CAS SciFinder

# Task History

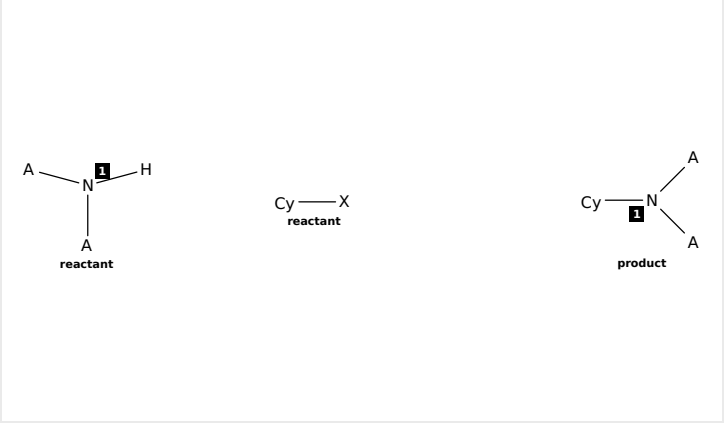
## Initiating Search

August 14, 2025, 4:55 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 ($Cu_2O$), Copper bromide (CuBr), Cuprous chloride, Copper(II) triflate, Copper oxide (CuO), Copper(1+), hexa-$\mu_3$-chlorotetradecahydrohexakis[$\mu$-(2-methyl-2-propanethiolato)]eicosakis[$\mu_3$-(2-methyl-2-propanethiolato)]hexa-$\mu_4$-thioxohenhexaconta-, chloride (1:1), (2-Thiophenecarboxylato-$\kappa O^2,\kappa S^1$)copper, Copper(II) acetylacetonate, Copper(1+), bis[2-(1*H*-imidazol-2-yl-$\kappa N^3$)pyridine-$\kappa N$](nitrato-$\kappa O,\kappa O'$)-, (*OC*-6-33)-, nitrate (1:1), Copper sulfate, Copper bromide ($CuBr_2$) |
| Document Type: | Journal |
| Publication Year: | 2024 |




Structure Match: **Substructure**

## Search Tasks

| Task | Result Type | View |
|---|---|---|
| Exported: Returned Reaction Results + Filters (806) | Reactions | View Results |

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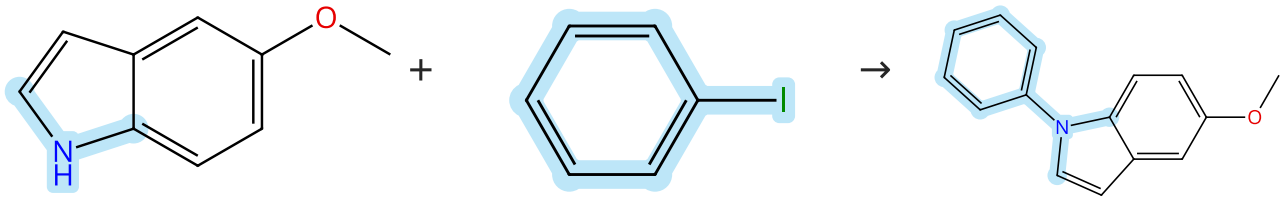
CAS SciFinder

## Reactions (500)

View in CAS SciFinder

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



Suppliers (106) Suppliers (93) Suppliers (8)

**31-614-CAS-39303569** Steps: **1** Yield: **100%**

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

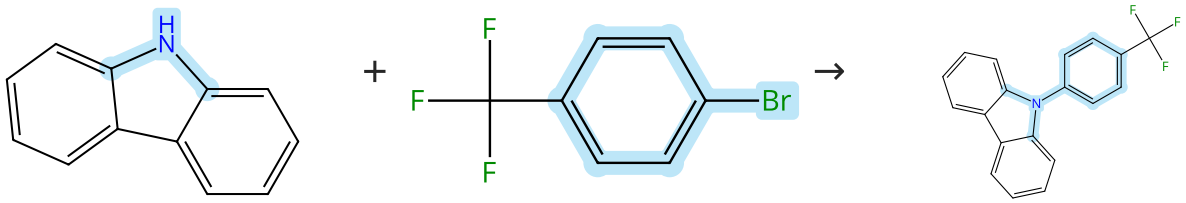
Experimental Protocols

**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 2** (1 Reaction) Steps: **1** Yield: **100%**



Suppliers (109) Suppliers (79) Suppliers (8)

**31-614-CAS-38610268** Steps: **1** Yield: **100%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 - 3 min, rt

1.2 rt → 194 °C; 16 h, 194 °C

1.3 **Reagents:** Water; cooled

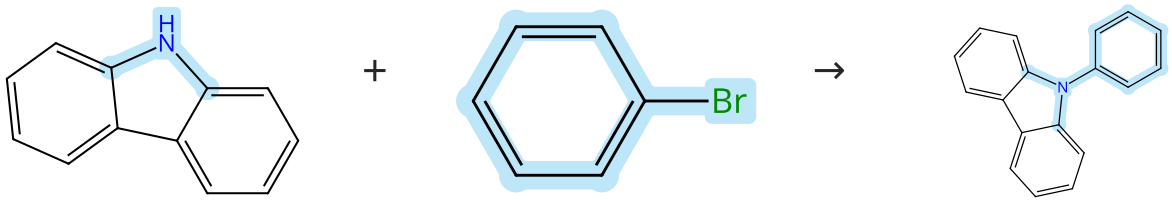
Experimental Protocols

**Chasing Turns and Twists: Unraveling the One-Step Synthesis, Intricate Pathways, and Structural Revelations of N-Aryl Aza-quasi[8]circulenes**

By: Mallick, Sudesh; et al

Chemistry - A European Journal (2024), 30(1), e202302876.

**Scheme 3** (1 Reaction) Steps: **1** Yield: **100%**



Suppliers (109) Suppliers (71) Suppliers (84)

31-614-CAS-38610266 Steps: **1** Yield: **100%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 - 3 min, rt

1.2 rt → 194 °C; 16 h, 194 °C

1.3 **Reagents:** Water; cooled

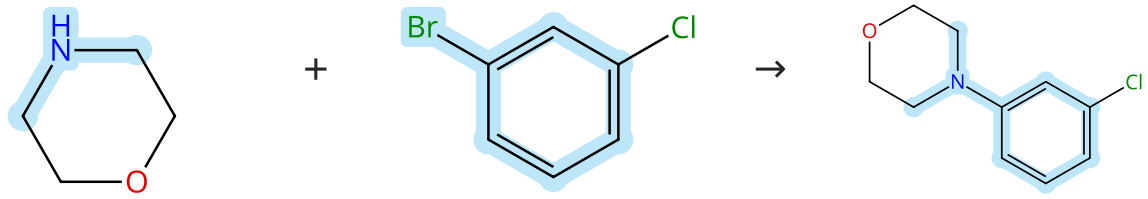
Experimental Protocols

**Chasing Turns and Twists: Unraveling the One-Step Synthesis, Intricate Pathways, and Structural Revelations of N-Aryl Aza-quasi[8]circulenes**

By: Mallick, Sudesh; et al

Chemistry - A European Journal (2024), 30(1), e202302876.

**Scheme 4** (1 Reaction) Steps: **1** Yield: **100%**




Suppliers (83) Suppliers (81) Suppliers (43)

31-614-CAS-41756977 Steps: **1** Yield: **100%**

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 2 h, rt

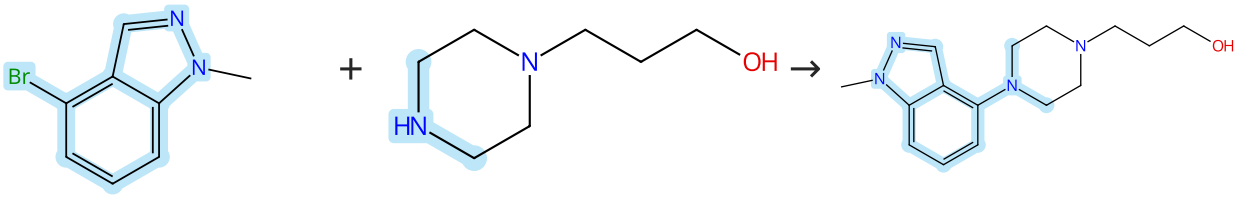
Experimental Protocols

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




Suppliers (68) Suppliers (67)

31-614-CAS-40801514 Steps: **1** Yield: **99%**

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

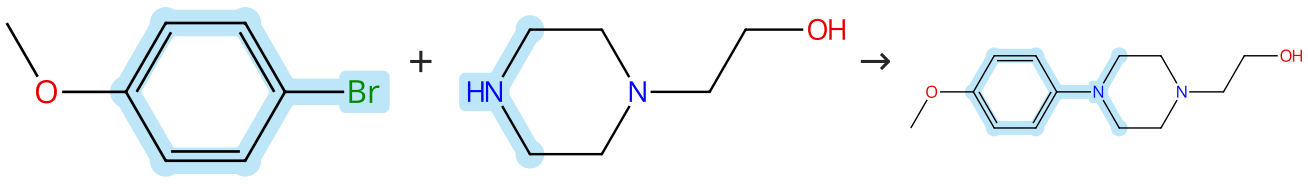
Experimental Protocols

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




Suppliers (69) Suppliers (87) Suppliers (15)

31-614-CAS-40801517 Steps: **1** Yield: **99%**

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

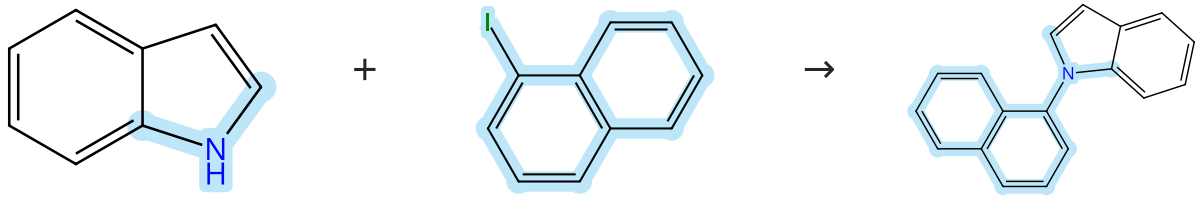
Experimental Protocols

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




Suppliers (109) Suppliers (87) Suppliers (6)

31-614-CAS-39340518 Steps: **1** Yield: **99%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** 1,10-Phenanthroline, Cuprous chloride
**Solvents:** Toluene; 65 h, reflux

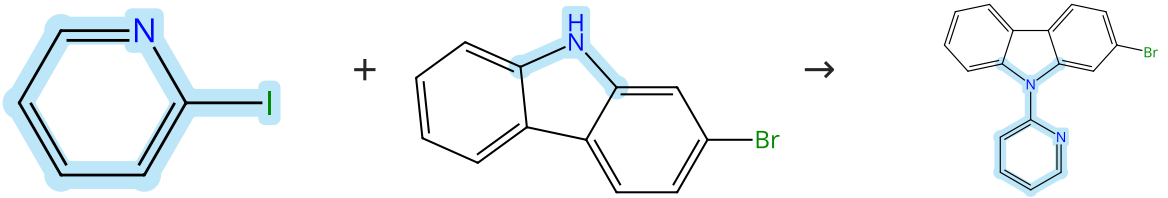
Experimental Protocols

**Asymmetric 1,2-diaxial synthesis of bi-(hetero)aryl benzofulvene atropisomers via transient directing group-assisted dehydrogenative coupling**

By: Hore, Soumyadip; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(18), 2524-2527.

**Scheme 8** (1 Reaction) Steps: **1** Yield: **99%**




Suppliers (79) Suppliers (83) Suppliers (24)

31-614-CAS-42064359 Steps: **1** Yield: **99%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N*,*N*,*N*',*N*'-Tetramethylethylenediamine, Copper oxide ($Cu_2O$)
**Solvents:** 1,2-Dichlorobenzene; 24 h, 185 °C

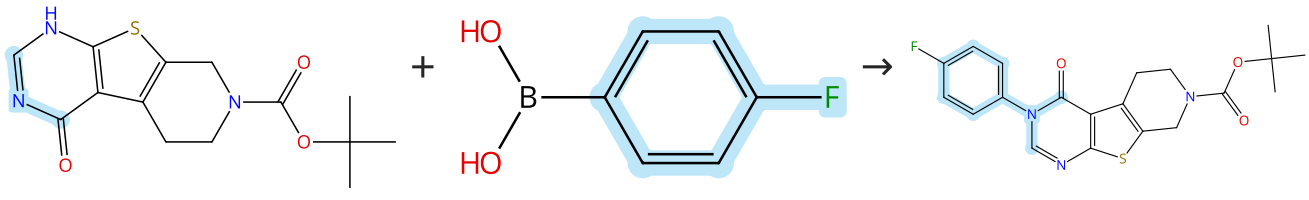
Experimental Protocols

**Importance of the curvature in electronic, structural and charge transport properties: oligomers of N-pyridine carbazole**

By: Brouillac, Clement; et al

Journal of Materials Chemistry C: Materials for Optical and Electronic Devices (2024), 12(32), 12598-12607.

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




Suppliers (42) Suppliers (104)

31-614-CAS-40487518 Steps: **1** Yield: **99%**

1.1 **Reagents:** Triethylamine
**Catalysts:** Cupric acetate
**Solvents:** 1,2-Dichloroethane; 16 h, rt

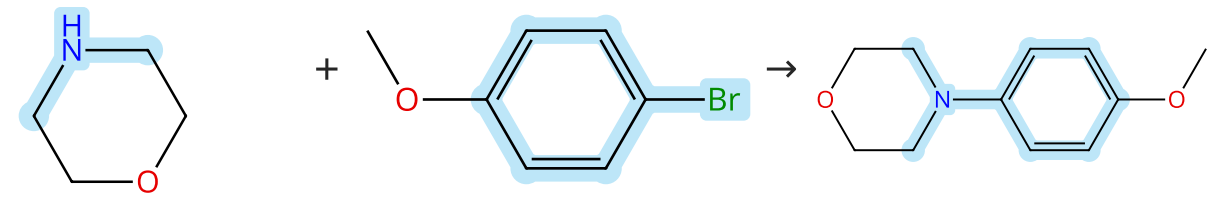
Experimental Protocols

**WLB-87848, a Selective $\sigma_1$ Receptor Agonist, with an Unusually Positioned NH Group as Positive Ionizable Moiety and Showing Neuroprotective Activity**

By: Christmann, Ute; et al

Journal of Medicinal Chemistry (2024), 67(11), 9150-9164.

**Scheme 10** (2 Reactions) Steps: **1** Yield: **99%**




Suppliers (83) Suppliers (69) Suppliers (57)

31-614-CAS-40801426 Steps: **1** Yield: **99%**

1.1 **Reagents:** Sodium trimethylsilanolate
**Catalysts:** Cuprous iodide, 1,2-Benzenediamine, $N^1$,$N^2$-bis(2-phenyl-1-naphthalenyl)-
**Solvents:** Dimethyl sulfoxide; 16 h, 24 °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.

31-614-CAS-41756986 Steps: **1** Yield: **99%**

1.1 **Reagents:** Sodium methoxide
**Catalysts:** Cuprous iodide, 1,2-Benzenediamine, $N^1$-[1,1'-biphenyl]-2-yl-$N^2$-(2-phenyl-1-naphthalenyl)-
**Solvents:** Dimethyl sulfoxide; 5 min

1.2 1 h, rt

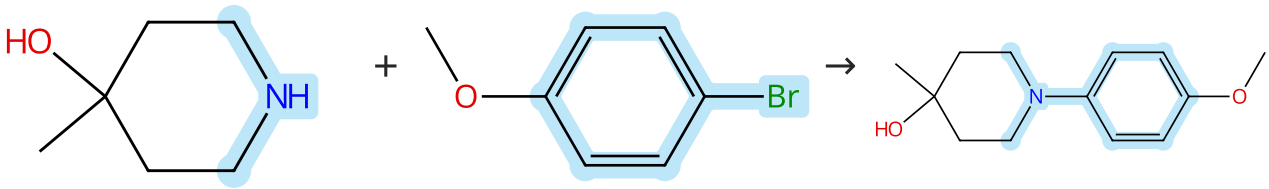
Experimental Protocols

**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 11** (1 Reaction) Steps: **1** Yield: **99%**




Suppliers (76) Suppliers (69)

31-614-CAS-40801492 Steps: **1** Yield: **99%**

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

Experimental Protocols

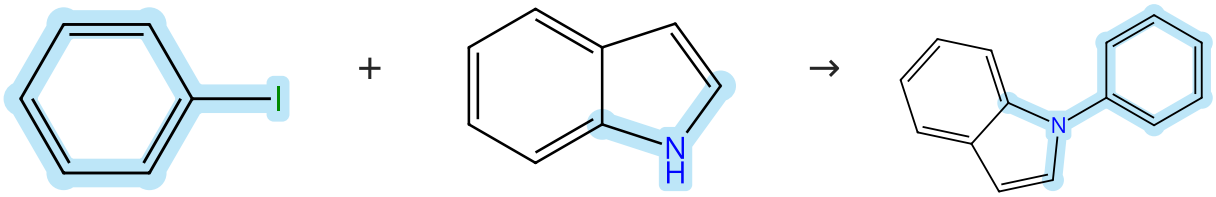
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 12** (3 Reactions)

Steps: **1** Yield: **95-99%**




Suppliers (93) | Suppliers (109) | Suppliers (68)

**31-614-CAS-39340523**

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

1.1 **Reagents:** Cesium carbonate
**Catalysts:** 1,10-Phenanthroline, Cuprous chloride
**Solvents:** Toluene; 65 h, reflux

Experimental Protocols

**Asymmetric 1,2-diaxial synthesis of bi-(hetero)aryl benzofulvene atropisomers via transient directing group-assisted dehydrogenative coupling**

By: Hore, Soumyadip; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(18), 2524-2527.

**31-614-CAS-42667958**

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

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 16 h, 120 °C

Experimental Protocols

**Rhodium-Catalyzed Asymmetric Cyclopropanation of Indoles with N-Triftosylhydrazones**

By: He, Caicai; et al

Angewandte Chemie, International Edition (2024), 63(50), e202408220.

**31-614-CAS-41844033**

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

1.1 **Reagents:** Triethylamine
**Catalysts:** Copper oxide (CuO), Guar gum
**Solvents:** Dimethylformamide; 3 h, 80 °C

Experimental Protocols

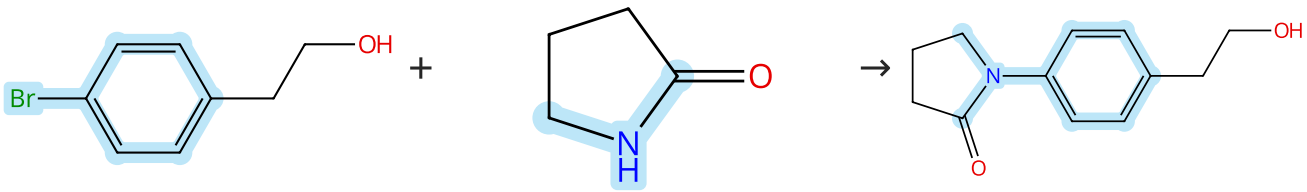
**An eco-friendly convenient approach for the synthesis of guar gum integrated copper nanoparticles: Investigation of its catalytic activity in the C-N Ullmann coupling reactions and study of its anti-human kidney cancer effects**

By: Li, Nana; et al

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

**Scheme 13** (1 Reaction)

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




Suppliers (88) | Suppliers (66) | Suppliers (4)

**31-614-CAS-38968018**

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

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** 2,3-Butanediamine, Cuprous iodide
**Solvents:** 1,4-Dioxane; overnight, 90 °C

Experimental Protocols

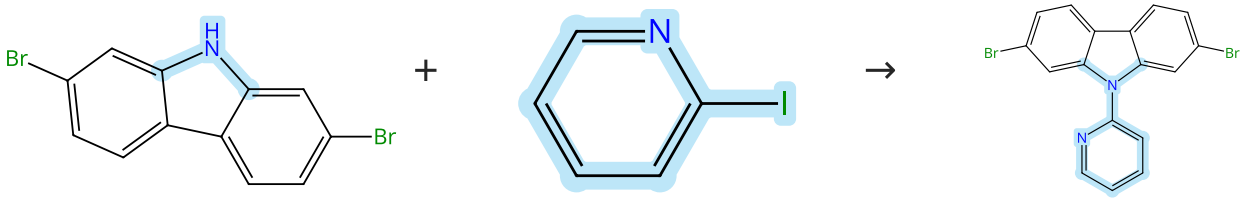
**Enantioselective Total Synthesis of (+)-Incargranine A Enabled by Bifunctional Iminophosphorane and Iridium Catalysis**

By: Miller, Anna A. M.; et al

Angewandte Chemie, International Edition (2024), 63(2), e202314308.

**Scheme 14** (1 Reaction)

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



Suppliers (79) | Suppliers (79) | Supplier (1)

**31-614-CAS-41323434**

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

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N*,*N*,*N*′,*N*′-Tetramethylethylenediamine, Copper oxide ($Cu_2O$)
**Solvents:** 1,2-Dichlorobenzene; 24 h, 185 °C

Experimental Protocols

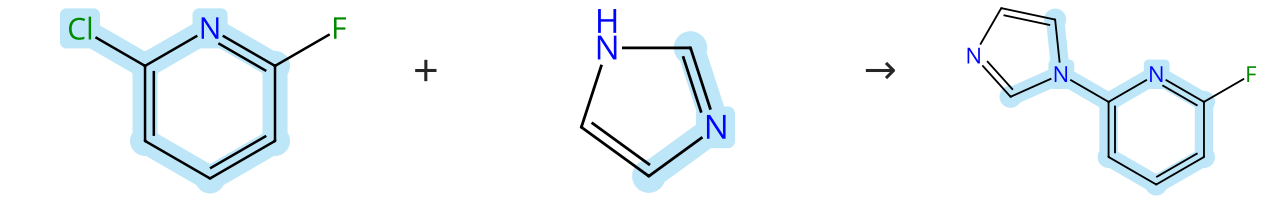
**Importance of the curvature in electronic, structural and charge transport properties: oligomers of N-pyridine carbazole**

By: Brouillac, Clement; et al

Journal of Materials Chemistry C: Materials for Optical and Electronic Devices (2024), 12(32), 12598-12607.

**Scheme 15** (1 Reaction)

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



Suppliers (71) | Suppliers (201) | Suppliers (31)

**31-614-CAS-40820774**

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

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide, Imidazo[1,5-*a*][1,10]phenanthrolinium, 10-[2,6-bis(1-methylethyl)phenyl]-, chloride (1:1)
**Solvents:** Dimethylformamide; 3 h, 80 °C

Experimental Protocols

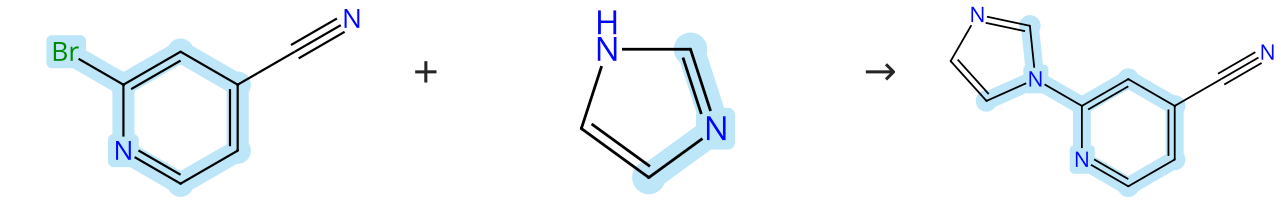
**A new highly efficient NHC/Cu(I) catalyst system for the Ullmann-type N-arylation reactions**

By: Liu, Guiyan; et al

Molecular Catalysis (2024), 564, 114284.

**Scheme 16** (1 Reaction)

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



Suppliers (83) | Suppliers (201) | Suppliers (45)

**31-614-CAS-40820781**

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

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide, Imidazo[1,5-*a*][1,10]phenanthrolinium, 10-[2,6-bis(1-methylethyl)phenyl]-, chloride (1:1)
**Solvents:** Dimethylformamide; 3 h, 80 °C

Experimental Protocols

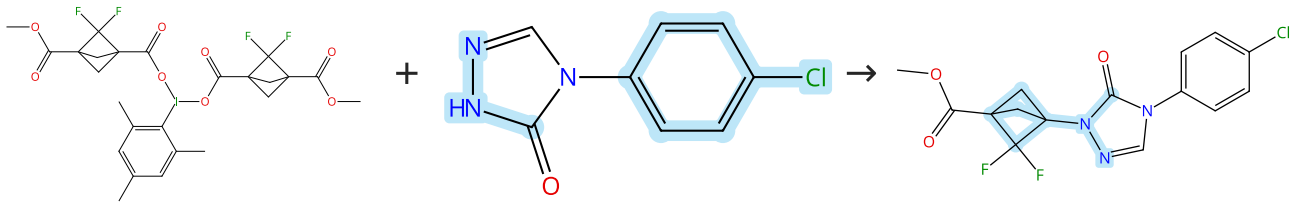
**A new highly efficient NHC/Cu(I) catalyst system for the Ullmann-type N-arylation reactions**

By: Liu, Guiyan; et al

Molecular Catalysis (2024), 564, 114284.

**Scheme 17** (1 Reaction)

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



Suppliers (45)

**31-614-CAS-39519420**

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

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

Experimental Protocols

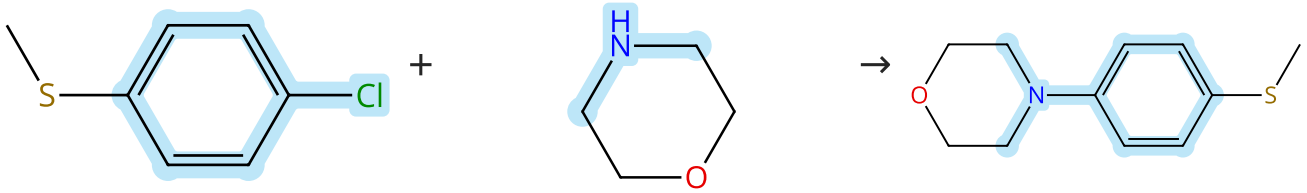
**Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-$F_2$) Building Blocks**

By: Ma, Xiaoshen; et al

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

**Scheme 18** (1 Reaction)

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



Suppliers (74) Suppliers (83) Suppliers (5)

**31-614-CAS-41757014**

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

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

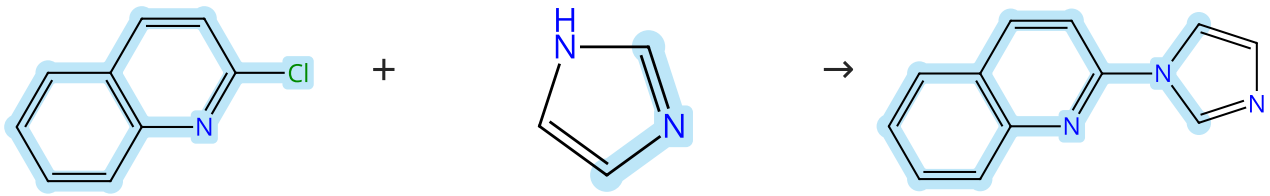
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 19** (1 Reaction)

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



Suppliers (88) Suppliers (201) Suppliers (5)

**31-614-CAS-40820757**

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

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide, Imidazo[1,5-*a*][1,10]phenanthrolinium, 10-[2,6-bis(1-methylethyl)phenyl]-, chloride (1:1)
**Solvents:** Dimethylformamide; 3 h, 80 °C

Experimental Protocols

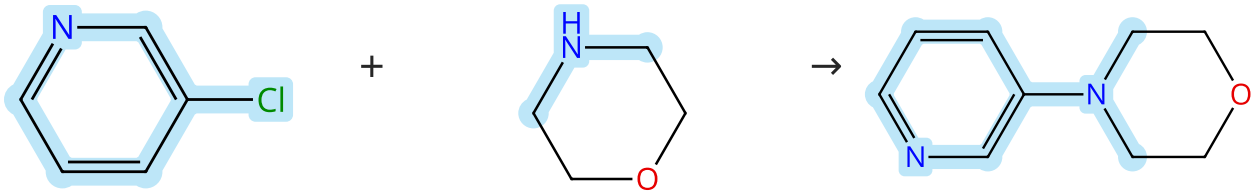
**A new highly efficient N HC/Cu(I) catalyst system for the Ullmann-type N-arylation reactions**

By: Liu, Guiyan; et al

Molecular Catalysis (2024), 564, 114284.

**Scheme 20** (1 Reaction)

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



Suppliers (79) | Suppliers (83) | Suppliers (32)

**31-614-CAS-41756896**

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

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:** Dimethylacetamide; 5 min

1.2 24 h, 55 °C

Experimental Protocols

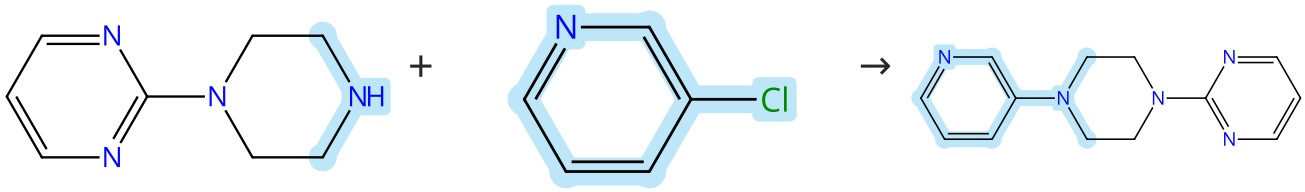
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 21** (1 Reaction)

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



Suppliers (101) | Suppliers (79) | Supplier (1)

**31-614-CAS-41757046**

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

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

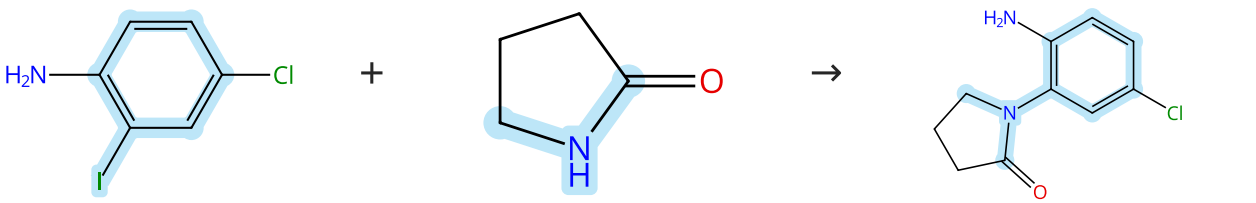
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 22** (1 Reaction)

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



Suppliers (87) | Suppliers (66) | Suppliers (18)

**31-614-CAS-39899862**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** *N*,*N*'-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 16 h, 110 °C

Experimental Protocols

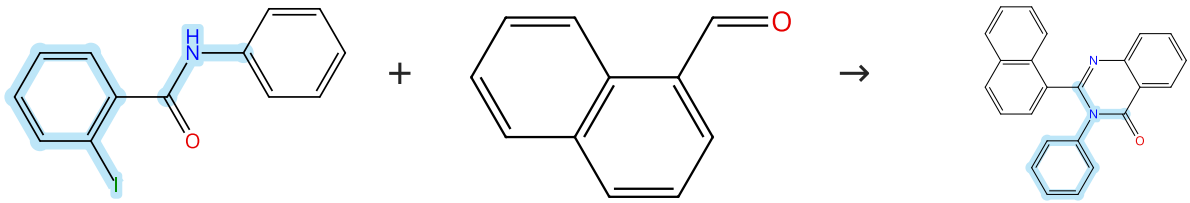
**Copper-Catalyzed Coupling between ortho-Haloanilines and Lactams/Amides: Synthesis of Benzimidazoles and Telmisartan**

By: Boquet, Vincent; et al

Journal of Organic Chemistry (2024), 89(8), 5469-5479.

