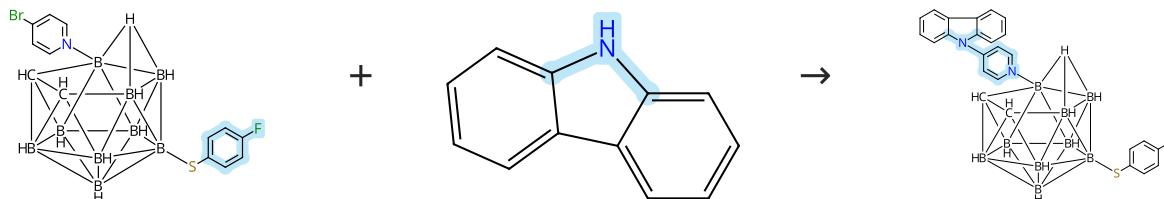
1.1 Reagents: Cesium carbonate  
Catalysts: Cuprous iodide  
Solvents: Toluene; 6 h, 110 °C

## 1.2 Reagents: Water

## Experimental Protocols

Scheme 218 (1 Reaction)

Steps: 1 Yield: 57%



Suppliers (109)

31-614-CAS-45136808

Steps: 1 Yield: 57%

**Dative Bonding Activation Enables Precise Functionalization of the Remote B-H Bond of nido-Carborane Clusters**

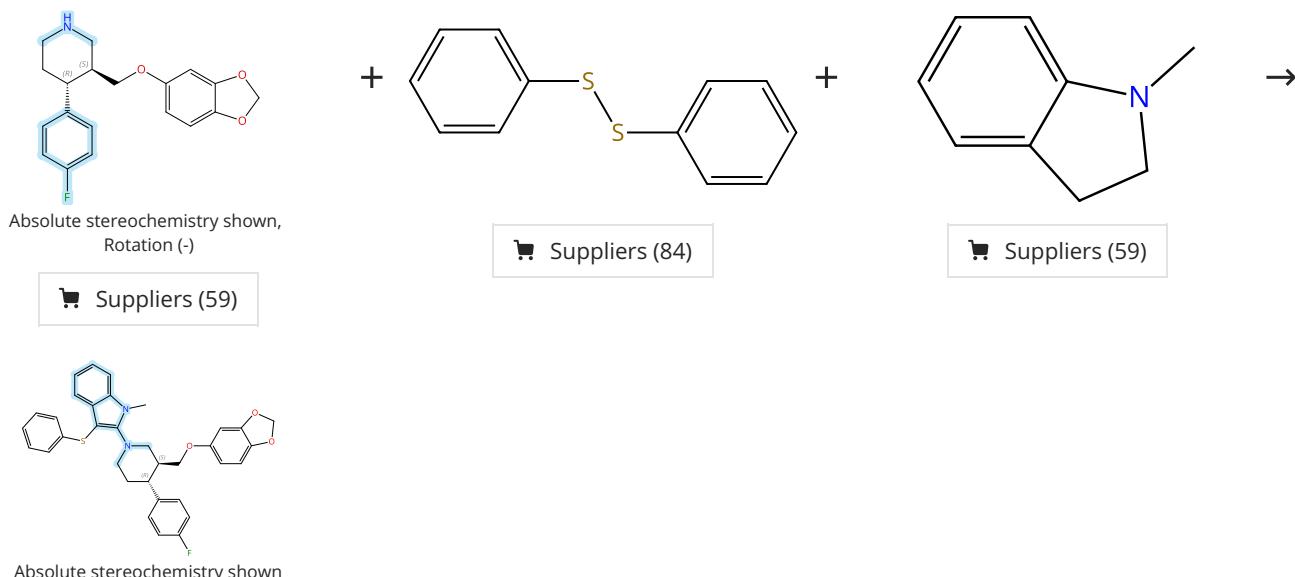
By: Ren, Hongyuan; et al

Journal of the American Chemical Society (2024), 146(38), 26543-26555.

1.1 Reagents: Potassium carbonate  
Catalysts: L-Proline, Cuprous iodide  
Solvents: Dimethyl sulfoxide; 20 h, 130 °C

Scheme 219 (1 Reaction)

Steps: 1 Yield: 57%



31-614-CAS-39026208

Steps: 1 Yield: 57%

1.1 Reagents: 2,3-Dichloro-5,6-dicyano-1,4-benzoquinone,  
Oxygen  
Catalysts: Iodine, Cuprous iodide  
Solvents: 1,4-Dioxane; 12 h, 80 °C

Iodine-dependent oxidative regioselective aminochalcogenation of indolines

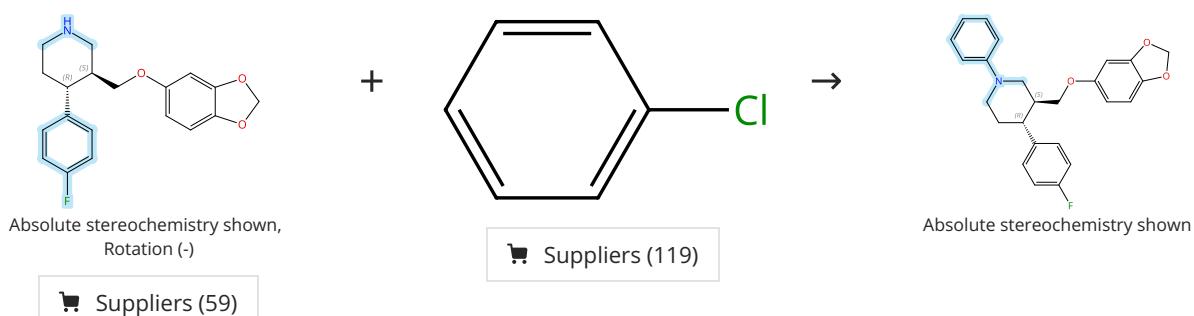
By: Zhang, Xiaoxiang; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(9), 1152-1155.

Experimental Protocols

Scheme 220 (1 Reaction)

Steps: 1 Yield: 56%



31-614-CAS-41757068

Steps: 1 Yield: 56%

1.1 Reagents: Sodium methoxide  
Catalysts: Copper bromide (Cu Br), 1,2-Benzenediamine,  $N^1$ -[3',5'-bis(1,1-dimethylethyl)][1,1'-biphenyl]-2-yl]- $N^2$ -[2-[3,5-bis(1,1-dimethylethyl)phenyl]-1-naphthalenyl]-  
Solvents: Dimethyl sulfoxide; 5 min

Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions

By: Ai, Han-Jun; et al

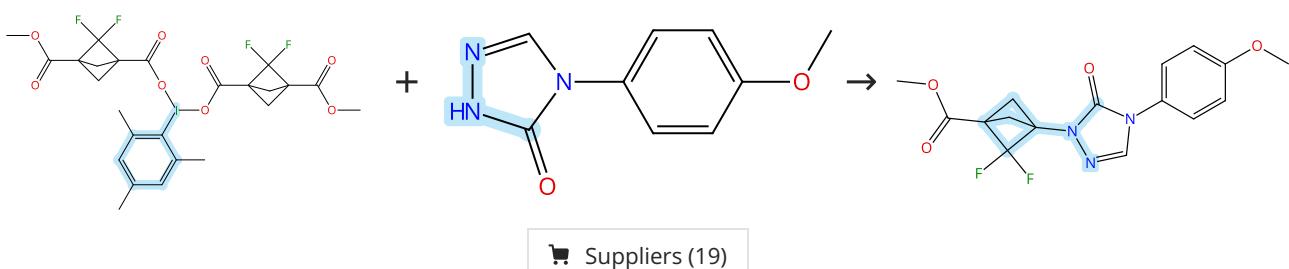
Journal of the American Chemical Society (2024), 146(38), 25949-25955.

1.2 24 h, 55 °C

Experimental Protocols

Scheme 221 (1 Reaction)

Steps: 1 Yield: 56%



31-614-CAS-39519423

Steps: 1 Yield: 56%

**1.1 Catalysts:** Copper(II) acetylacetone, Iridium(1+), [4,4'-bis(1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,\kappa N^1$ ]bis[2-(2-pyridinyl- $\kappa M$ )phenyl- $\kappa C$ ]-, (*OC*-6-33)-, hexafluorophosphate(1-) (1:1)  
**Solvents:** Acetonitrile; 2.5 h, 24 °C

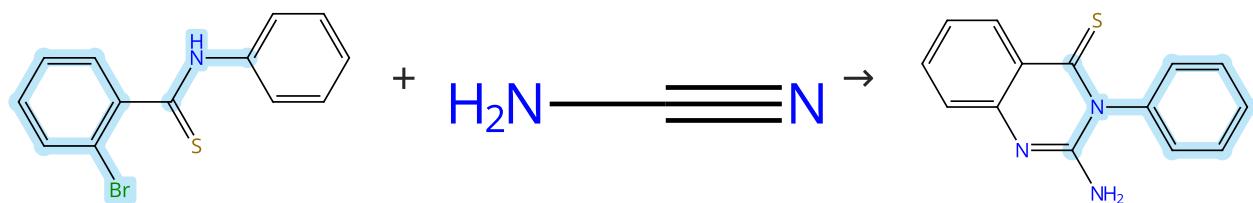
Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-F<sub>2</sub>) Building Blocks

By: Ma, Xiaoshen; et al

Organic Letters (2024), 26(9), 1947-1951.

Experimental Protocols

## Scheme 222 (1 Reaction)



Suppliers (9)

Suppliers (60)

31-614-CAS-42982628

Steps: 1 Yield: 56%

**1.1 Reagents:** Potassium *tert*-butoxide  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

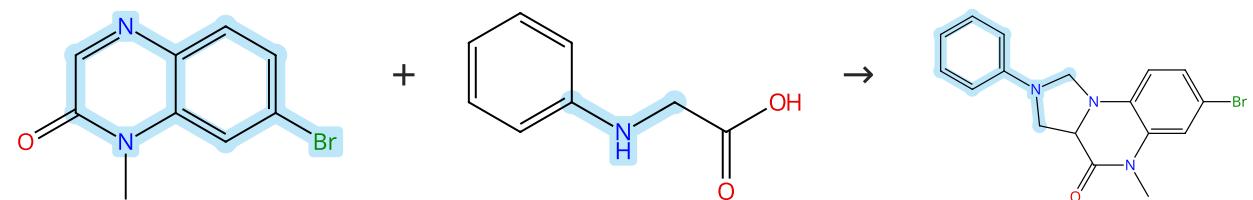
Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling

By: Wang, Zhongjie; et al

Journal of Organic Chemistry (2024), 89(24), 18255-18268.

Experimental Protocols

## Scheme 223 (1 Reaction)



Suppliers (62)

Suppliers (88)

31-614-CAS-39663071

Steps: 1 Yield: 56%

**1.1 Reagents:** Oxygen  
**Catalysts:** Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride  
**Solvents:** 1,2-Dichloroethane; 12 h, rt

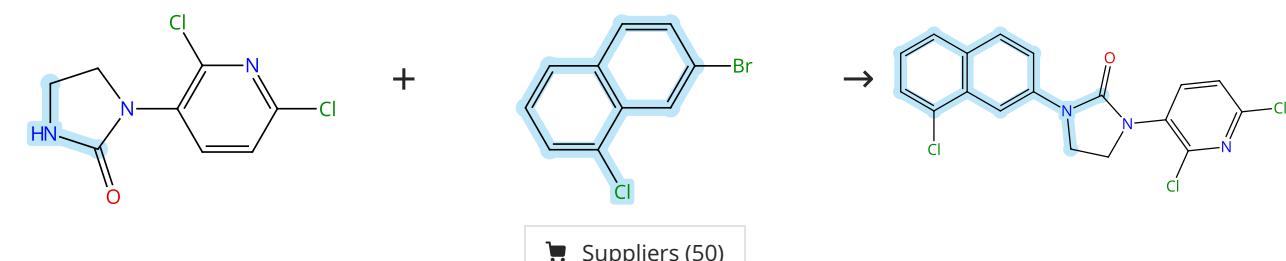
Visible-light-promoted tandem decarboxylation coupling/cyclization of N-aryl glycines with quinoxalinones: easy access to tetrahydroimidazo[1,5-a]quinoxalin-4(5H)-ones

By: Tang, Zhen; et al

Green Synthesis and Catalysis (2024), 5(1), 31-34.

Experimental Protocols

## Scheme 224 (1 Reaction)



Suppliers (50)

31-614-CAS-39822597

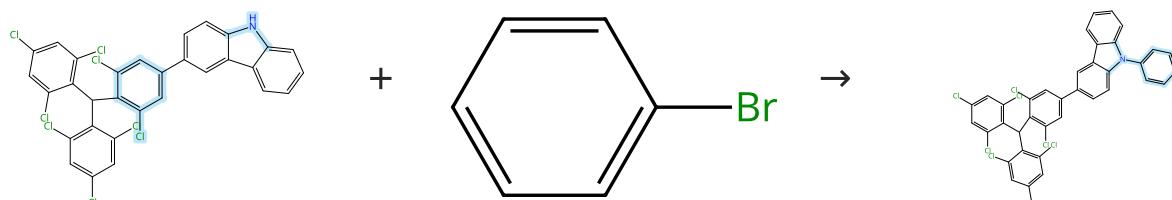
Steps: 1 Yield: 56%

**Copper-mediated synthesis of N-arylated cyclic urea from diaminecarbamate**

By: Liu, Handong; et al

Tetrahedron Letters (2024), 140, 155006.

Experimental Protocols

**Scheme 225 (1 Reaction)**

31-614-CAS-40885859

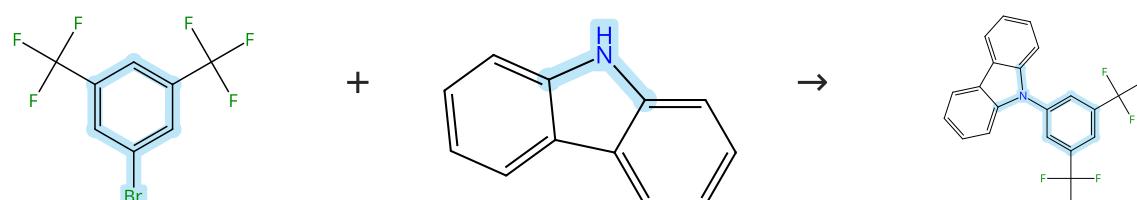
Steps: 1 Yield: 56%

**Spin-State Manipulation in a Luminescent Diradical Polymer**

By: Wang, Shengjie; et al

Macromolecules (Washington, DC, United States) (2024), 57(13), 6133-6139.

Experimental Protocols

**Scheme 226 (1 Reaction)**

31-614-CAS-42413835

Steps: 1 Yield: 56%

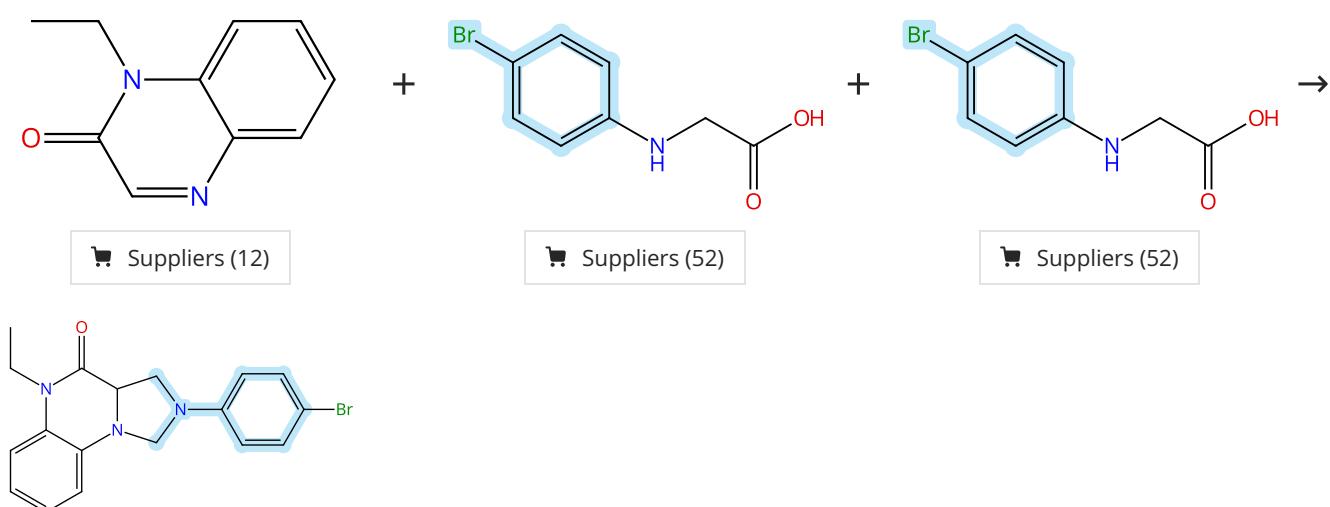
**Defluorinative Multicomponent Cascade Reaction of Trifluoromethylarenes via Photoexcited Palladium Catalysis**

By: Li, Zhibin; et al

JACS Au (2024), 4(11), 4223-4233.

**Scheme 227 (1 Reaction)**

Steps: 1 Yield: 56%



31-614-CAS-39663053

Steps: 1 Yield: 56%

1.1 Reagents: Oxygen

Catalysts: Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride

Solvents: 1,2-Dichloroethane; 12 h, rt

Experimental Protocols

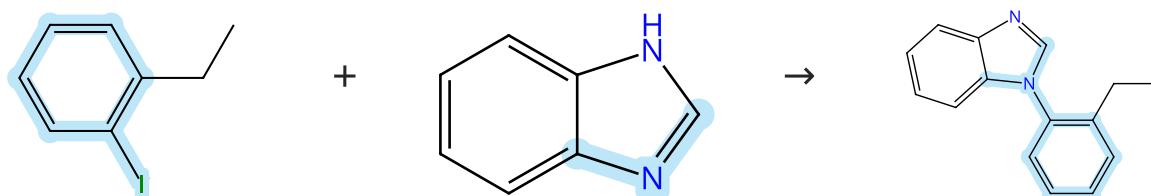
**Visible-light-promoted tandem decarboxylation coupling/cyclization of N-aryl glycines with quinoxalinones: easy access to tetrahydroimidazo[1,5-a]quinoxalin-4(5H)-ones**

By: Tang, Zhen; et al

Green Synthesis and Catalysis (2024), 5(1), 31-34.

**Scheme 228 (1 Reaction)**

Steps: 1 Yield: 56%



Suppliers (61)

Suppliers (95)

31-614-CAS-39810075

Steps: 1 Yield: 56%

1.1 Reagents: Potassium *tert*-butoxideCatalysts: 1*H*-Benzotriazole, Cuprous iodide

Solvents: Dimethyl sulfoxide; 48 h, 140 °C

Experimental Protocols

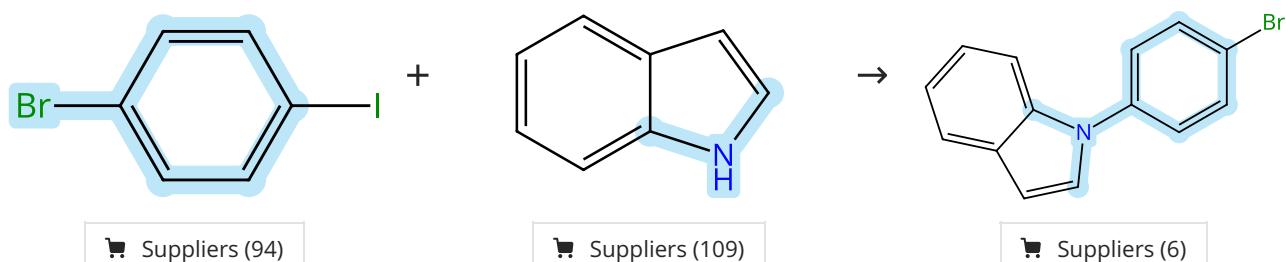
**Nickel-Catalyzed Atroposelective C-H Alkylation Enabled by Bimetallic Catalysis with Air-Stable Heteroatom-Substituted Secondary Phosphine Oxide Preligands**

By: Zhang, Zi-Jing; et al

Journal of the American Chemical Society (2024), 146(13), 9172-9180.

**Scheme 229 (1 Reaction)**

Steps: 1 Yield: 56%



Suppliers (94)

Suppliers (109)

Suppliers (6)

31-614-CAS-39303575

Steps: 1 Yield: 56%

1.1 Reagents: Cesium carbonate

Catalysts: Cuprous iodide

Solvents: Dimethylformamide; overnight, 120 °C

Experimental Protocols

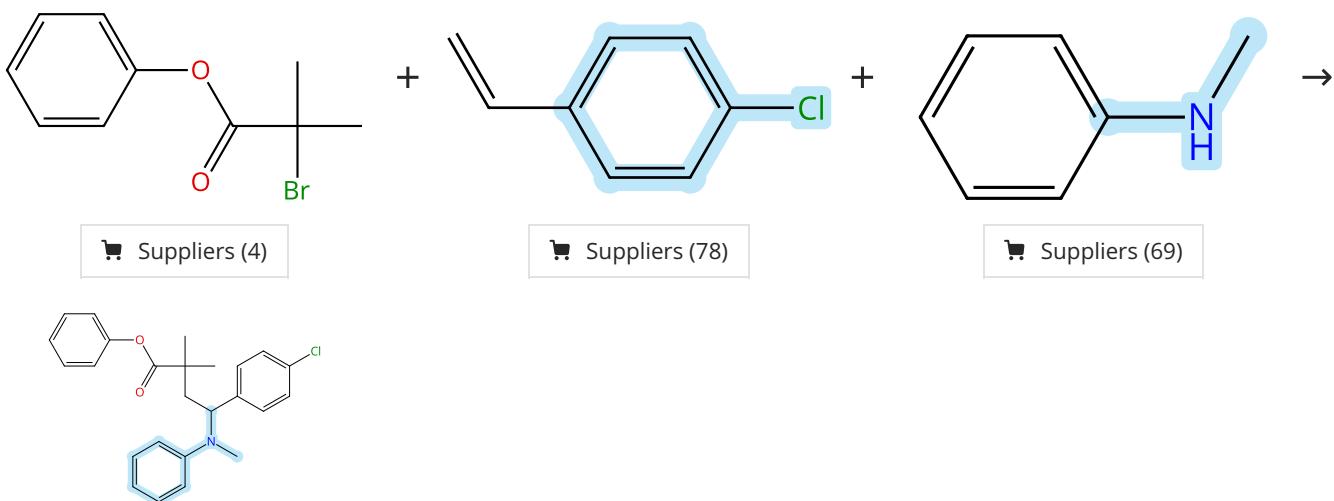
**Tosylazide as N1-Synthon: Iron-Catalyzed Nitrogenative Dimerization of Indoles to p-Bisindolopyrazine Derivatives**

By: Li, Jianan; et al

Organic Letters (2024), 26(5), 1046-1050.

Scheme 230 (1 Reaction)

Steps: 1 Yield: 55%



31-614-CAS-41720187

Steps: 1 Yield: 55%

1.1 Reagents: Tripotassium phosphate  
 Catalysts: 2,2'-Bipyridine, Copper(II) triflate  
 Solvents: 1,2-Dichloroethane; 24 h, 80 °C

Experimental Protocols

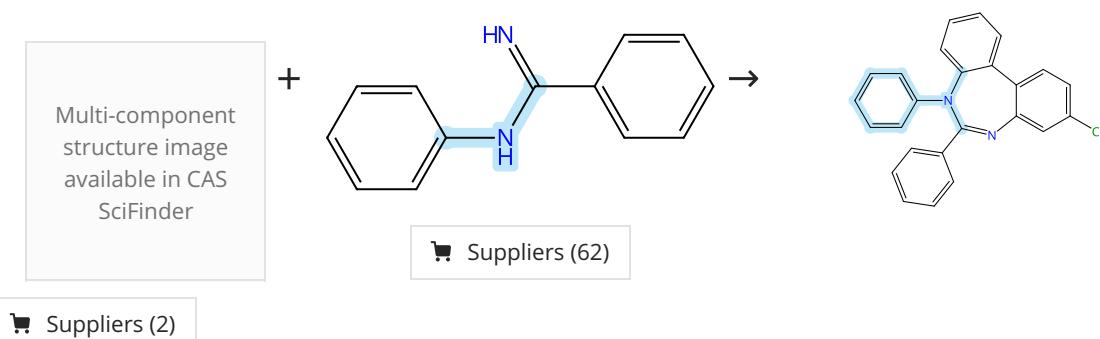
**Cu-Catalyzed Three-Component Alkene Carboamination: Mechanistic Insights and Rational Design to Overcome Limitations**

By: Ho, Tam D.; et al

Journal of the American Chemical Society (2024), 146(36), 25176-25189.

Scheme 231 (1 Reaction)

Steps: 1 Yield: 55%



31-614-CAS-42088108

Steps: 1 Yield: 55%

1.1 Reagents: Potassium acetate  
 Catalysts: Cuprous iodide  
 Solvents: Acetonitrile; 6 h, 80 °C

Experimental Protocols

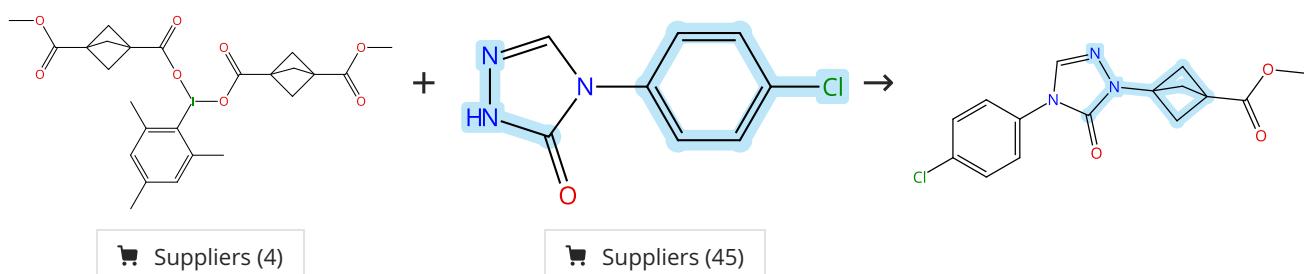
**Practical Copper-Catalyzed Double N-Arylation of Cyclic Diaryliodoniums: Synthesis of 5H-Dibenzo[ d, f ][ 1,3 ]Diazepine, and Benzo[ c ]Cinnoline Derivatives**

By: Zhang, Lianji; et al

Journal of Heterocyclic Chemistry (2024), 61(12), 1942-1953.

Scheme 232 (1 Reaction)

Steps: 1 Yield: 55%



31-614-CAS-39519417

Steps: 1 Yield: 55%

**1.1 Reagents:** Copper(II) acetylacetone, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,\kappa N^1$ ]bis[2-(2-pyridinyl- $\kappa M$ )phenyl- $\kappa C$ ]-, (*OC*-6-33)-, hexafluorophosphate(1-) (1:1)  
**Solvents:** Acetonitrile; 2.5 h, 24 °C

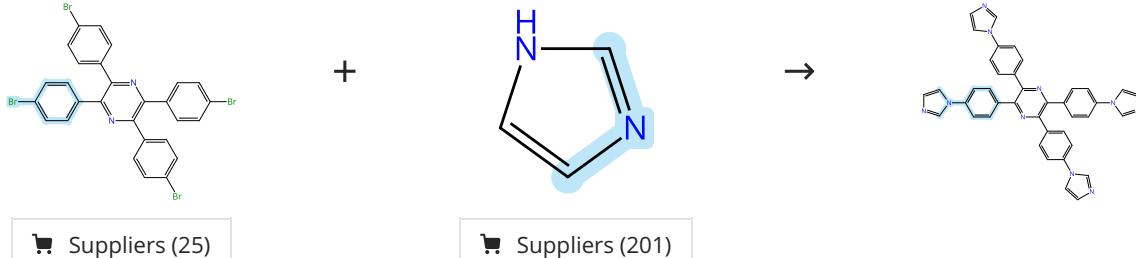
Experimental Protocols

Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-F<sub>2</sub>) Building Blocks

By: Ma, Xiaoshen; et al

Organic Letters (2024), 26(9), 1947-1951.

## Scheme 233 (1 Reaction)



Suppliers (25)

Suppliers (201)

31-614-CAS-39077716

Steps: 1 Yield: 55%

**1.1 Reagents:** Potassium *tert*-butoxide  
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide, 18-Crown-6  
**Solvents:** Dimethylformamide; 72 h, 130 °C

**1.2 Reagents:** Water

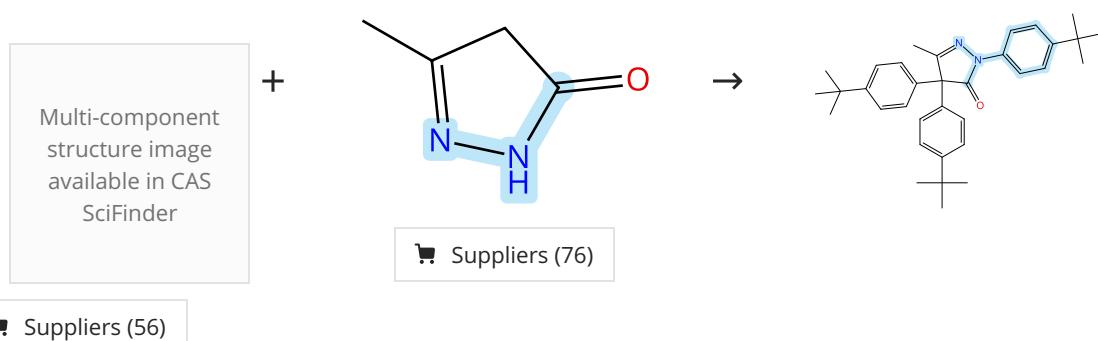
Experimental Protocols

Pt(II) Tetrafacial Barrel with Aggregation-Induced Emission for Sensing

By: Sainaba, Arppitha Baby; et al

Inorganic Chemistry (2024), 63(1), 508-517.

## Scheme 234 (1 Reaction)



Suppliers (56)

Suppliers (76)

31-614-CAS-38961915

Steps: 1 Yield: 55%

**1.1 Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 6 h, 110 °C

**1.2 Reagents:** Water

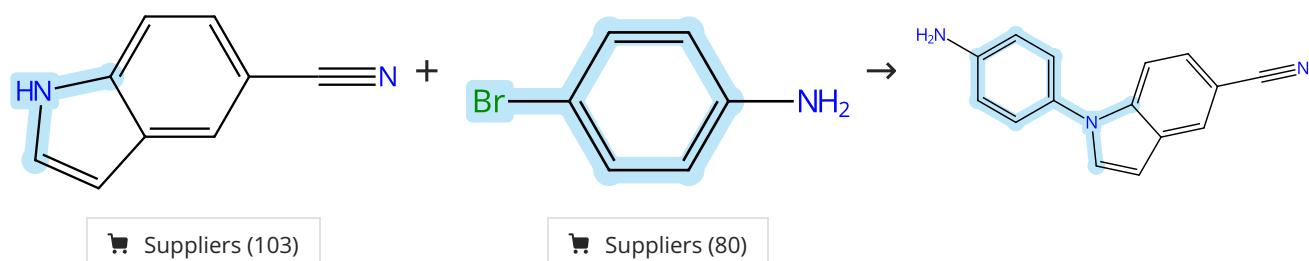
Experimental Protocols

Sequential regioselective arylation of pyrazolones with diaryliodonium salts

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

## Scheme 235 (1 Reaction)



Suppliers (103)

Suppliers (80)

31-614-CAS-43493333

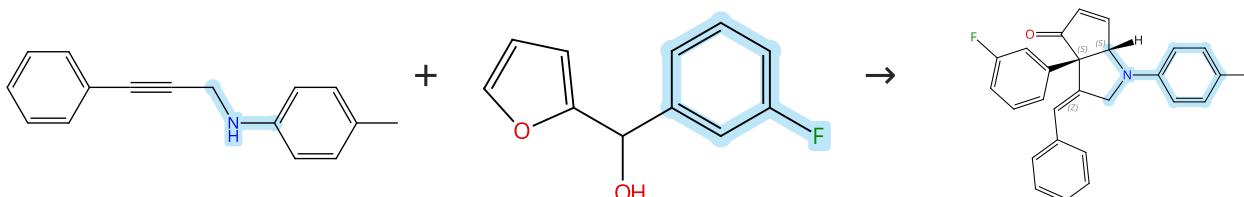
Steps: 1 Yield: 55%

**Discovery of Novel 5-Cyano-3-phenylindole-Based LSD1/HDA C Dual Inhibitors for Colorectal Cancer Treatment**

By: Zhu, Hui-Juan; et al

Journal of Medicinal Chemistry (2024), 67(22), 20172-20202.

Experimental Protocols

**Scheme 236 (1 Reaction)**

Suppliers (3)

Suppliers (23)

Relative stereochemistry shown  
Double bond geometry shown

31-614-CAS-39895307

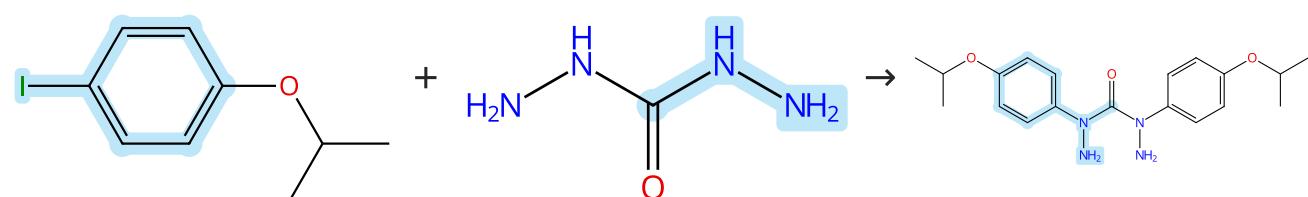
Steps: 1 Yield: 55%

**Synthesis of cis-fused cyclopentenone-pyrrolidine scaffolds via sequential aza-Piancatelli and Conia-ene type reactions in one pot**

By: Solanke, Pooja R.; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(31), 4234-4237.

Experimental Protocols

**Scheme 237 (1 Reaction)**

Suppliers (48)

Suppliers (65)

31-614-CAS-41194610

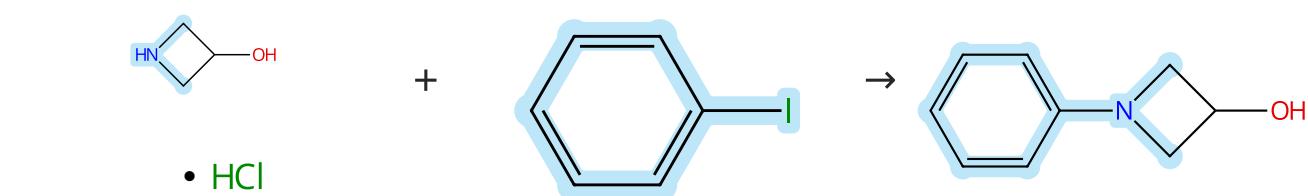
Steps: 1 Yield: 55%

**Electronic and Magnetic Interactions in 6-Oxoverdazyl Diradicals: Connection through N(1) vs C(3) Revisited**

By: Bodzioch, Agnieszka; et al

Journal of Organic Chemistry (2024), 89(9), 6306-6321.

Experimental Protocols

**Scheme 238 (1 Reaction)**

Suppliers (101)

Suppliers (93)

Suppliers (55)

31-614-CAS-39340037

Steps: 1 Yield: 55%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** L-Proline, Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 40 h, 90 °C

Experimental Protocols

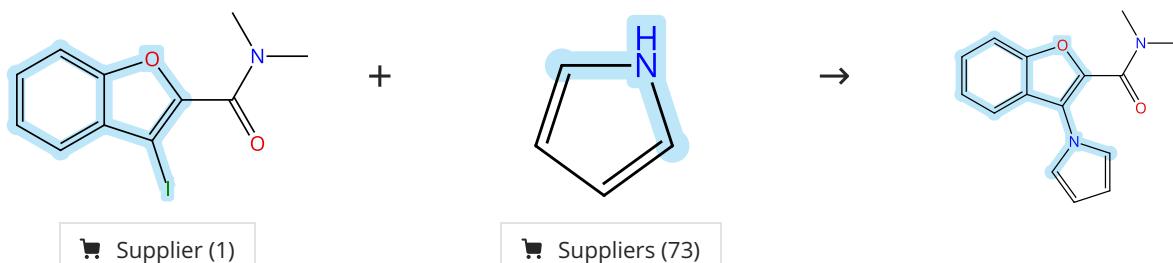
Interrupted N-Heterocyclic Carbene-Catalyzed Radical Coupling Strategy: A Versatile Platform for Alkylation and Arylation of [60]Fullerene

By: Chao, Di; et al

Organic Letters (2024), 26(7), 1432-1436.