**Scheme 23** (2 Reactions)

Steps: **1** Yield: **95-97%**



Suppliers (38)

Suppliers (80)

**31-614-CAS-39791005**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (Cu O)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**31-614-CAS-43887585**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper
**Solvents:** Polyethylene glycol; rt; 10 h, 70 °C

1.2 **Reagents:** Water

Experimental Protocols

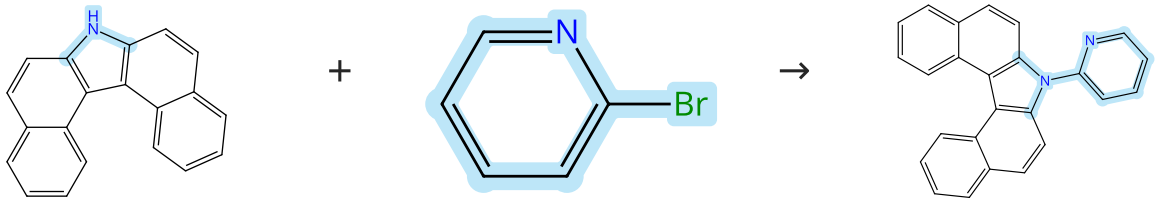
**An expedient access to aminoquinazolines and quinazolinones via N-atom insertion reaction using copper nanoparticles decorated on magnetic carbon spheres**

By: Thrilokraj, R.; et al

Materials Today Chemistry (2024), 42, 102395.

**Scheme 24** (1 Reaction)

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



Suppliers (67)

Suppliers (86)

**31-614-CAS-41277575**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

Experimental Protocols

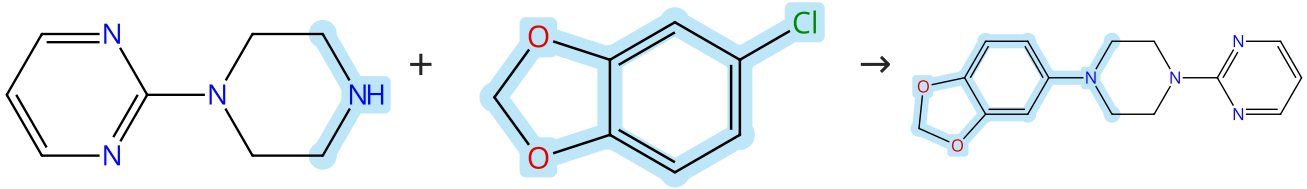
**Palladium-Catalyzed Direct Alkynylation of Carbazoles with Alkynyl Bromides**

By: Dharaniyedath, Jyothis; et al

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

**Scheme 25** (1 Reaction)

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



Suppliers (101)

Suppliers (52)

Supplier (1)

31-614-CAS-41756906 Steps: **1** Yield: **96%**

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

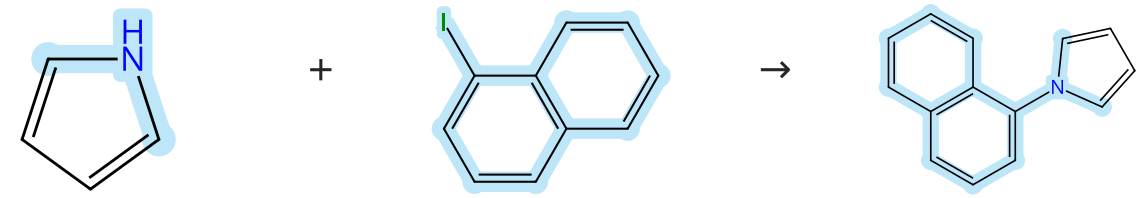
Experimental Protocols

**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 26** (1 Reaction) Steps: **1** Yield: **96%**




Suppliers (73) Suppliers (87) Suppliers (5)

31-614-CAS-39028767 Steps: **1** Yield: **96%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide; 16 h, 120 °C

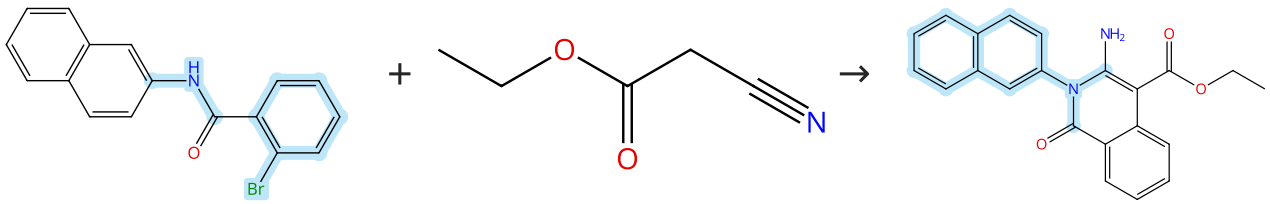
Experimental Protocols

**Aryldiazonium-Salt-Triggered Carboxylative Azotization of Pyrroles or Indoles with Polyhalomethanes via Halogen-Atom Transfer (XAT)**

By: Zhang, Tian-Bao; et al

Organic Letters (2024), 26(2), 461-466.

**Scheme 27** (1 Reaction) Steps: **1** Yield: **96%**




Suppliers (3) Suppliers (69)

31-614-CAS-38062418 Steps: **1** Yield: **96%**

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

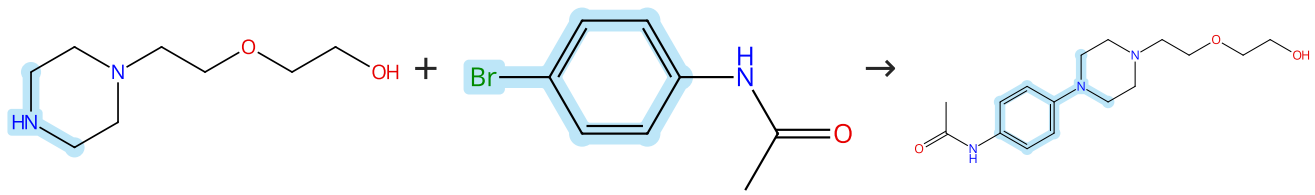
Experimental Protocols

**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 28** (1 Reaction) Steps: **1** Yield: **96%**




Suppliers (81) Suppliers (78)

31-614-CAS-40801488 Steps: **1** Yield: **96%**

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

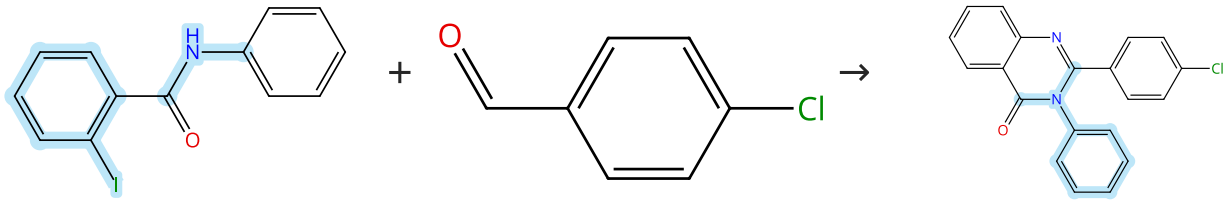
Experimental Protocols

**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 29** (2 Reactions) Steps: **1** Yield: **95-96%**




Suppliers (38) Suppliers (90) Suppliers (2)

31-614-CAS-39790996 Steps: **1** Yield: **96%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

31-614-CAS-43887579 Steps: **1** Yield: **95%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper
**Solvents:** Polyethylene glycol; rt; 10 h, 70 °C

1.2 **Reagents:** Water

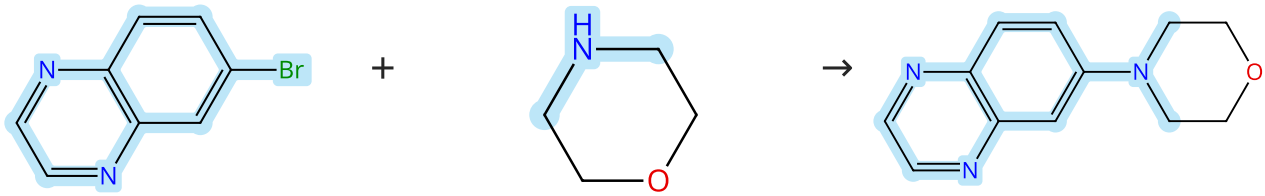
Experimental Protocols

**An expedient access to aminoquinazolines and quinazolinones via N-atom insertion reaction using copper nanoparticles decorated on magnetic carbon spheres**

By: Thrilokraj, R.; et al

Materials Today Chemistry (2024), 42, 102395.

**Scheme 30** (1 Reaction) Steps: **1** Yield: **96%**




Suppliers (85) Suppliers (83) Suppliers (2)

31-614-CAS-40801444 Steps: **1** Yield: **96%**

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

Experimental Protocols

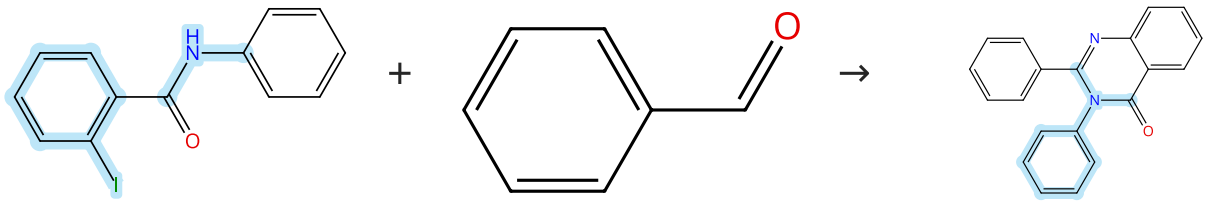
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 31** (2 Reactions)

Steps: **1** Yield: **95-96%**



Suppliers (38) | Suppliers (60) | Suppliers (12)

**31-614-CAS-39790992**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (Cu O)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**31-614-CAS-43887582**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper
**Solvents:** Polyethylene glycol; rt; 10 h, 70 °C

1.2 **Reagents:** Water

Experimental Protocols

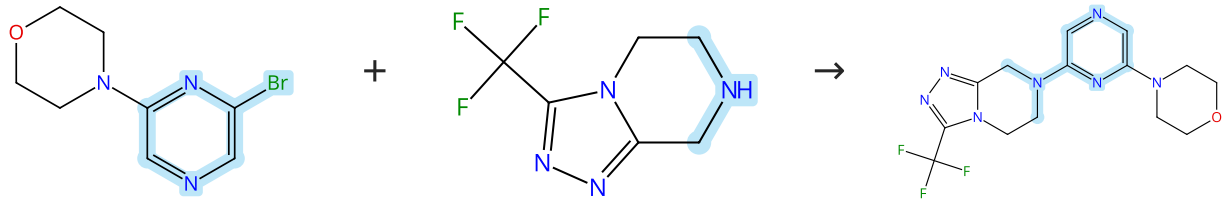
**An expedient access to aminoquinazolines and quinazolinones via N-atom insertion reaction using copper nanoparticles decorated on magnetic carbon spheres**

By: Thrilokraj, R.; et al

Materials Today Chemistry (2024), 42, 102395.

**Scheme 32** (1 Reaction)

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



Suppliers (57) | Suppliers (79)

**31-614-CAS-40801450**

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

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

Experimental Protocols

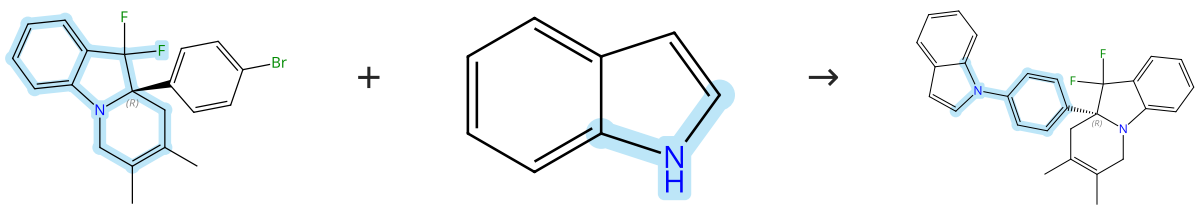
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 33** (1 Reaction)

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



Absolute stereochemistry shown, Rotation (-)

Suppliers (109)

Absolute stereochemistry shown, Rotation (-)

31-614-CAS-40570006 Steps: **1** Yield: **96%**

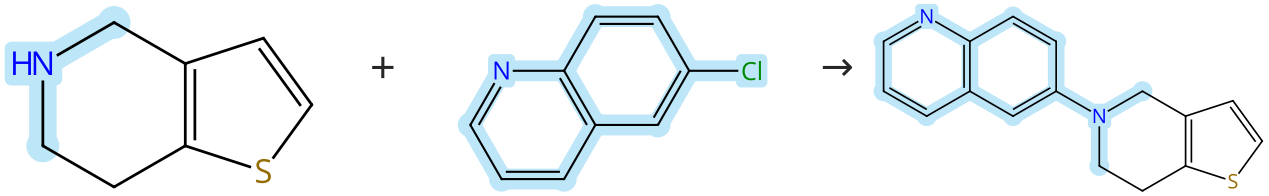
1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N*,*N*'-Dimethylethylenediamine, Cuprous iodide
**Solvents:** 1,4-Dioxane; 90 °C

**$B(C_6F_5)_3$/CPA-Catalyzed Aza-Diels-Alder Reaction of 3,3-Difluoro-2-Aryl-3H-indoles and Unactivated Dienes**

By: Wei, Xing-Pin; et al

Chemistry - A European Journal (2024), 30(34), e202401008.

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




Suppliers (71) Suppliers (85)

31-614-CAS-41756952 Steps: **1** Yield: **96%**

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

1.2 24 h, 55 °C

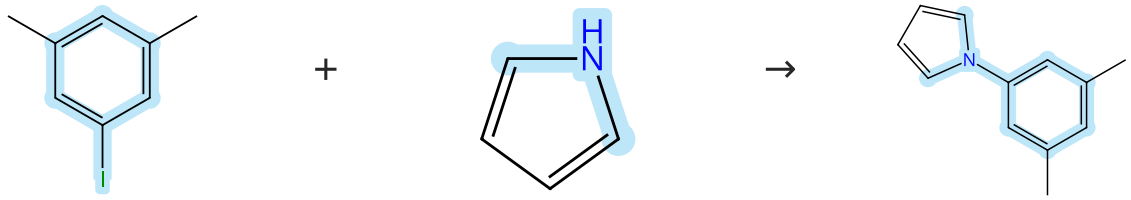
Experimental Protocols

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




Suppliers (83) Suppliers (73) Suppliers (23)

31-614-CAS-39028768 Steps: **1** Yield: **96%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide; 16 h, 120 °C

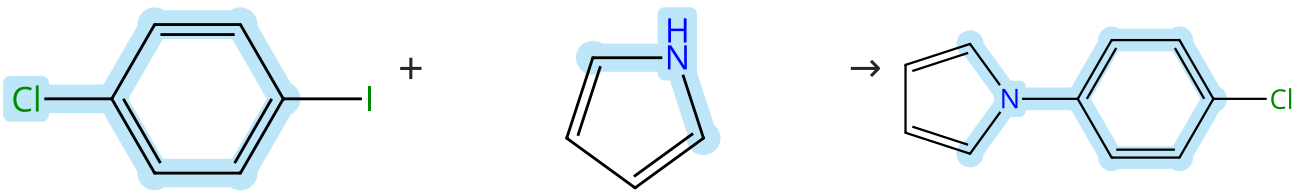
Experimental Protocols

**Aryldiazonium-Salt-Triggered Carboxylative Azotization of Pyrroles or Indoles with Polyhalomethanes via Halogen-Atom Transfer (XAT)**

By: Zhang, Tian-Bao; et al

Organic Letters (2024), 26(2), 461-466.

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




Suppliers (83) Suppliers (73) Suppliers (51)

31-614-CAS-39028773 Steps: **1** Yield: **96%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide; 16 h, 120 °C

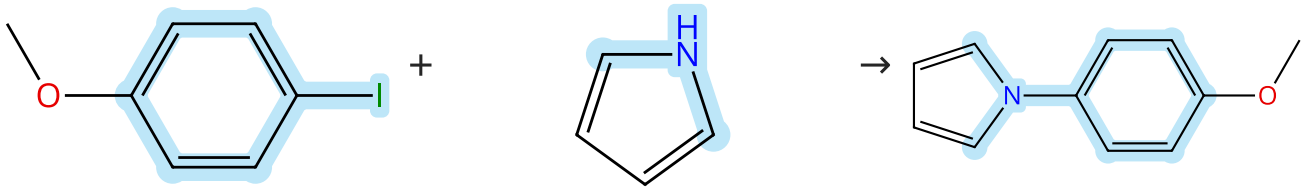
Experimental Protocols

**Aryldiazonium-Salt-Triggered Carboxylative Azotization of Pyrroles or Indoles with Polyhalomethanes via Halogen-Atom Transfer (XAT)**

By: Zhang, Tian-Bao; et al

Organic Letters (2024), 26(2), 461-466.

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




Suppliers (89) Suppliers (73) Suppliers (52)

31-614-CAS-39028774 Steps: **1** Yield: **96%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide; 16 h, 120 °C

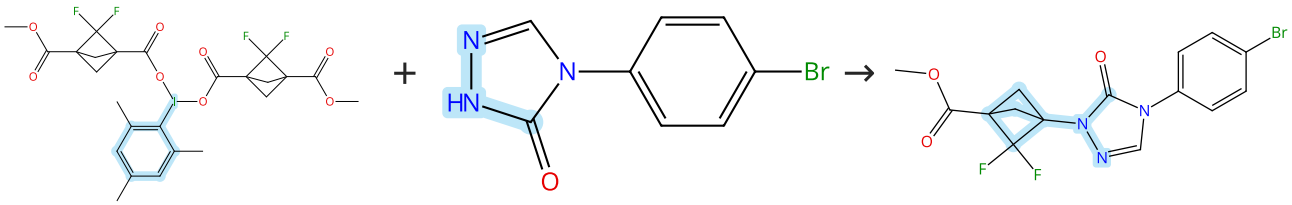
Experimental Protocols

**Aryldiazonium-Salt-Triggered Carboxylative Azotization of Pyrroles or Indoles with Polyhalomethanes via Halogen-Atom Transfer (XAT)**

By: Zhang, Tian-Bao; et al

Organic Letters (2024), 26(2), 461-466.

**Scheme 38** (1 Reaction) Steps: **1** Yield: **95%**




Suppliers (63)

31-614-CAS-39519410 Steps: **1** Yield: **95%**

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

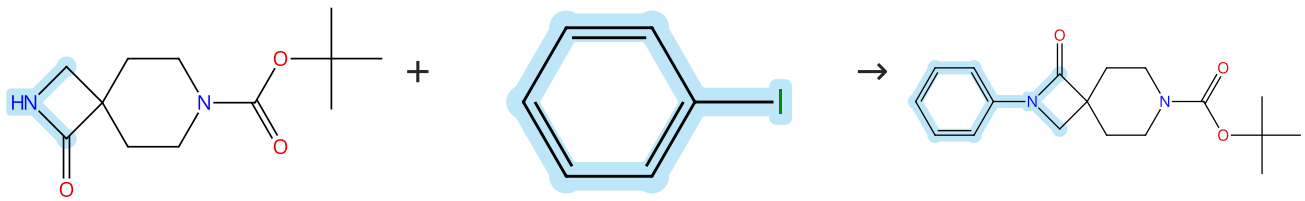
Experimental Protocols

**Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-$F_2$) Building Blocks**

By: Ma, Xiaoshen; et al

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

**Scheme 39** (1 Reaction) Steps: **1** Yield: **95%**




Suppliers (60) Suppliers (93)

31-614-CAS-41778724 Steps: **1** Yield: **95%**

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

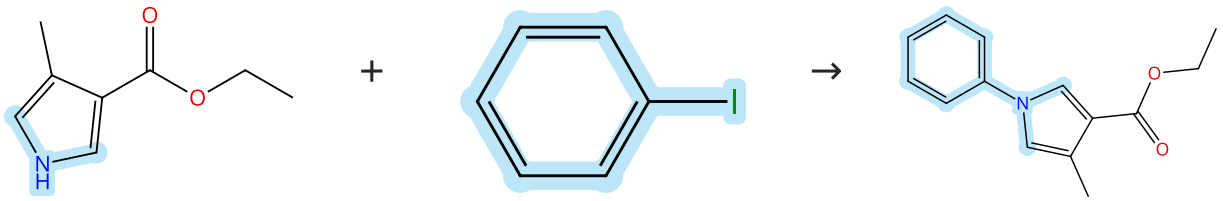
Experimental Protocols

**Construction of remote cyano-substituted quaternary carbon centers via nickel-catalyzed migratory hydrocyanation of unconjugated dienes**

By: Xing, Yidan; et al

Science China: Chemistry (2024), 67(10), 3397-3405.

**Scheme 40** (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (61) Suppliers (93) Supplier (1)

31-614-CAS-40260494 Steps: **1** Yield: **95%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N*,*N*′-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; overnight, 100 °C

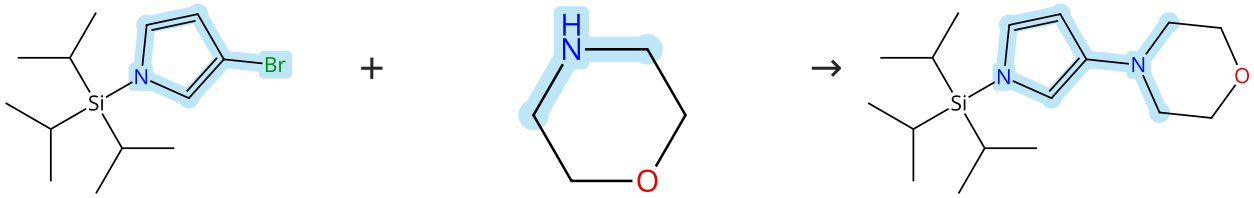
Experimental Protocols

**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 & Catalysis (2024), 366(10), 2312-2323.

**Scheme 41** (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (73) Suppliers (83)

31-614-CAS-40801480 Steps: **1** Yield: **95%**

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

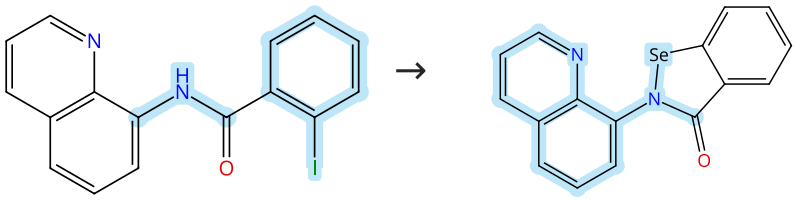
Experimental Protocols

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



Suppliers (13) Supplier (1)

31-614-CAS-38894623 Steps: **1** Yield: **95%**

1.1 **Reagents:** Potassium *tert*-butoxide, Selenium
**Solvents:** Dimethylformamide; -5 - 0 °C; 15 min, - 5 °C → rt

1.2 **Catalysts:** Cuprous iodide; 16 - 24 h, 110 °C

1.3 **Reagents:** Sodium chloride
**Solvents:** Water; 6 h

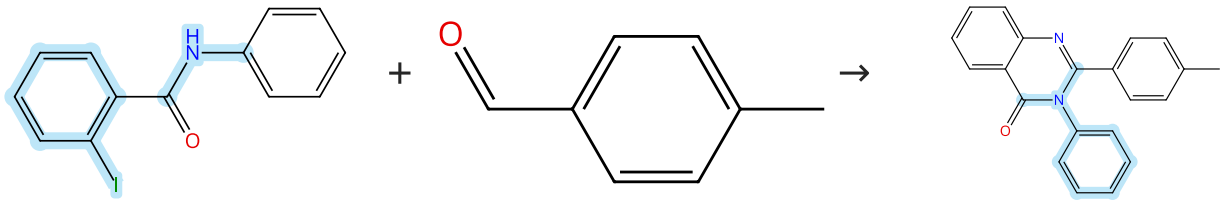
Experimental Protocols

**Directing Group Strategy for the Isolation of Organos elenium (VI) Benzoselenonates: Metal-Free Catalysts for Hydrogen Evolution Reaction**

By: Batabyal, Monojit; et al

Journal of the American Chemical Society (2024), 146(1), 57-61.

**Scheme 43** (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (38) Suppliers (102) Suppliers (4)

31-614-CAS-39791009 Steps: **1** Yield: **95%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

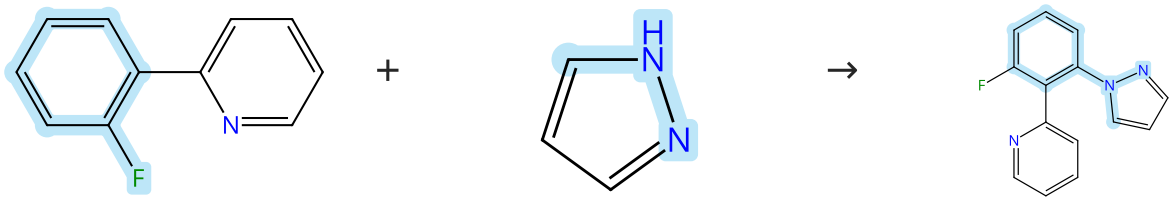
Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**Scheme 44** (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (36) Suppliers (93)

31-614-CAS-41633154 Steps: **1** Yield: **95%**

1.1 **Reagents:** 2,4,6-Trimethylbenzoic acid, Sodium carbonate, Silver fluoride, Oxygen
**Catalysts:** Cupric acetate
**Solvents:** *m*-Xylene, 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 160 °C

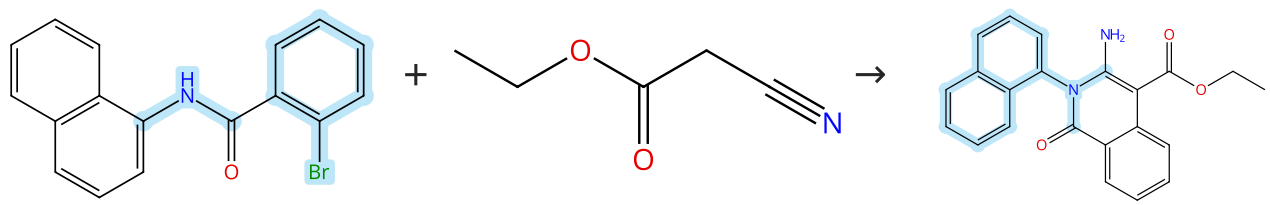
Experimental Protocols

**Copper-promoted ortho-directed C-H amination of 2-arylpyridines with NH-heterocycles**

By: Zeng, Yang-Hao; et al

Organic & Biomolecular Chemistry (2024), 22(36), 7390-7394.

**Scheme 45** (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (6) Suppliers (69)

31-614-CAS-38062413 Steps: **1** Yield: **95%**

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

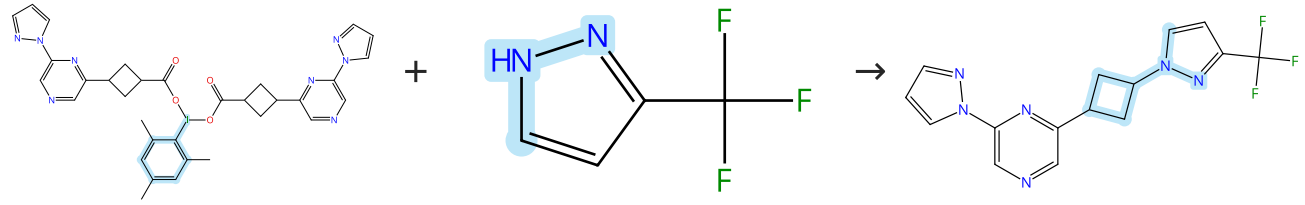
Experimental Protocols

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



Suppliers (123)

31-614-CAS-36318287 Steps: **1** Yield: **95%**

1.1 **Catalysts:** 4,7-Diphenyl-1,10-phenanthroline, (2-Thiophenecarboxylato-κ$O^2$,κ$S^1$)copper, *fac*-Tris(2-(2-pyridinyl)phenyl)iridium
**Solvents:** 1,4-Dioxane; 1 - 3 min; 1 h, rt

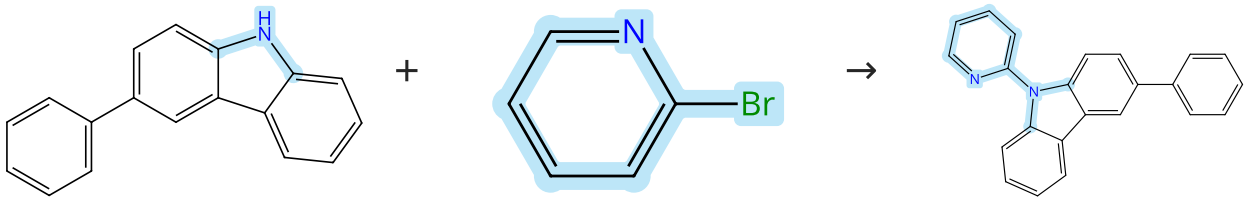
Experimental Protocols

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



Suppliers (60) Suppliers (86) Supplier (1)

31-614-CAS-41277574 Steps: **1** Yield: **95%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

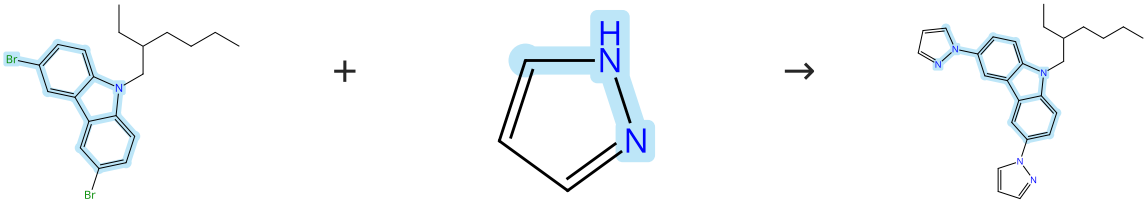
Experimental Protocols

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

By: Dharaniyedath, Jyothis; et al

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

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



Suppliers (49) Suppliers (93)

31-614-CAS-42065687 Steps: **1** Yield: **95%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Copper oxide ($Cu_2O$)
**Solvents:** Dimethylformamide; 24 h, 120 °C

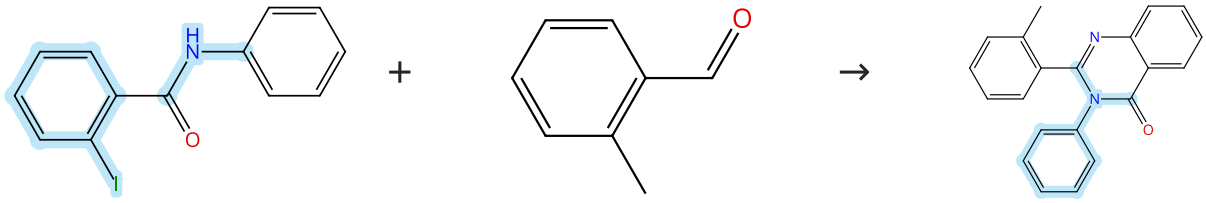
Experimental Protocols

**Molecular Design of Naphthalene- and Carbazole-Based Monomers for Regiospecific Synthesis of Poly(arylenev inylene)s via Co-Catalyzed Hydroarylation Polyaddition**

By: Iwamori, Ryota; et al

Macromolecular Rapid Communications (2024), 45(16), 2400168.