## Scheme 239 (1 Reaction)

Steps: 1 Yield: 55%



Suppliers (1)

Suppliers (73)

31-614-CAS-40981153

Steps: 1 Yield: 55%

**1.1 Reagents:** Cesium carbonate  
**Catalysts:** Copper oxide ( $\text{Cu}_2\text{O}$ )  
**Solvents:** Dimethyl sulfoxide; 32 h, 120 °C

Experimental Protocols

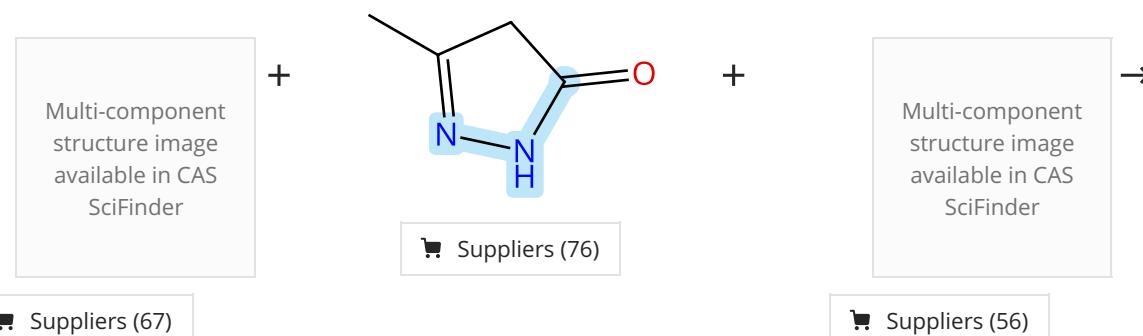
Deprotonative Metallation of Benzofuran and Benzothiophene Derivatives for the Formation of Tetracyclic and Pentacyclic Heteroaromatic Compounds

By: Elmir, Loubna; et al

European Journal of Organic Chemistry (2024), 27(27), e202400374.

## Scheme 240 (1 Reaction)

Steps: 1 Yield: 55%

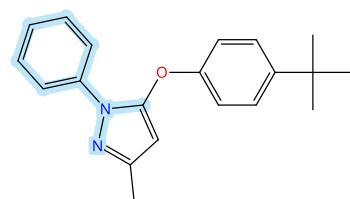


Suppliers (67)

Suppliers (76)

Multi-component structure image available in CAS SciFinder

Suppliers (56)



31-614-CAS-38961932

Steps: 1 Yield: 55%

**1.1 Reagents:** Sodium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 3 h, 110 °C

1.2 3 h, 110 °C

1.3 **Reagents:** Water

Experimental Protocols

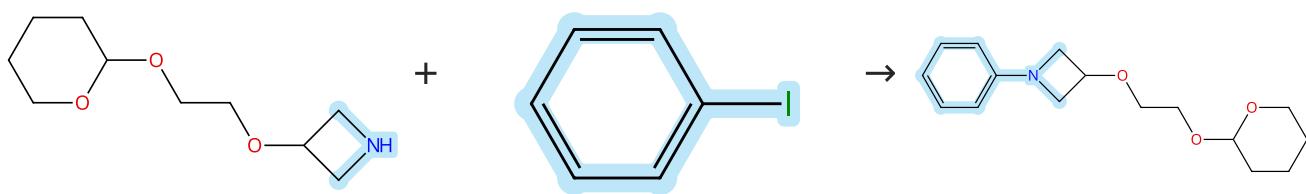
Sequential regioselective arylation of pyrazolones with diaryliodonium salts

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

Scheme 241 (1 Reaction)

Steps: 1 Yield: 55%



Supplier (1)

Suppliers (93)

31-614-CAS-42451331

Steps: 1 Yield: 55%

1.1 Reagents: Potassium carbonate  
Catalysts: L-Proline, Cuprous iodide  
Solvents: Dimethyl sulfoxide; 19 h, 70 °C

Experimental Protocols

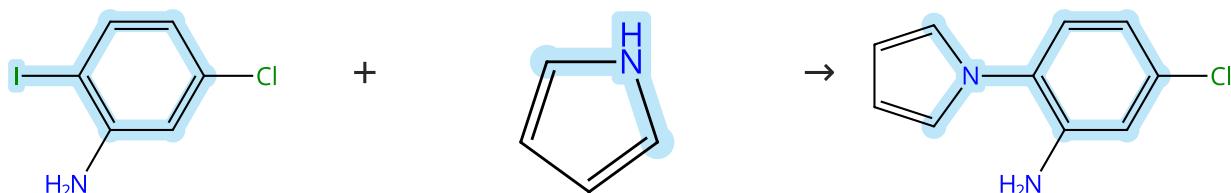
Synthesis and evaluation of a novel series of diphenylamine and diphenylether derivatives with osteoblastogenic and osteogenic effects via CDK8 inhibition

By: Morishita, Ko; et al

Chemical &amp; Pharmaceutical Bulletin (2024), 72(10), 862-883.

Scheme 242 (1 Reaction)

Steps: 1 Yield: 55%



Supplier (72)

Supplier (73)

Supplier (37)

31-614-CAS-41164532

Steps: 1 Yield: 55%

1.1 Reagents: Tripotassium phosphate  
Catalysts: *N,N'*-Dimethylethylenediamine, Cuprous iodide  
Solvents: Toluene; 24 h, 110 °C

Experimental Protocols

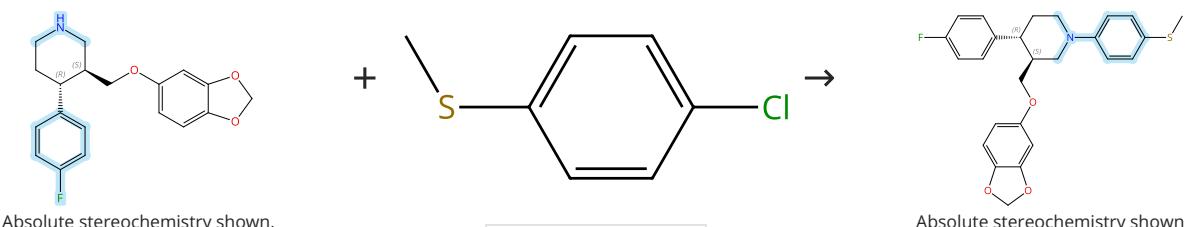
InCl<sub>3</sub>-Catalyzed One-Pot Synthesis of Pyrrolo/Indolo- and Benzoazepino-Fused Quinoxalines

By: Aksakal, Nuray Esra; et al

ACS Omega (2024), 9(30), 33251-33260.

Scheme 243 (1 Reaction)

Steps: 1 Yield: 54%

Absolute stereochemistry shown,  
Rotation (-)

Supplier (59)

31-614-CAS-41756969

Steps: 1 Yield: 54%

1.1 Reagents: Sodium methoxide  
Catalysts: Copper bromide (Cu Br), 1,2-Benzenediamine, *N*<sup>1</sup>-[3',5'-bis(1,1-dimethylethyl)[1,1'-biphenyl]-2-yl]-*N*<sup>2</sup>-[2-[3,5-bis(1,1-dimethylethyl)phenyl]-1-naphthalenyl]-

Solvents: Dimethyl sulfoxide; 5 min

1.2 24 h, 55 °C

Experimental Protocols

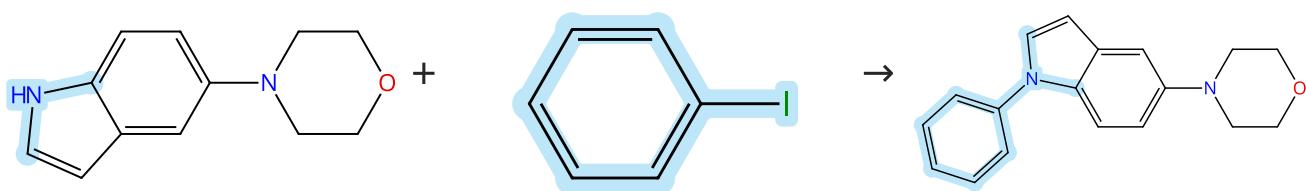
Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions

By: Ai, Han-Jun; et al

Journal of the American Chemical Society (2024), 146(38), 25949-25955.

Scheme 244 (1 Reaction)

Steps: 1 Yield: 54%



Suppliers (55)

Suppliers (93)

31-614-CAS-42382976

Steps: 1 Yield: 54%

Ring-opening silylation of N-aryllindoles via endocyclic C-N bond cleavage triggered by silylboranes

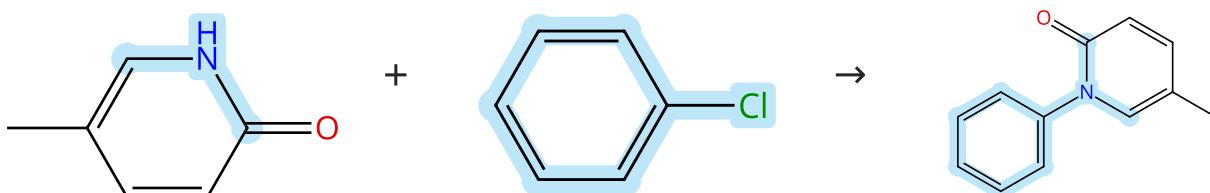
By: Tian, Ye; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(83), 11980-11983.

Experimental Protocols

Scheme 245 (1 Reaction)

Steps: 1 Yield: 54%



Suppliers (85)

Suppliers (119)

Suppliers (106)

31-614-CAS-41934950

Steps: 1 Yield: 54%

Enhanced production of Pirfenidone through a microfluidic system: A novel and thorough chemical kinetics investigation

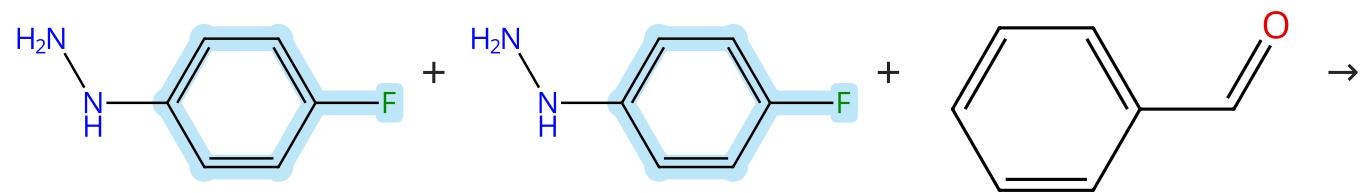
By: Bastan, Farzad; et al

Chemical Engineering and Processing (2024), 204, 109928.

Experimental Protocols

Scheme 246 (1 Reaction)

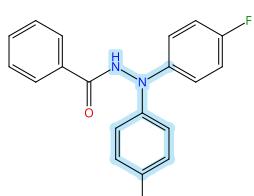
Steps: 1 Yield: 54%



Suppliers (61)

Suppliers (61)

Suppliers (60)



Supplier (1)

31-614-CAS-39391331

Steps: 1 Yield: 54%

- 1.1 Reagents: Dipotassium phosphate  
 Catalysts: Copper(II) triflate  
 Solvents: Acetonitrile; 12 h, 0 °C

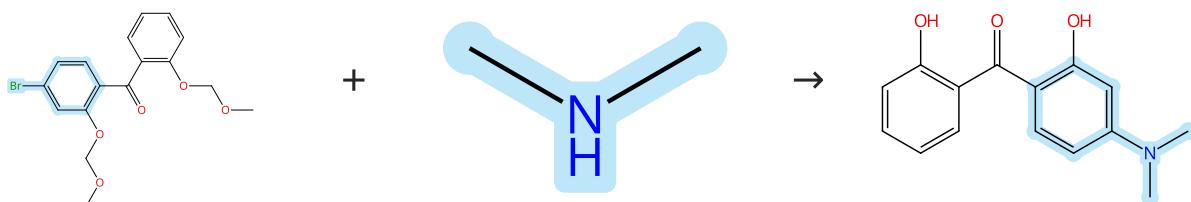
## Experimental Protocols

An aerobic copper-catalyzed multi-component reaction strategy for N,N'-diaryl acylhydrazine synthesis: reactions and mechanism

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

## Scheme 247 (1 Reaction)



Steps: 1 Yield: 54%

31-614-CAS-39027386

Steps: 1 Yield: 54%

- 1.1 Reagents: Tripotassium phosphate  
 Catalysts: Cuprous iodide, 1*H*-Pyrrole-2-carboxylic acid, 2,2-dimethylhydrazide  
 Solvents: 2-Methoxyethanol, Tetrahydrofuran; 22 h, 60 °C
- 1.2 Reagents: Trifluoroacetic acid  
 Solvents: Dichloromethane; 3.5 h, rt

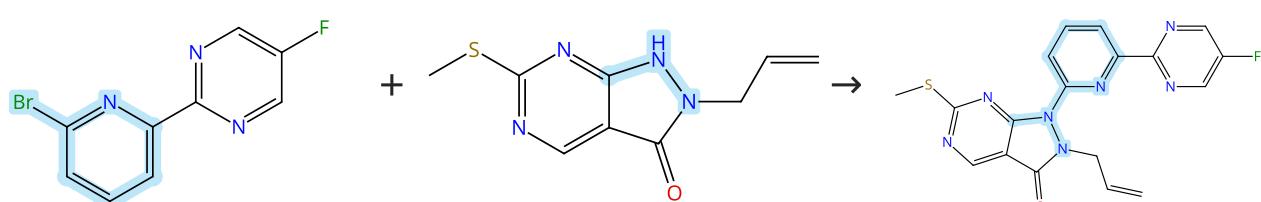
## Experimental Protocols

Synthesis of Thioxanthone 10,10-Dioxides and Sulfone-Fluore sceins via Pd-catalyzed Sulfonylative Homocoupling

By: Knorr, Gergely; et al

Organic Letters (2024), 26(4), 945-949.

## Scheme 248 (1 Reaction)



Steps: 1 Yield: 54%

31-614-CAS-40870526

Steps: 1 Yield: 54%

- 1.1 Reagents: Potassium carbonate  
 Catalysts: Cuprous iodide, (1*S*,2*S*)-*N*<sup>1</sup>,*N*<sup>2</sup>-Dimethyl-1,2-cyclohexanediamine  
 Solvents: 1,4-Dioxane; overnight, 95 °C

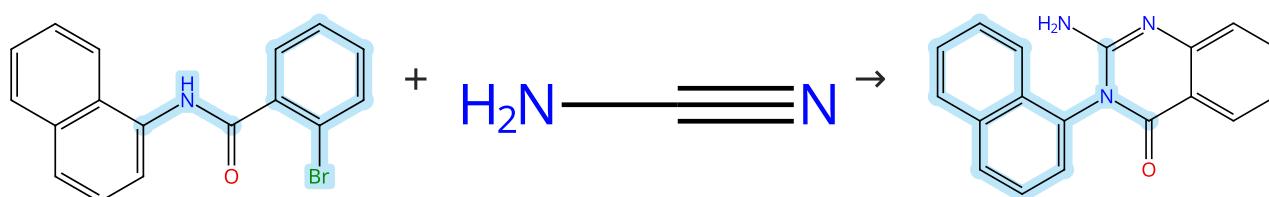
## Experimental Protocols

Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy

By: Wang, Yong; et al

Journal of Medicinal Chemistry (2024), 67(12), 9927-9949.

## Scheme 249 (1 Reaction)



Steps: 1 Yield: 54%

31-614-CAS-42982633

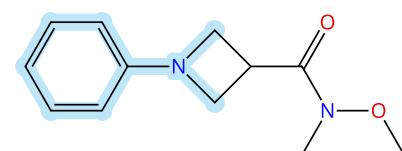
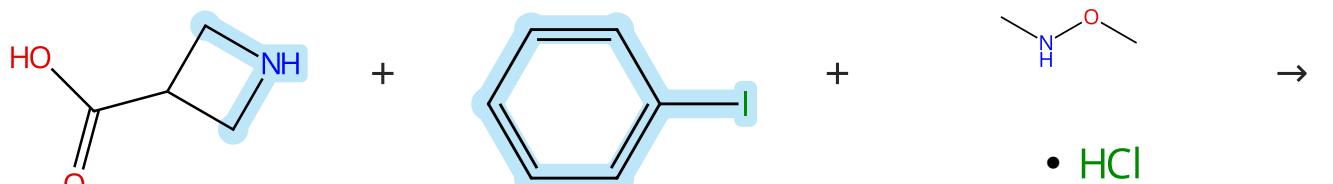
Steps: 1 Yield: 54%

1.1 Reagents: Potassium *tert*-butoxide  
 Catalysts: Cuprous iodide  
 Solvents: Dimethyl sulfoxide; 8 h, 130 °C

Experimental Protocols

Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling  
 By: Wang, Zhongjie; et al  
 Journal of Organic Chemistry (2024), 89(24), 18255-18268.

## Scheme 250 (1 Reaction)



31-614-CAS-41502510

Steps: 1 Yield: 53%

1.1 Reagents: Potassium carbonate  
 Catalysts: L-Proline, Cuprous iodide  
 Solvents: Dimethyl sulfoxide; 16 h, 140 °C  
 1.2 Reagents: Citric acid  
 Solvents: Water; 10 min, rt  
 1.3 Reagents: 4-(Dimethylamino)pyridine, Diisopropylethylamine, 1-Ethyl-3-(3'-dimethylaminopropyl)carbodiimide hydrochloride  
 Solvents: Dichloromethane; overnight, rt

Experimental Protocols

Regio- and Diastereoselective Synthesis of Polysubstituted Piperidines Enabled by Boron Radical-Catalyzed (4+2) Cycloaddition

By: Ding, Zhengwei; et al

Angewandte Chemie, International Edition (2024), 63(38), e202406612.

## Scheme 251 (1 Reaction)



31-614-CAS-39318005

Steps: 1 Yield: 53%

1.1 Reagents: Cesium carbonate  
 Catalysts: Cuprous iodide  
 Solvents: Dimethyl sulfoxide; 15 min, rt  
 1.2 12 h, 80 °C

Experimental Protocols

A sonochemical approach to 4-substituted pyrrolo[1,2-a]quinoxalines via Cu-catalyzed N-arylation followed by Wang resin/air promoted oxidative cyclization strategy

By: Chemboli, Raviteja; et al

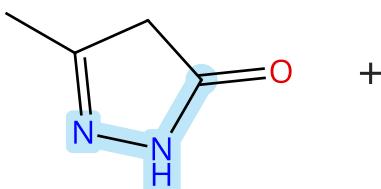
Tetrahedron Letters (2024), 136, 154917.