**Scheme 49** (2 Reactions) Steps: **1** Yield: **93-95%**



Suppliers (38) Suppliers (86) Suppliers (3)

31-614-CAS-39791000 Steps: **1** Yield: **95%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

31-614-CAS-43887580 Steps: **1** Yield: **93%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper
**Solvents:** Polyethylene glycol; rt; 10 h, 70 °C

1.2 **Reagents:** Water

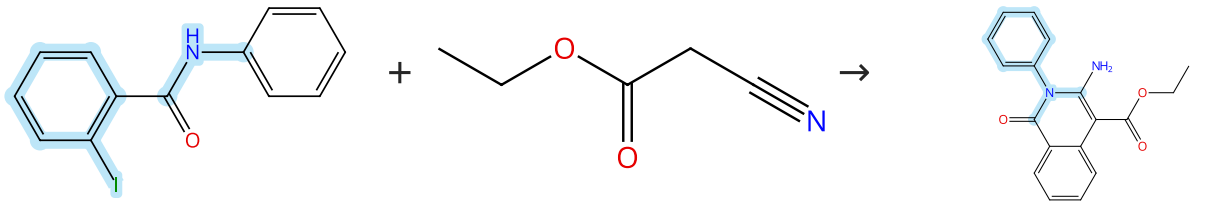
Experimental Protocols

**An expedient access to aminoquinazolines and quinazolinones via N-atom insertion reaction using copper nanoparticles decorated on magnetic carbon spheres**

By: Thrilokraj, R.; et al

Materials Today Chemistry (2024), 42, 102395.

**Scheme 50** (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (38) Suppliers (69) Supplier (1)

31-614-CAS-38062407 Steps: **1** Yield: **95%**

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

Experimental Protocols

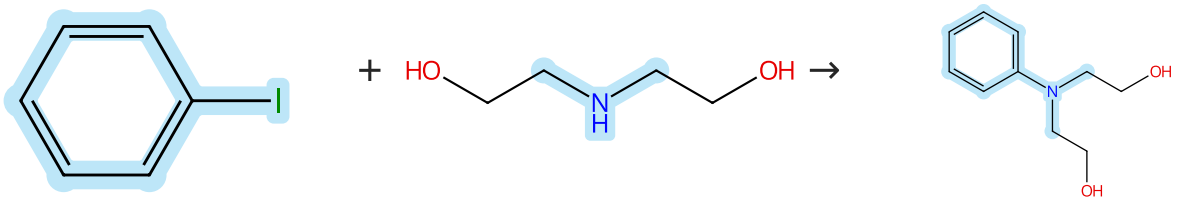
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

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

**Scheme 51** (1 Reaction)

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




Suppliers (93) | Suppliers (103) | Suppliers (72)

**31-614-CAS-35838776**

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

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 4 h, 100 °C

Experimental Protocols

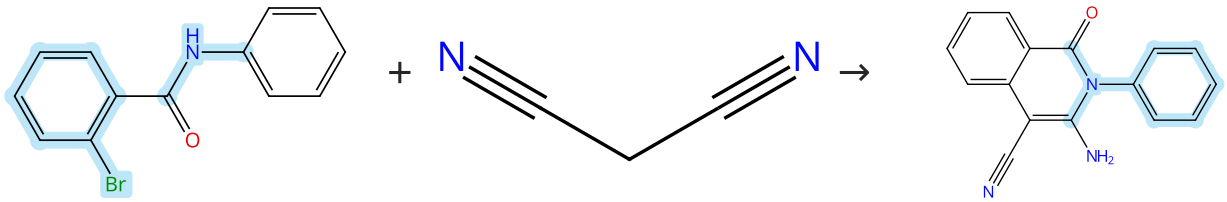
**Polyaniline-encapsulating $CuFe_2O_4/Cu_2O$ composite: a simple, effective and reusable heterogeneous catalyst for ligand-free N-arylation of amines and nitrogen heterocycles**

By: Ahrari, Vahide; et al

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

**Scheme 52** (1 Reaction)

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




Suppliers (16) | Suppliers (60)

**31-614-CAS-38062421**

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

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

Experimental Protocols

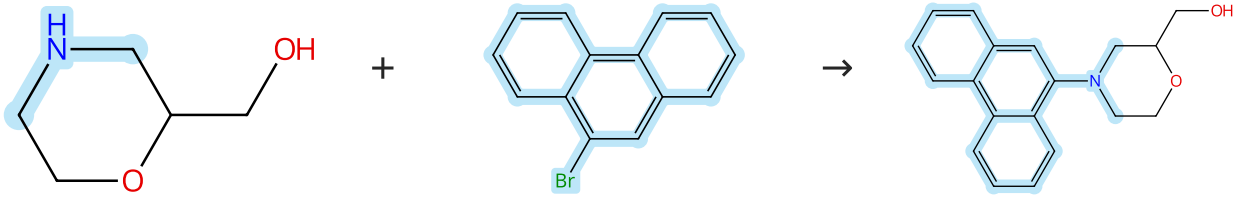
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

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

**Scheme 53** (1 Reaction)

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




Suppliers (74) | Suppliers (88)

**31-614-CAS-40801485**

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

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

Experimental Protocols

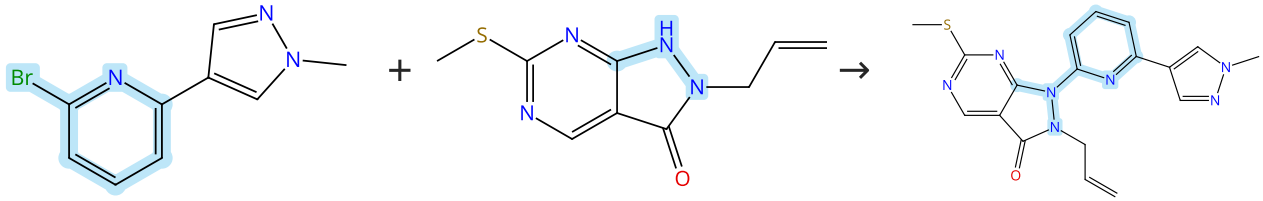
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 54** (1 Reaction)

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



Suppliers (24)

Suppliers (60)

**31-614-CAS-40870538**

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

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

Experimental Protocols

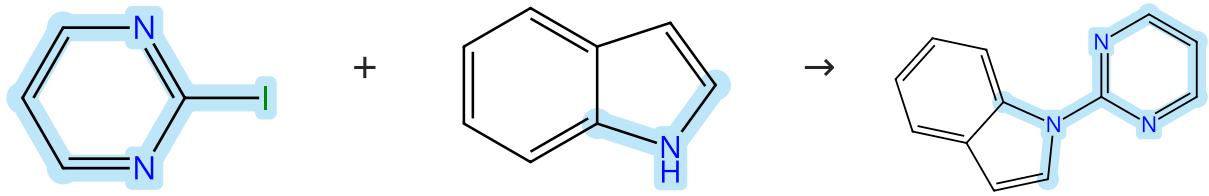
**Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy**

By: Wang, Yong; et al

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

**Scheme 55** (1 Reaction)

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



Suppliers (72)

Suppliers (109)

Suppliers (58)

**31-614-CAS-42667950**

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

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 16 h, 120 °C

Experimental Protocols

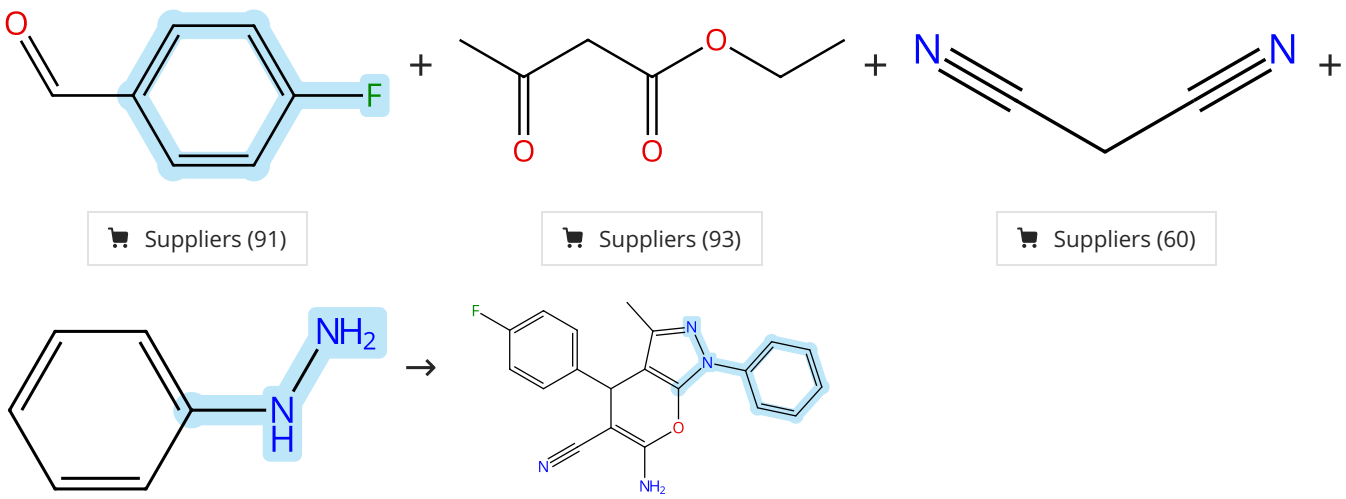
**Rhodium-Catalyzed Asymmetric Cyclopropanation of Indoles with N-Triftosylhydrazones**

By: He, Caicai; et al

Angewandte Chemie, International Edition (2024), 63(50), e202408220.

**Scheme 56** (1 Reaction)

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



Suppliers (91)

Suppliers (93)

Suppliers (60)

Suppliers (63)

Suppliers (7)

31-614-CAS-39676053 Steps: **1** Yield: **95%**

1.1 **Catalysts:** Cobalt oxide ($Co_3O_4$), Nickel monoxide, Copper oxide (CuO); 10 min, 100 °C

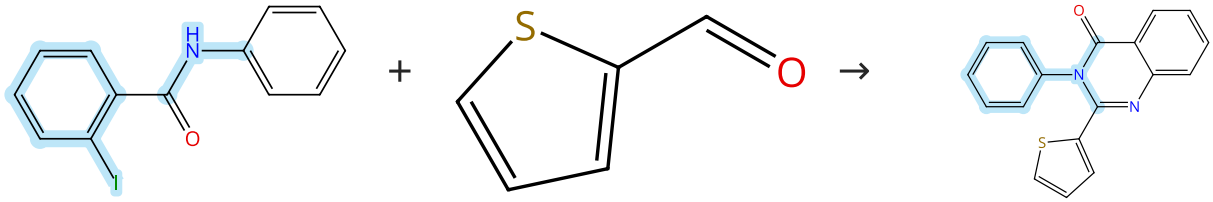
Experimental Protocols

**An approach to rapid one-pot multi-component synthesis of 1,4-dihydropyrano[2,3-C]pyrazole catalyzed by core shell Ni O $Co_3O_4$@ CuO nanoplates under solvent-free conditions**

By: Thakare, S. V.; et al

Heterocyclic Letters (2024), 14(1), 55-63.

**Scheme 57** (2 Reactions) Steps: **1** Yield: **89-95%**




Suppliers (38) Suppliers (97) Suppliers (5)

31-614-CAS-39791002 Steps: **1** Yield: **95%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (Cu O)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazo linones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

31-614-CAS-43887588 Steps: **1** Yield: **89%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper
**Solvents:** Polyethylene glycol; rt; 10 h, 70 °C

1.2 **Reagents:** Water

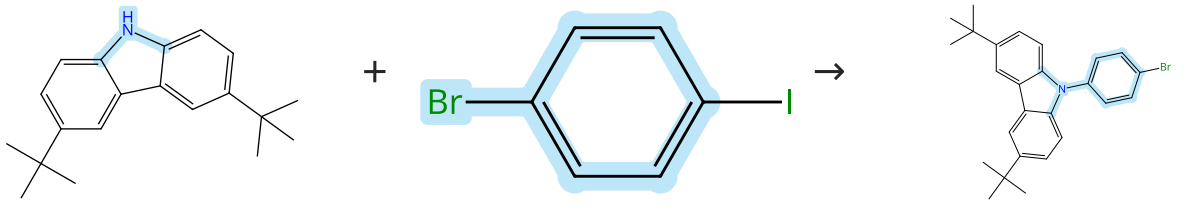
Experimental Protocols

**An expedient access to aminoquinazolines and quinazo linones via N-atom insertion reaction using copper nano particles decorated on magnetic carbon spheres**

By: Thrilokraj, R.; et al

Materials Today Chemistry (2024), 42, 102395.

**Scheme 58** (1 Reaction) Steps: **1** Yield: **95%**




Suppliers (69) Suppliers (94) Suppliers (55)

31-614-CAS-39476411 Steps: **1** Yield: **95%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper, 18-Crown-6
**Solvents:** 1,2-Dichlorobenzene; 12 h, reflux

Experimental Protocols

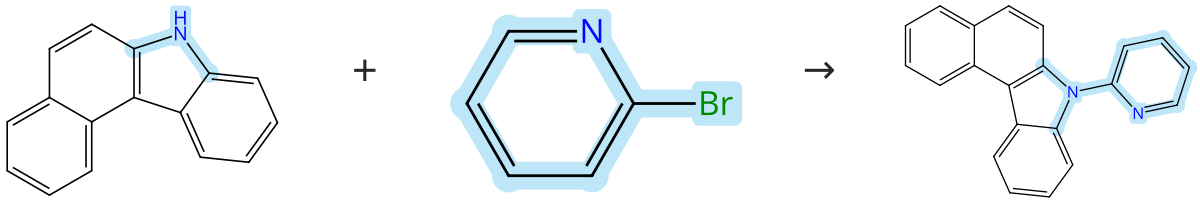
**Exploiting P-chemistry to modulate the thermally activated delayed fluorescence of organic fluorophores**

By: Ledos, Nicolas; et al

Dyes and Pigments (2024), 224, 111978.

**Scheme 59** (1 Reaction)

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



Suppliers (60)

Suppliers (86)

**31-614-CAS-41277579**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

Experimental Protocols

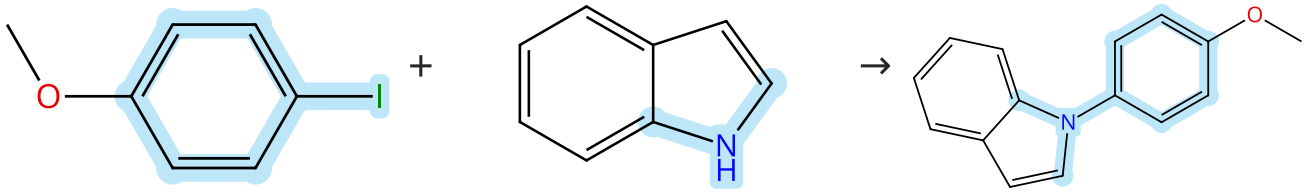
**Palladium-Catalyzed Direct Alkynylation of Carbazoles with Alkynyl Bromides**

By: Dharaniyedath, Jyothis; et al

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

**Scheme 60** (2 Reactions)

Steps: **1** Yield: **83-95%**



Suppliers (89)

Suppliers (109)

Suppliers (12)

**31-614-CAS-41844046**

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

1.1 **Reagents:** Triethylamine
**Catalysts:** Copper oxide (CuO), Guar gum
**Solvents:** Dimethylformamide; 3 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.

**31-614-CAS-39303562**

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

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

Experimental Protocols

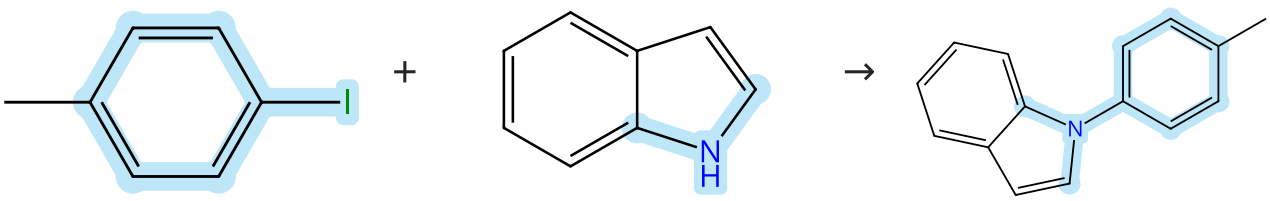
**Tosylazide as N1-Synthon: Iron-Catalyzed Nitrogenative Dimerization of Indoles to p-Bisindolopyrazine Derivatives**

By: Li, Jianan; et al

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

**Scheme 61** (2 Reactions)

Steps: **1** Yield: **87-95%**



Suppliers (82)

Suppliers (109)

Suppliers (7)

31-614-CAS-41844031 Steps: **1** Yield: **95%**

1.1 **Reagents:** Triethylamine
**Catalysts:** Copper oxide (CuO), Guar gum
**Solvents:** Dimethylformamide; 2 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.

31-614-CAS-39303570 Steps: **1** Yield: **87%**

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

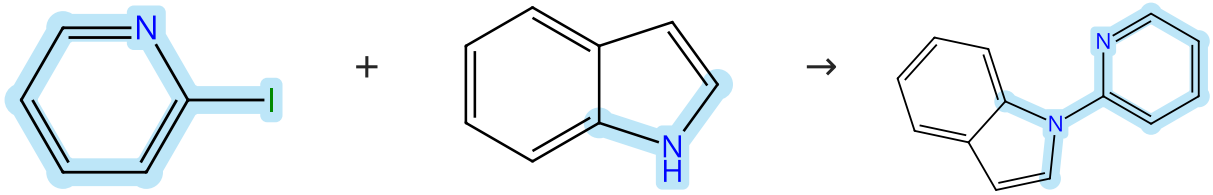
Experimental Protocols

**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 62** (1 Reaction) Steps: **1** Yield: **95%**




Suppliers (79) Suppliers (109) Suppliers (40)

31-614-CAS-42667944 Steps: **1** Yield: **95%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 16 h, 120 °C

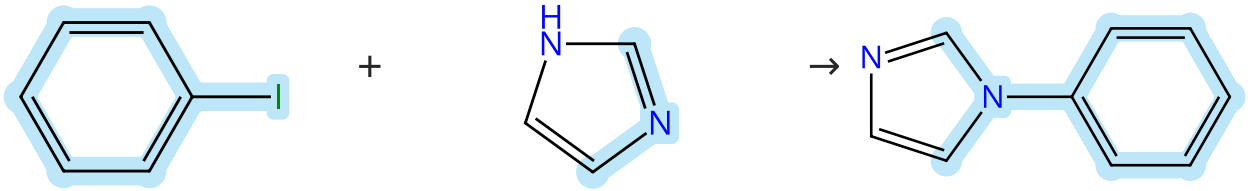
Experimental Protocols

**Rhodium-Catalyzed Asymmetric Cyclopropanation of Indoles with N-Triftosylhydrazones**

By: He, Caicai; et al

Angewandte Chemie, International Edition (2024), 63(50), e202408220.

**Scheme 63** (2 Reactions) Steps: **1** Yield: **95%**




Suppliers (93) Suppliers (201) Suppliers (81)

31-614-CAS-41844048 Steps: **1** Yield: **95%**

1.1 **Reagents:** Triethylamine
**Catalysts:** Copper oxide (CuO), Guar gum
**Solvents:** Dimethylformamide; 4 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.

31-614-CAS-35838761 Steps: **1** Yield: **95%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 2 h, 100 °C

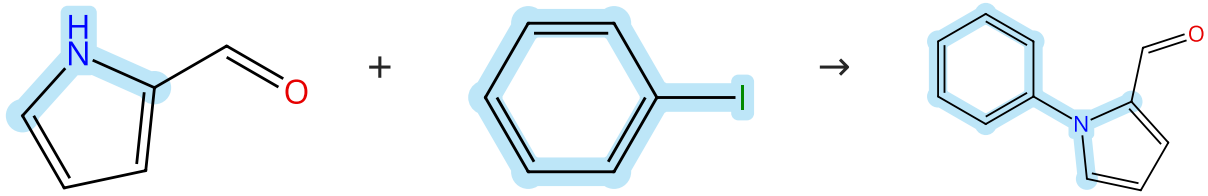
Experimental Protocols

**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 64** (1 Reaction) Steps: **1** Yield: **95%**




Suppliers (113) Suppliers (93) Suppliers (57)

31-614-CAS-39947379 Steps: **1** Yield: **95%**

1.1 **Reagents:** Sodium hydroxide
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; rt

1.2 rt; 12 h, 100 °C

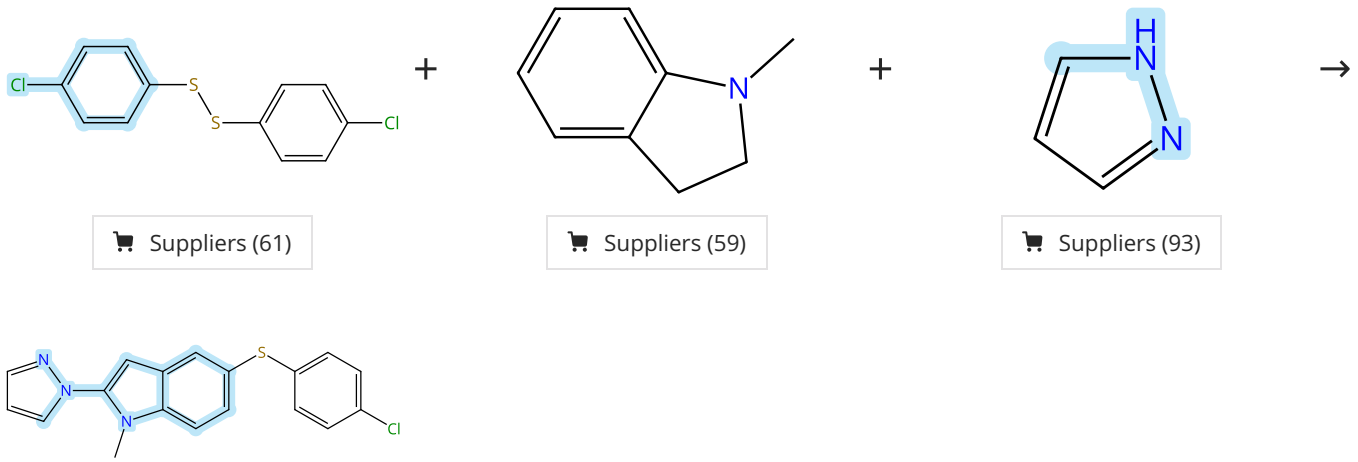
Experimental Protocols

**Direct access to pyrrole anhydrides via oxidative self-coupling of pyrrole carboxaldehydes**

By: Panday, Surabhi; et al

Organic & Biomolecular Chemistry (2024), 22(15), 3045-3052.

**Scheme 65** (1 Reaction) Steps: **1** Yield: **94%**




Suppliers (61) Suppliers (59) Suppliers (93)

31-614-CAS-39026167 Steps: **1** Yield: **94%**

1.1 **Reagents:** Oxygen
**Catalysts:** Iodine, Cuprous iodide
**Solvents:** 1,2-Dichloroethane; 12 h, 80 °C

Experimental Protocols

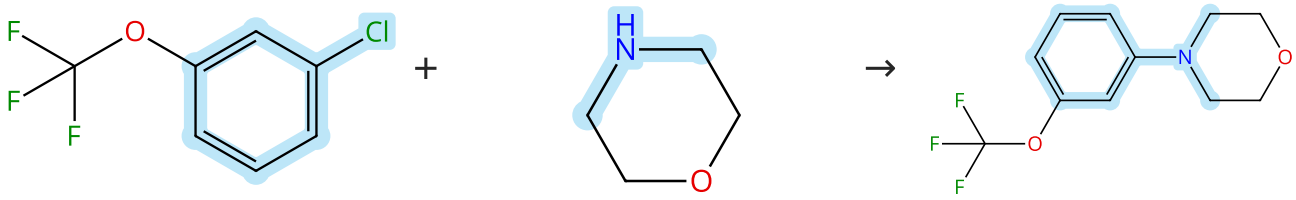
**Iodine-dependent oxidative regioselective aminochalcogenation of indolines**

By: Zhang, Xiaoxiang; et al

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

**Scheme 66** (1 Reaction)

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



Suppliers (59) | Suppliers (83) | Supplier (1)

**31-614-CAS-41757023**

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

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

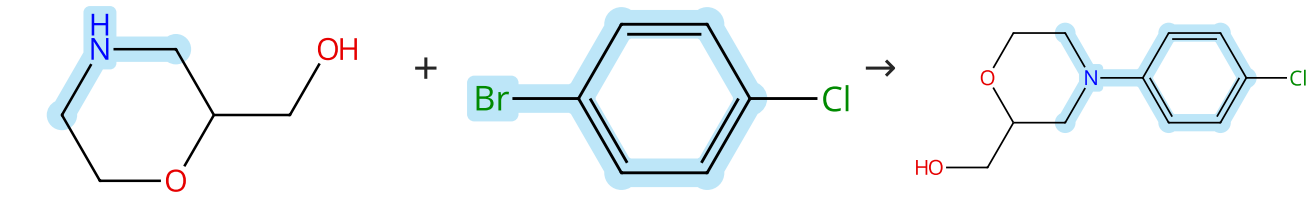
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 67** (1 Reaction)

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



Suppliers (74) | Suppliers (79) | Suppliers (3)

**31-614-CAS-40801476**

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

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

Experimental Protocols

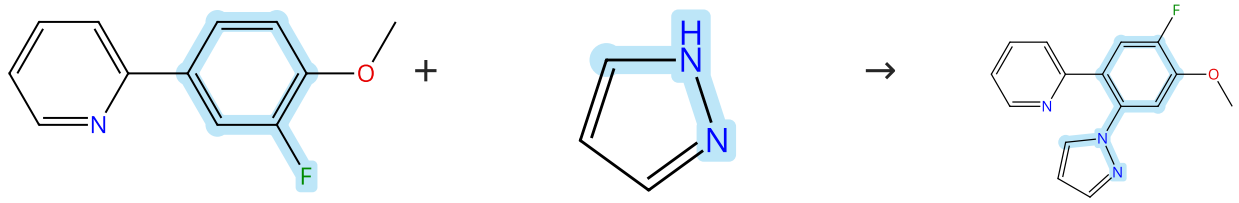
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 68** (1 Reaction)

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



Suppliers (29) | Suppliers (93)

**31-614-CAS-41633176**

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

1.1 **Reagents:** 2,4,6-Trimethylbenzoic acid, Sodium carbonate, Silver fluoride, Oxygen
**Catalysts:** Cupric acetate
**Solvents:** *m*-Xylene, 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 160 °C

Experimental Protocols

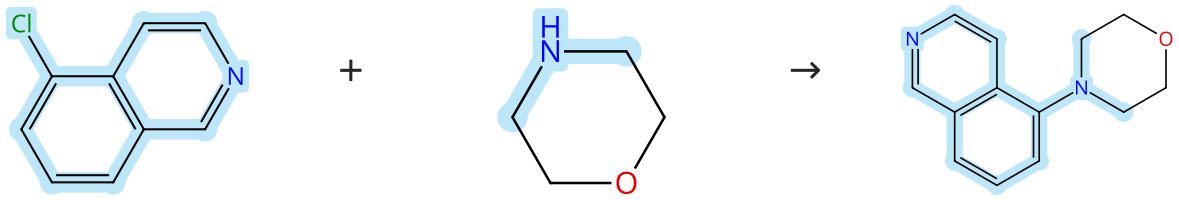
**Copper-promoted ortho-directed C-H amination of 2-arylpyridines with NH-heterocycles**

By: Zeng, Yang-Hao; et al

Organic & Biomolecular Chemistry (2024), 22(36), 7390-7394.

**Scheme 69** (1 Reaction)

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



Suppliers (68) | Suppliers (83) | Suppliers (3)

**31-614-CAS-41757017**

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

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

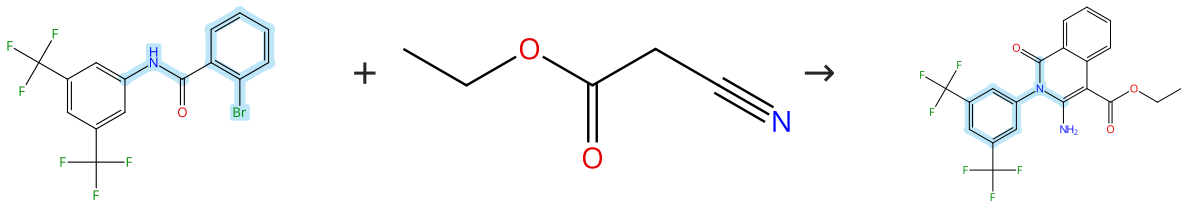
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 70** (1 Reaction)

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



Suppliers (3) | Suppliers (69)

**31-614-CAS-38062416**

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

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

Experimental Protocols

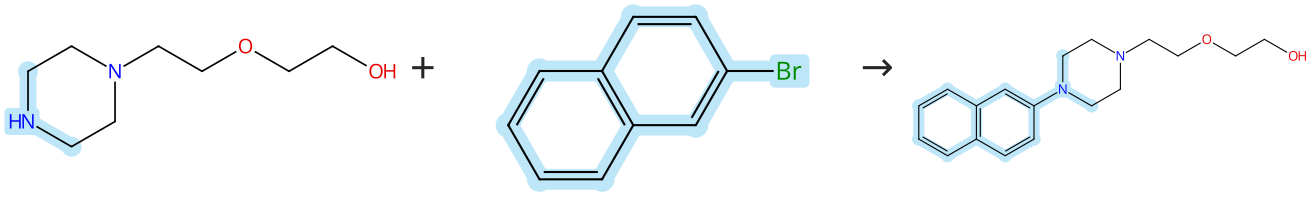
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

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

**Scheme 71** (1 Reaction)

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



Suppliers (81) | Suppliers (88)

**31-614-CAS-40801487**

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

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

Experimental Protocols

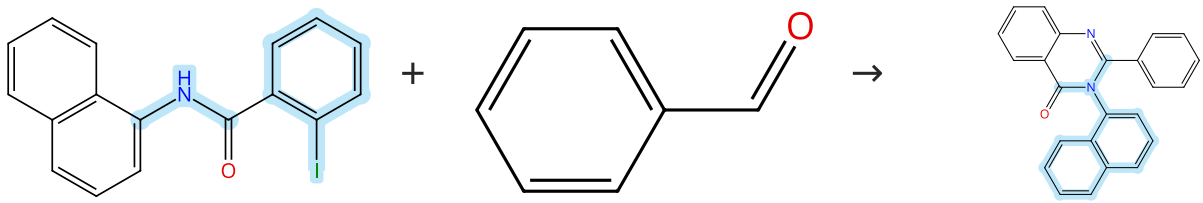
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 72** (2 Reactions)

Steps: **1** Yield: **92-94%**



Suppliers (7) | Suppliers (60) | Suppliers (5)

**31-614-CAS-43887587**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper
**Solvents:** Polyethylene glycol; rt; 10 h, 70 °C

1.2 **Reagents:** Water

Experimental Protocols

**An expedient access to aminoquinazolines and quinazolinones via N-atom insertion reaction using copper nanoparticles decorated on magnetic carbon spheres**

By: Thrilokraj, R.; et al

Materials Today Chemistry (2024), 42, 102395.