## Scheme 252 (1 Reaction)

Steps: 1 Yield: 53%

Multi-component  
structure image  
available in CAS  
SciFinder

+



+

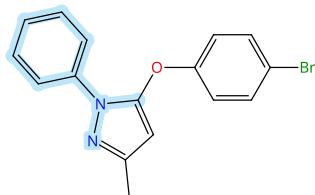
Multi-component  
structure image  
available in CAS  
SciFinder

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Suppliers (67)

Suppliers (76)

Suppliers (48)



31-614-CAS-38961923

Steps: 1 Yield: 53%

- 1.1 **Reagents:** Sodium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 3 h, 110 °C
- 1.2 3 h, 110 °C
- 1.3 **Reagents:** Water

Experimental Protocols

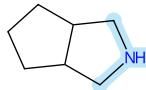
Sequential regioselective arylation of pyrazolones with diaryliodonium salts

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

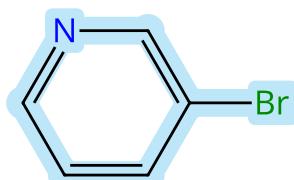
## Scheme 253 (1 Reaction)

Steps: 1 Yield: 53%



• HCl

+



Suppliers (73)

Suppliers (89)

Supplier (1)

31-614-CAS-41175792

Steps: 1 Yield: 53%

- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** L-Proline, Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 72 h, 100 °C

Experimental Protocols

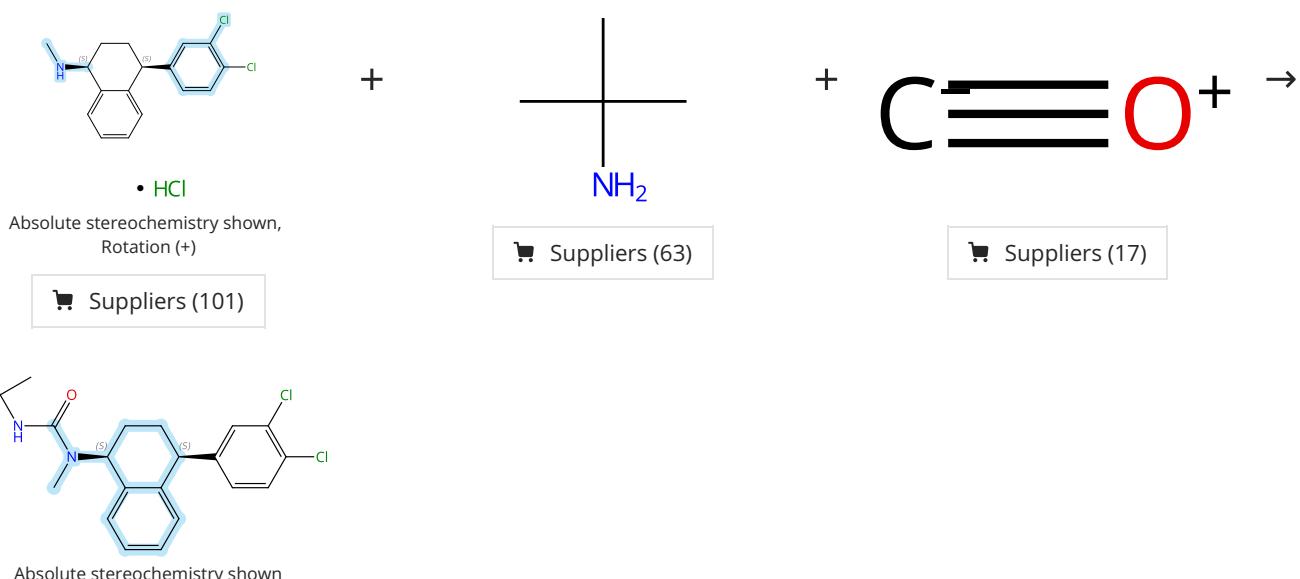
α-Amino bicycloalkylation through organophotoredox catalysis

By: Nugent, Jeremy; et al

Chemical Science (2024), 15(28), 10918-10925.

## Scheme 254 (1 Reaction)

Steps: 1 Yield: 53%



31-614-CAS-42946569

Steps: 1 Yield: 53%

Synchronous recognition of amines in oxidative carbonylation toward unsymmetrical ureas

## 1.1 Reagents: Triethylamine

By: Wang, Jinhui; et al

Catalysts: Copper bromide ( $\text{Cu Br}_2$ ),  $[(2,2'-(1R,2R)-1,2-\text{Cyclohexanediyl}]\text{bis}[(\text{nitrilo}-\kappa\text{N})\text{methylidyne}]]\text{bis}[4,6\text{-bis}(1,1-\text{dimethylethyl})\text{phenolato}-\kappa\text{O}]$ (2-)cobalt

Science (Washington, DC, United States) (2024), 386(6723), 776-782.

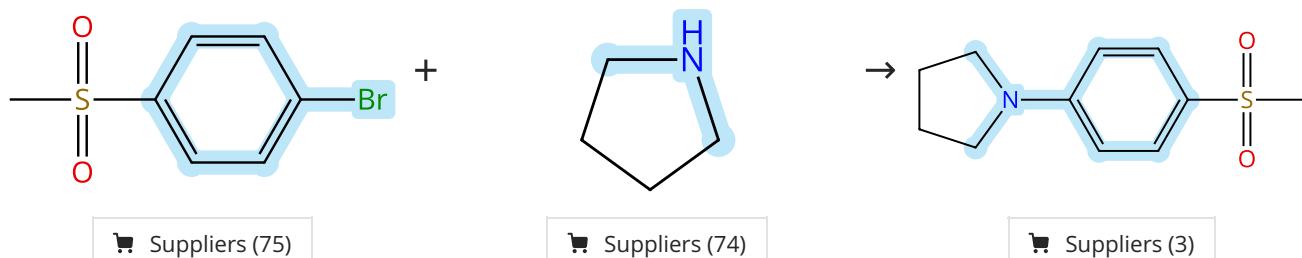
Solvents: Acetonitrile, Toluene; 1 min, rt

## 1.2 Reagents: Oxygen; 12 h, 1 MPa, 120 °C

## Experimental Protocols

## Scheme 255 (1 Reaction)

Steps: 1 Yield: 53%



31-614-CAS-41175796

Steps: 1 Yield: 53%

 $\alpha$ -Amino bicycloalkylation through organophotoredox catalysis

## 1.1 Reagents: Potassium carbonate

By: Nugent, Jeremy; et al

Catalysts: L-Proline, Cuprous iodide

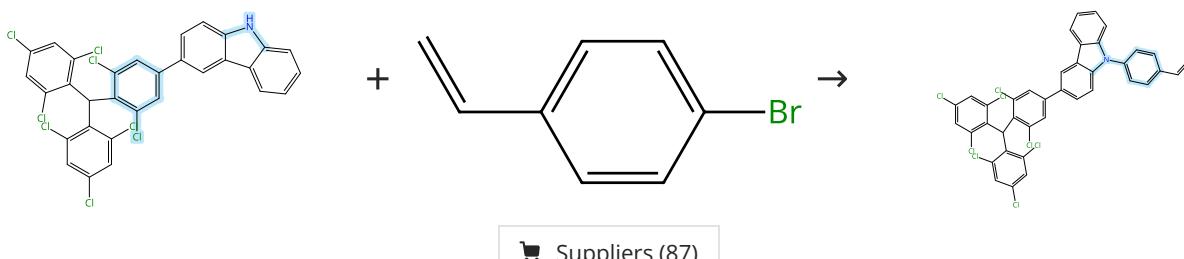
Chemical Science (2024), 15(28), 10918-10925.

Solvents: Dimethyl sulfoxide; 72 h, 80 °C

## Experimental Protocols

## Scheme 256 (1 Reaction)

Steps: 1 Yield: 53%



31-614-CAS-40885863

Steps: 1 Yield: 53%

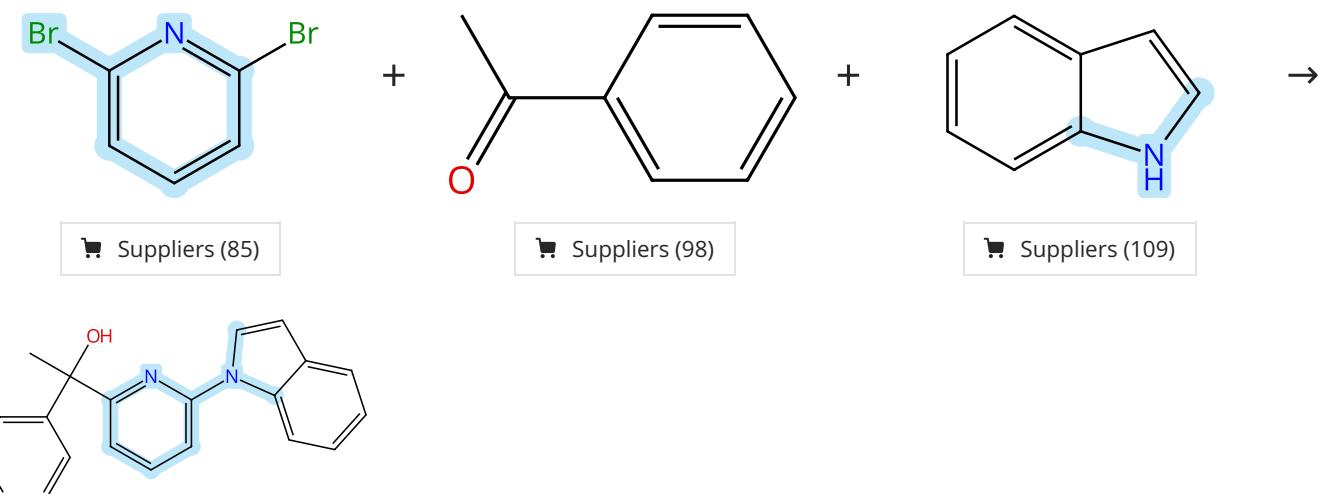
- 1.1 Reagents:** Potassium carbonate, *trans*-1,4-Diaminocyclohexane  
**Catalysts:** Cuprous iodide  
**Solvents:** 1,4-Dioxane; 48 h, 100 °C

Experimental Protocols

**Spin-State Manipulation in a Luminescent Diradical Polymer**

By: Wang, Shengjie; et al

Macromolecules (Washington, DC, United States) (2024), 57(13), 6133-6139.

**Scheme 257 (1 Reaction)**

31-614-CAS-41084442

Steps: 1 Yield: 53%

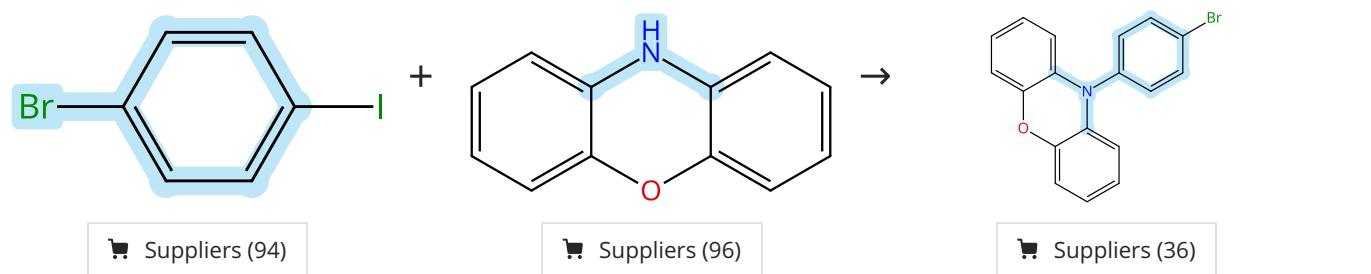
- 1.1 Reagents:** Butyllithium  
**Solvents:** Diethyl ether; -78 °C
- 1.2 Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 12 h, 110 °C

Experimental Protocols

**Trinuclear ruthenium clusters supported by piconol ligands: Application in catalytic C(sp<sup>3</sup>)-H bond oxidation in CH<sub>3</sub>CN/H<sub>2</sub>O**

By: Hao, Zhiqiang; et al

Journal of Organometallic Chemistry (2024), 1005, 122981.

**Scheme 258 (1 Reaction)**

31-614-CAS-40363585

Steps: 1 Yield: 53%

- 1.1 Reagents:** Potassium carbonate  
**Catalysts:** Copper, 18-Crown-6  
**Solvents:** Dimethylformamide; 12 h, 140 °C

Experimental Protocols

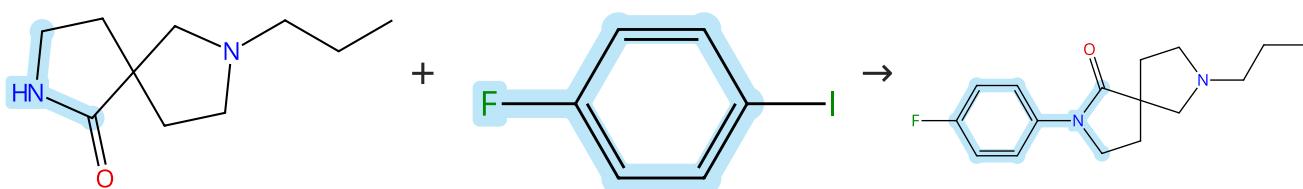
**Exploiting P-chemistry to modulate the thermally activated delayed fluorescence of organic fluorophores**

By: Ledos, Nicolas; et al

Dyes and Pigments (2024), 224, 111978.

Scheme 259 (1 Reaction)

Steps: 1 Yield: 52%



Suppliers (82)

31-614-CAS-38852523

Steps: 1 Yield: 52%

1.1 Reagents: Tripotassium phosphate

Catalysts: *N,N'*-Dimethylethylenediamine, Cuprous iodide

Solvents: 1,4-Dioxane; 20 h, 100 °C

Experimental Protocols

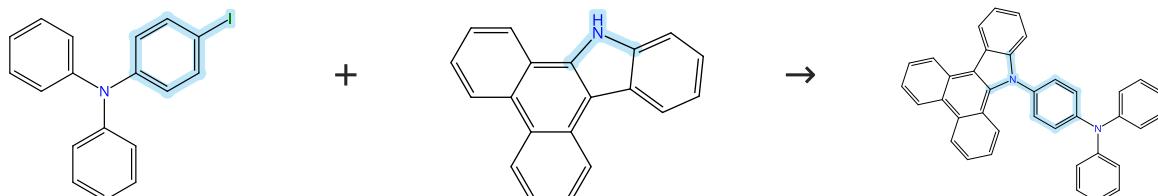
Design and synthesis of fused azacyclic and azaspiracyclic γ-lactams targeting dopaminergic D2/D4 receptors

By: Lalut, Julien; et al

Journal of Molecular Structure (2024), 1299, 137104.

Scheme 260 (1 Reaction)

Steps: 1 Yield: 52%



Suppliers (58)

Suppliers (35)

31-614-CAS-39557398

Steps: 1 Yield: 52%

Twofold rigidity activates ultralong organic high-temperature phosphorescence

By: Chen, Kaijun; et al

Nature Communications (2024), 15(1), 1269.

Experimental Protocols

Scheme 261 (1 Reaction)

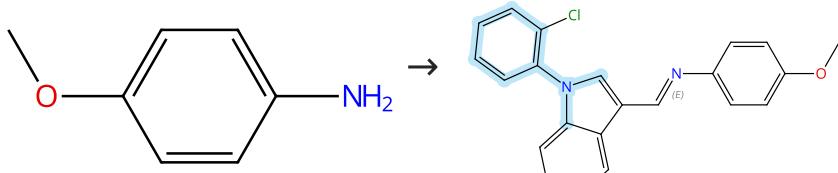
Steps: 1 Yield: 52%



Suppliers (84)

Suppliers (109)

Suppliers (298)



Suppliers (78)

Double bond geometry shown

31-614-CAS-40180092

Steps: 1 Yield: 52%

- 1.1 **Reagents:** Tripotassium phosphate  
**Catalysts:** 1,2-Diaminocyclohexane, Cuprous iodide  
**Solvents:** *p*-Xylene; 24 h, 160 °C; 160 °C → rt
- 1.2 **Reagents:** Ammonium chloride  
**Solvents:** Water; rt
- 1.3 **Reagents:** Phosphorus oxychloride  
**Solvents:** Dimethylformamide; 0 °C; 2 h, rt
- 1.4 **Reagents:** Sodium hydroxide  
**Solvents:** Water; pH 8 - 9, 0 °C
- 1.5 **Solvents:** Toluene; 16 h, reflux

## Experimental Protocols

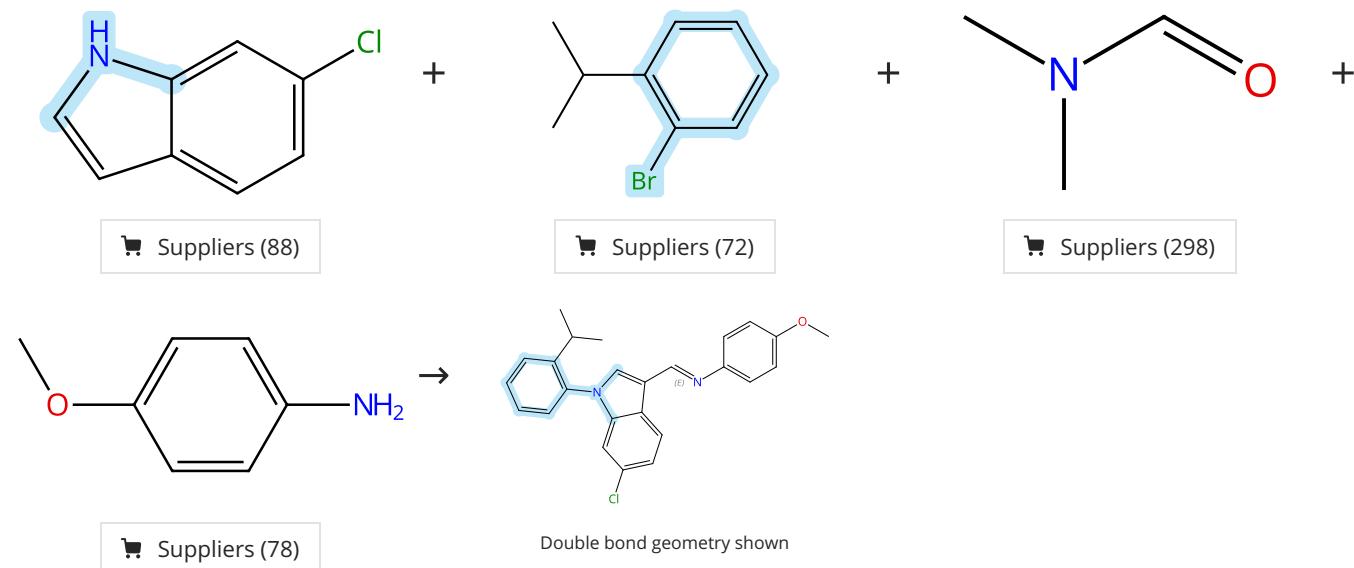
**Iron-catalyzed stereoselective C-H alkylation for simultaneous construction of C-N axial and C-central chirality**

By: Zhang, Zi-Jing; et al

Nature Communications (2024), 15(1), 3503.