**31-614-CAS-39791008**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

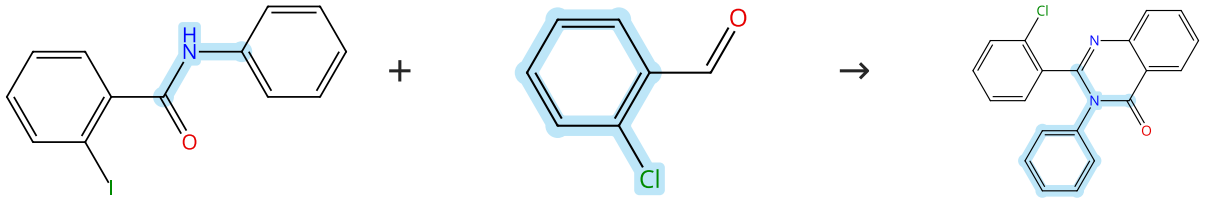
**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**Scheme 73** (2 Reactions)

Steps: **1** Yield: **91-94%**



Suppliers (38) | Suppliers (83) | Suppliers (2)

**31-614-CAS-39790994**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**31-614-CAS-43887584**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper
**Solvents:** Polyethylene glycol; rt; 10 h, 70 °C

1.2 **Reagents:** Water

Experimental Protocols

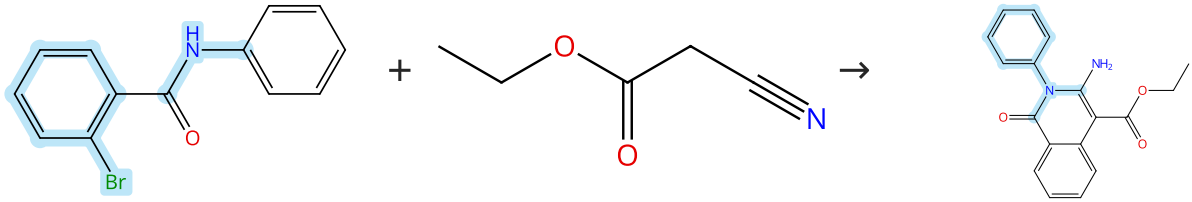
**An expedient access to aminoquinazolines and quinazolinones via N-atom insertion reaction using copper nanoparticles decorated on magnetic carbon spheres**

By: Thrilokraj, R.; et al

Materials Today Chemistry (2024), 42, 102395.

**Scheme 74** (1 Reaction)

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



Suppliers (16) | Suppliers (69) | Supplier (1)

**31-614-CAS-38062427**

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

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

Experimental Protocols

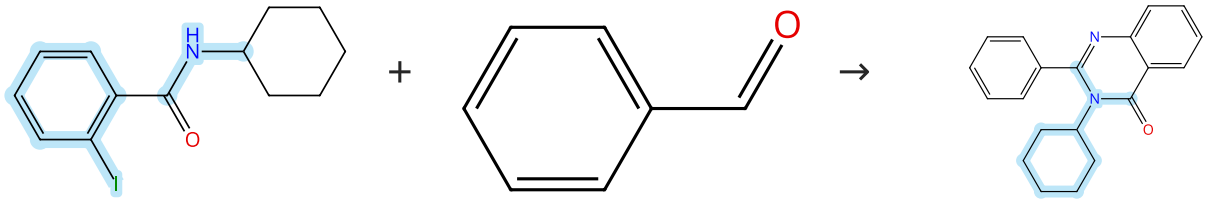
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

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

**Scheme 75** (1 Reaction)

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



Suppliers (32) | Suppliers (60) | Suppliers (4)

**31-614-CAS-39791010**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

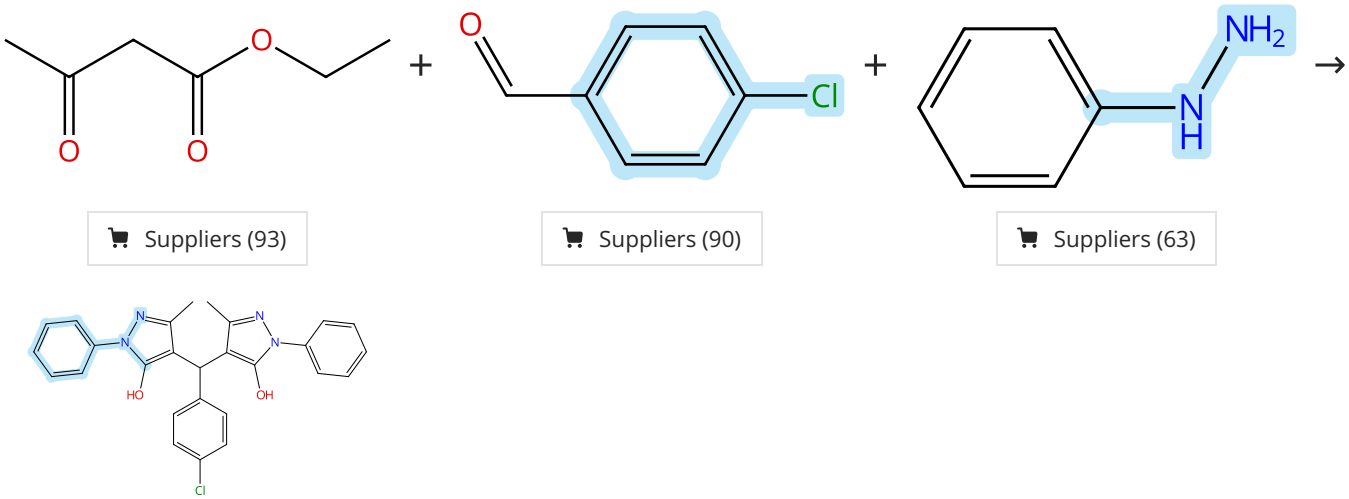
**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**Scheme 76** (1 Reaction)

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



Suppliers (93) | Suppliers (90) | Suppliers (63)



Suppliers (7)

31-614-CAS-44172541 Steps: **1** Yield: **94%**

1.1 **Catalysts:** Copper oxide (CuO)
**Solvents:** Methanol; 15 min, 70 °C

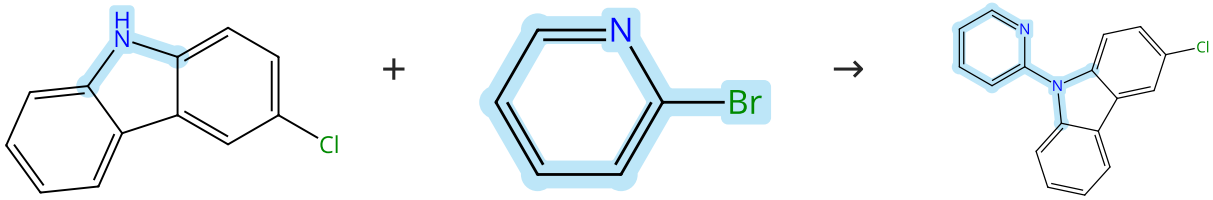
Experimental Protocols

**Synthesis of Bis-pyrazole Derivatives Using Coal Fly Ash @Cu O Coreshell Nanocomposite and their Molecular Docking against Human Tyrosyl DNA Phosphodiesterase I**

By: Thakare, Savita Vasantrao; et al

Current Catalysis (2024), 13(2), 117-130.

**Scheme 77** (1 Reaction) Steps: **1** Yield: **94%**




Suppliers (64) Suppliers (86)

31-614-CAS-41277586 Steps: **1** Yield: **94%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

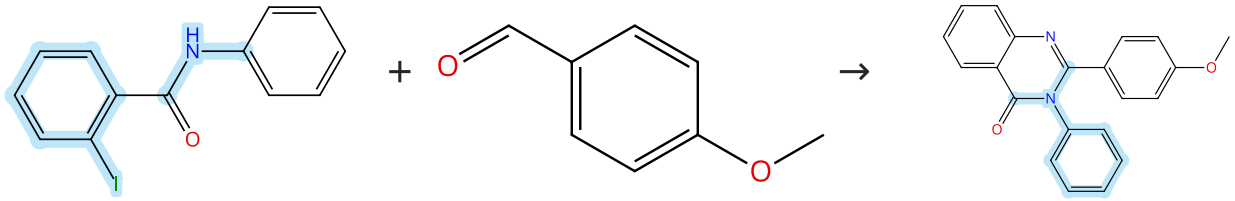
Experimental Protocols

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

By: Dharaniyedath, Jyothis; et al

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

**Scheme 78** (2 Reactions) Steps: **1** Yield: **94%**




Suppliers (38) Suppliers (126) Suppliers (4)

31-614-CAS-39790991 Steps: **1** Yield: **94%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

31-614-CAS-43887583 Steps: **1** Yield: **94%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper
**Solvents:** Polyethylene glycol; rt; 10 h, 70 °C

1.2 **Reagents:** Water

Experimental Protocols

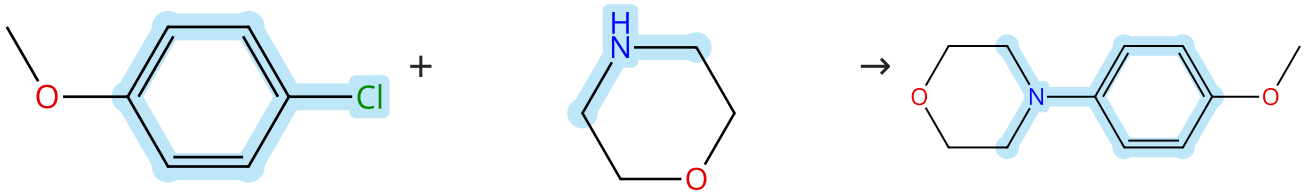
**An expedient access to aminoquinazolines and quinazolinones via N-atom insertion reaction using copper nanoparticles decorated on magnetic carbon spheres**

By: Thrilokraj, R.; et al

Materials Today Chemistry (2024), 42, 102395.

**Scheme 79** (1 Reaction)

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



Suppliers (69) | Suppliers (83) | Suppliers (57)

**31-614-CAS-41756897**

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

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

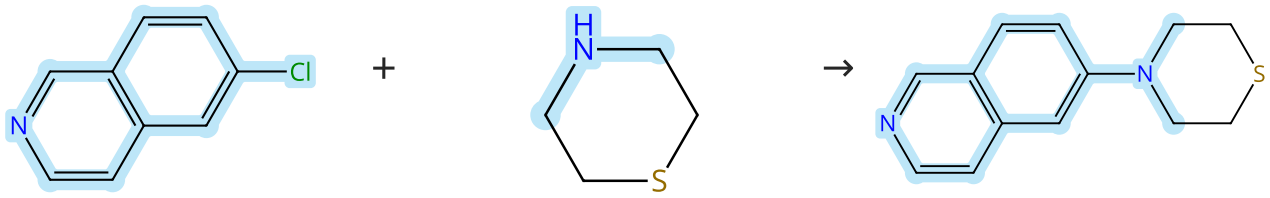
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 80** (1 Reaction)

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



Suppliers (67) | Suppliers (83)

**31-614-CAS-41757016**

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

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:** Toluene, Dimethylacetamide; 5 min

1.2 24 h, 55 °C

Experimental Protocols

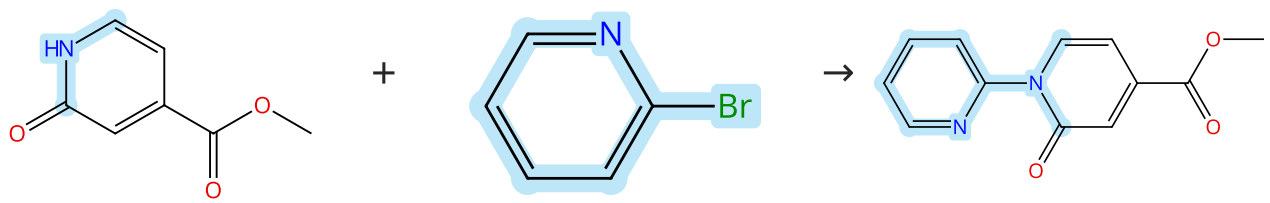
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 81** (1 Reaction)

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



Suppliers (66) | Suppliers (86)

**31-614-CAS-38968924**

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

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N*,*N*'-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

Experimental Protocols

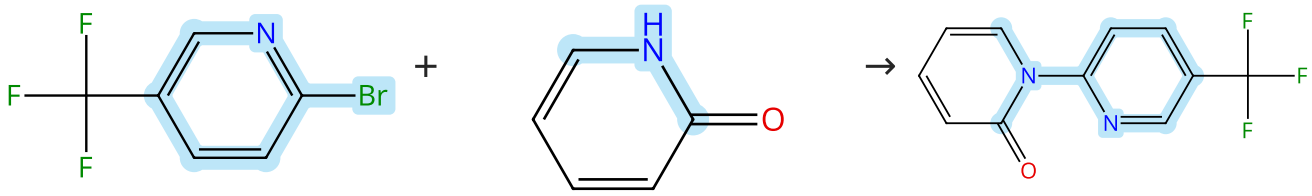
**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 82** (1 Reaction)

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



Suppliers (94)

Suppliers (128)

Supplier (1)

**31-614-CAS-38968932**

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

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N*,*N*′-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

Experimental Protocols

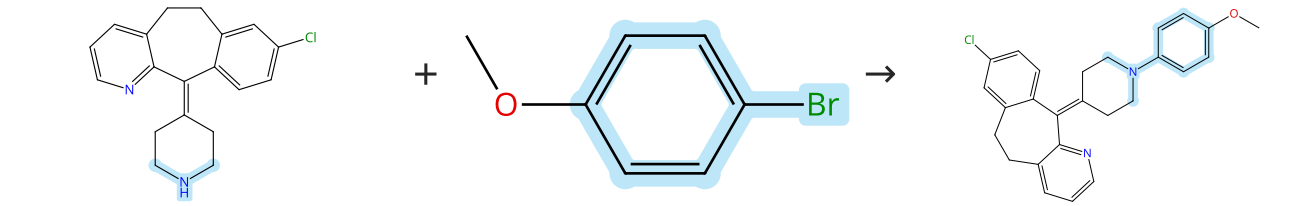
**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 83** (1 Reaction)

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



Suppliers (98)

Suppliers (69)

**31-614-CAS-41756975**

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

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 3 h, rt

Experimental Protocols

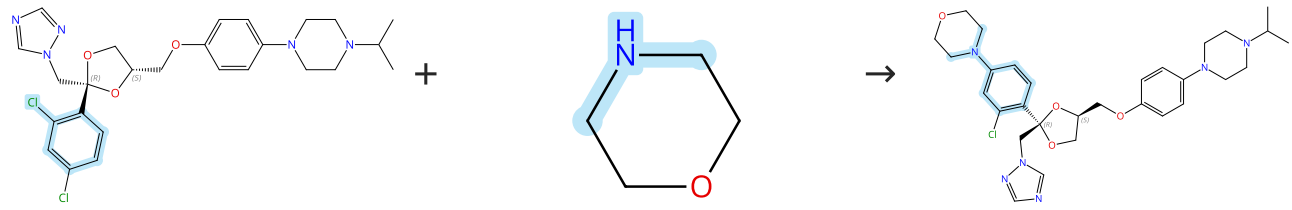
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 84** (1 Reaction)

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



Relative stereochemistry shown

Suppliers (61)

Suppliers (83)

Relative stereochemistry shown

31-614-CAS-41756964 Steps: **1** Yield: **93%**

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

1.2 24 h, 55 °C

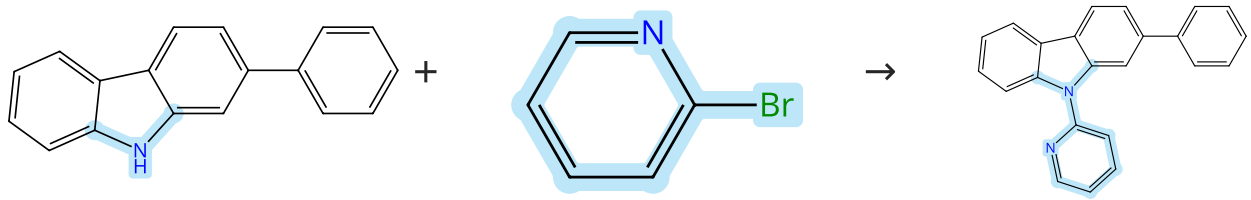
Experimental Protocols

**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 85** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (58) Suppliers (86)

31-614-CAS-41277568 Steps: **1** Yield: **93%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

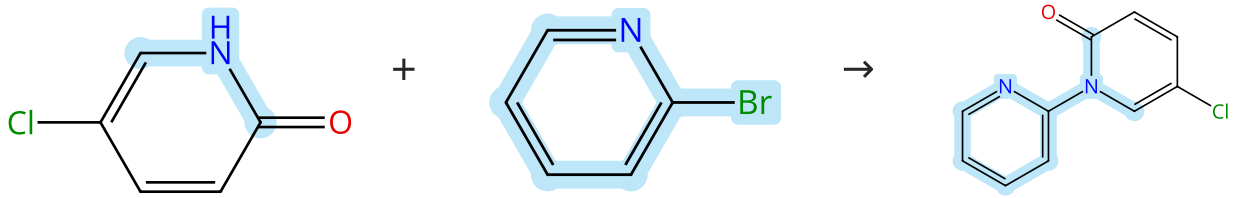
Experimental Protocols

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

By: Dharaniyedath, Jyothis; et al

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

**Scheme 86** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (95) Suppliers (86) Suppliers (2)

31-614-CAS-38968929 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N*,*N*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

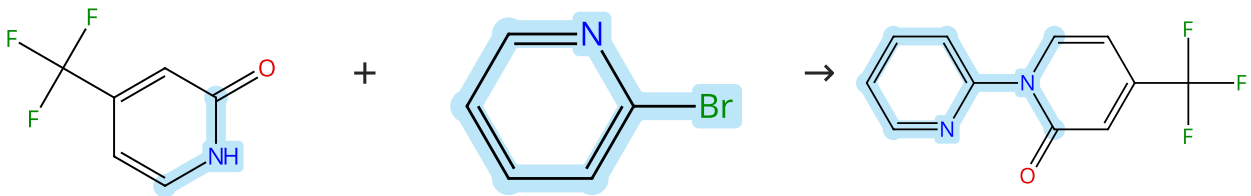
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 87** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (85) Suppliers (86)

31-614-CAS-38968926 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

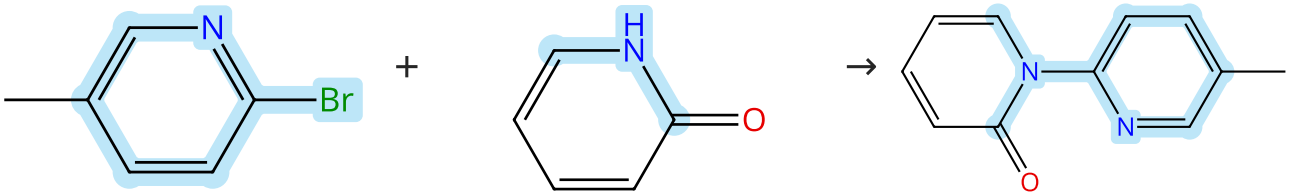
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 88** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (102) Suppliers (128) Suppliers (4)

31-614-CAS-38968936 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

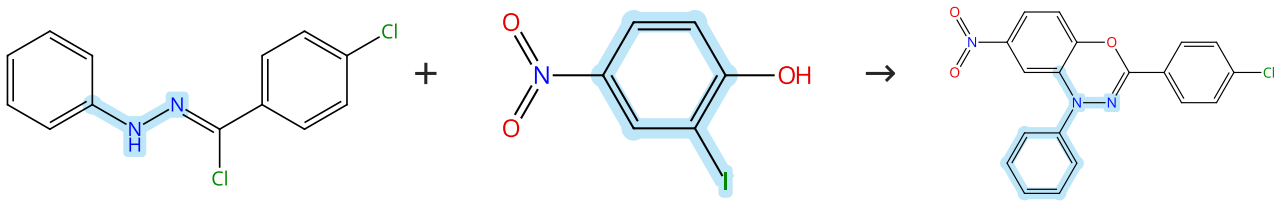
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 89** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (4) Suppliers (63)

31-614-CAS-42420851 Steps: **1** Yield: **93%**

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

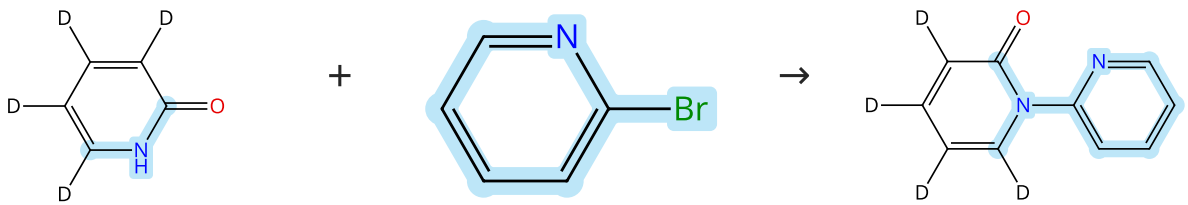
1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

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

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 90** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (8) Suppliers (86)

31-614-CAS-38969003 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

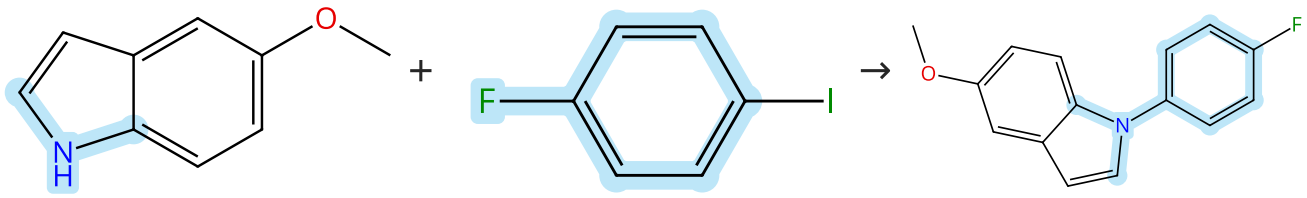
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 91** (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (106) Suppliers (82) Suppliers (5)

31-614-CAS-39303581 Steps: **1** Yield: **93%**

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

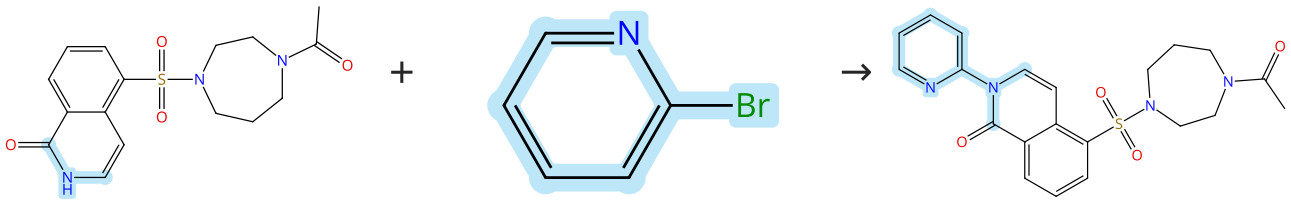
Experimental Protocols

**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 92** (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (86)

31-614-CAS-38969001 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

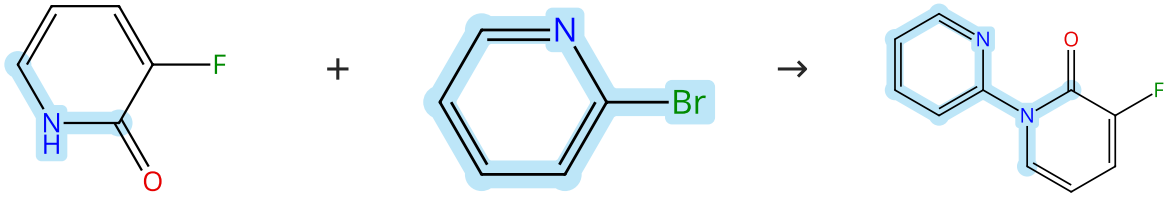
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

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



Suppliers (71) Suppliers (86) Suppliers (4)

31-614-CAS-38968921 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

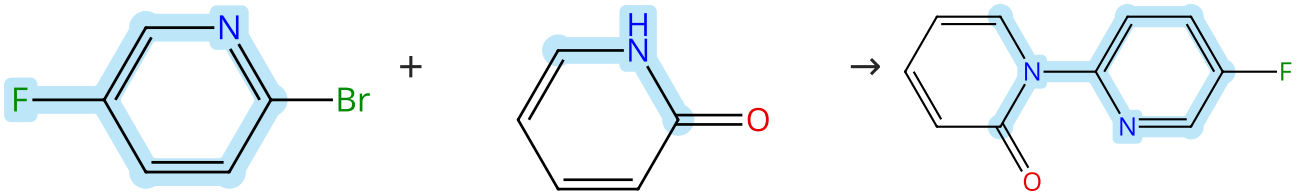
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 94** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (86) Suppliers (128) Supplier (1)

31-614-CAS-38968937 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

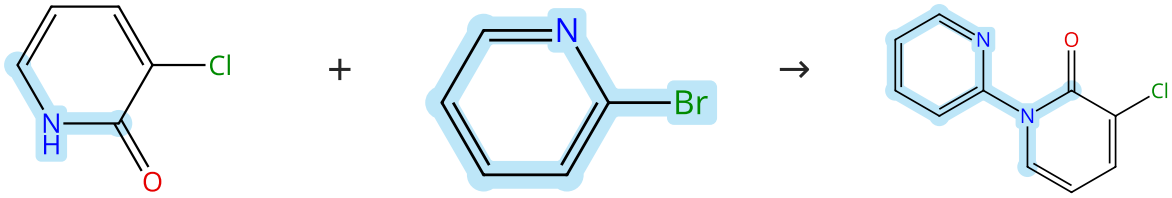
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 95** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (89) Suppliers (86) Suppliers (4)

31-614-CAS-38968922 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

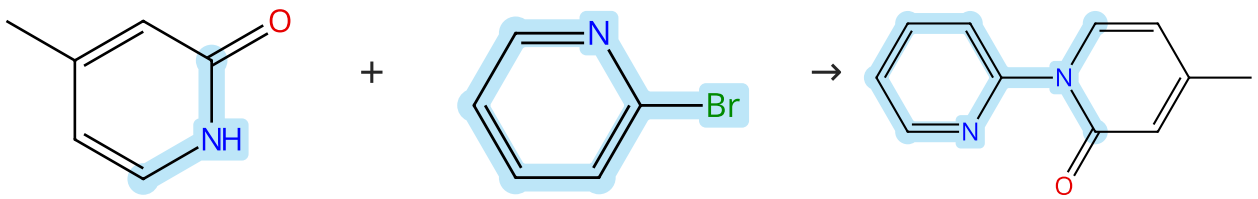
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 96** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (100) Suppliers (86) Supplier (1)

31-614-CAS-38968930 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

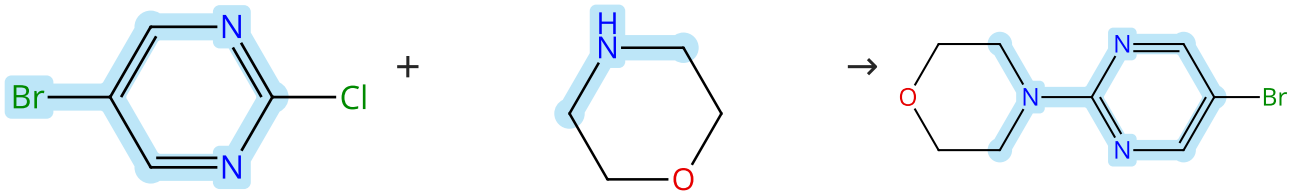
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 97** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (105) Suppliers (83) Suppliers (76)

31-614-CAS-40743584 Steps: **1** Yield: **93%**

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatricyclo[3.3.1.1$^{3,7}$]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

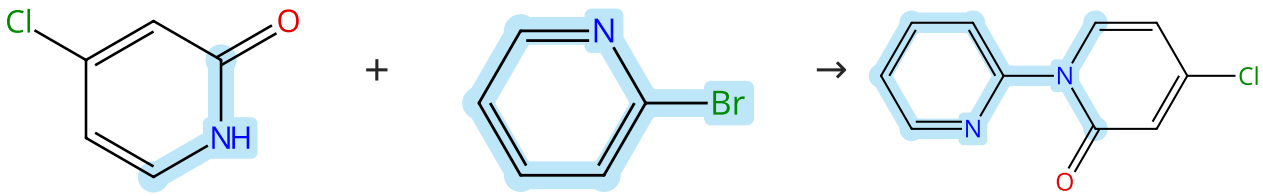
Experimental Protocols

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

By: Phulwale, Vikram; et al

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

**Scheme 98** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (92) Suppliers (86)

31-614-CAS-38968925 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

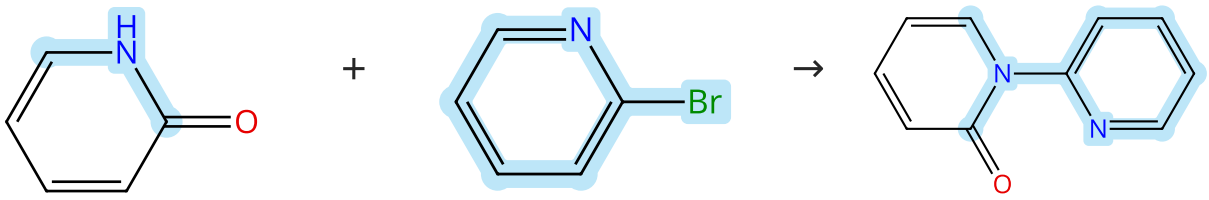
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 99** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (128) Suppliers (86) Suppliers (9)

31-614-CAS-38968920 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

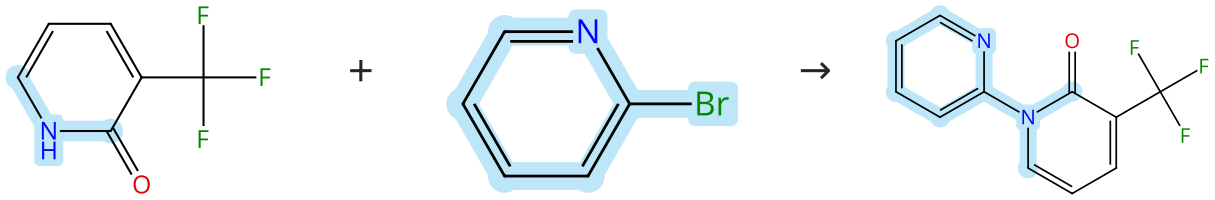
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 100** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (91) Suppliers (86)

31-614-CAS-38968931 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

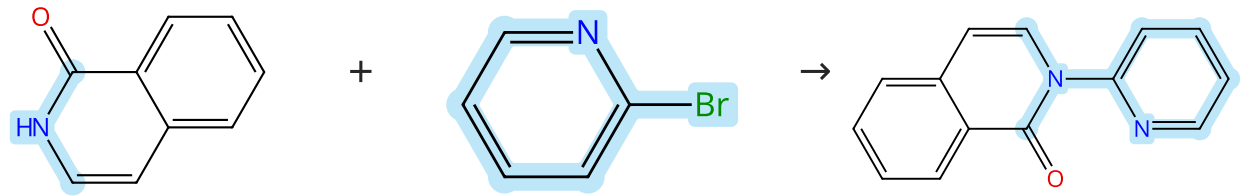
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 101** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (102) Suppliers (86) Supplier (1)

31-614-CAS-38968935 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

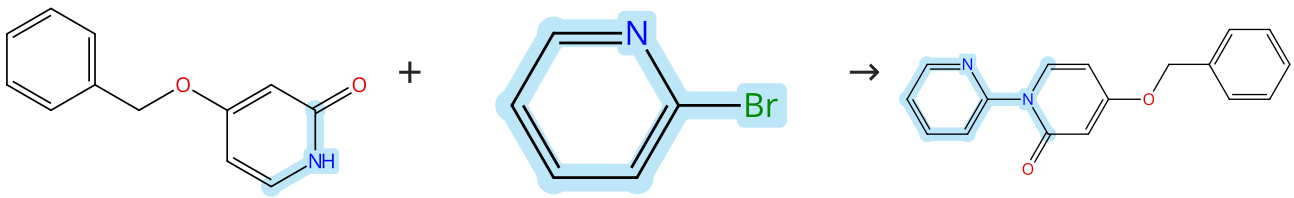
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 102** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (78) Suppliers (86) Suppliers (2)

31-614-CAS-38968933 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

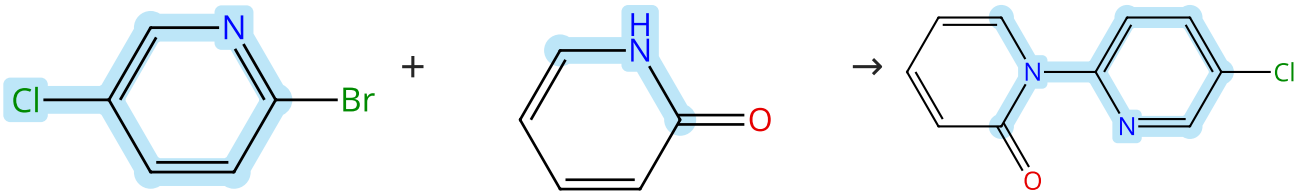
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 103** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (99) Suppliers (128) Supplier (1)

31-614-CAS-38968941 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

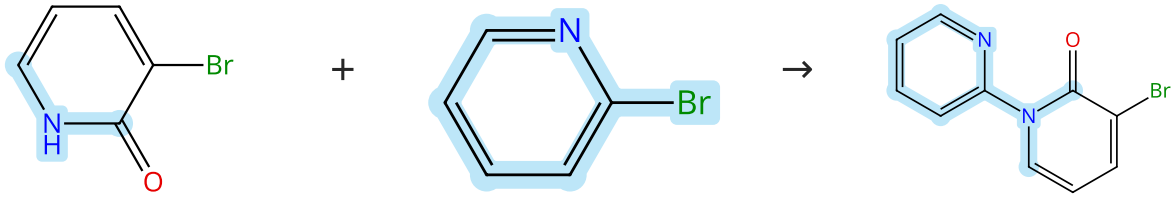
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 104** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (88) Suppliers (86) Suppliers (15)

31-614-CAS-38968927 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

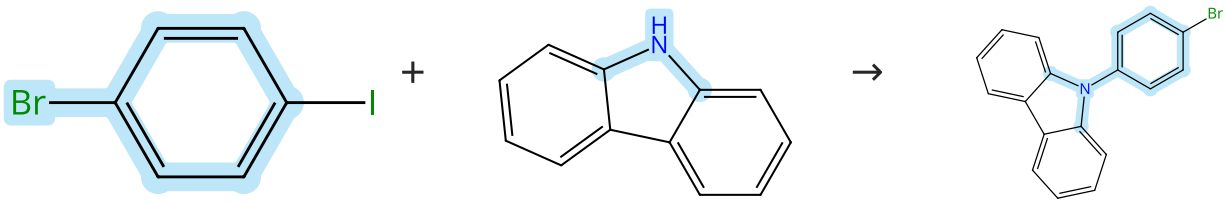
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 105** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (94) Suppliers (109) Suppliers (94)

31-614-CAS-45308786 Steps: **1** Yield: **93%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide
**Solvents:** 1,2-Dimethoxyethane, Water; 20 h, 90 °C

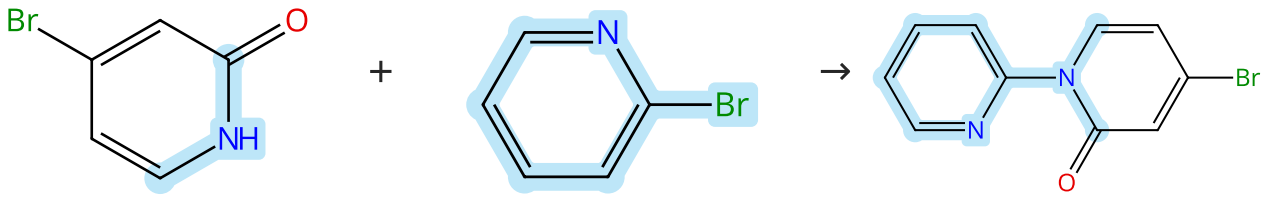
Experimental Protocols

**Molecular engineering of coumarins for enhanced 2-photon absorption property**

By: Zhang, Fan; et al

Chemistry Letters (2024), 53(7), upae131.