Scheme 262 (1 Reaction)

Steps: 1 Yield: 52%



31-614-CAS-40180137

Steps: 1 Yield: 52%

- 1.1 **Reagents:** Tripotassium phosphate  
**Catalysts:** 1,2-Diaminocyclohexane, Cuprous iodide  
**Solvents:** *p*-Xylene; 24 h, 160 °C; 160 °C → rt
- 1.2 **Reagents:** Ammonium chloride  
**Solvents:** Water; rt
- 1.3 **Reagents:** Phosphorus oxychloride  
**Solvents:** Dimethylformamide; 0 °C; 2 h, rt
- 1.4 **Reagents:** Sodium hydroxide  
**Solvents:** Water; pH 8 - 9, 0 °C
- 1.5 **Solvents:** Toluene; 16 h, reflux

## Experimental Protocols

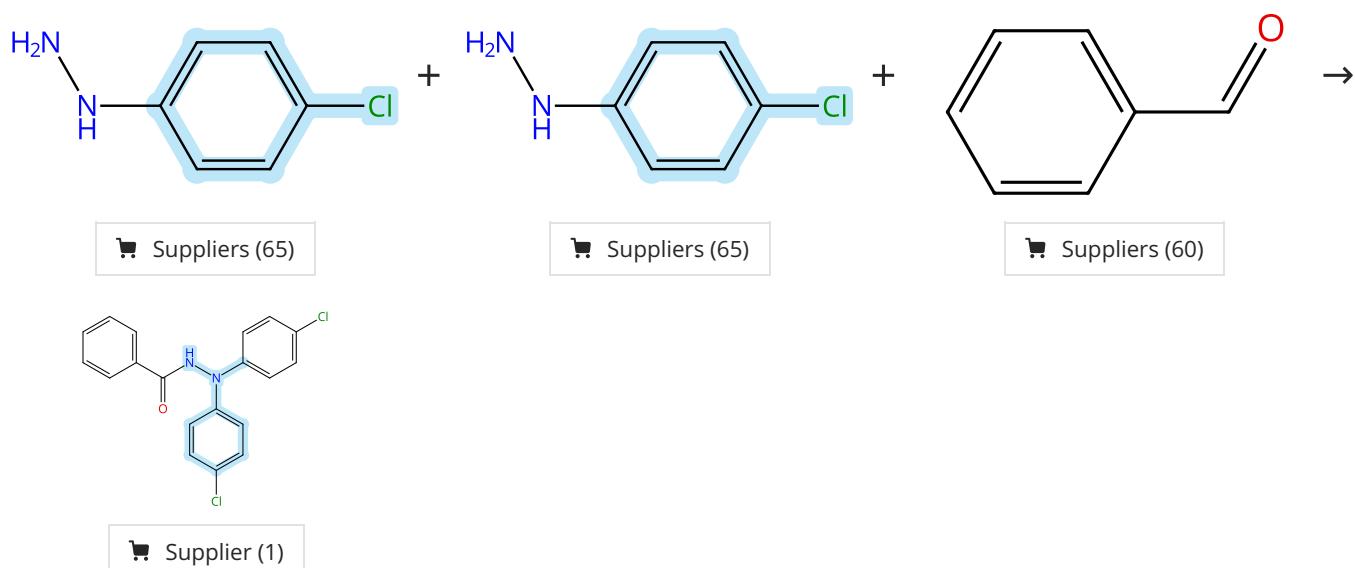
**Iron-catalyzed stereoselective C-H alkylation for simultaneous construction of C-N axial and C-central chirality**

By: Zhang, Zi-Jing; et al

Nature Communications (2024), 15(1), 3503.

Scheme 263 (1 Reaction)

Steps: 1 Yield: 52%



31-614-CAS-39391332

Steps: 1 Yield: 52%

**1.1 Reagents:** Dipotassium phosphate  
**Catalysts:** Copper(II) triflate  
**Solvents:** Acetonitrile; 12 h, 0 °C

Experimental Protocols

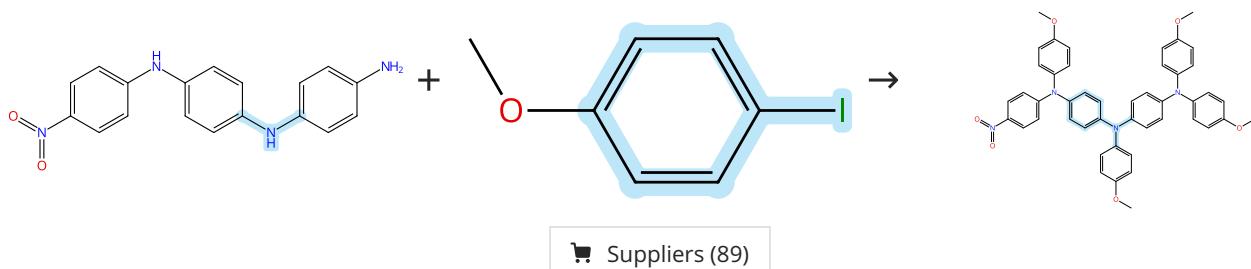
An aerobic copper-catalyzed multi-component reaction strategy for N,N'-diaryl acylhydrazine synthesis: reactions and mechanism

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

Scheme 264 (1 Reaction)

Steps: 1 Yield: 52%



31-614-CAS-40616787

Steps: 1 Yield: 52%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Copper, 18-Crown-6  
**Solvents:** 1,2-Dichlorobenzene; 24 h, reflux

Experimental Protocols

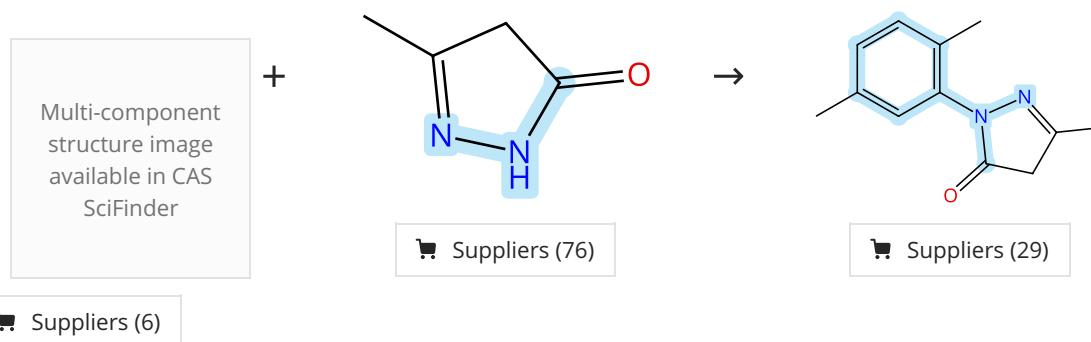
Concept of triphenylamine side chains with four electro active nitrogen centers toward record-high stable electrochromic polyamides

By: Chern, Yaw-Terng; et al

Journal of Materials Chemistry C: Materials for Optical and Electronic Devices (2024), 12(24), 8804-8812.

Scheme 265 (1 Reaction)

Steps: 1 Yield: 52%



31-614-CAS-38961894

Steps: 1 Yield: 52%

**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 3 h, 110 °C
- 1.2 **Reagents:** Water

Experimental Protocols

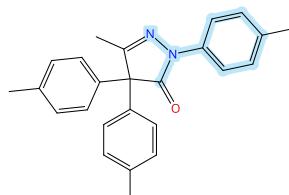
**Scheme 266 (1 Reaction)**

Multi-component structure image available in CAS SciFinder

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Suppliers (76)

Suppliers (36)

Steps: 1 Yield: 52%

31-614-CAS-38961926

Steps: 1 Yield: 52%

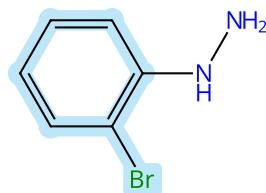
**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

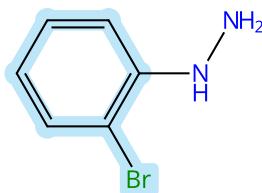
Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

- 1.1 **Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 6 h, 110 °C
- 1.2 **Reagents:** Water

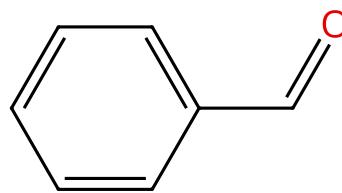
Experimental Protocols

**Scheme 267 (1 Reaction)**

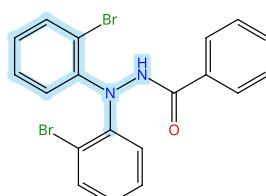
+



+



→



Suppliers (47)

Suppliers (47)

Suppliers (60)

Steps: 1 Yield: 52%

31-614-CAS-39391326

Steps: 1 Yield: 52%

**An aerobic copper-catalyzed multi-component reaction strategy for N,N'-diaryl acylhydrazine synthesis: reactions and mechanism**

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

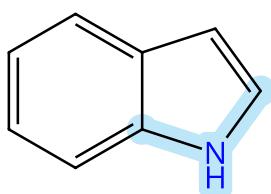
- 1.1 **Reagents:** Dipotassium phosphate  
**Catalysts:** Copper(II) triflate  
**Solvents:** Acetonitrile; 12 h, 0 °C

Experimental Protocols

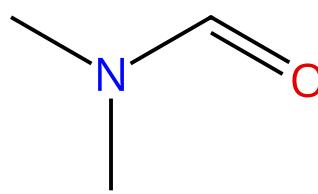
Scheme 268 (1 Reaction)



+



+

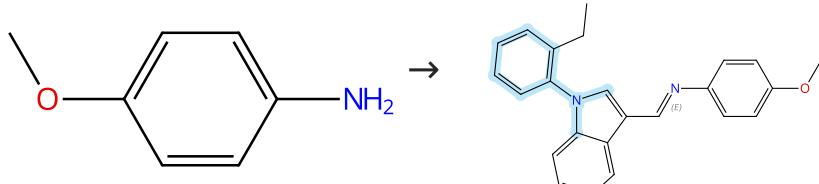


Steps: 1 Yield: 52%

Suppliers (82)

Suppliers (109)

Suppliers (298)



Suppliers (78)

Double bond geometry shown

31-614-CAS-40180076

Steps: 1 Yield: 52%

- 1.1 Reagents: Tripotassium phosphate  
Catalysts: 1,2-Diaminocyclohexane, Cuprous iodide  
Solvents: *p*-Xylene; 24 h, 160 °C; 160 °C → rt
- 1.2 Reagents: Ammonium chloride  
Solvents: Water; rt
- 1.3 Reagents: Phosphorus oxychloride  
Solvents: Dimethylformamide; 0 °C; 2 h, rt
- 1.4 Reagents: Sodium hydroxide  
Solvents: Water; pH 8 - 9, 0 °C
- 1.5 Solvents: Toluene; 16 h, reflux

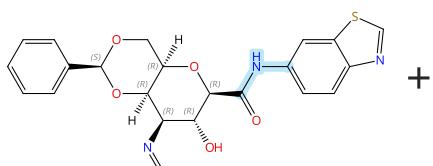
Iron-catalyzed stereoselective C-H alkylation for simultaneous construction of C-N axial and C-central chirality

By: Zhang, Zi-Jing; et al

Nature Communications (2024), 15(1), 3503.

## Experimental Protocols

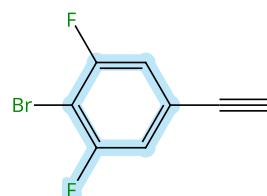
Scheme 269 (1 Reaction)



Absolute stereochemistry shown

+

+

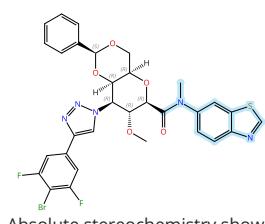


→

Steps: 1 Yield: 52%

Suppliers (84)

Suppliers (16)



Absolute stereochemistry shown

31-614-CAS-39637191

Steps: 1 Yield: 52%

1.1 Reagents: Sodium hydride

Solvents: Dimethylformamide; 60 min, rt

1.2 Solvents: Water; rt

1.3 Catalysts: Sodium ascorbate, Copper sulfate

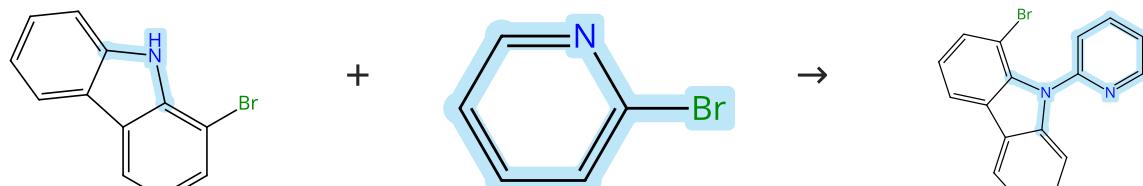
Solvents: Dimethylformamide, Water; 1 h, 85 °C

Experimental Protocols

Identification of benzothiazole derived monosaccharides as potent, selective, and orally bioavailable inhibitors of human and mouse galectin-3; a rare example of using a S...O binding interaction for drug design

By: Liu, Chunjian; et al

Bioorganic &amp; Medicinal Chemistry (2024), 101, 117638.

**Scheme 270 (1 Reaction)**

Suppliers (64)

Suppliers (86)

Supplier (1)

Steps: 1 Yield: 52%

31-614-CAS-41277583

Steps: 1 Yield: 52%

1.1 Reagents: Potassium carbonate

Catalysts: Copper

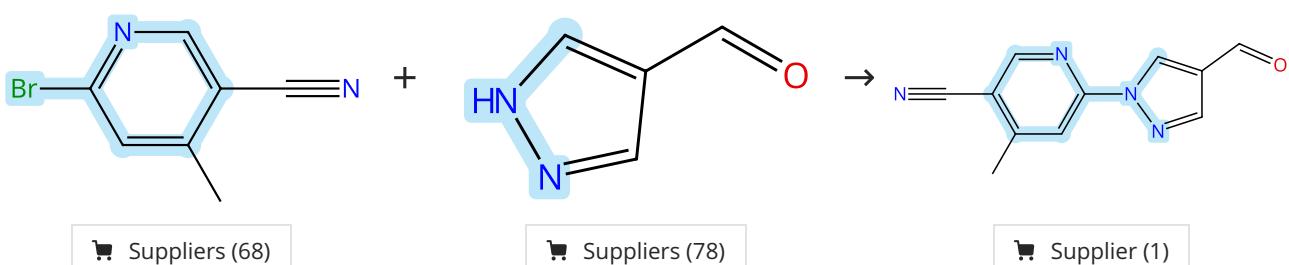
Solvents: Dimethylformamide; 30 h, 140 °C

Experimental Protocols

Palladium-Catalyzed Direct Alkyneation of Carbazoles with Alkynyl Bromides

By: Dharaniyedath, Jyothis; et al

European Journal of Organic Chemistry (2024), 27(40), e202400649.

**Scheme 271 (1 Reaction)**

Suppliers (68)

Suppliers (78)

Supplier (1)

Steps: 1 Yield: 52%

31-614-CAS-40948321

Steps: 1 Yield: 52%

1.1 Reagents: Potassium carbonate

Catalysts: Cuprous iodide

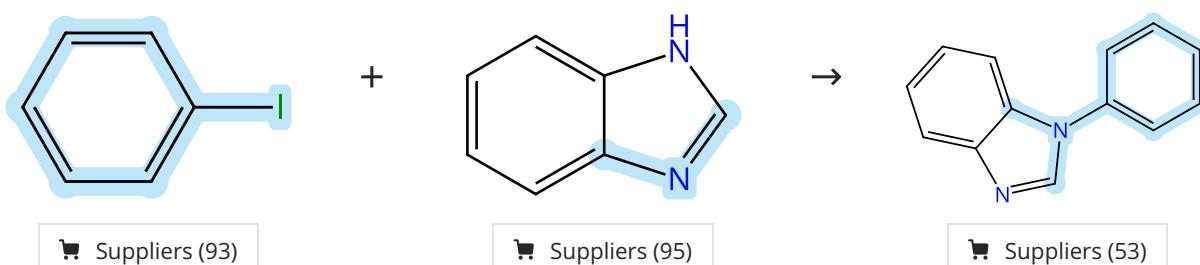
Solvents: 1,4-Dioxane; 1 h, 110 °C

Experimental Protocols

Discovery of BMS-986308: A Renal Outer Medullary Potassium Channel Inhibitor for the Treatment of Heart Failure

By: Richter, Jeremy M.; et al

Journal of Medicinal Chemistry (2024), 67(11), 9731-9744.

**Scheme 272 (1 Reaction)**

Suppliers (93)

Suppliers (95)

Suppliers (53)

Steps: 1 Yield: 52%

31-614-CAS-35838766

Steps: 1 Yield: 52%

**1.1 Reagents:** Potassium hydroxide  
**Catalysts:** Copper oxide ( $\text{Cu}_2\text{O}$ ), Copper iron oxide ( $\text{CuFe}_2\text{O}_4$ ), Polyaniline  
**Solvents:** Dimethyl sulfoxide; 6 h, 100 °C

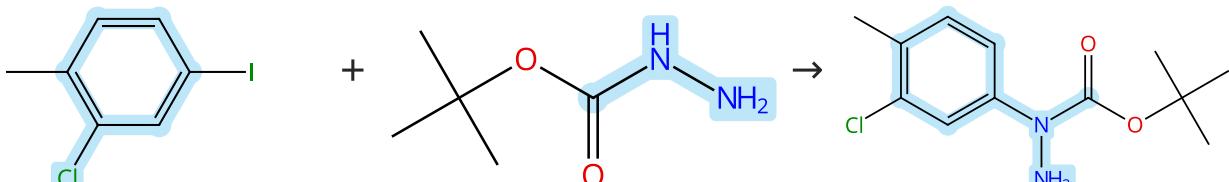
Experimental Protocols

Polyaniline-encapsulating  $\text{CuFe}_2\text{O}_4/\text{Cu}_2\text{O}$  composite: a simple, effective and reusable heterogeneous catalyst for ligand-free N-arylation of amines and nitrogen heterocycles

By: Ahrari, Vahide; et al

Inorganic and Nano-Metal Chemistry (2024), 54(12), 1211-1220.