**Scheme 106** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (125) Suppliers (86) Suppliers (22)

31-614-CAS-38968928 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt
1.2 **Reagents:** Water

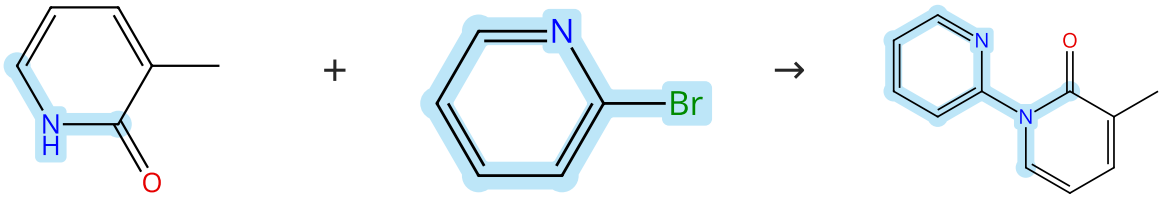
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 107** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (89) Suppliers (86) Supplier (1)

31-614-CAS-38968923 Steps: **1** Yield: **93%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 20 h, 120 °C; 120 °C → rt
1.2 **Reagents:** Water

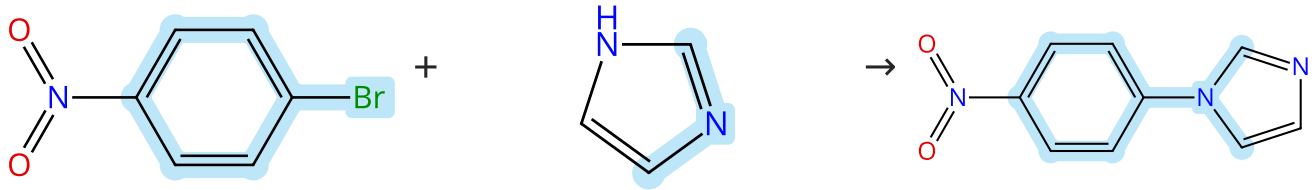
Experimental Protocols

**Co(III)-Catalyzed C6-Selective C-H Activation/Pyridine Migration of 2-Pyridones with Propiolates**

By: Zhu, Yue-Lu; et al

Organic Letters (2024), 26(1), 12-17.

**Scheme 108** (1 Reaction) Steps: **1** Yield: **93%**




Suppliers (76) Suppliers (201) Suppliers (83)

31-614-CAS-35838783 Steps: **1** Yield: **93%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 3 h, 100 °C

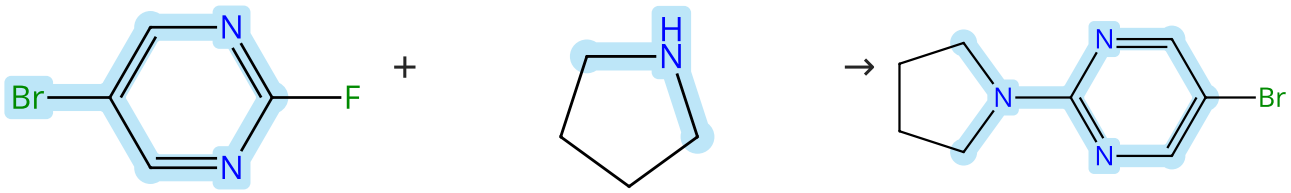
Experimental Protocols

**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 109** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (83) Suppliers (74) Suppliers (67)

31-614-CAS-40743596 Steps: **1** Yield: **92%**

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatricyclo[3.3.1.1$^{3,7}$]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

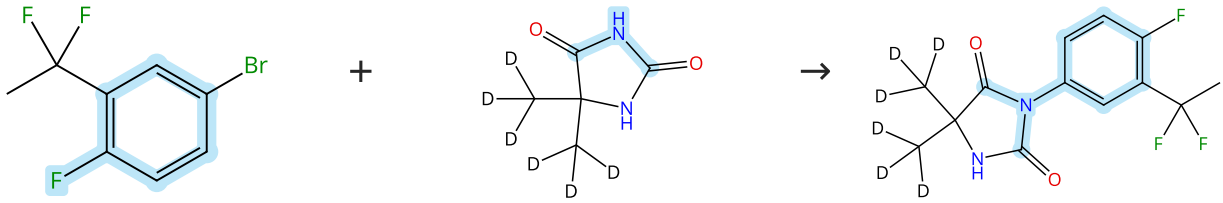
Experimental Protocols

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

By: Phulwale, Vikram; et al

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

**Scheme 110** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (44)

31-614-CAS-42372620 Steps: **1** Yield: **92%**

1.1 **Catalysts:** Copper oxide ($Cu_2O$)
**Solvents:** Dimethylacetamide; 24 h, rt → 160 °C

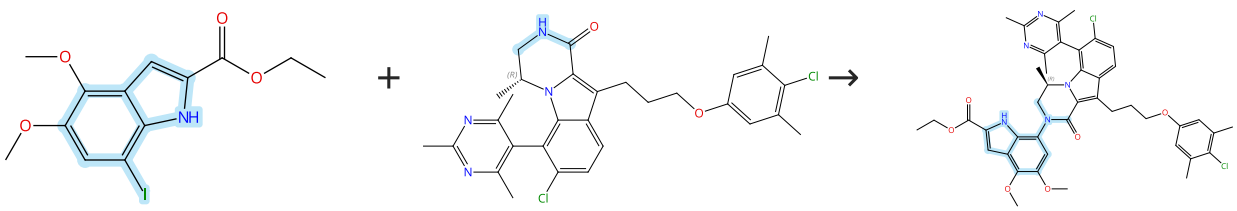
Experimental Protocols

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

By: Leas, Derek A.; et al

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

**Scheme 111** (1 Reaction) Steps: **1** Yield: **92%**




Absolute stereochemistry shown Absolute stereochemistry shown

31-614-CAS-42896068 Steps: **1** Yield: **92%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, *trans*-*N*,*N*′-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Toluene; 48 h, rt → 100 °C

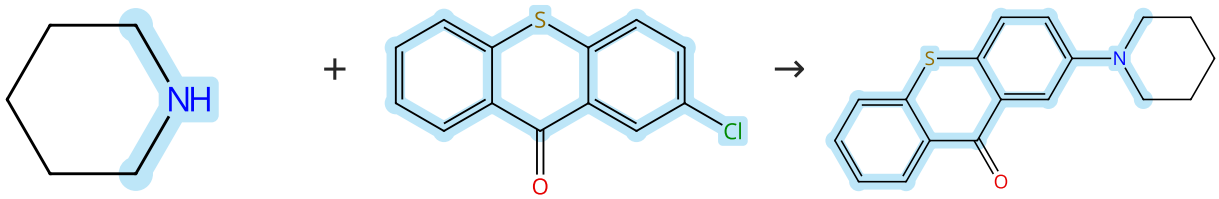
Experimental Protocols

**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 112** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (50) Suppliers (73) Supplier (1)

31-614-CAS-41756923 Steps: **1** Yield: **92%**

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, 40 °C

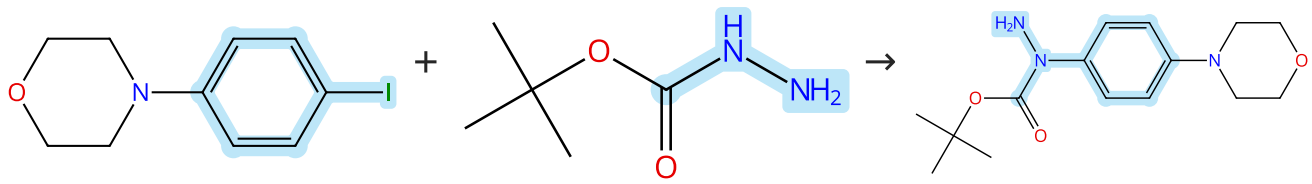
Experimental Protocols

**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 113** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (60) Suppliers (96) Supplier (1)

31-614-CAS-41148457 Steps: **1** Yield: **92%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide
**Solvents:** Dimethylformamide; 21 h, 80 °C

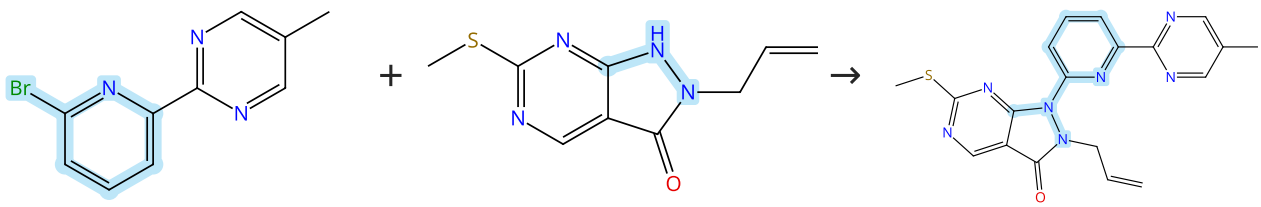
Experimental Protocols

**Aryl Azocyclopropeniums: Minimalist, Visible-Light Photoswitches**

By: Fink, Moritz; et al

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

**Scheme 114** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (4) Suppliers (60)

31-614-CAS-40870525 Steps: **1** Yield: **92%**

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

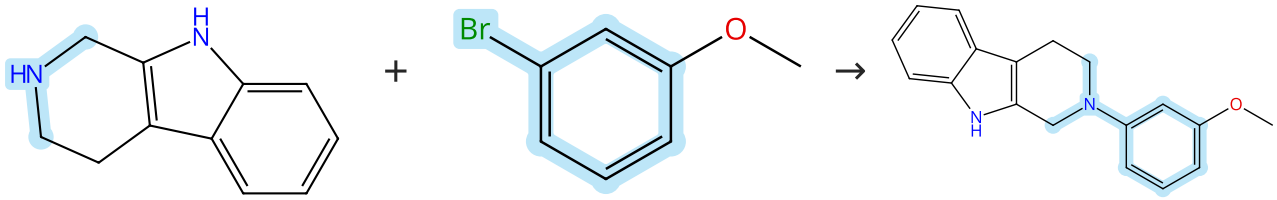
Experimental Protocols

**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 115** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (75) Suppliers (80)

31-614-CAS-41277524 Steps: **1** Yield: **92%**

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

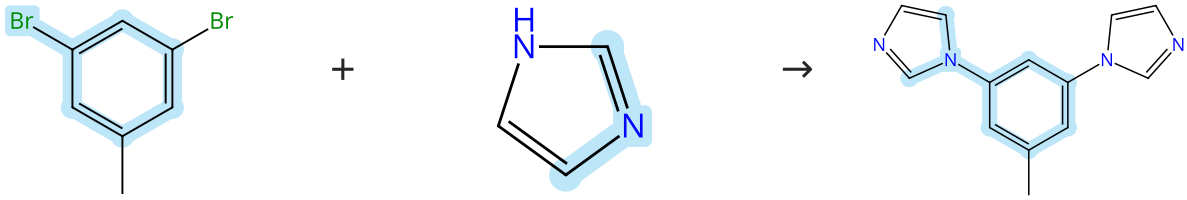
Experimental Protocols

**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 116** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (81) Suppliers (201) Suppliers (9)

31-614-CAS-41122674 Steps: **1** Yield: **92%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper sulfate; 72 h, 180 °C

Experimental Protocols

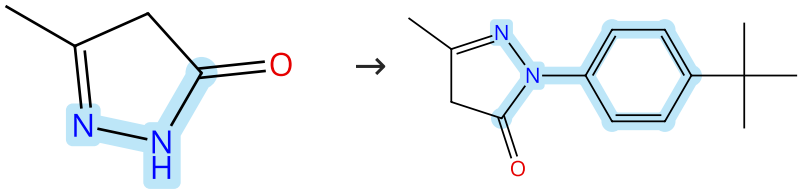
**Systemic regulation of binding sites in porous coordination polymers for ethylene purification from ternary C2 hydrocarbons**

By: Li, Yi; et al

Chemical Science (2024), 15(24), 9318-9324.

**Scheme 117** (1 Reaction) Steps: **1** Yield: **92%**

Multi-component structure image available in CAS SciFinder




Suppliers (56) Suppliers (76) Suppliers (6)

31-614-CAS-38961891 Steps: **1** Yield: **92%**

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

1.2 **Reagents:** Water

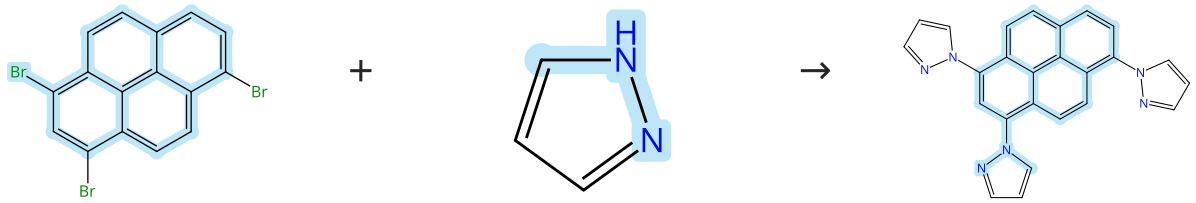
Experimental Protocols

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

By: Liao, Wenbo; et al

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

**Scheme 118** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (10) Suppliers (93)

31-614-CAS-41137269 Steps: **1** Yield: **92%**

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

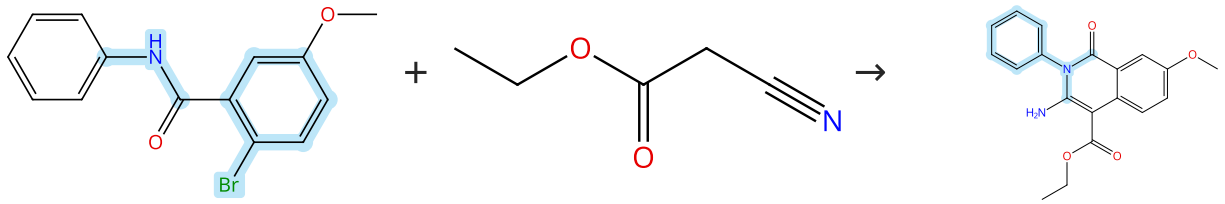
Experimental Protocols

**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 119** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (4) Suppliers (69)

31-614-CAS-38062423 Steps: **1** Yield: **92%**

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

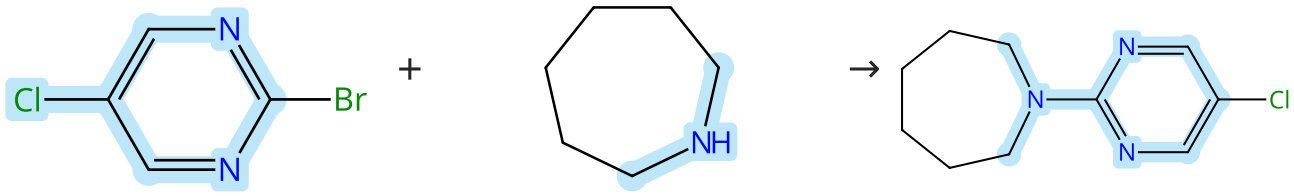
Experimental Protocols

**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 120** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (67) Suppliers (49) Suppliers (4)

31-614-CAS-40743593 Steps: **1** Yield: **92%**

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphat ricyclo[3.3.1.1$^{3,7}$]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

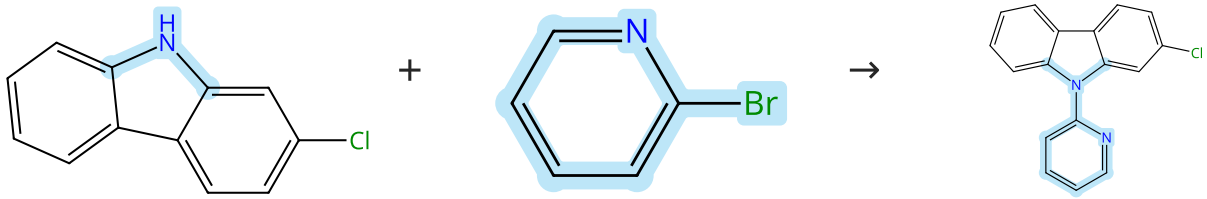
Experimental Protocols

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

By: Phulwale, Vikram; et al

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

**Scheme 121** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (66) Suppliers (86) Supplier (1)

31-614-CAS-41277576 Steps: **1** Yield: **92%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

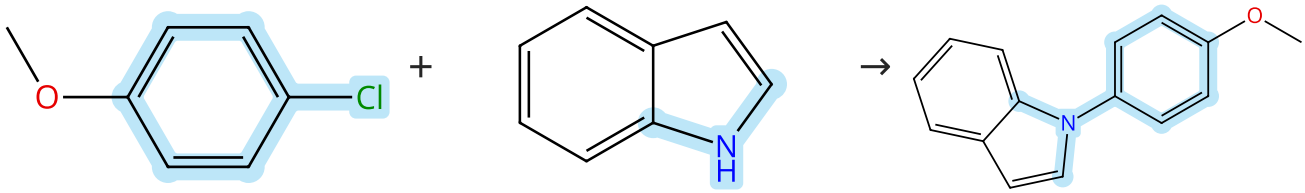
Experimental Protocols

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

By: Dharaniyedath, Jyothis; et al

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

**Scheme 122** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (69) Suppliers (109) Suppliers (12)

31-614-CAS-41844047 Steps: **1** Yield: **92%**

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

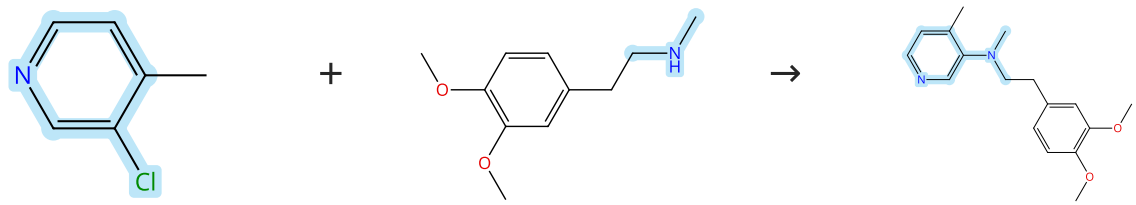
Experimental Protocols

**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 123** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (61) Suppliers (45)

31-614-CAS-41756930 Steps: **1** Yield: **92%**

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

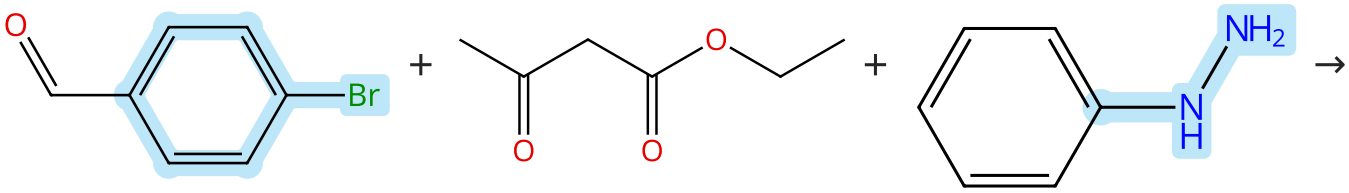
Experimental Protocols

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

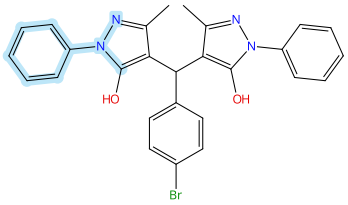
By: Ai, Han-Jun; et al

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

**Scheme 124** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (89) Suppliers (93) Suppliers (63)




Suppliers (2)

31-614-CAS-44172546 Steps: **1** Yield: **92%**

1.1 **Catalysts:** Copper oxide (Cu O)
**Solvents:** Methanol; 25 min, 70 °C

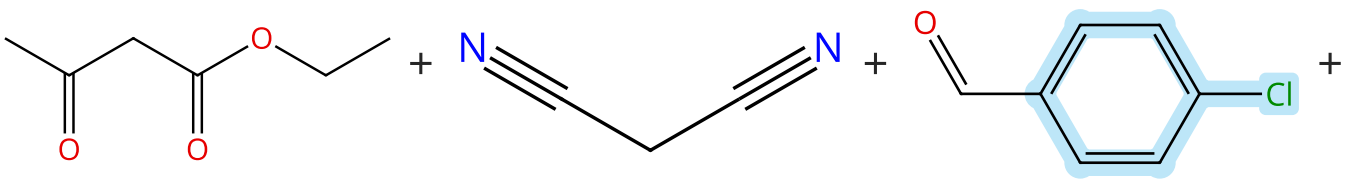
Experimental Protocols

**Synthesis of Bis-pyrazole Derivatives Using Coal Fly Ash @Cu O Coreshell Nanocomposite and their Molecular Docking against Human Tyrosyl DNA Phosphodiesterase I**

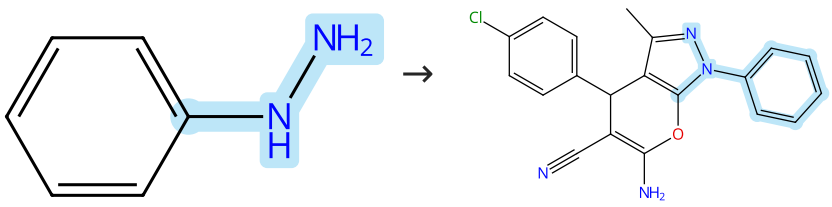
By: Thakare, Savita Vasantrao; et al

Current Catalysis (2024), 13(2), 117-130.

**Scheme 125** (1 Reaction) Steps: **1** Yield: **92%**




Suppliers (93) Suppliers (60) Suppliers (90)




Suppliers (63) Suppliers (19)

31-614-CAS-39676056 Steps: **1** Yield: **92%**

1.1 **Catalysts:** Cobalt oxide ($Co_3O_4$), Nickel monoxide, Copper oxide (CuO); 15 min, 100 °C

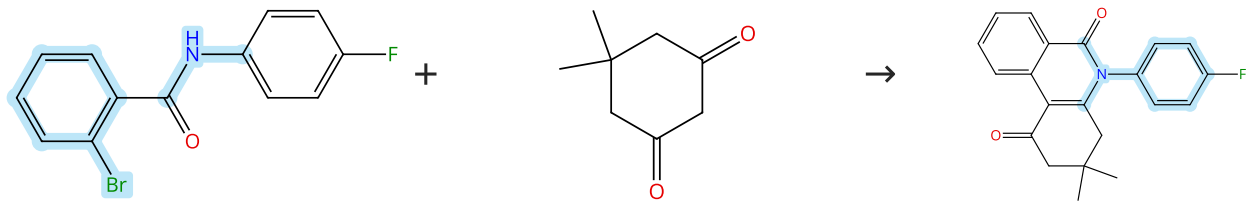
Experimental Protocols

**An approach to rapid one-pot multi-component synthesis of 1,4-dihydropyrano[2,3-C]pyrazole catalyzed by core shell Ni O $Co_3O_4$@ CuO nanoplates under solvent-free conditions**

By: Thakare, S. V.; et al

Heterocyclic Letters (2024), 14(1), 55-63.

**Scheme 126** (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (9) Suppliers (100)

31-614-CAS-38062426 Steps: **1** Yield: **91%**

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

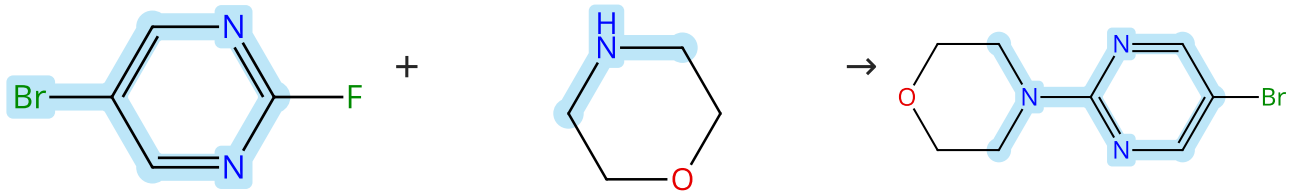
Experimental Protocols

**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 127** (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (83) Suppliers (83) Suppliers (76)

31-614-CAS-40743592 Steps: **1** Yield: **91%**

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphat ricyclo[3.3.1.1$^{3,7}$]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

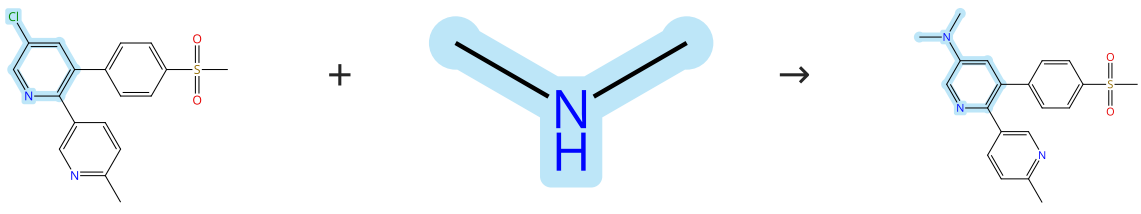
Experimental Protocols

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

By: Phulwale, Vikram; et al

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

**Scheme 128** (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (80) Suppliers (110) Suppliers (37)

31-614-CAS-41756970 Steps: **1** Yield: **91%**

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 **Solvents:** Tetrahydrofuran; 24 h, 55 °C

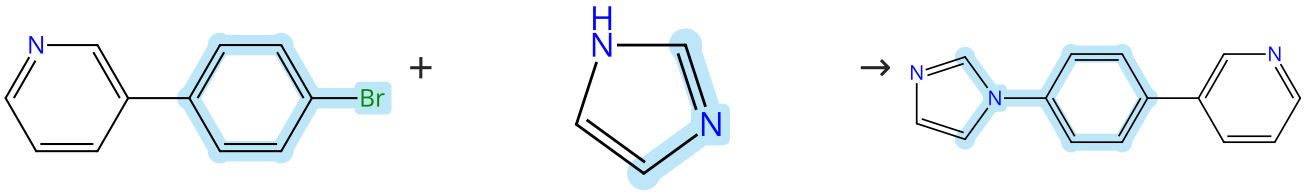
Experimental Protocols

**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 129** (1 Reaction) Steps: **1** Yield: **91%**




Suppliers (71) Suppliers (201)

31-614-CAS-40277911 Steps: **1** Yield: **91%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide; overnight, 150 °C

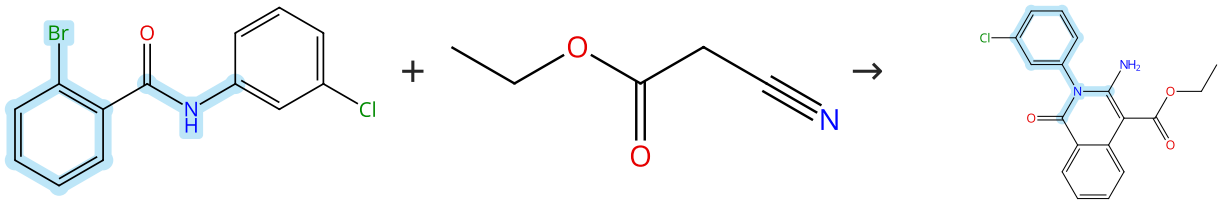
Experimental Protocols

**Orientational Self-Sorting in Octahedral Palladium Cages: Scope and Limitations of the "cis Rule"**

By: de Montmollin, Jean; et al

Inorganic Chemistry (2024), 63(10), 4583-4588.