## Scheme 273 (1 Reaction)



Suppliers (65)

Suppliers (96)

31-614-CAS-38942447

Steps: 1 Yield: 51%

**1.1 Reagents:** Cesium carbonate  
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide  
**Solvents:** Dimethylformamide; 12 h, 80 °C

Experimental Protocols

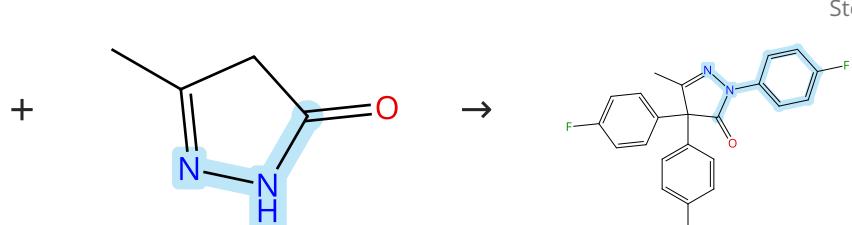
Enantioselective Synthesis of N-N Amide-Pyrrole Atropisomers via Paal-Knorr Reaction

By: Wei, Yuanlin; et al

Organic Letters (2024), 26(12), 2343-2348.

## Scheme 274 (1 Reaction)

Multi-component structure image available in CAS SciFinder



Suppliers (53)

Suppliers (76)

31-614-CAS-38961929

Steps: 1 Yield: 51%

**1.1 Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene; 6 h, 110 °C

**1.2 Reagents:** Water

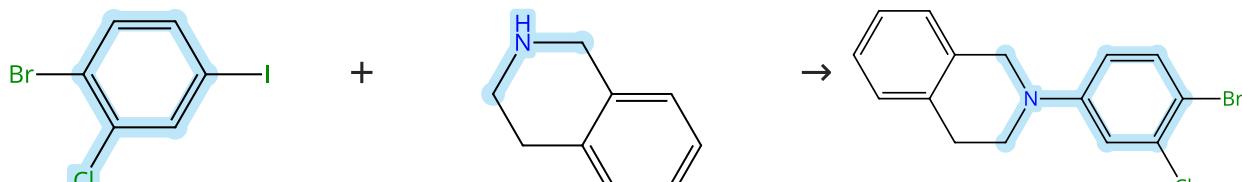
Experimental Protocols

Sequential regioselective arylation of pyrazolones with diaryliodonium salts

By: Liao, Wenbo; et al

Organic &amp; Biomolecular Chemistry (2024), 22(4), 708-713.

## Scheme 275 (1 Reaction)



Suppliers (73)

Suppliers (92)

31-614-CAS-39281171

Steps: 1 Yield: 51%

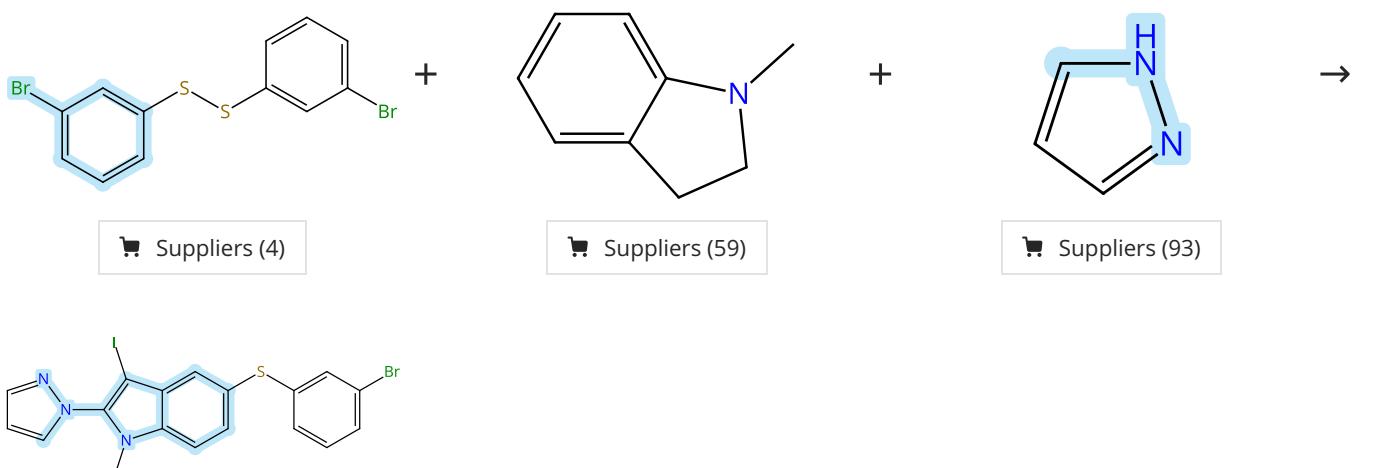
**1.1 Reagents:** Ethylene glycol, Tripotassium phosphate  
**Catalysts:** Cuprous iodide  
**Solvents:** Isopropanol; 24 h, 90 °C

Experimental Protocols

**CBr<sub>4</sub> as a Mild Oxidant-Enabled Oxidation of a sp<sup>3</sup> C-H Bond: A Facile Synthesis of the Persistent Iminium Salts of Tetrahydroisoquinolines**

By: Chen, Yuqin; et al

Chemistry - A European Journal (2024), 30(14), e202303952.

**Scheme 276 (1 Reaction)**

31-614-CAS-39675961

Steps: 1 Yield: 51%

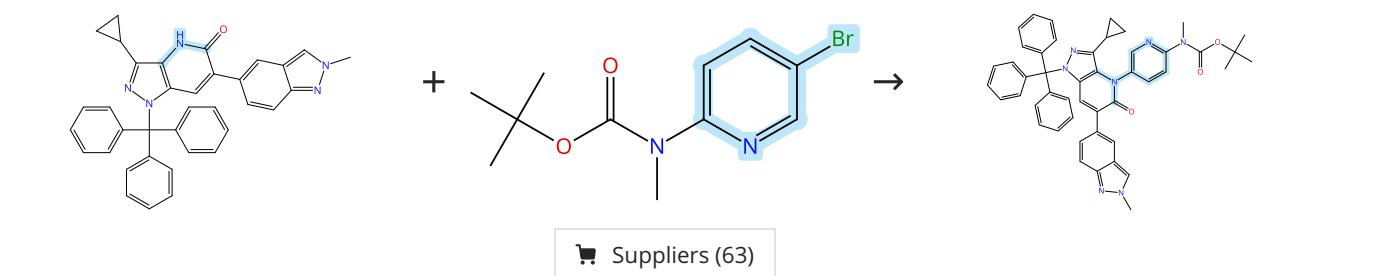
**1.1 Reagents:** Iodine, Oxygen  
**Catalysts:** Cuprous iodide  
**Solvents:** Toluene, 1,4-Dioxane; 24 h, 80 °C

Experimental Protocols

**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

**Scheme 277 (1 Reaction)**

31-614-CAS-39638242

Steps: 1 Yield: 51%

**1.1 Reagents:** Potassium carbonate, N,N-Dimethylglycine  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; rt; 17 h, 120 °C

Experimental Protocols

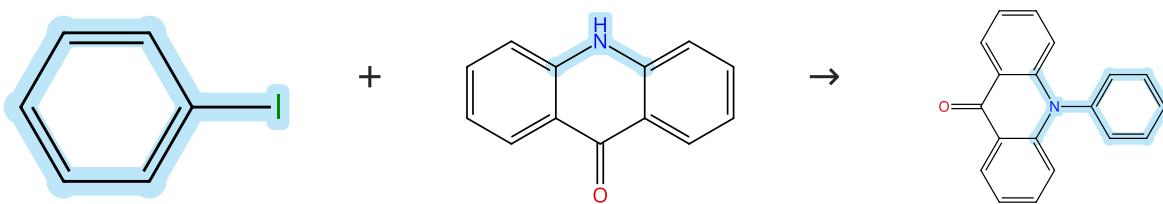
**Development of a Series of Pyrrolopyridone MAT2A Inhibitors**

By: Atkinson, Stephen J.; et al

Journal of Medicinal Chemistry (2024), 67(6), 4541-4559.

**Scheme 278 (1 Reaction)**

Steps: 1 Yield: 51%



Suppliers (93)

Suppliers (103)

Suppliers (53)

31-614-CAS-40266115

Steps: 1 Yield: 51%

- 1.1 **Reagents:** Potassium carbonate  
**Catalysts:** 2,2,6,6-Tetramethyl-3,5-heptanedione, Cuprous iodide  
**Solvents:** Dimethylformamide; 48 h, 130 °C; 130 °C → rt
- 1.2 **Reagents:** Hydrochloric acid  
**Solvents:** Water; rt

**Visible-Light [4+2] Homodimerization of Decomposition-Prone Styrenes via Electron Transfer Catalysis of Diaryl Diiselenides**

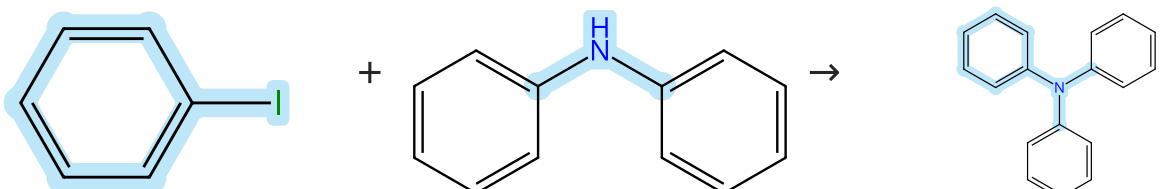
By: Jang, Inho; et al

Organic Letters (2024), 26(18), 4008-4012.

Experimental Protocols

**Scheme 279 (1 Reaction)**

Steps: 1 Yield: 51%



Suppliers (93)

Suppliers (98)

Suppliers (88)

31-614-CAS-35838777

Steps: 1 Yield: 51%

- 1.1 **Reagents:** Potassium hydroxide  
**Catalysts:** Copper oxide ( $\text{Cu}_2\text{O}$ ), Copper iron oxide ( $\text{CuFe}_2\text{O}_4$ ), Polyaniline  
**Solvents:** Dimethyl sulfoxide; 15 h, 100 °C

Experimental Protocols

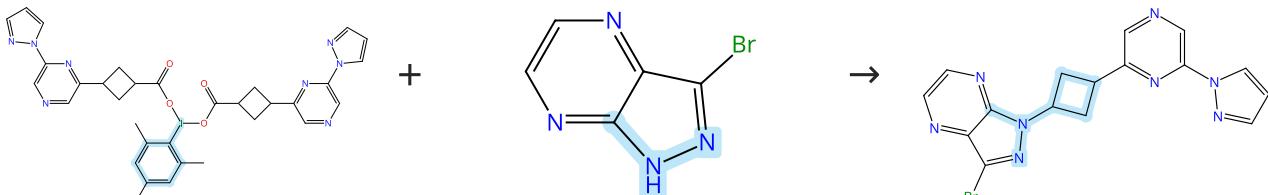
**Polyaniline-encapsulating  $\text{CuFe}_2\text{O}_4/\text{Cu}_2\text{O}$  composite: a simple, effective and reusable heterogeneous catalyst for ligand-free N-arylation of amines and nitrogen heterocycles**

By: Ahrari, Vahide; et al

Inorganic and Nano-Metal Chemistry (2024), 54(12), 1211-1220.

**Scheme 280 (1 Reaction)**

Steps: 1 Yield: 51%



Suppliers (61)

31-614-CAS-36318204

Steps: 1 Yield: 51%

- 1.1 **Catalysts:** 4,7-Diphenyl-1,10-phenanthroline, (2-Thiophenecarboxylato- $\kappa O^2,\kappa S^1$ )copper, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,\kappa N^1$ ]bis[5-fluoro-2-(5-methyl-2-pyridinyl- $\kappa N$ )phenyl- $\kappa C$ ]-, ( $OC_6-33$ )-, hexafluorophosphate(1-) (1:1)  
**Solvents:** 1,4-Dioxane; 1 - 3 min; 1 h, rt

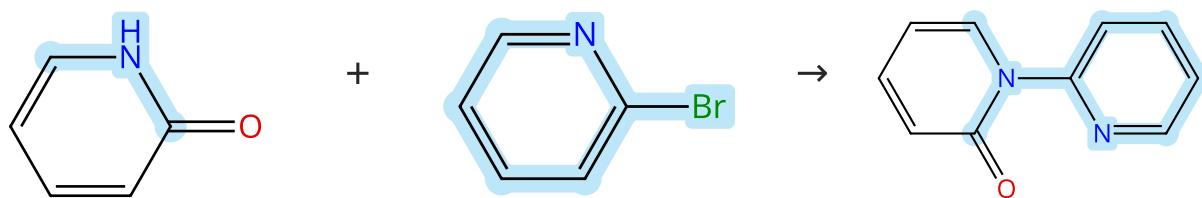
Experimental Protocols

**Redefining the Synthetic Logic of Medicinal Chemistry. Photoredox-Catalyzed Reactions as a General Tool for Aliphatic Core Functionalization**

By: Fernandez, David F.; et al

Organic Letters (2024), 26(14), 2702-2707.

Scheme 281 (1 Reaction)



Suppliers (128)

Suppliers (86)

Suppliers (9)

31-614-CAS-42147057

Steps: 1 Yield: 50%

1.1 Reagents: Potassium carbonate

Catalysts: *N,N,N',N'*-Tetramethylethylenediamine, Cuprous iodide

Solvents: Toluene; 16 h, 110 °C

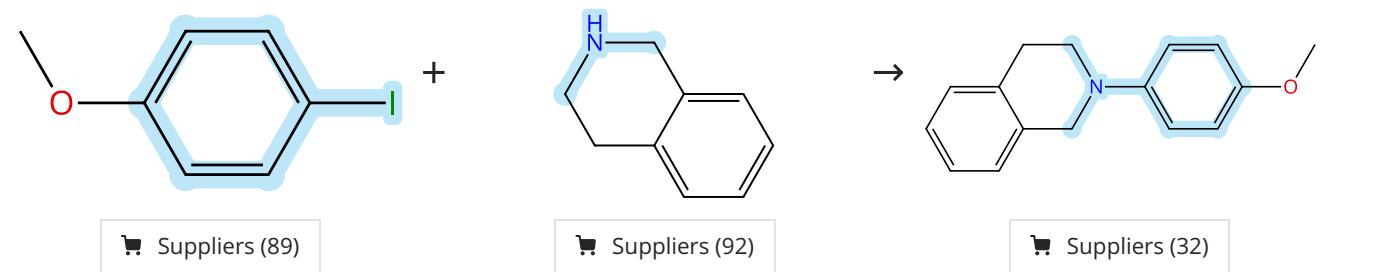
Bromopyridines as Versatile Synthons for Heteroarylated 2-Pyridones via Ru(II)-Mediated Domino C-O/C-N/C-C Bond Formation Reactions

By: Drev, Miha; et al

Molecules (2024), 29(18), 4418.

Experimental Protocols

Scheme 282 (1 Reaction)



Suppliers (89)

Suppliers (92)

Suppliers (32)

31-614-CAS-44875551

Steps: 1 Yield: 50%

1.1 Reagents: Tripotassium phosphate

Catalysts: Cuprous iodide

Solvents: Isopropanol, Ethylene glycol; rt; 24 h, 85 - 90 °C

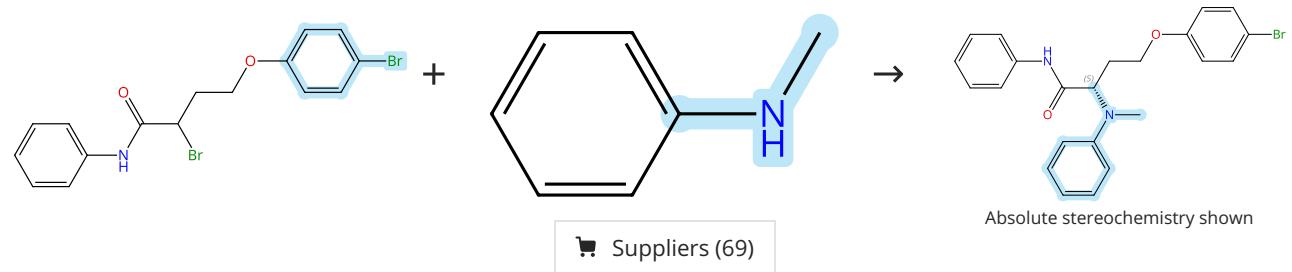
Photoredox/NHC Dual Catalysis Enabled de Novo Synthesis of  $\alpha$ -Amino Acids Derivatives

By: Ji, Dong-Sheng; et al

Organic Letters (2024), 26(39), 8435-8440.

Experimental Protocols

Scheme 283 (1 Reaction)



Suppliers (69)

31-614-CAS-41176936

Steps: 1 Yield: 50%

Copper-Catalyzed Enantioconvergent Radical N-Alkylation of Diverse (Hetero)aromatic Amines

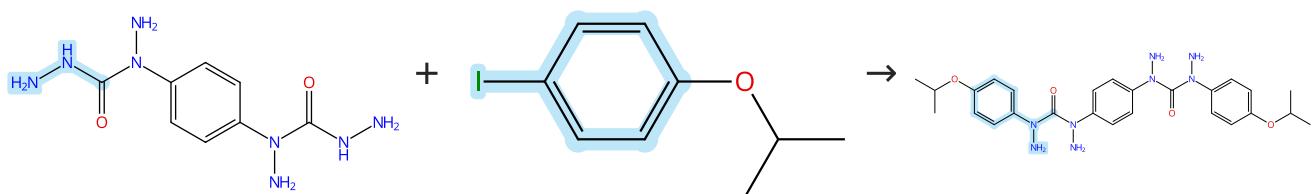
By: Du, Xuan-Yi; et al

Journal of the American Chemical Society (2024), 146(13), 9444-9454.

Experimental Protocols

**Scheme 284 (1 Reaction)**

Steps: 1 Yield: 50%



Suppliers (48)

**31-614-CAS-41194611**

Steps: 1 Yield: 50%

- 1.1 Reagents:** Tripotassium phosphate  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethylformamide; 24 h, 50 °C

## Experimental Protocols

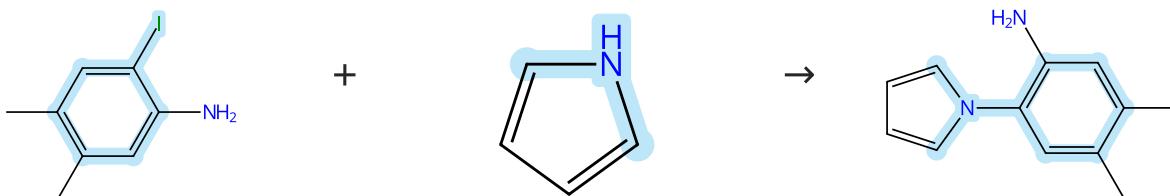
**Electronic and Magnetic Interactions in 6-Oxoverdazyl Diradicals: Connection through N(1) vs C(3) Revisited**

By: Bodzioch, Agnieszka; et al

Journal of Organic Chemistry (2024), 89(9), 6306-6321.

**Scheme 285 (1 Reaction)**

Steps: 1 Yield: 50%



Suppliers (54)

Suppliers (73)

Suppliers (5)

**31-614-CAS-39317997**

Steps: 1 Yield: 50%

- 1.1 Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 15 min, rt  
**1.2** 12 h, 80 °C

## Experimental Protocols

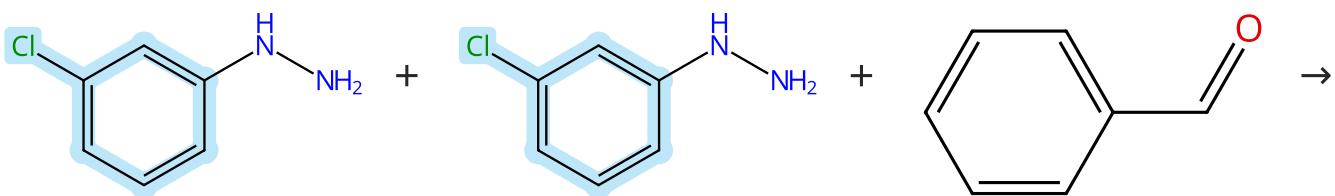
**A sonochemical approach to 4-substituted pyrrolo[1,2-a]quinoxalines via Cu-catalyzed N-arylation followed by Wang resin/air promoted oxidative cyclization strategy**

By: Chemboli, Raviteja; et al

Tetrahedron Letters (2024), 136, 154917.

**Scheme 286 (1 Reaction)**

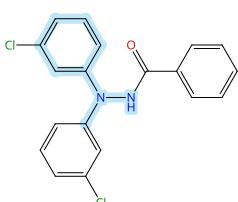
Steps: 1 Yield: 50%



Suppliers (57)

Suppliers (57)

Suppliers (60)



Supplier (1)

31-614-CAS-39391325

Steps: 1 Yield: 50%

**1.1 Reagents:** Dipotassium phosphate  
**Catalysts:** Copper(II) triflate  
**Solvents:** Acetonitrile; 12 h, 0 °C

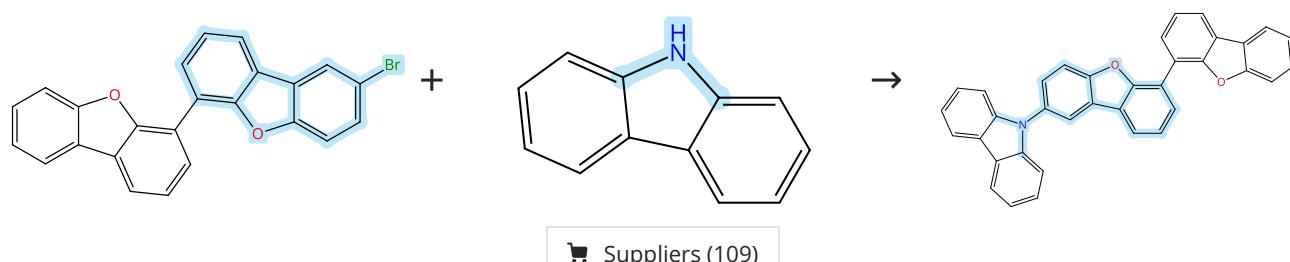
Experimental Protocols

An aerobic copper-catalyzed multi-component reaction strategy for N',N'-diaryl acylhydrazine synthesis: reactions and mechanism

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

## Scheme 287 (1 Reaction)



31-614-CAS-41060056

Steps: 1 Yield: 50%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethylacetamide; 48 h, 453 K

**1.2 Reagents:** Sodium chloride  
**Solvents:** Water

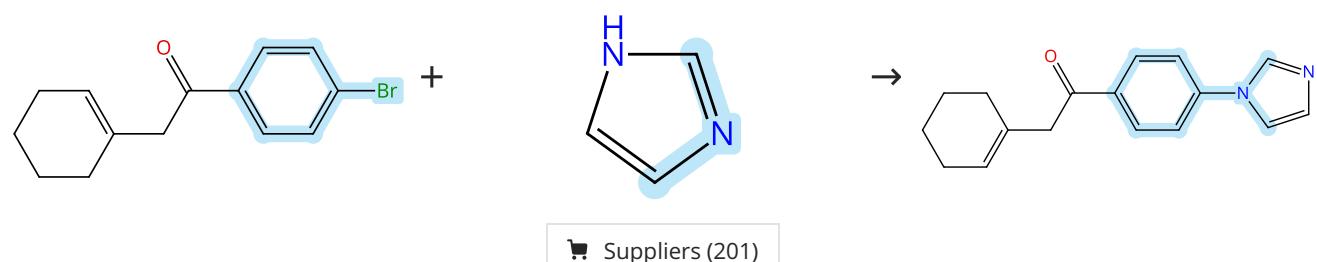
Experimental Protocols

Utilizing weakly donor-acceptor ternary π-conjugated architecture to achieve single-component white luminescence and stimulus-responsive room-temperature phosphorescence

By: Huang, Wenbin; et al

Chemical Science (2024), 15(31), 12316-12325.

## Scheme 288 (1 Reaction)



31-614-CAS-38946802

Steps: 1 Yield: 50%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Copper sulfate; 24 h, 150 °C

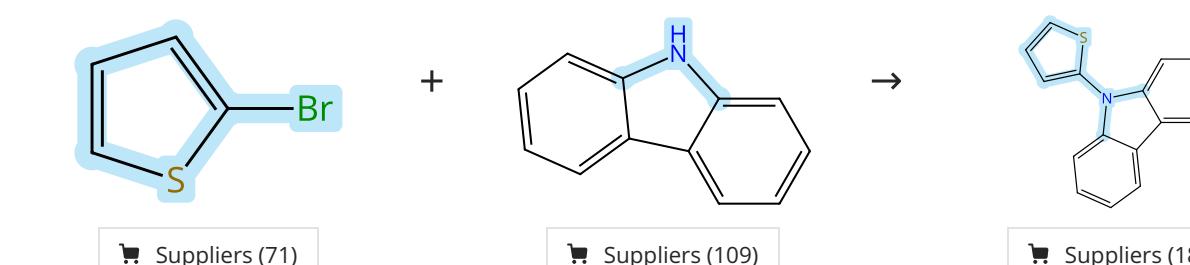
Experimental Protocols

Chromium-Catalyzed Cross-Coupling of Methyl Ketones with Cyclic Ketones toward the Selective Synthesis of β-Branched β,γ-Unsaturated Ketones

By: Adhikari, Priyanka; et al

Organic Letters (2024), 26(1), 286-291.

## Scheme 289 (1 Reaction)



31-614-CAS-38854438

Steps: 1 Yield: 50%

**1.1 Reagents:** Cesium carbonate  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethylformamide; 30 min, 200 °C

Experimental Protocols

Multifunctional Photoelectroactive Materials for Optoelectronic Applications Based on Thieno[3,4-*b*]pyrazines and Thieno[1,2,5]thiadiazoles

By: Zangoli, Mattia; et al

Chemistry - A European Journal (2024), 30(7), e202303590.

## Scheme 290 (1 Reaction)



31-614-CAS-42382972

Steps: 1 Yield: 50%

**1.1 Reagents:** Tripotassium phosphate  
**Catalysts:** Cuprous iodide, (-)-*trans*-1,2-Diaminocyclohexane  
**Solvents:** 1,4-Dioxane; rt → 110 °C; 24 h, 110 °C

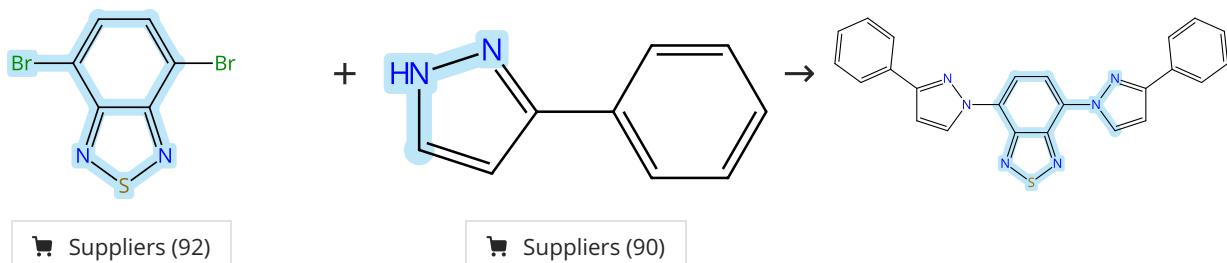
Experimental Protocols

Ring-opening silylation of N-arylindoles via endocyclic C-N bond cleavage triggered by silylboranes

By: Tian, Ye; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(83), 11980-11983.

## Scheme 291 (1 Reaction)



31-614-CAS-39503756

Steps: 1 Yield: 50%

**1.1 Reagents:** Potassium carbonate  
**Catalysts:** Copper oxide (CuO)  
**Solvents:** Dimethylformamide; 48 h, 150 °C

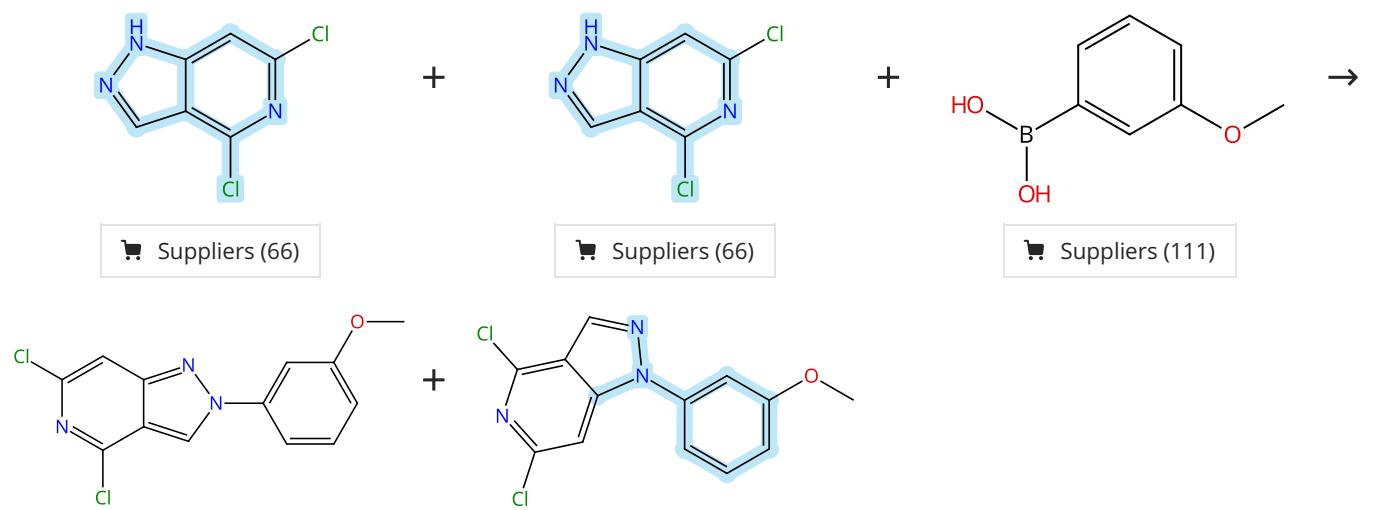
Experimental Protocols

Photoactive benzothiadiazole-N-heterocycle derivatives: synthesis, photophysics and water sensing in organic solvents

By: Ebersol, Camila P.; et al

New Journal of Chemistry (2024), 48(11), 4680-4689.

Scheme 292 (1 Reaction)



31-614-CAS-38906721

Steps: 1 Yield: 81%

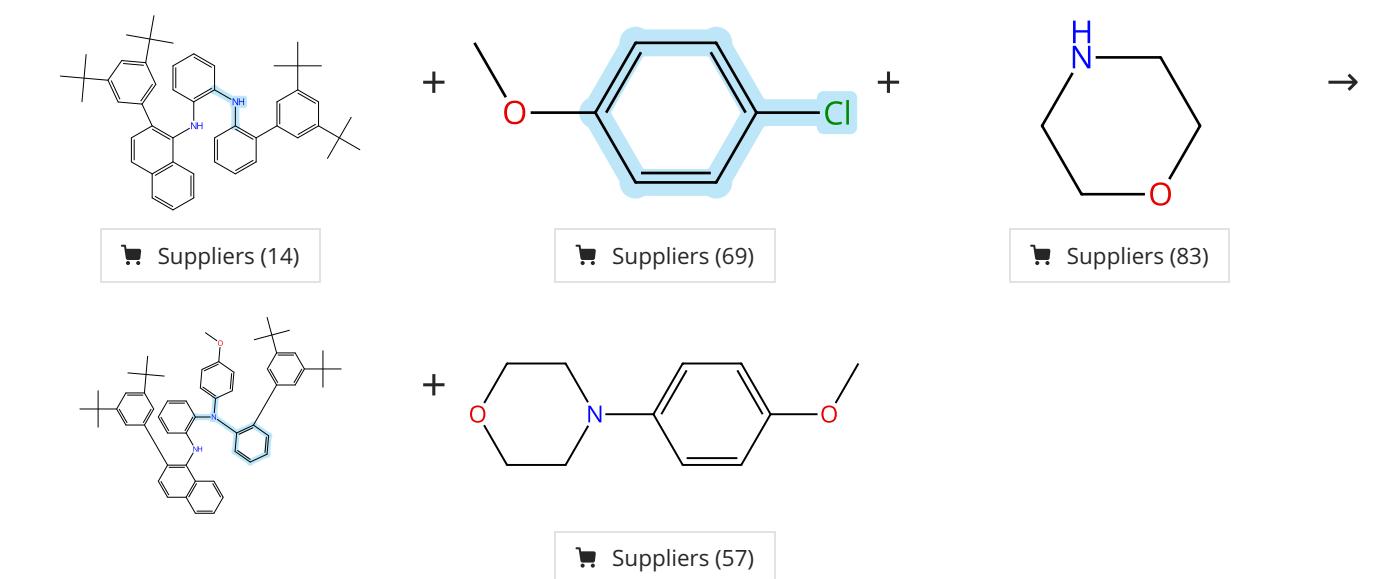
**Discovery of 4-Ethoxy-6-chloro-5-azaindazoles as Novel PDE4 Inhibitors for the Treatment of Alcohol Use Disorder and Alcoholic Liver Diseases**

By: Zheng, Lei; et al

Journal of Medicinal Chemistry (2024), 67(1), 728-753.

- 1.1 **Reagents:** Pyridine  
**Catalysts:** Cupric acetate  
**Solvents:** Dichloromethane; rt; 24 h, rt
- 1.2 **Solvents:** Water; rt  
**Experimental Protocols**

Scheme 293 (1 Reaction)



31-614-CAS-41756989

Steps: 1 Yield: 80%

**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

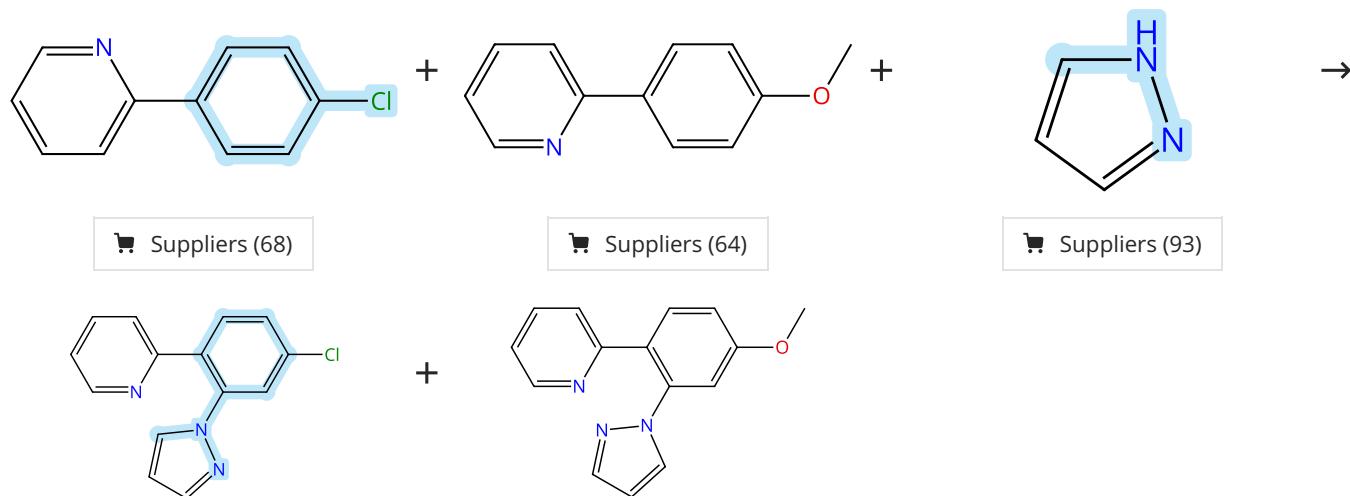
By: Ai, Han-Jun; et al

Journal of the American Chemical Society (2024), 146(38), 25949-25955.