**Scheme 130** (1 Reaction) Steps: **1** Yield: **91%**




Suppliers (8) Suppliers (69)

31-614-CAS-38062419 Steps: **1** Yield: **91%**

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

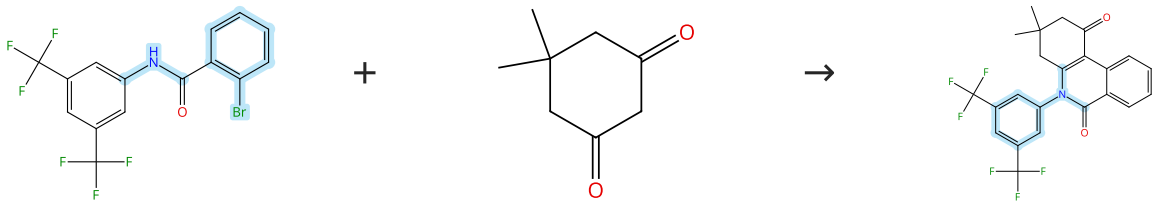
Experimental Protocols

**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 131** (1 Reaction) Steps: **1** Yield: **91%**




Suppliers (3) Suppliers (100)

31-614-CAS-38062422 Steps: **1** Yield: **91%**

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

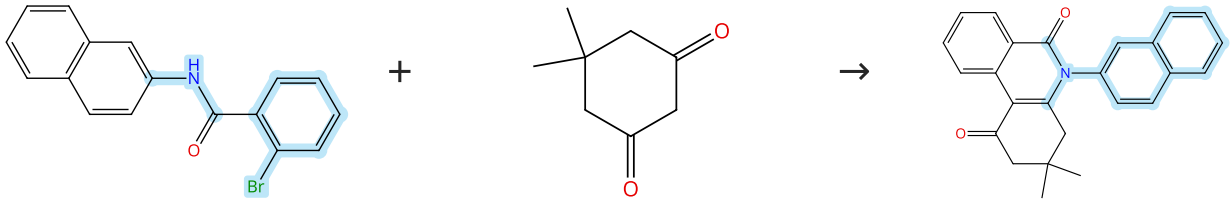
Experimental Protocols

**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 132** (1 Reaction) Steps: **1** Yield: **91%**




Suppliers (3) Suppliers (100)

31-614-CAS-38062424 Steps: **1** Yield: **91%**

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

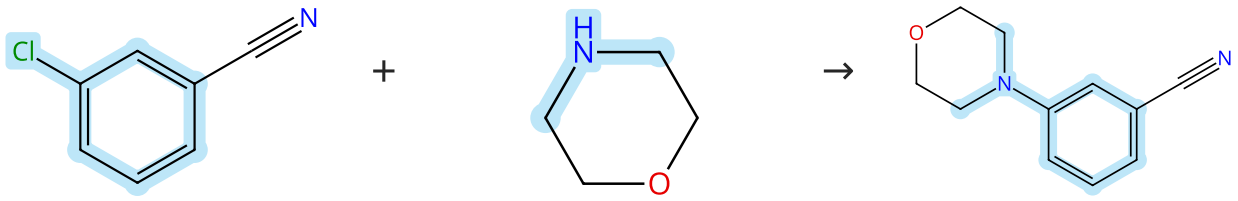
Experimental Protocols

**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 133** (1 Reaction) Steps: **1** Yield: **91%**




Suppliers (75) Suppliers (83) Suppliers (60)

31-614-CAS-41757030 Steps: **1** Yield: **91%**

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

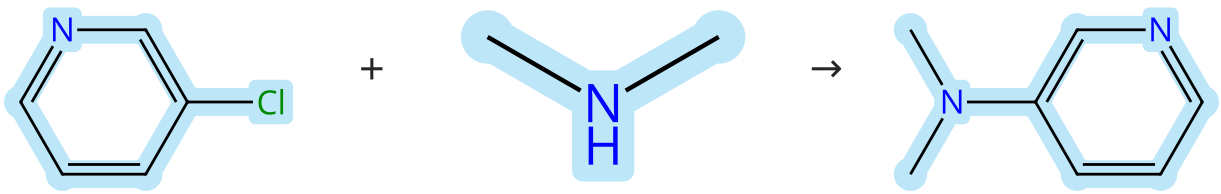
Experimental Protocols

**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 134** (1 Reaction) Steps: **1** Yield: **91%**




Suppliers (79) Suppliers (110) Suppliers (52)

31-614-CAS-41757053 Steps: **1** Yield: **91%**

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 **Solvents:** Tetrahydrofuran; 24 h, 55 °C

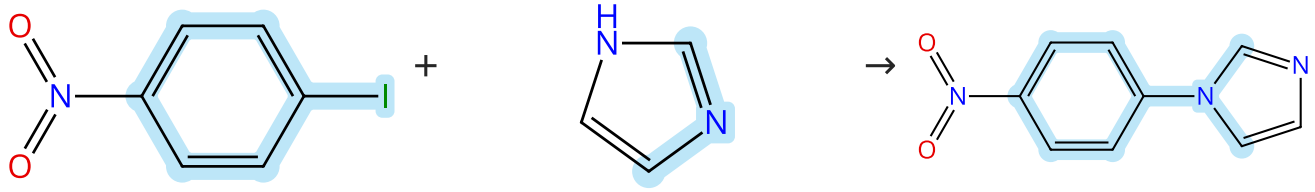
Experimental Protocols

**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 135** (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (68) Suppliers (201) Suppliers (83)

31-614-CAS-35838764 Steps: **1** Yield: **91%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 1 h, 100 °C

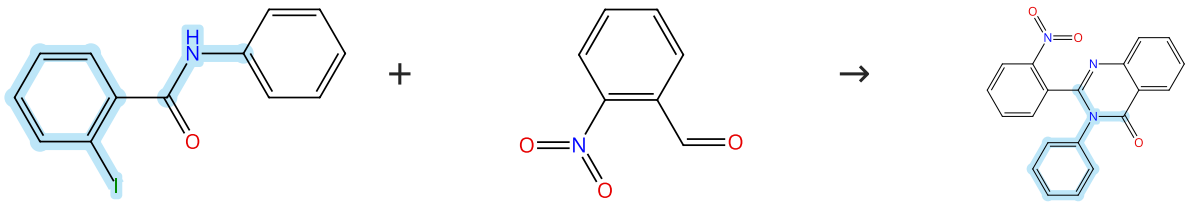
Experimental Protocols

**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 136** (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (38) Suppliers (91) Suppliers (5)

31-614-CAS-39791004 Steps: **1** Yield: **90%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (Cu O)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

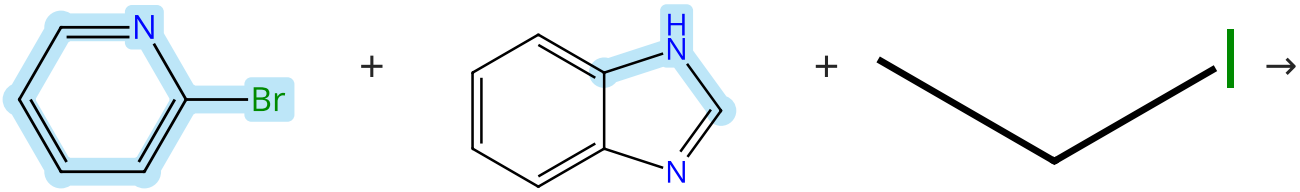
**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**Scheme 137** (1 Reaction)

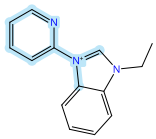
Steps: **1** Yield: **90%**



Suppliers (86)

Suppliers (95)

Suppliers (65)



• $Br^-$

**31-614-CAS-43496300**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper oxide (CuO)
**Solvents:** Dimethyl sulfoxide; 24 h, 150 °C

1.2 **Solvents:** Acetonitrile; 12 h, 90 °C

Experimental Protocols

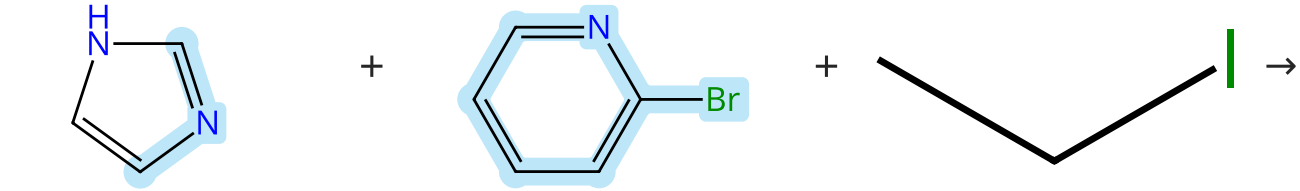
**Cobalt(III) Complexes of Pyridine-Functionalized Chelating NHC Ligands: Effective Catalysts for the Olefination of Alcohols Using Sulfones**

By: Siddique, Misba; et al

Organometallics (2024), 43(13), 1482-1489.

**Scheme 138** (1 Reaction)

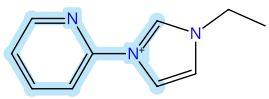
Steps: **1** Yield: **90%**



Suppliers (201)

Suppliers (86)

Suppliers (65)



• $Br^-$

**31-614-CAS-43496295**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper oxide (CuO)
**Solvents:** Dimethyl sulfoxide; 24 h, 150 °C

1.2 **Solvents:** Acetonitrile; 12 h, 90 °C

Experimental Protocols

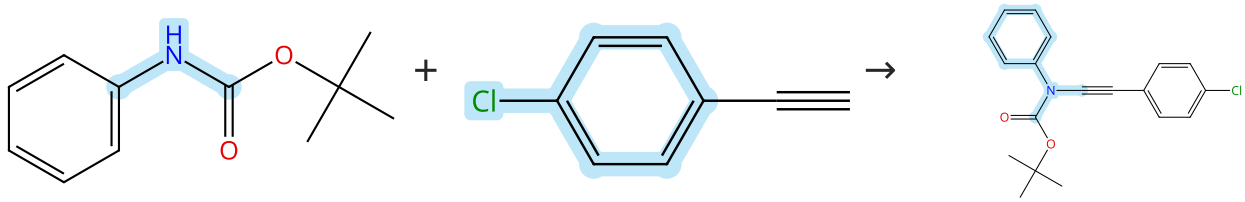
**Cobalt(III) Complexes of Pyridine-Functionalized Chelating NHC Ligands: Effective Catalysts for the Olefination of Alcohols Using Sulfones**

By: Siddique, Misba; et al

Organometallics (2024), 43(13), 1482-1489.

**Scheme 139** (1 Reaction)

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



Suppliers (71)

Suppliers (79)

**31-614-CAS-41090751**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** 1,10-Phenanthroline, Copper sulfate
**Solvents:** Toluene; 72 h, 80 °C

Experimental Protocols

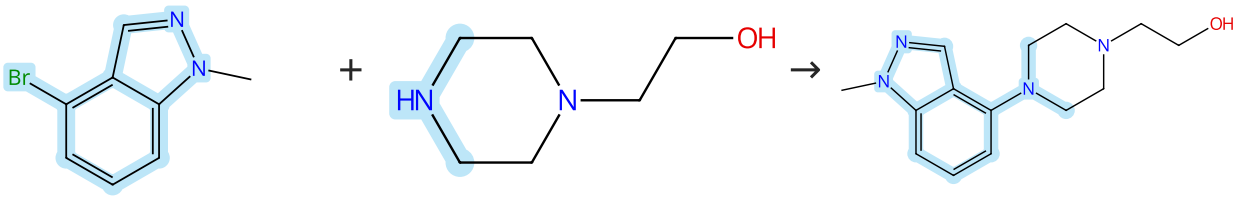
**Cycloaddition of Phenyltriazolinedione with Carbazole-Alkynes and Yne-Carbamates to Access Diazacyclobutenes**

By: Miller, Brock A.; et al

Journal of Organic Chemistry (2024), 89(7), 4990-4999.

**Scheme 140** (1 Reaction)

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



Suppliers (68)

Suppliers (87)

**31-614-CAS-40801461**

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

1.1 **Reagents:** Sodium trimethylsilanolate
**Catalysts:** Cuprous iodide, 1,2-Benenediamine, $N^1$,$N^2$-bis(2-phenyl-1-naphthalenyl)-
**Solvents:** Dimethyl sulfoxide; 50 °C; 16 h, 50 °C

Experimental Protocols

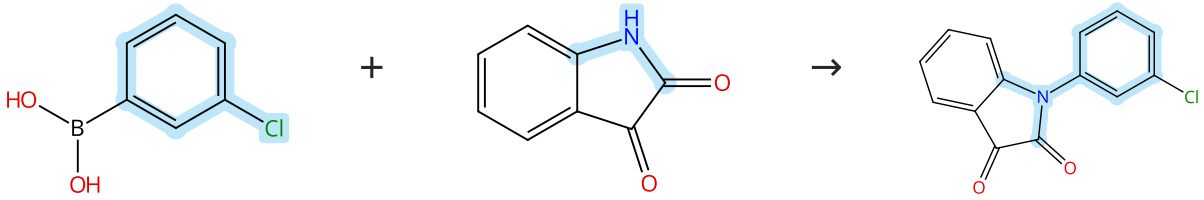
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 141** (1 Reaction)

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



Suppliers (111)

Suppliers (114)

**31-614-CAS-39585615**

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

1.1 **Reagents:** Trifluoroacetic acid, Triethylamine
**Catalysts:** Cupric acetate, Sodium bis(2-ethylhexyl) sulfosuccinate
**Solvents:** Water; 4 h, rt

Experimental Protocols

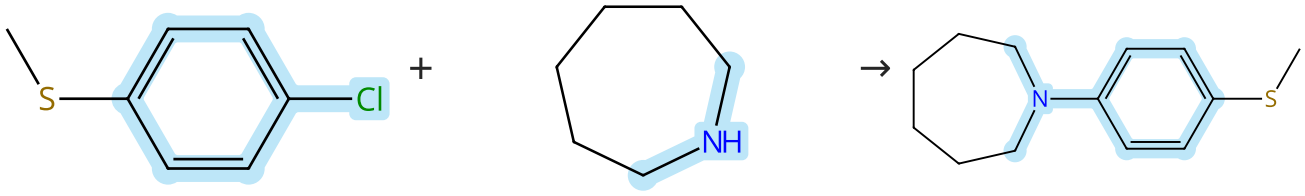
**Cu(II)-catalyzed 'in-water' N-arylation of electron-deficient NH-heterocycles**

By: Sunny, Steeva; et al

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

**Scheme 142** (1 Reaction)

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




Suppliers (74)

Suppliers (49)

**31-614-CAS-41757064**

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

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

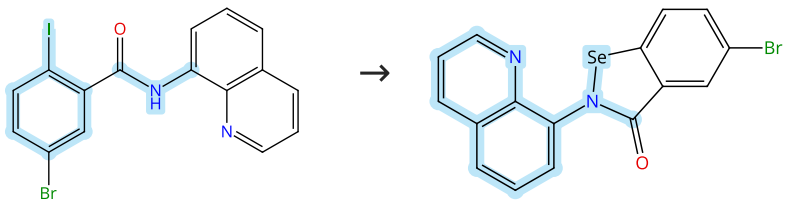
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 143** (1 Reaction)

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




Suppliers (3)

**31-614-CAS-39217954**

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

1.1 **Reagents:** Potassium *tert*-butoxide, Selenium
**Solvents:** Dimethylformamide; -5 - 0 °C; 15 min, - 5 °C → rt

1.2 **Catalysts:** Cuprous iodide; 16 - 24 h, 110 °C

1.3 **Reagents:** Sodium chloride
**Solvents:** Water; 6 h

Experimental Protocols

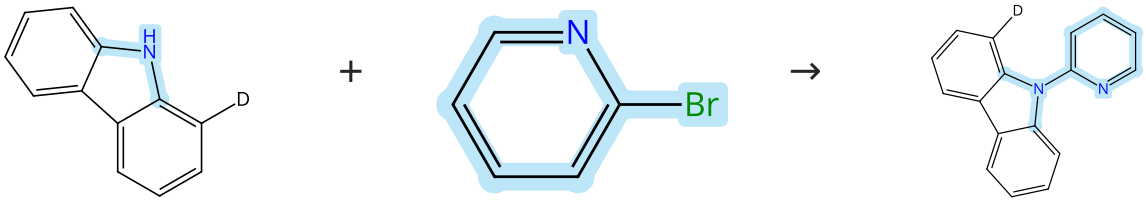
**Directing Group Strategy for the Isolation of Organos elenium (VI) Benzoselenonates: Metal-Free Catalysts for Hydrogen Evolution Reaction**

By: Batabyal, Monojit; et al

Journal of the American Chemical Society (2024), 146(1), 57-61.

**Scheme 144** (1 Reaction)

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




Suppliers (86)

**31-614-CAS-41277578**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

Experimental Protocols

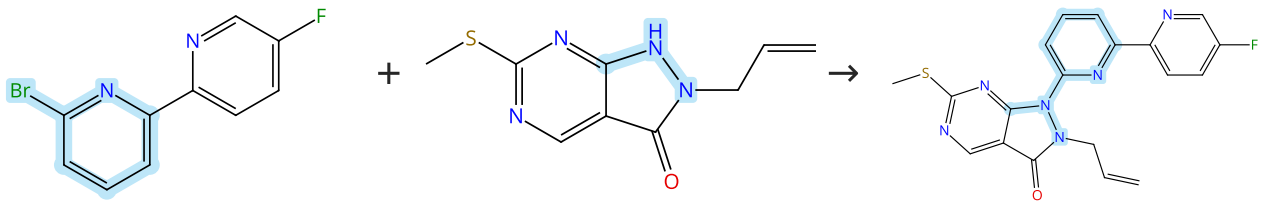
**Palladium-Catalyzed Direct Alkynylation of Carbazoles with Alkynyl Bromides**

By: Dharaniyedath, Jyothis; et al

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

**Scheme 145** (1 Reaction)

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



Suppliers (60)

**31-614-CAS-40870536**

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

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

Experimental Protocols

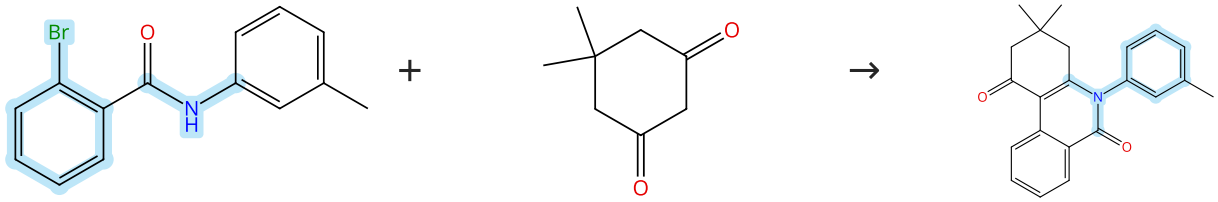
**Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy**

By: Wang, Yong; et al

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

**Scheme 146** (1 Reaction)

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



Suppliers (9)

Suppliers (100)

**31-614-CAS-38062420**

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

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

Experimental Protocols

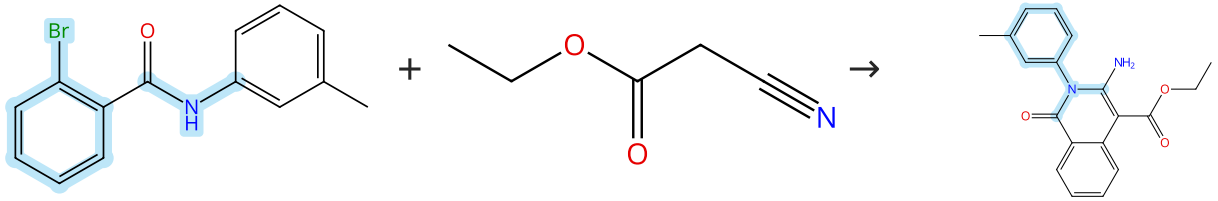
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

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

**Scheme 147** (1 Reaction)

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



Suppliers (9)

Suppliers (69)

**31-614-CAS-38062428**

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

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

Experimental Protocols

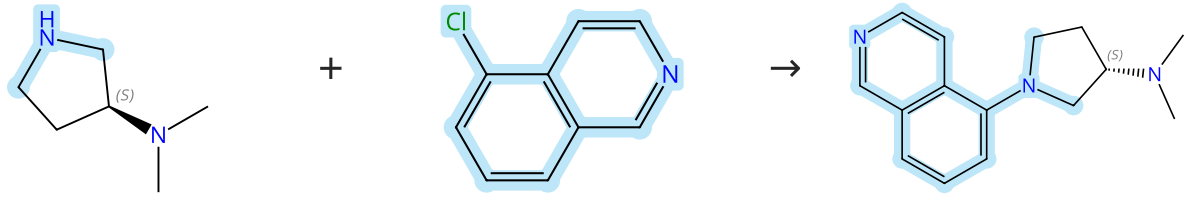
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

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

**Scheme 148** (1 Reaction)

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



Absolute stereochemistry shown, Rotation (-)

Suppliers (74)

Suppliers (68)

Absolute stereochemistry shown

**31-614-CAS-41756950**

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

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

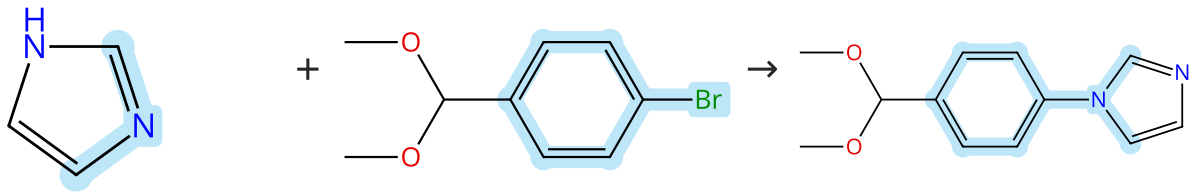
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 149** (1 Reaction)

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



Suppliers (201)

Suppliers (62)

**31-614-CAS-39663305**

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

1.1 **Reagents:** Sodium hydride
**Solvents:** Dimethylformamide; 0 °C; 0.5 h, rt

1.2 **Catalysts:** Copper; 4 h, 150 °C

1.3 **Reagents:** Water

Experimental Protocols

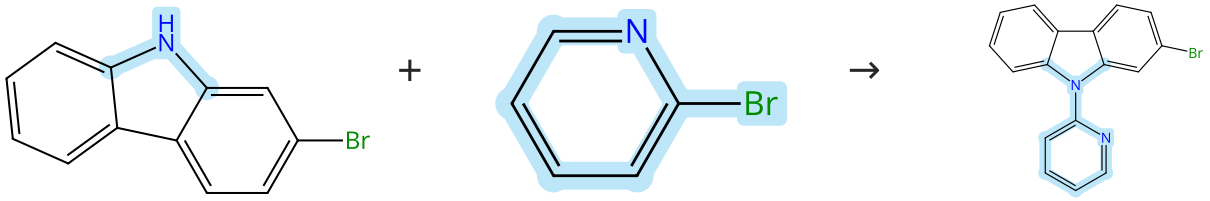
**Confined Trinuclear Ru Sites in Phosphine-Incorporated Porous Organic Polymers for the Direct Synthesis of Alcohols from Reductive Hydroformylation of Alkenes**

By: Zhu, Yinghao; et al

ACS Catalysis (2024), 14(7), 4593-4600.

**Scheme 150** (1 Reaction)

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



Suppliers (83)

Suppliers (86)

Suppliers (24)

**31-614-CAS-41277570**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

Experimental Protocols

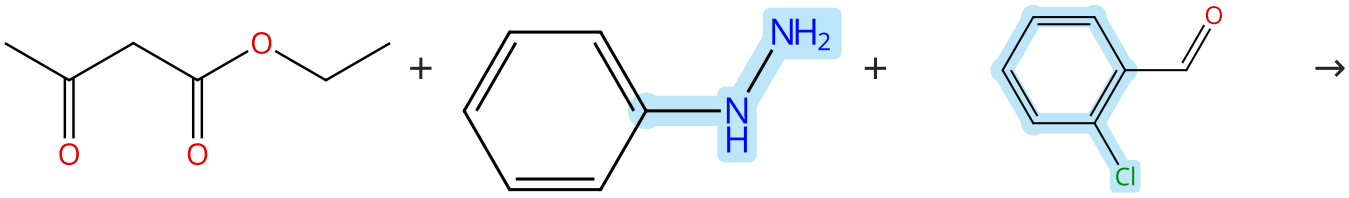
**Palladium-Catalyzed Direct Alkynylation of Carbazoles with Alkynyl Bromides**

By: Dharaniyedath, Jyothis; et al

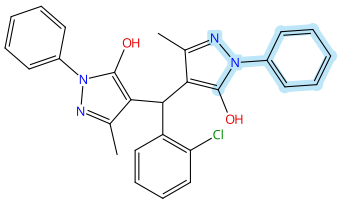
European Journal of Organic Chemistry (2024), 27(40), e202400649.

**Scheme 151** (1 Reaction)

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




Suppliers (93) | Suppliers (63) | Suppliers (83)




Suppliers (3)

**31-614-CAS-44172542**

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

1.1 **Catalysts:** Copper oxide (CuO)
**Solvents:** Methanol; 20 min, 70 °C

Experimental Protocols

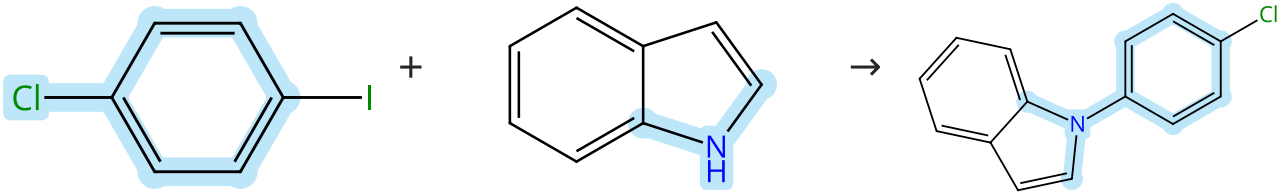
**Synthesis of Bis-pyrazole Derivatives Using Coal Fly Ash @Cu O Coreshell Nanocomposite and their Molecular Docking against Human Tyrosyl DNA Phosphodiesterase I**

By: Thakare, Savita Vasantrao; et al

Current Catalysis (2024), 13(2), 117-130.

**Scheme 152** (1 Reaction)

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




Suppliers (83) | Suppliers (109) | Suppliers (6)

**31-614-CAS-39303564**

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

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

Experimental Protocols

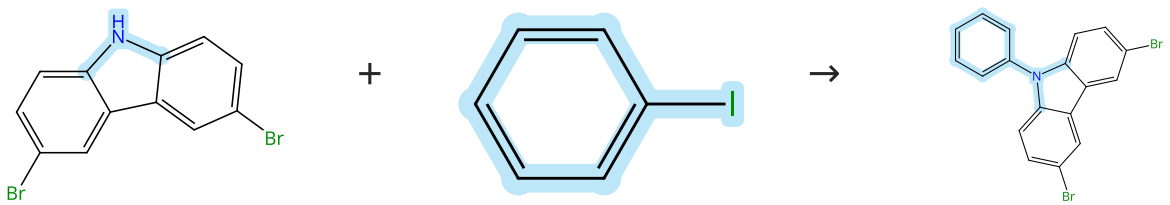
**Tosylazide as N1-Synthon: Iron-Catalyzed Nitrogenative Dimerization of Indoles to p-Bisindolopyrazine Derivatives**

By: Li, Jianan; et al

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

**Scheme 153** (1 Reaction)

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




Suppliers (93) | Suppliers (93) | Suppliers (80)

31-614-CAS-41704777 Steps: **1** Yield: **90%**

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

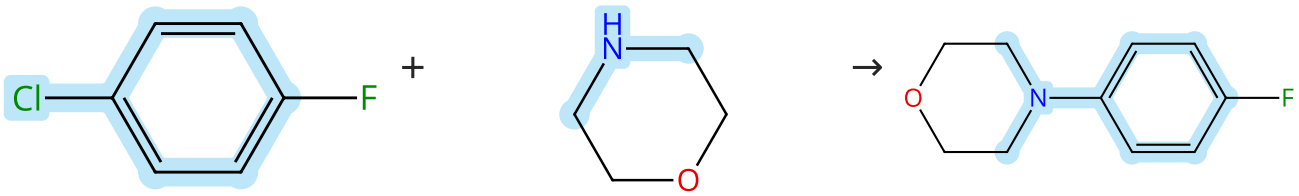
Experimental Protocols

**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 154** (1 Reaction) Steps: **1** Yield: **90%**




Suppliers (60) Suppliers (83) Suppliers (27)

31-614-CAS-41757019 Steps: **1** Yield: **90%**

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

1.2 24 h, 55 °C

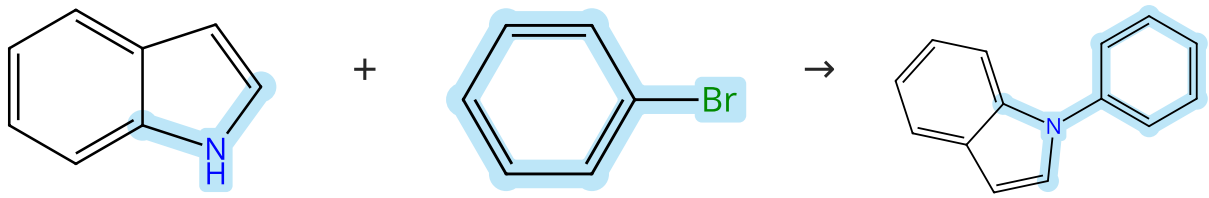
Experimental Protocols

**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: **90%**




Suppliers (109) Suppliers (71) Suppliers (68)

31-614-CAS-41844030 Steps: **1** Yield: **90%**

1.1 **Reagents:** Triethylamine
**Catalysts:** Copper oxide (Cu O), Guar gum
**Solvents:** Dimethylformamide; 4 h, 80 °C

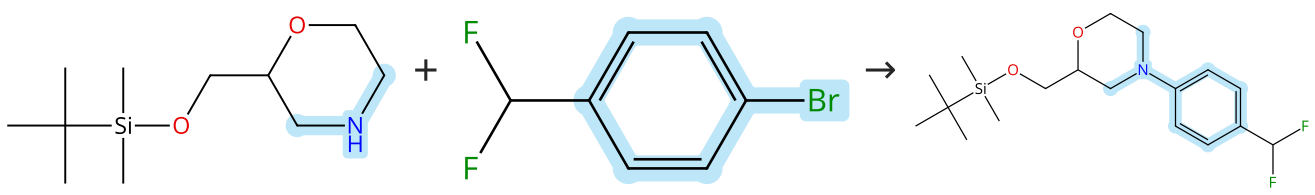
Experimental Protocols

**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 156** (1 Reaction) Steps: **1** Yield: **89%**




Suppliers (10) Suppliers (74)

31-614-CAS-41277518 Steps: **1** Yield: **89%**

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

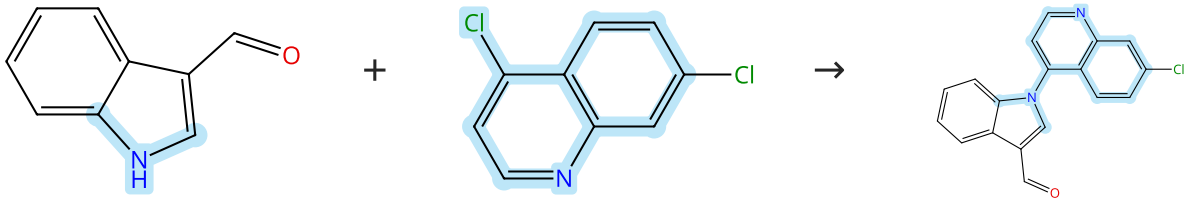
Experimental Protocols

**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 157** (1 Reaction) Steps: **1** Yield: **89%**




Suppliers (114) Suppliers (98)

31-614-CAS-41061406 Steps: **1** Yield: **89%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 10 min, rt

1.2 60 min, rt

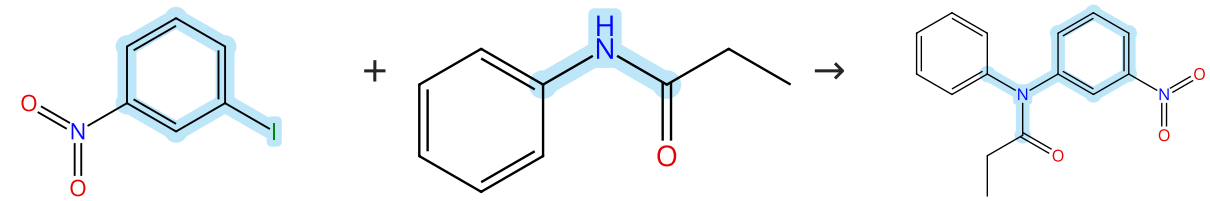
Experimental Protocols

**N-Alkylation/Arylation of Indole-3-Carboxaldehyde and Gelatin Functionalization via Schiff Base Formation**

By: Perwin, Aashna; et al

Journal of Polymers and the Environment (2024), 32(10), 5046-5057.