- 1.1 **Reagents:** Sodium methoxide  
**Catalysts:** Cuprous iodide  
**Solvents:** Dimethyl sulfoxide; 5 min
- 1.2 24 h, 60 °C  
**Experimental Protocols**

Scheme 294 (1 Reaction)

Steps: 1 Yield: 77%



31-614-CAS-41633243

Steps: 1 Yield: 77%

1.1 **Reagents:** 2,4,6-Trimethylbenzoic acid, Sodium carbonate, Silver fluoride, Oxygen  
**Catalysts:** Cupric acetate  
**Solvents:** *m*-Xylene, 1,1,1,3,3-Hexafluoro-2-propanol; 12 h, 160 °C

**Copper-promoted ortho-directed C-H amination of 2-arylpyridines with NH-heterocycles**

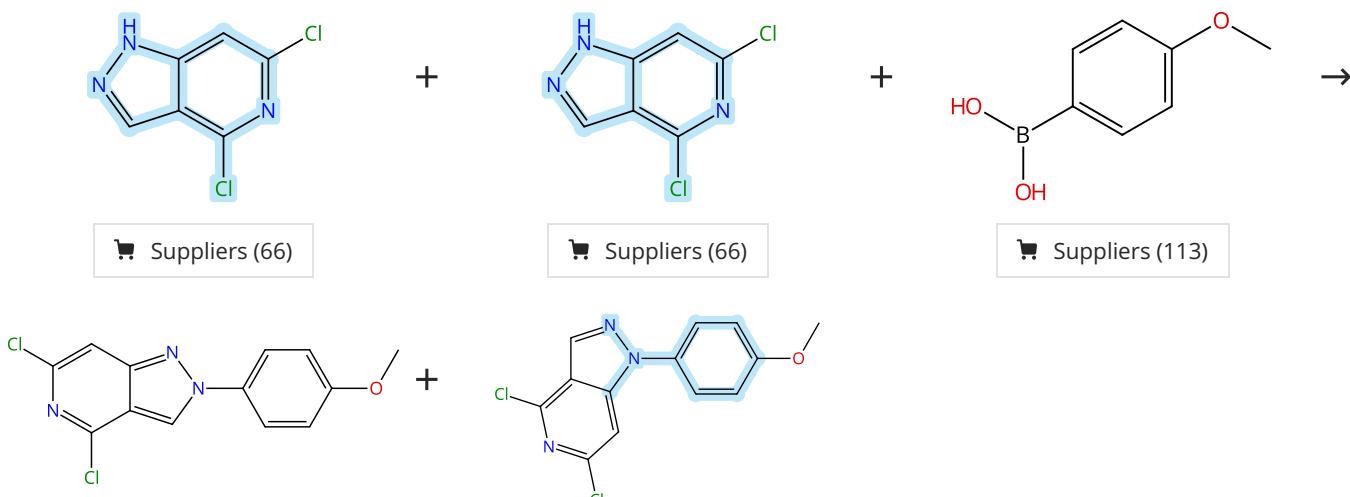
By: Zeng, Yang-Hao; et al

Organic &amp; Biomolecular Chemistry (2024), 22(36), 7390-7394.

Experimental Protocols

Scheme 295 (1 Reaction)

Steps: 1 Yield: 75%



31-614-CAS-38906723

Steps: 1 Yield: 75%

1.1 **Reagents:** Pyridine  
**Catalysts:** Cupric acetate  
**Solvents:** Dichloromethane; rt; 24 h, rt  
1.2 **Solvents:** Water; rt

**Discovery of 4-Ethoxy-6-chloro-5-azaindazoles as Novel PDE4 Inhibitors for the Treatment of Alcohol Use Disorder and Alcoholic Liver Diseases**

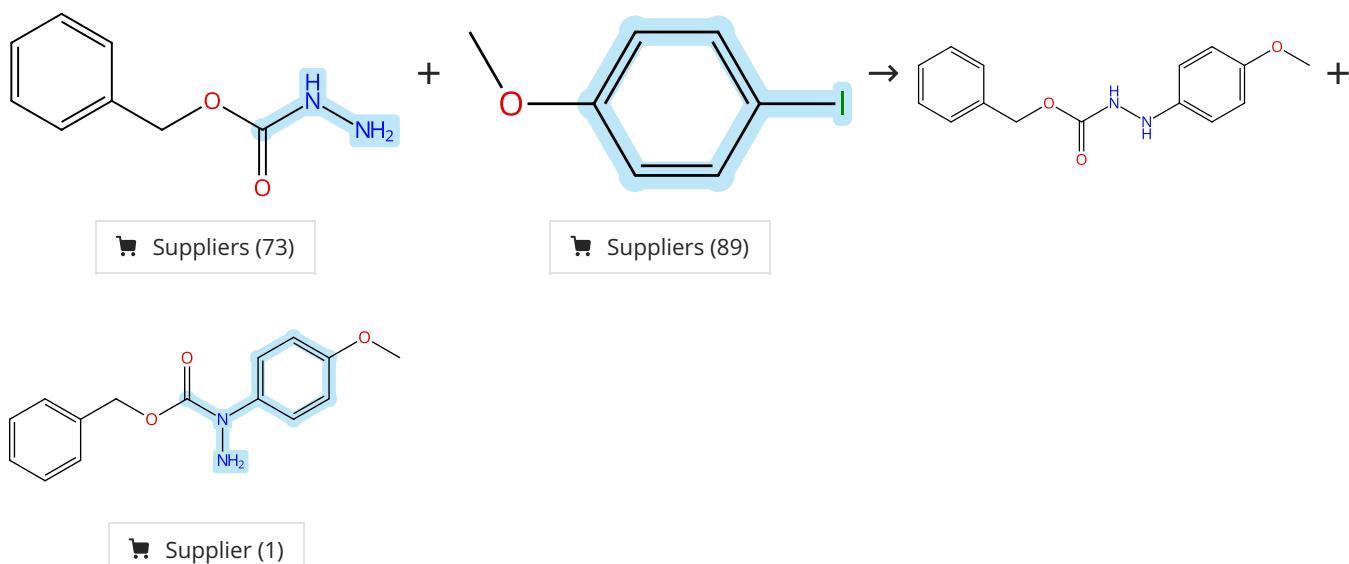
By: Zheng, Lei; et al

Journal of Medicinal Chemistry (2024), 67(1), 728-753.

Experimental Protocols

Scheme 296 (1 Reaction)

Steps: 1 Yield: 66%



31-614-CAS-41194623

Steps: 1 Yield: 66%

1.1 Reagents: Cesium carbonate  
Catalysts: Cuprous iodide  
Solvents: Dimethylformamide; 24 h, 50 °C

Electronic and Magnetic Interactions in 6-Oxoverdazyl Diradicals: Connection through N(1) vs C(3) Revisited

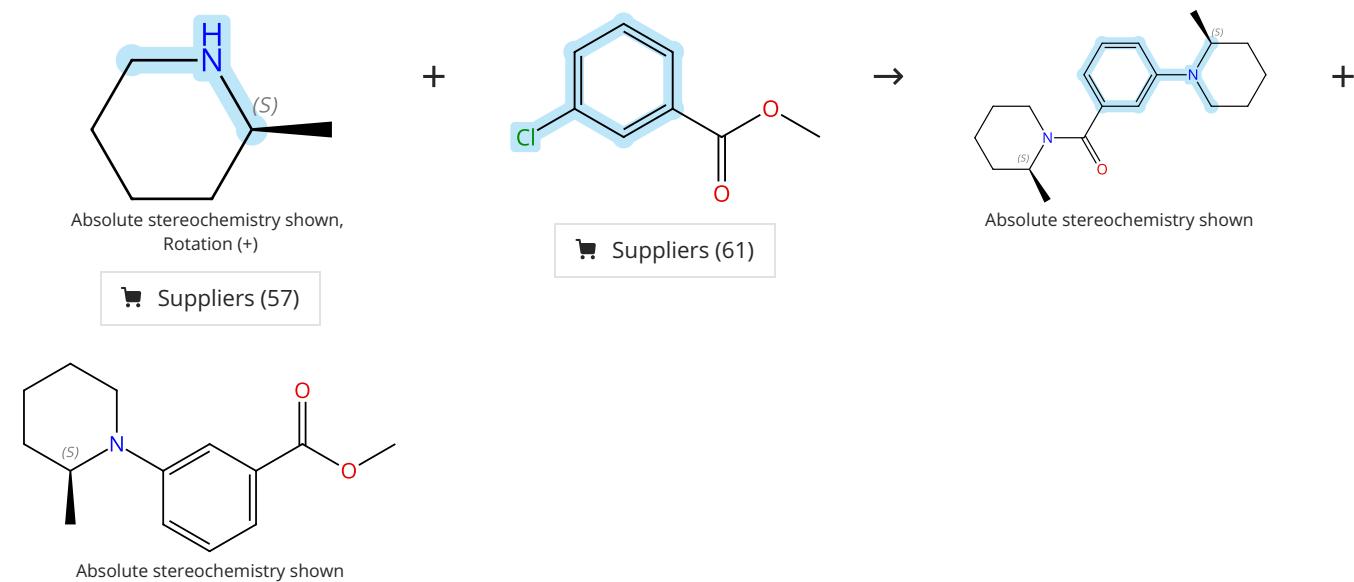
By: Bodzioch, Agnieszka; et al

Journal of Organic Chemistry (2024), 89(9), 6306-6321.

Experimental Protocols

Scheme 297 (1 Reaction)

Steps: 1 Yield: 64%



31-614-CAS-41756916

Steps: 1 Yield: 64%

1.1 Reagents: Sodium methoxide  
Catalysts: Copper bromide (Cu Br), 1,2-Benzenediamine,  $N^1$ -[3',5'-bis(1,1-dimethylethyl)[1,1'-biphenyl]-2-yl]- $N^2$ -[2-[3,5-bis(1,1-dimethylethyl)phenyl]-1-naphthalenyl]-  
Solvents: Dimethyl sulfoxide, Toluene; 5 min

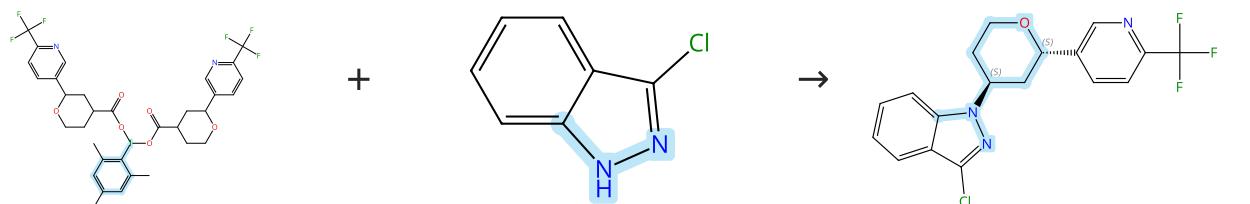
Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions

By: Ai, Han-Jun; et al

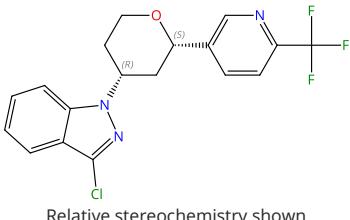
Journal of the American Chemical Society (2024), 146(38), 25949-25955.

1.2 24 h, 55 °C

Experimental Protocols

**Scheme 298 (1 Reaction)**

Suppliers (73)



31-614-CAS-36318318

Steps: 1 Yield: 60%

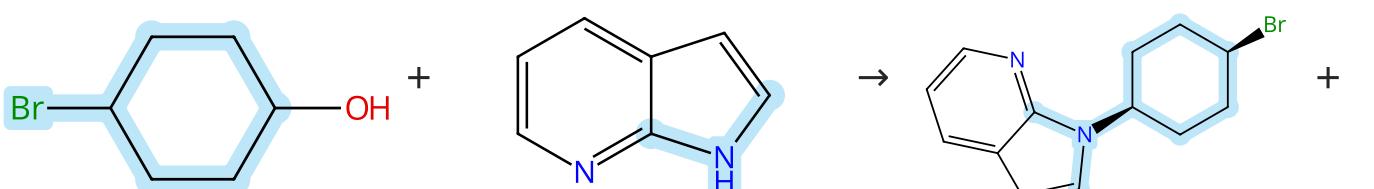
1.1 **Catalysts:** 4,7-Diphenyl-1,10-phenanthroline, (2-Thiophene necarboxylato- $\kappa O^2,\kappa S^1$ )copper, *fac*-Tris(2-(2-pyridinyl)phenyl) iridium  
**Solvents:** 1,4-Dioxane; 1 - 3 min; 1 h, rt

Experimental Protocols

**Redefining the Synthetic Logic of Medicinal Chemistry. Photoredox-Catalyzed Reactions as a General Tool for Aliphatic Core Functionalization**

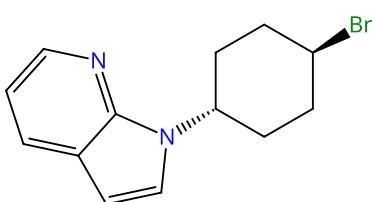
By: Fernandez, David F.; et al

Organic Letters (2024), 26(14), 2702-2707.

**Scheme 299 (1 Reaction)**

Suppliers (40)

Suppliers (115)



31-614-CAS-40572828

Steps: 1 Yield: 60%

1.1 **Reagents:** 2-*tert*-Butyl-1,1,3,3-tetramethylguanidine, 5,7-Bis(1,1-dimethylethyl)-3-phenylbenzoxazolium  
**Solvents:** Fluorobenzene; 5 min, rt  
 1.2 **Reagents:** Pyridine; 10 min, rt  
 1.3 **Catalysts:** Cupric acetate, 4,7-Dimethoxy-1,10-phenanthroline, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine- $\kappa N^1,\kappa N^1'$ ]bis[5-fluoro-2-(5-methyl-2-pyridinyl- $\kappa N$ )phenyl- $\kappa C^-$ , (*OC*-6-33)-, hexafluorophosphate(1-) (1:1)  
**Solvents:** Acetonitrile; 5 min, rt  
 1.4 **Reagents:** 2-*tert*-Butyl-1,1,3,3-tetramethylguanidine, 2-Iodosyl-1,3,5-trimethylbenzene; 4 h, 24 °C

**Free-Radical Deoxygenative Amination of Alcohols via Copper Metallaphotoredox Catalysis**

By: Carson, William P.; et al

Journal of the American Chemical Society (2024), 146(23), 15681-15687.

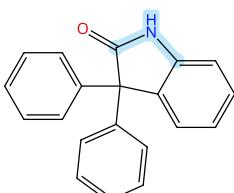
Experimental Protocols

Scheme 300 (1 Reaction)

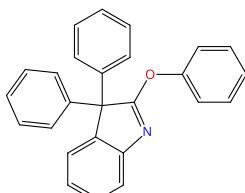
Steps: 1 Yield: 53%

Multi-component  
structure image  
available in CAS  
SciFinder

+

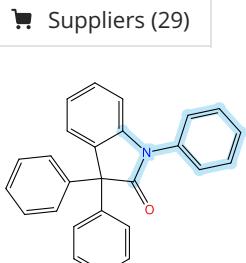


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Suppliers (7)



Suppliers (3)

31-614-CAS-39283508

Steps: 1 Yield: 53%

1.1 Catalysts: Copper(II) triflate

Solvents: Dimethylacetamide; 12 h, 80 °C

Experimental Protocols

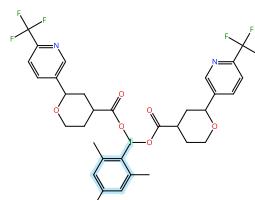
### Copper-Catalyzed Chemoselective O-Arylation of Oxindoles: Access to Cyclic Aryl Carboxyimides

By: Singh, Prasoon Raj; et al

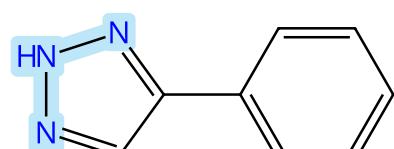
Journal of Organic Chemistry (2024), 89(5), 2926-2938.

Scheme 301 (1 Reaction)

Steps: 1 Yield: 52%



+

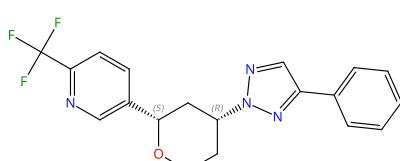


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Relative stereochemistry shown

Suppliers (10)



Relative stereochemistry shown

31-614-CAS-36318269

Steps: 1 Yield: 52%

1.1 Catalysts: 4,7-Diphenyl-1,10-phenanthroline, (2-Thiophe  
necarboxylato- $\kappa^2O^2,\kappa^1S^1$ )copper, *fac*-Tris(2-(2-pyridinyl)phenyl)  
iridium

Solvents: 1,4-Dioxane; 1 - 3 min; 1 h, rt

Experimental Protocols

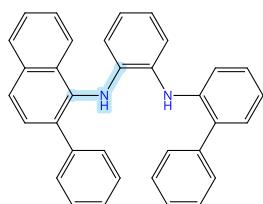
### Redefining the Synthetic Logic of Medicinal Chemistry. Photon edox-Catalyzed Reactions as a General Tool for Aliphatic Core Functionalization

By: Fernandez, David F.; et al

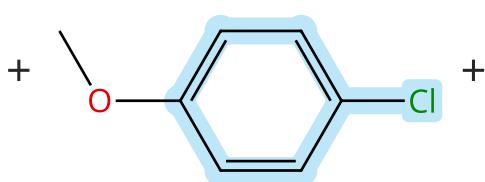
Organic Letters (2024), 26(14), 2702-2707.

Scheme 302 (1 Reaction)

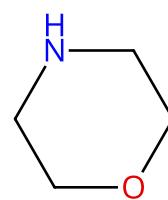
Steps: 1 Yield: 65%



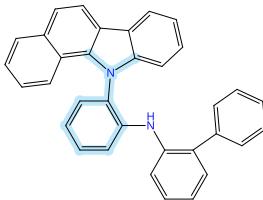
Suppliers (38)



Suppliers (69)



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31-614-CAS-41757006

Steps: 1 Yield: 65%

1.1 Reagents: Sodium methoxide

Catalysts: Cuprous iodide

Solvents: Dimethyl sulfoxide; 5 min

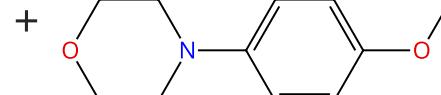
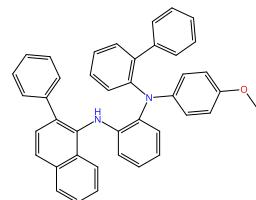
1.2 24 h, 60 °C

Experimental Protocols

**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

Journal of the American Chemical Society (2024), 146(38), 25949-25955.



Suppliers (57)

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