**Scheme 158** (1 Reaction) Steps: **1** Yield: **89%**




Suppliers (50) Suppliers (55)

31-614-CAS-39205108 Steps: **1** Yield: **89%**

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

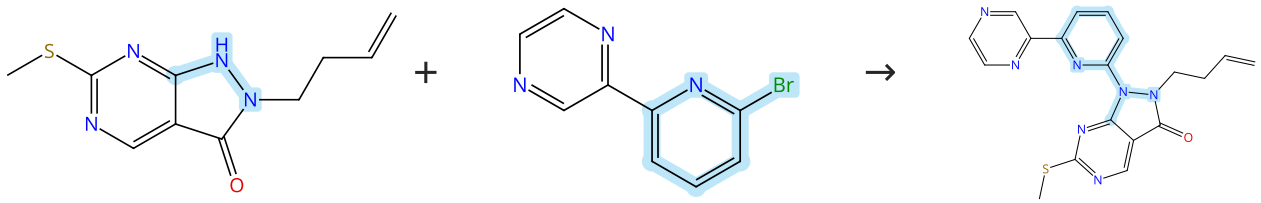
Experimental Protocols

**Synthesis of polysubstituted azepanes by dearomative ring expansion of nitroarenes**

By: Mykura, Rory; et al

Nature Chemistry (2024), 16(5), 771-779.

**Scheme 159** (1 Reaction) Steps: **1** Yield: **89%**




Supplier (1) Suppliers (5)

31-614-CAS-40870588 Steps: **1** Yield: **89%**

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

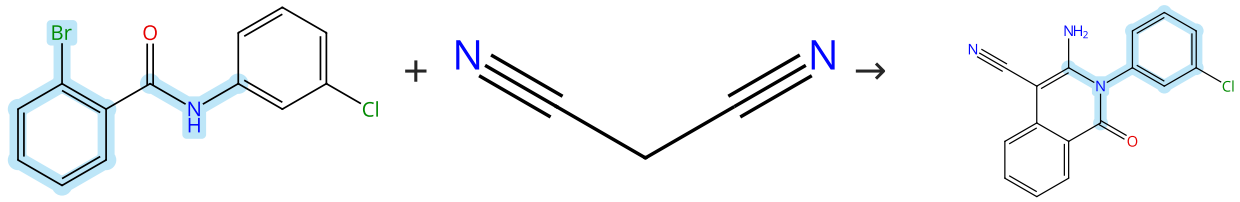
Experimental Protocols

**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 160** (1 Reaction) Steps: **1** Yield: **89%**




Suppliers (8) Suppliers (60)

31-614-CAS-38062435 Steps: **1** Yield: **89%**

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

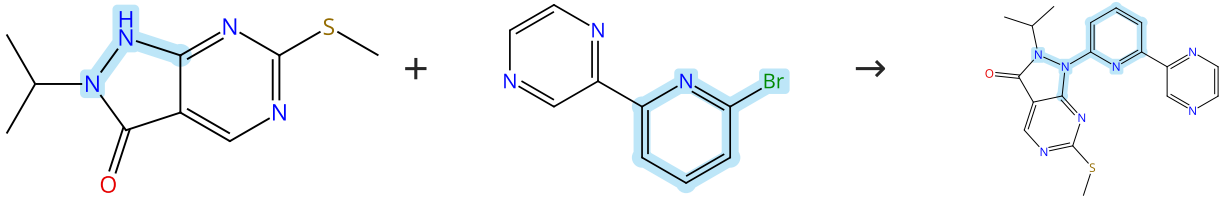
Experimental Protocols

**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 161** (1 Reaction) Steps: **1** Yield: **89%**




Suppliers (40) Suppliers (5)

31-614-CAS-40870571 Steps: **1** Yield: **89%**

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

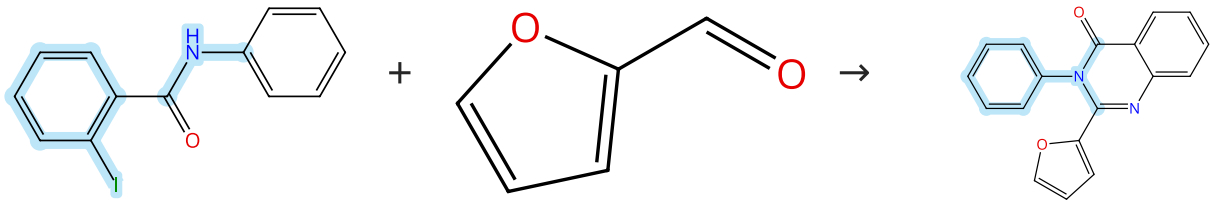
Experimental Protocols

**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 162** (1 Reaction) Steps: **1** Yield: **89%**




Suppliers (38) Suppliers (74) Suppliers (6)

31-614-CAS-43887586 Steps: **1** Yield: **89%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper
**Solvents:** Polyethylene glycol; rt; 10 h, 70 °C
1.2 **Reagents:** Water

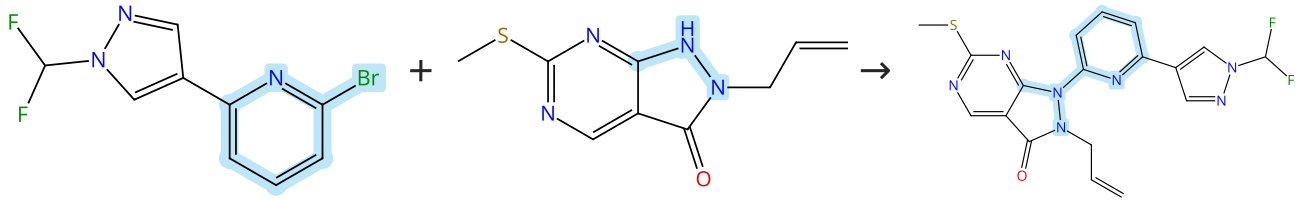
Experimental Protocols

**An expedient access to aminoquinazolines and quinazolinones via N-atom insertion reaction using copper nanoparticles decorated on magnetic carbon spheres**

By: Thrilokraj, R.; et al

Materials Today Chemistry (2024), 42, 102395.

**Scheme 163** (1 Reaction) Steps: **1** Yield: **89%**



Suppliers (60)

31-614-CAS-40870533 Steps: **1** Yield: **89%**

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

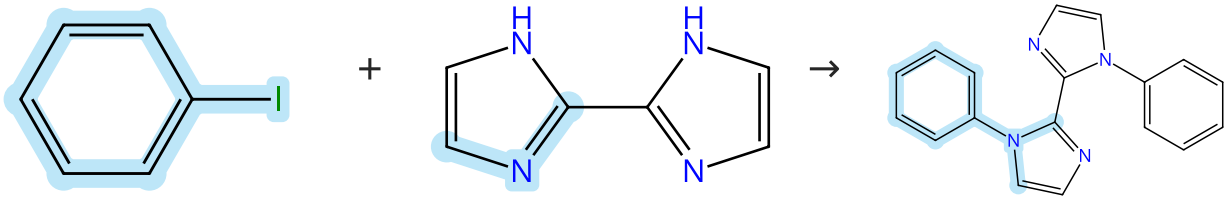
Experimental Protocols

**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) Steps: **1** Yield: **89%**



Suppliers (93) Suppliers (77)

31-614-CAS-42513221 Steps: **1** Yield: **89%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 24 h, rt → reflux

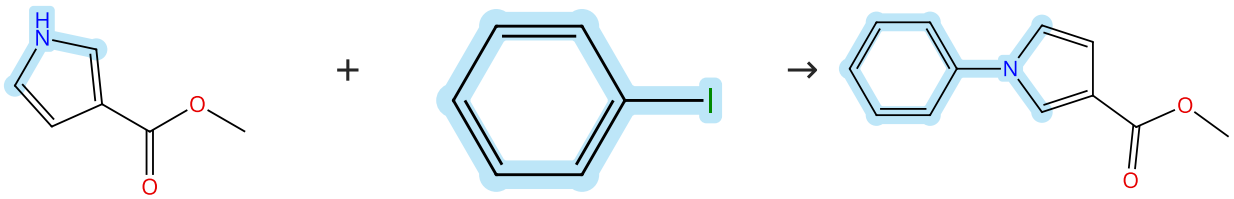
Experimental Protocols

**Reductive Coupling of N-Heteroarenes and 1,2-Dicarbonyls for Direct Access to γ-Amino Acids, Esters, and Ketones Using a Heterogeneous Single-Atom Iridium Catalyst**

By: Jia, Huanhuan; et al

Journal of the American Chemical Society (2024), 146(46), 31647-31655.

**Scheme 165** (1 Reaction) Steps: **1** Yield: **89%**



Suppliers (66) Suppliers (93) Suppliers (4)

31-614-CAS-40260477 Steps: **1** Yield: **89%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; overnight, 100 °C

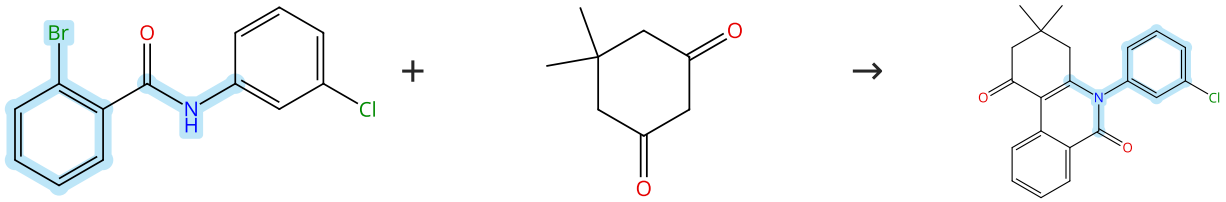
Experimental Protocols

**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 & Catalysis (2024), 366(10), 2312-2323.

**Scheme 166** (1 Reaction) Steps: **1** Yield: **88%**




Suppliers (8) Suppliers (100)

31-614-CAS-38062404 Steps: **1** Yield: **88%**

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

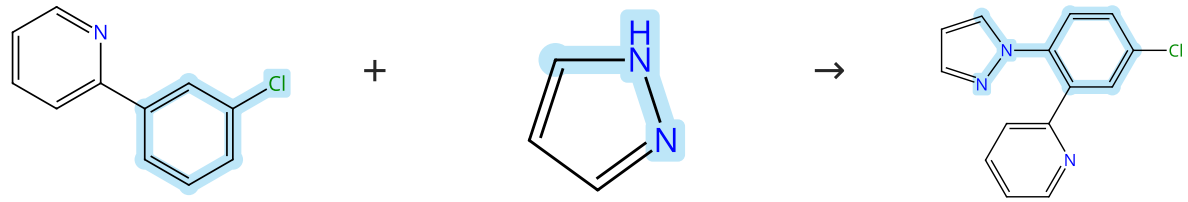
Experimental Protocols

**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 167** (1 Reaction) Steps: **1** Yield: **88%**




Suppliers (28) Suppliers (93)

31-614-CAS-41633152 Steps: **1** Yield: **88%**

1.1 **Reagents:** 2,4,6-Trimethylbenzoic acid, Sodium carbonate, Silver fluoride, Oxygen
**Catalysts:** Cupric acetate
**Solvents:** *m*-Xylene, 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 160 °C

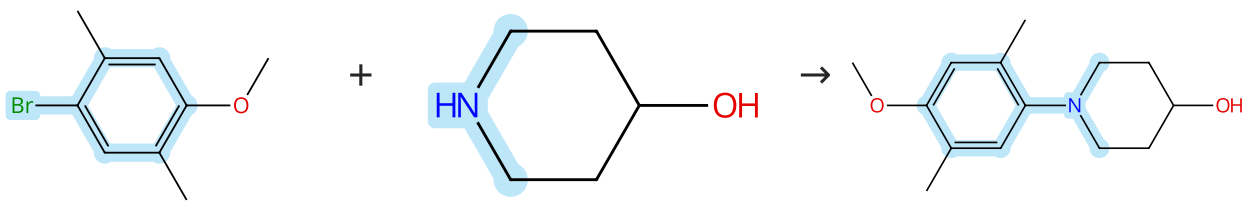
Experimental Protocols

**Copper-promoted ortho-directed C-H amination of 2-arylpyridines with NH-heterocycles**

By: Zeng, Yang-Hao; et al

Organic & Biomolecular Chemistry (2024), 22(36), 7390-7394.

**Scheme 168** (1 Reaction) Steps: **1** Yield: **88%**




Suppliers (48) Suppliers (92)

31-614-CAS-40801466 Steps: **1** Yield: **88%**

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

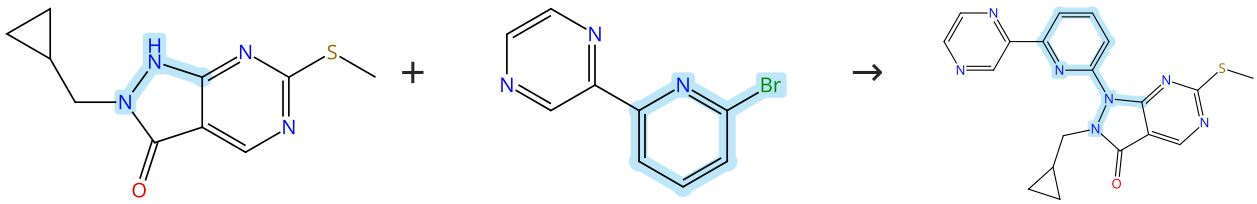
Experimental Protocols

**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 169** (1 Reaction) Steps: **1** Yield: **88%**



Supplier (1) Suppliers (5)

31-614-CAS-40870582 Steps: **1** Yield: **88%**

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

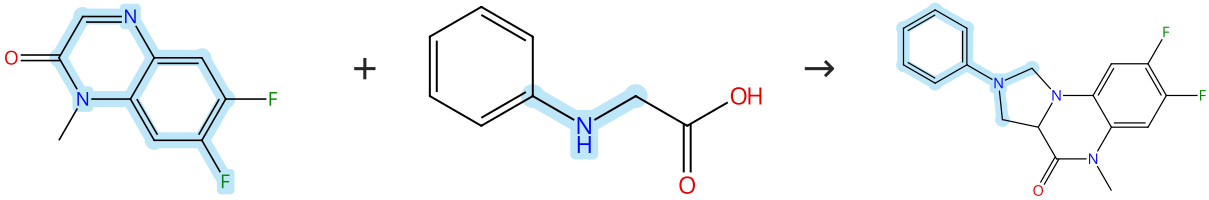
Experimental Protocols

**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 170** (1 Reaction) Steps: **1** Yield: **88%**



Suppliers (88)

31-614-CAS-39663079 Steps: **1** Yield: **88%**

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

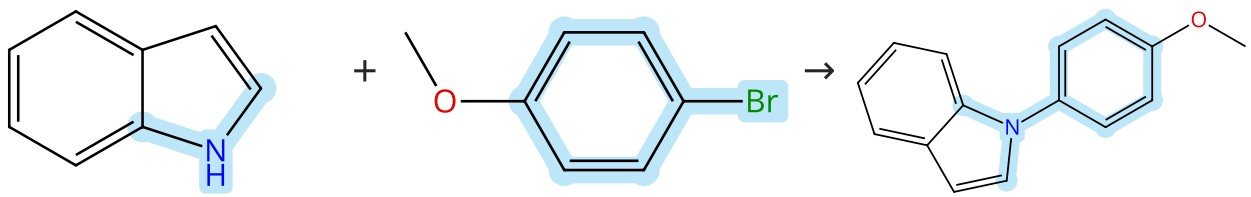
Experimental Protocols

**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 171** (1 Reaction) Steps: **1** Yield: **88%**



Suppliers (109) Suppliers (69) Suppliers (12)

31-614-CAS-41844049 Steps: **1** Yield: **88%**

1.1 **Reagents:** Triethylamine
**Catalysts:** Copper oxide (CuO), Guar gum
**Solvents:** Dimethylformamide; 4 h, 80 °C

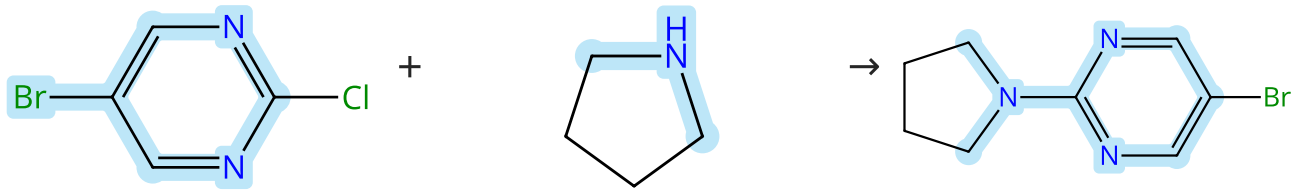
Experimental Protocols

**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 172** (1 Reaction) Steps: **1** Yield: **88%**




Suppliers (105) Suppliers (74) Suppliers (67)

31-614-CAS-40743585 Steps: **1** Yield: **88%**

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphat ricyclo[3.3.1.1$^{3,7}$]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

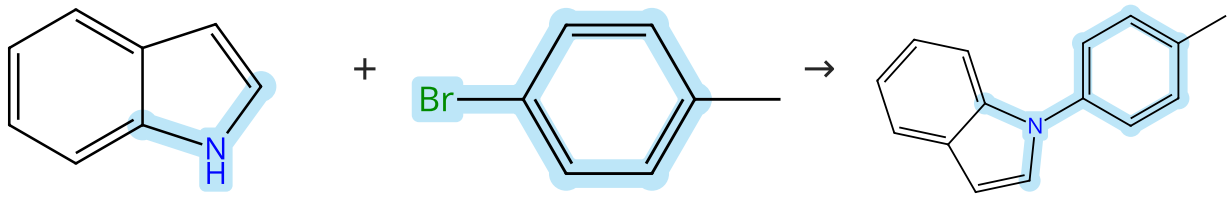
Experimental Protocols

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

By: Phulwale, Vikram; et al

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

**Scheme 173** (1 Reaction) Steps: **1** Yield: **88%**




Suppliers (109) Suppliers (65) Suppliers (7)

31-614-CAS-41844040 Steps: **1** Yield: **88%**

1.1 **Reagents:** Triethylamine
**Catalysts:** Copper oxide (CuO), Guar gum
**Solvents:** Dimethylformamide; 5 h, 80 °C

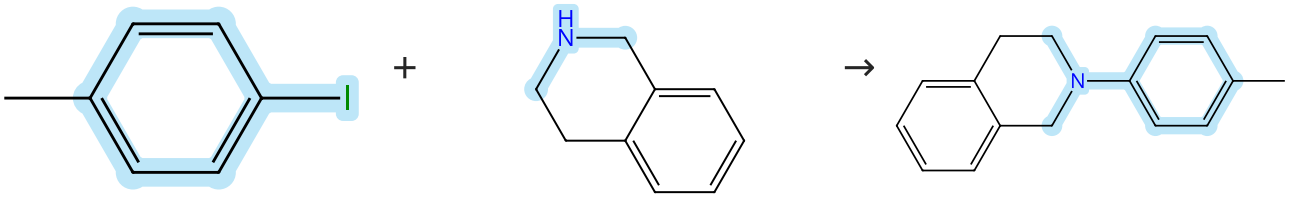
Experimental Protocols

**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 174** (2 Reactions) Steps: **1** Yield: **80-88%**




Suppliers (82) Suppliers (92) Suppliers (2)

31-614-CAS-41429343 Steps: **1** Yield: **88%**

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

Experimental Protocols

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

By: Marchan-Garcia, Joaquin; et al

Bioorganic Chemistry (2024), 143, 107008.

31-614-CAS-40034157 Steps: **1** Yield: **80%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** Isopropanol, Ethylene glycol; rt; 24 h, 85 - 90 °C

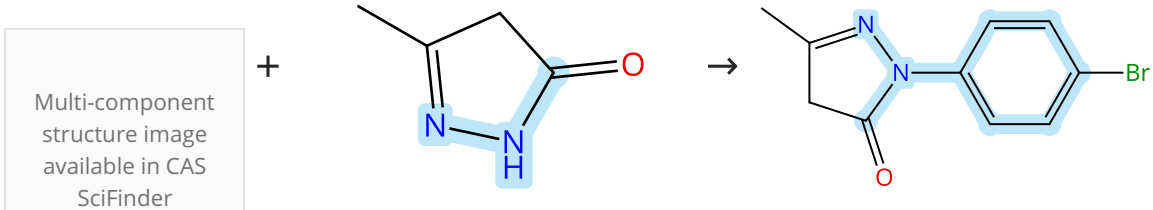
Experimental Protocols

**Preparation of an OHCP nanofiber photocatalyst for cross-dehydrogenation coupling reactions**

By: Zhao, Xingshun; et al

Catalysis Science & Technology (2024), 14(10), 2848-2857.

**Scheme 175** (1 Reaction) Steps: **1** Yield: **87%**




Suppliers (48) Suppliers (76) Suppliers (36)

31-614-CAS-38961888 Steps: **1** Yield: **87%**

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

1.2 **Reagents:** Water

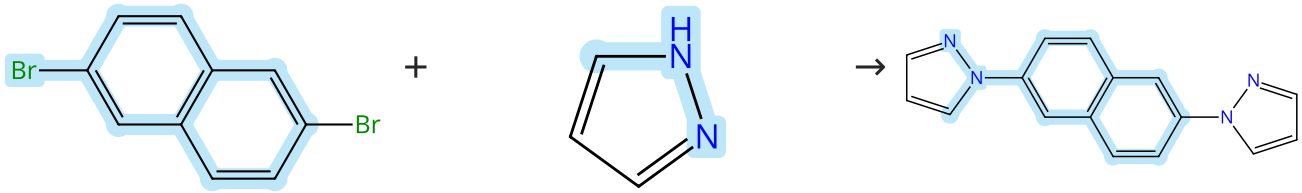
Experimental Protocols

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

By: Liao, Wenbo; et al

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

**Scheme 176** (1 Reaction) Steps: **1** Yield: **87%**




Suppliers (86) Suppliers (93)

31-614-CAS-41323811 Steps: **1** Yield: **87%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Copper oxide ($Cu_2O$)
**Solvents:** Dimethylformamide; 24 h, 120 °C

Experimental Protocols

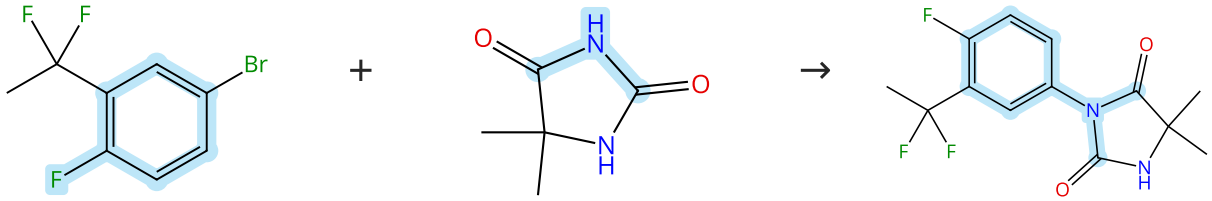
**Molecular Design of Naphthalene- and Carbazole-Based Monomers for Regiospecific Synthesis of Poly(arylenevinylene)s via Co-Catalyzed Hydroarylation Polyaddition**

By: Iwamori, Ryota; et al

Macromolecular Rapid Communications (2024), 45(16), 2400168.

**Scheme 177** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (44)

Suppliers (86)

**31-614-CAS-42372618**

Steps: **1** Yield: **87%**

1.1 **Catalysts:** Copper oxide ($Cu_2O$)
**Solvents:** Dimethylacetamide; overnight, 160 °C

Experimental Protocols

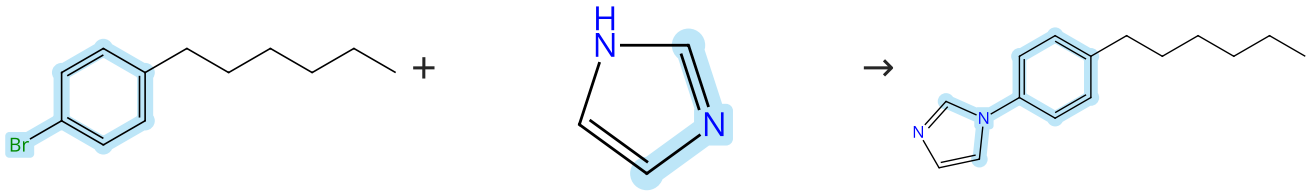
**Single-Dose Drug Development Candidate for Schistosomiasis**

By: Leas, Derek A.; et al

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

**Scheme 178** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (81)

Suppliers (201)

**31-614-CAS-43800191**

Steps: **1** Yield: **87%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 3 d, 120 °C

Experimental Protocols

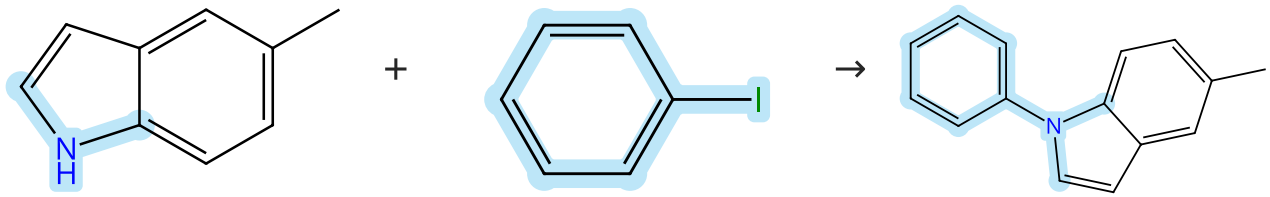
**Asymmetric Imidazolium-Based Ionic Liquid Crystal with Enhanced Ionic Conductivity in Low-Temperature Smectic Phases**

By: Kim, Yuna; et al

Crystals (2024), 14(12), 1053.

**Scheme 179** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (86)

Suppliers (93)

Suppliers (7)

**31-614-CAS-39303567**

Steps: **1** Yield: **87%**

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

Experimental Protocols

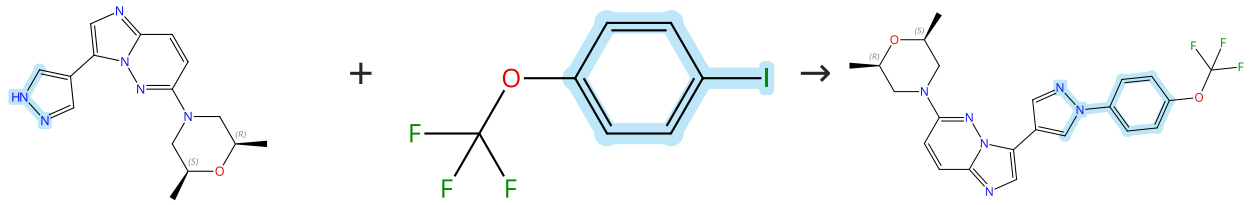
**Tosylazide as N1-Synthon: Iron-Catalyzed Nitrogenative Dimerization of Indoles to p-Bisindolopyrazine Derivatives**

By: Li, Jianan; et al

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

**Scheme 180** (1 Reaction)

Steps: **1** Yield: **87%**



Relative stereochemistry shown

Relative stereochemistry shown

Suppliers (76)

**31-614-CAS-38840679**

Steps: **1** Yield: **87%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cupric acetate
**Solvents:** Dimethylformamide; rt; 24 h, 110 °C

Experimental Protocols

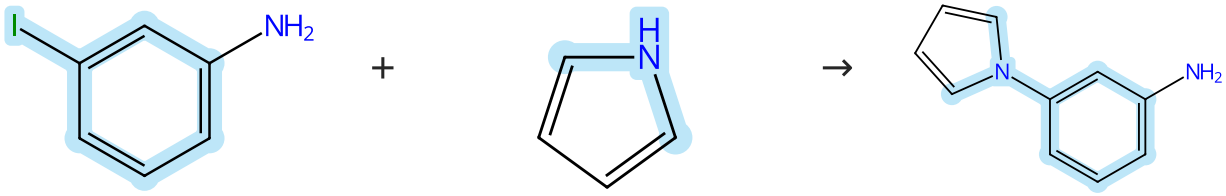
**Identification of a Selective FLT3 Inhibitor with Low Activity against VEGFR, FGFR, PDGFR, c-KIT, and RET Anti-Targets**

By: Akwata, Desmond; et al

ChemMedChem (2024), 19(1), e202300442.

**Scheme 181** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (77)

Suppliers (73)

Suppliers (65)

**31-614-CAS-40389268**

Steps: **1** Yield: **87%**

1.1 **Reagents:** 1,10-Phenanthroline, Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** 1,4-Dioxane; 24 h, 110 °C; 110 °C → rt

1.2 **Solvents:** Ethyl acetate; rt

Experimental Protocols

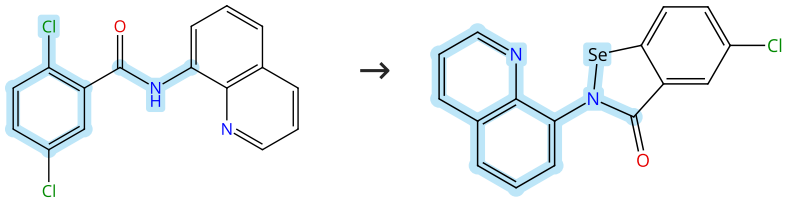
**Tetrahydropyridine LIMK inhibitors: Structure activity studies and biological characterization**

By: Champire, Anthony; et al

European Journal of Medicinal Chemistry (2024), 271, 116391.

**Scheme 182** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (4)

**31-614-CAS-39217952**

Steps: **1** Yield: **87%**

1.1 **Reagents:** Potassium *tert*-butoxide, Selenium
**Solvents:** Dimethylformamide; -5 - 0 °C; 15 min, - 5 °C → rt

1.2 **Catalysts:** Cuprous iodide; 16 - 24 h, 110 °C

1.3 **Reagents:** Sodium chloride
**Solvents:** Water; 6 h

Experimental Protocols

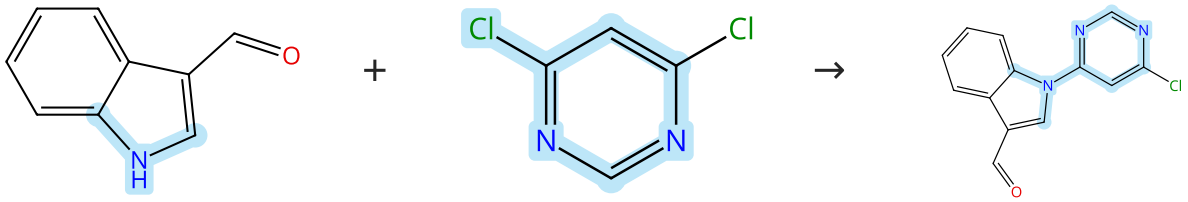
**Directing Group Strategy for the Isolation of Organos elenium (VI) Benzoselenonates: Metal-Free Catalysts for Hydrogen Evolution Reaction**

By: Batabyal, Monojit; et al

Journal of the American Chemical Society (2024), 146(1), 57-61.

**Scheme 183** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (114)

Suppliers (94)

**31-614-CAS-41061404**

Steps: **1** Yield: **87%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 10 min, rt

1.2 30 min, rt

Experimental Protocols

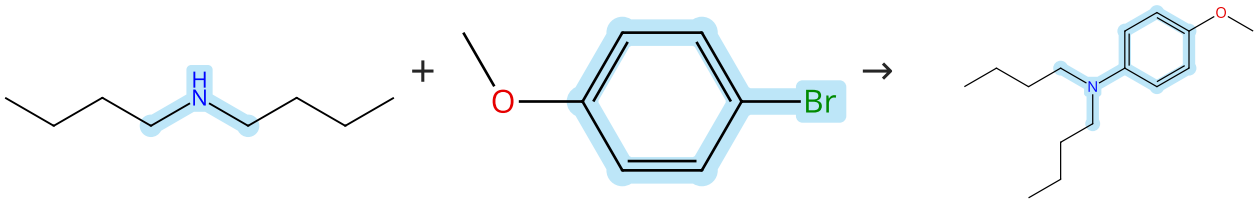
**N-Alkylation/Arylation of Indole-3-Carboxaldehyde and Gelatin Functionalization via Schiff Base Formation**

By: Perwin, Aashna; et al

Journal of Polymers and the Environment (2024), 32(10), 5046-5057.

**Scheme 184** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (71)

Suppliers (69)

Suppliers (2)

**31-614-CAS-38947748**

Steps: **1** Yield: **87%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, *N*-9*H*-Carbazol-9-yl-1*H*-pyrrole-2-carboxamide
**Solvents:** Diethylene glycol; 48 h, rt

Experimental Protocols

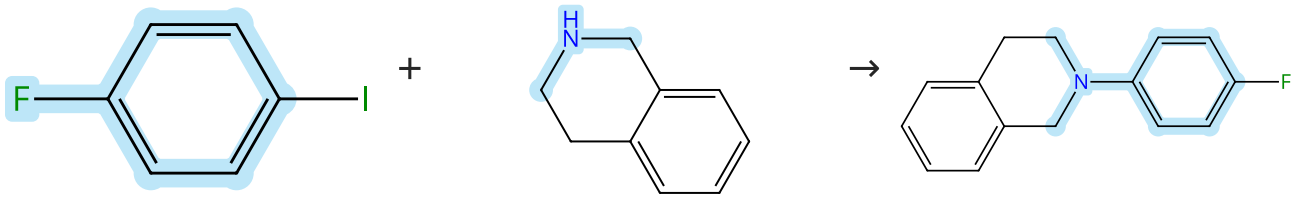
**Room-Temperature CuI-Catalyzed N-Arylation of Cyclopropylamine**

By: Hong, Peng; et al

Journal of Organic Chemistry (2024), 89(1), 57-67.

**Scheme 185** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (82)

Suppliers (92)

Suppliers (7)

**31-614-CAS-41429349**

Steps: **1** Yield: **87%**

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

Experimental Protocols

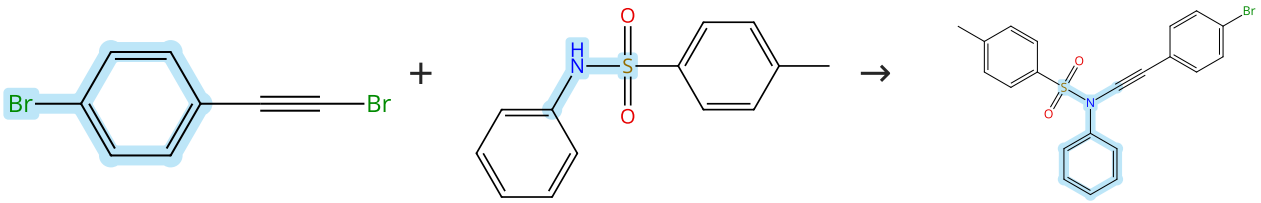
**Green approach to the synthesis of α-aminophosphonate-tetrahydroisoquinoline hybrids and their anti-cholinesterase activity**

By: Marchan-Garcia, Joaquin; et al

Bioorganic Chemistry (2024), 143, 107008.

**Scheme 186** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (33)

Suppliers (63)

**31-614-CAS-39338928**

Steps: **1** Yield: **87%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** 1,10-Phenanthroline, Copper sulfate
**Solvents:** Toluene; 12 h, 80 °C

Experimental Protocols

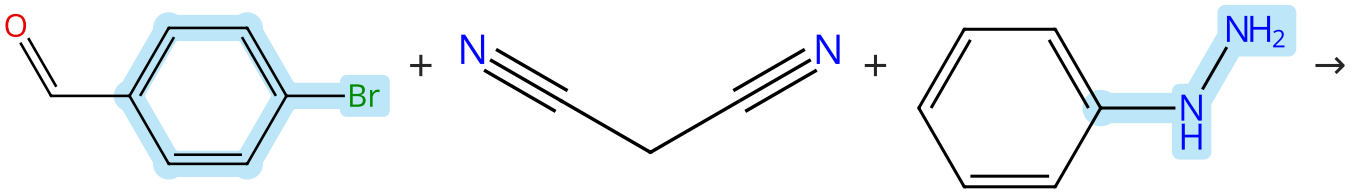
**A gold-catalyzed cyclization/nucleophilic addition reaction of o-alkynylanilines with ynamides: stereoselective synthesis of 3-vinylindoles**

By: Luo, Wenyi; et al

Organic Chemistry Frontiers (2024), 11(4), 1112-1117.

**Scheme 187** (1 Reaction)

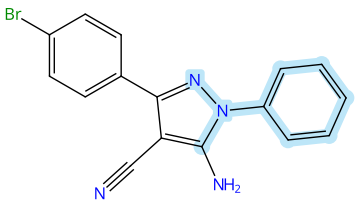
Steps: **1** Yield: **87%**



Suppliers (89)

Suppliers (60)

Suppliers (63)



Supplier (1)

**31-614-CAS-35485673**

Steps: **1** Yield: **87%**

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 $Fe_3O_4$); 9 min, 65 °C

Experimental Protocols

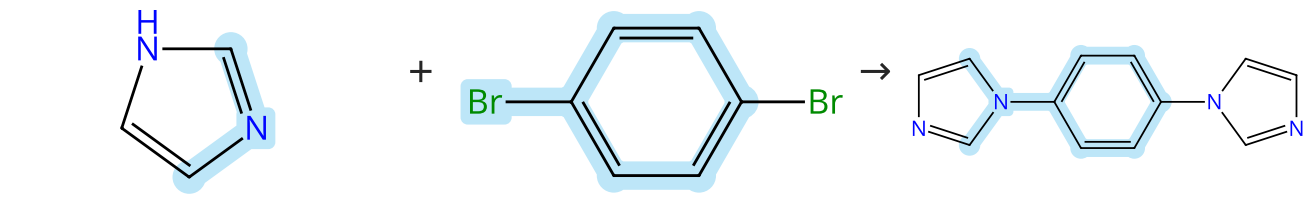
**Fabrication of Copper(II)-coated Magnetic Core-shell Nanoparticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives**

By: Soleimani, Maryam; et al

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

**Scheme 188** (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (201)

Suppliers (97)

Suppliers (50)

31-614-CAS-42726951 Steps: **1** Yield: **87%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper sulfate; 48 h, rt → 150 °C

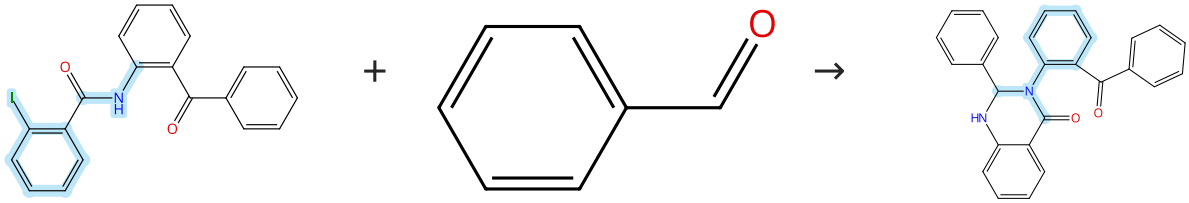
Experimental Protocols

**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 189** (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (4) Suppliers (60)

31-614-CAS-39791012 Steps: **1** Yield: **86%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

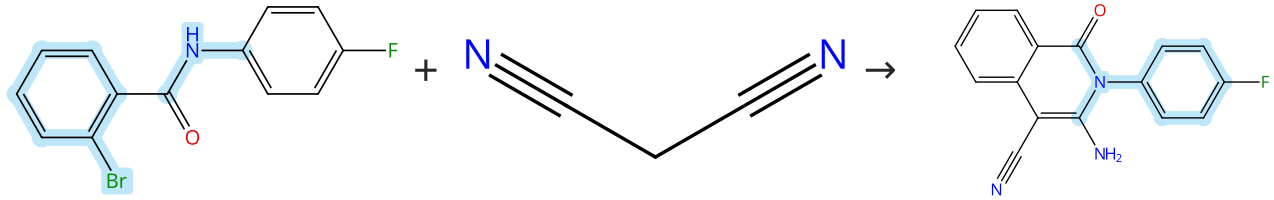
Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**Scheme 190** (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (9) Suppliers (60)

31-614-CAS-38062439 Steps: **1** Yield: **86%**

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

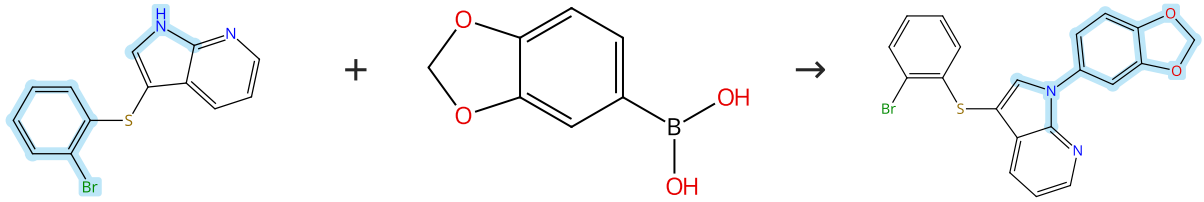
Experimental Protocols

**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 191** (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (98)

31-614-CAS-42764259 Steps: **1** Yield: **86%**

1.1 **Reagents:** 1,8-Diazabicyclo[5.4.0]undec-7-ene
**Catalysts:** Cupric acetate
**Solvents:** Dichloromethane; 30 min, rt

1.2 12 h, rt

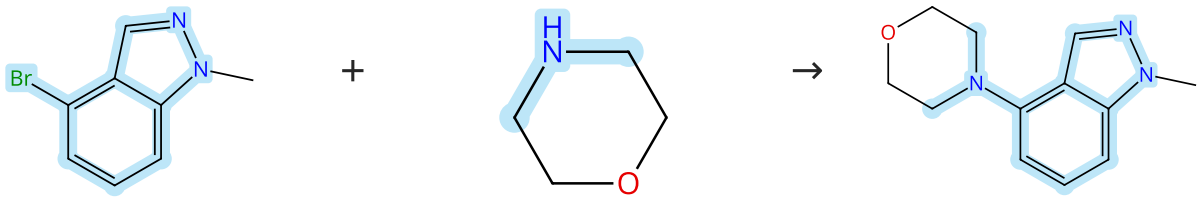
Experimental Protocols

**Iodine-Catalyzed Regioselective C-3 Chalcogenation of 7-Azaindoles: Access to Benzothiophene-Fused 7-Azaindole Analogs**

By: Mondal, Krishanu; et al

Journal of Organic Chemistry (2024), 89(23), 17042-17058.

**Scheme 192** (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (68) Suppliers (83)

31-614-CAS-40801458 Steps: **1** Yield: **86%**

1.1 **Reagents:** Sodium trimethylsilanolate
**Catalysts:** Cuprous iodide, 1,2-Benzenediamine, $N^1$,$N^2$-bis(2-phenyl-1-naphthalenyl)-
**Solvents:** Dimethyl sulfoxide; 24 °C; 48 h, 24 °C

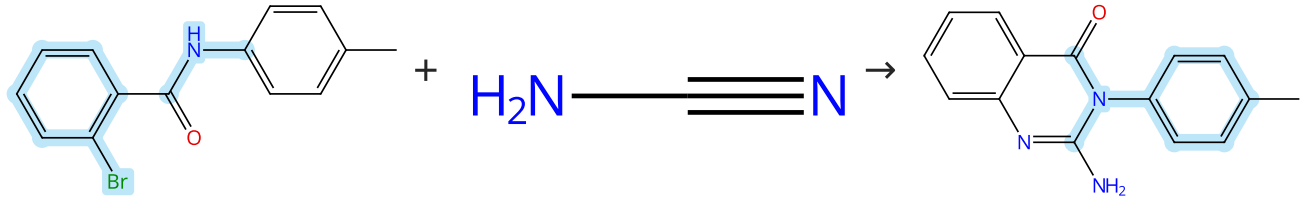
Experimental Protocols

**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 193** (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (11) Suppliers (60) Supplier (1)

31-614-CAS-42982614 Steps: **1** Yield: **86%**

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

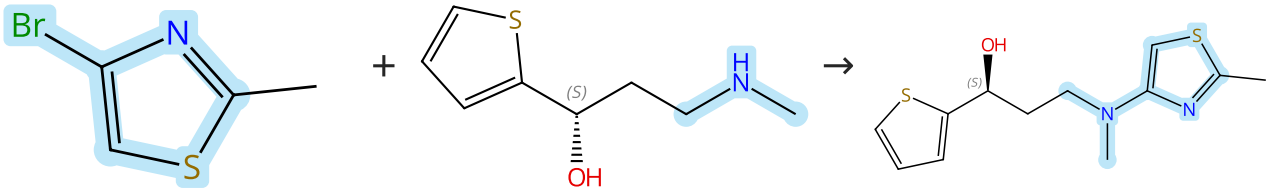
Experimental Protocols

**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 194** (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (71)

Absolute stereochemistry shown, Rotation (-)

Suppliers (80)

Absolute stereochemistry shown

31-614-CAS-40801499 Steps: **1** Yield: **86%**

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

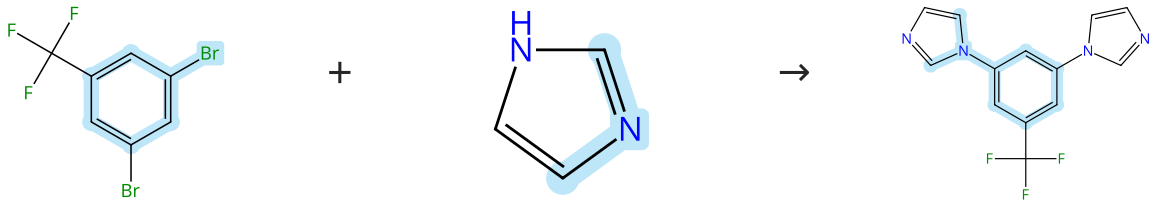
Experimental Protocols

**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 195** (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (63) Suppliers (201) Suppliers (28)

31-614-CAS-41122671 Steps: **1** Yield: **86%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper sulfate; 72 h, rt → 180 °C

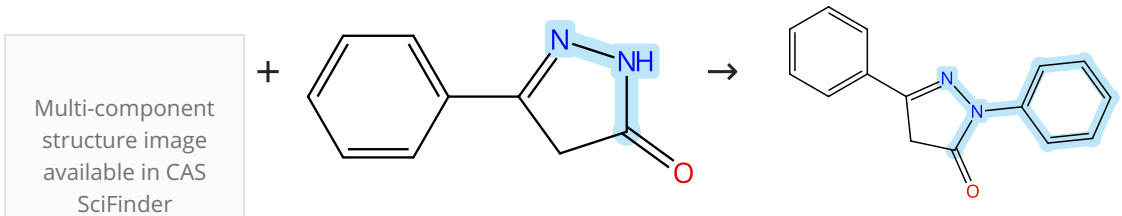
Experimental Protocols

**Systemic regulation of binding sites in porous coordination polymers for ethylene purification from ternary C2 hydrocarbons**

By: Li, Yi; et al

Chemical Science (2024), 15(24), 9318-9324.

**Scheme 196** (1 Reaction) Steps: **1** Yield: **86%**




Suppliers (67) Suppliers (54) Suppliers (54)

31-614-CAS-38961897 Steps: **1** Yield: **86%**

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

1.2 **Reagents:** Water

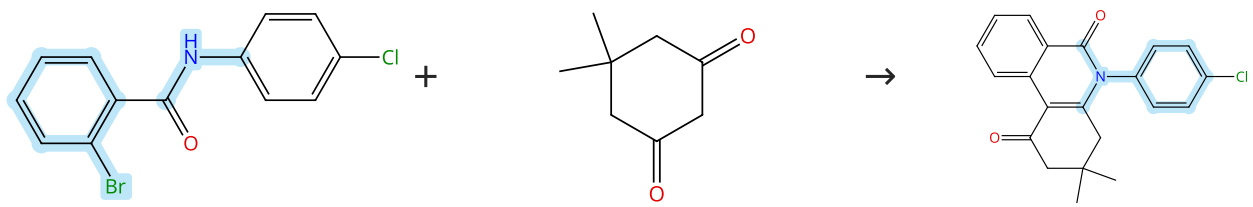
Experimental Protocols

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

By: Liao, Wenbo; et al

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

**Scheme 197** (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (41) Suppliers (100)

31-614-CAS-38062405 Steps: **1** Yield: **86%**

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

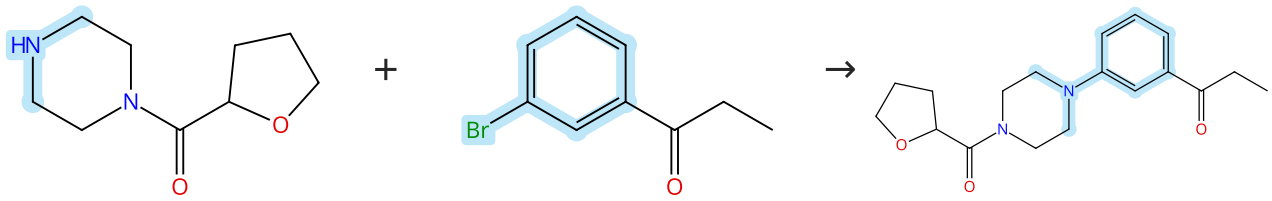
Experimental Protocols

**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 198** (1 Reaction) Steps: **1** Yield: **86%**




Suppliers (94) Suppliers (80)

31-614-CAS-40801434 Steps: **1** Yield: **86%**

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

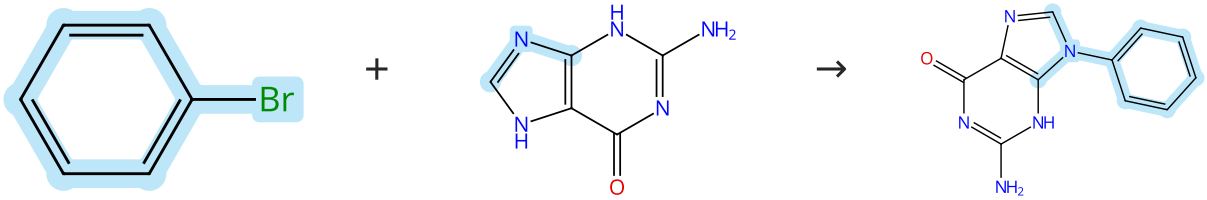
Experimental Protocols

**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 199** (1 Reaction) Steps: **1** Yield: **86%**




Suppliers (71) Suppliers (128) Suppliers (21)

31-614-CAS-41277502 Steps: **1** Yield: **86%**

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

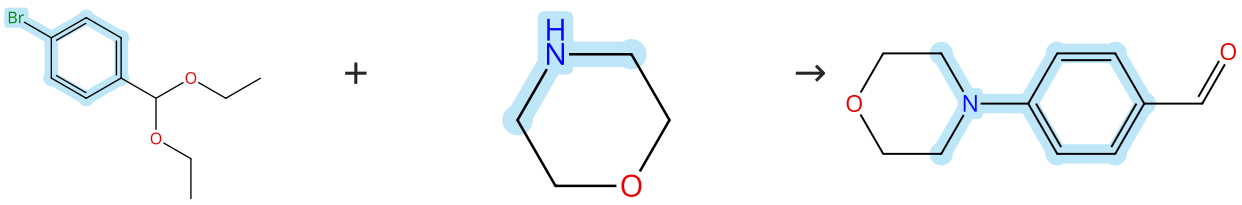
Experimental Protocols

**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 200** (1 Reaction) Steps: **1** Yield: **86%**




Suppliers (68) Suppliers (83) Suppliers (93)

31-614-CAS-40801471 Steps: **1** Yield: **86%**

1.1 **Reagents:** Sodium trimethylsilanolate
**Catalysts:** Cuprous iodide, 1,2-Benzenediamine, $N^1$,$N^2$-bis(2-phenyl-1-naphthalenyl)-
**Solvents:** Dimethyl sulfoxide; rt; 16 h, rt

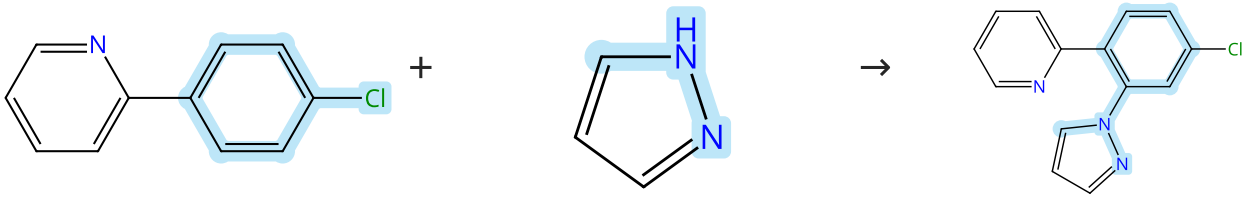
Experimental Protocols

**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 201** (1 Reaction) Steps: **1** Yield: **86%**




Suppliers (68) Suppliers (93)

31-614-CAS-41633170 Steps: **1** Yield: **86%**

1.1 **Reagents:** 2,4,6-Trimethylbenzoic acid, Sodium carbonate, Silver fluoride, Oxygen
**Catalysts:** Cupric acetate
**Solvents:** *m*-Xylene, 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 160 °C

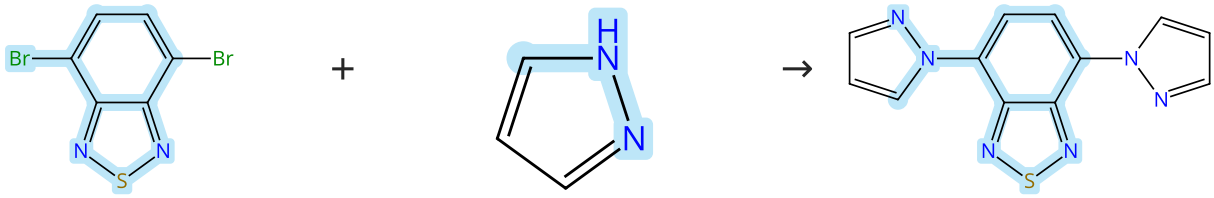
Experimental Protocols

**Copper-promoted ortho-directed C-H amination of 2-arylpyridines with NH-heterocycles**

By: Zeng, Yang-Hao; et al

Organic & Biomolecular Chemistry (2024), 22(36), 7390-7394.

**Scheme 202** (1 Reaction) Steps: **1** Yield: **86%**




Suppliers (92) Suppliers (93)

31-614-CAS-39503758 Steps: **1** Yield: **86%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper oxide (CuO)
**Solvents:** Dimethylformamide; 48 h, 150 °C

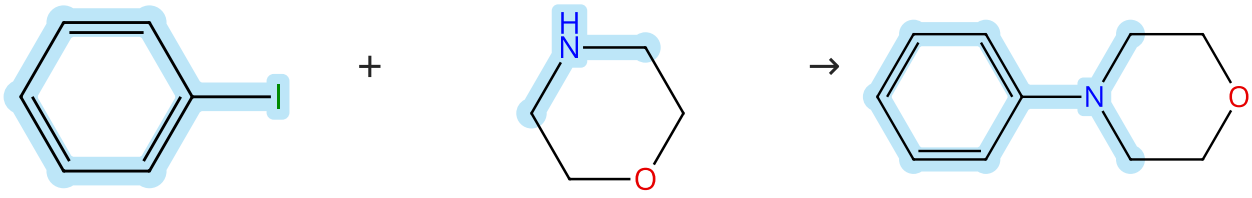
Experimental Protocols

**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 203** (1 Reaction) Steps: **1** Yield: **86%**




Suppliers (93) Suppliers (83) Suppliers (74)

31-614-CAS-35838763 Steps: **1** Yield: **86%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 2 h, 100 °C

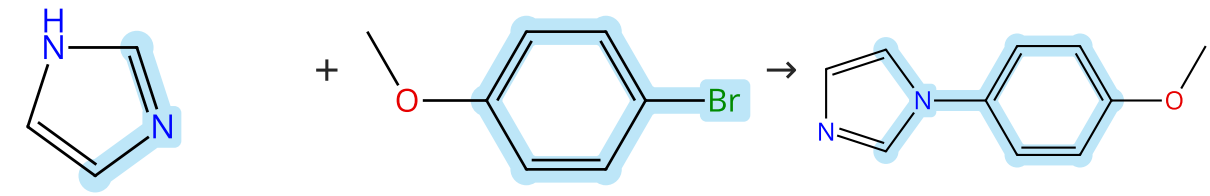
Experimental Protocols

**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 204** (1 Reaction) Steps: **1** Yield: **86%**




Suppliers (201) Suppliers (69) Suppliers (55)

31-614-CAS-40039618 Steps: **1** Yield: **86%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** *N*,*N*-Dimethylglycine, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 48 h, 110 °C

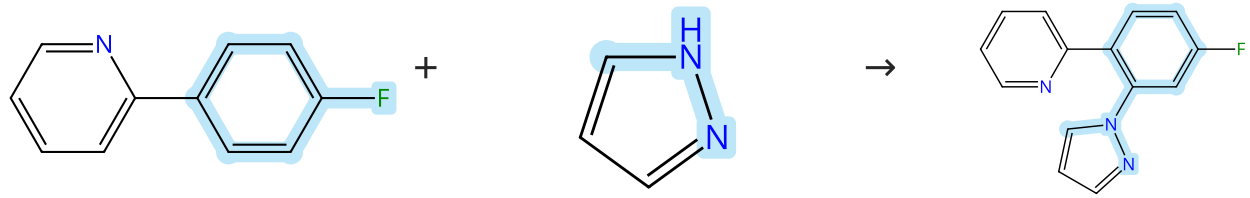
Experimental Protocols

**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 205** (1 Reaction) Steps: **1** Yield: **85%**




Suppliers (69) Suppliers (93)

31-614-CAS-41633162 Steps: **1** Yield: **85%**

1.1 **Reagents:** 2,4,6-Trimethylbenzoic acid, Sodium carbonate, Silver fluoride, Oxygen
**Catalysts:** Cupric acetate
**Solvents:** *m*-Xylene, 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 160 °C

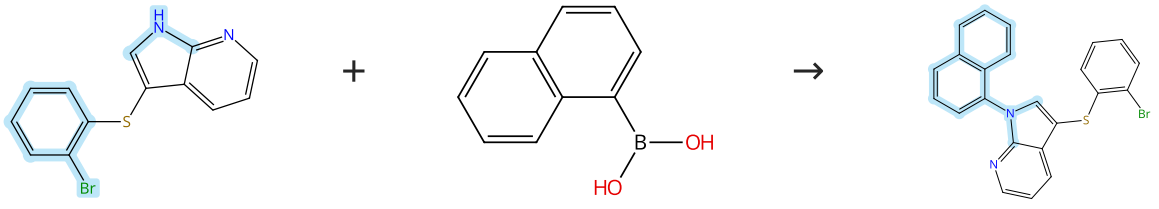
Experimental Protocols

**Copper-promoted ortho-directed C-H amination of 2-arylpyridines with NH-heterocycles**

By: Zeng, Yang-Hao; et al

Organic & Biomolecular Chemistry (2024), 22(36), 7390-7394.

**Scheme 206** (1 Reaction) Steps: **1** Yield: **85%**




Suppliers (99)

31-614-CAS-42764256 Steps: **1** Yield: **85%**

1.1 **Reagents:** 1,8-Diazabicyclo[5.4.0]undec-7-ene
**Catalysts:** Cupric acetate
**Solvents:** Dichloromethane; 30 min, rt

1.2 12 h, rt

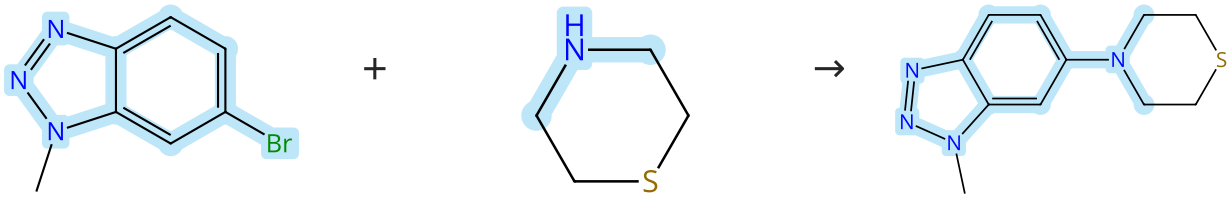
Experimental Protocols

**Iodine-Catalyzed Regioselective C-3 Chalcogenation of 7-Azaindoles: Access to Benzothiophene-Fused 7-Azaindole Analogs**

By: Mondal, Krishanu; et al

Journal of Organic Chemistry (2024), 89(23), 17042-17058.

**Scheme 207** (1 Reaction) Steps: **1** Yield: **85%**




Suppliers (58) Suppliers (83)

31-614-CAS-40801443 Steps: **1** Yield: **85%**

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

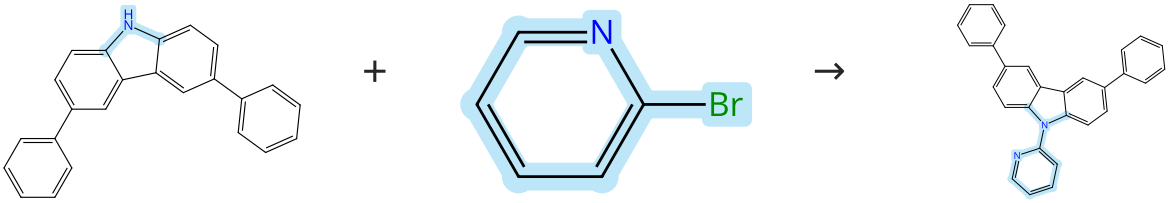
Experimental Protocols

**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 208** (1 Reaction) Steps: **1** Yield: **85%**




Suppliers (68) Suppliers (86)

31-614-CAS-41277571 Steps: **1** Yield: **85%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

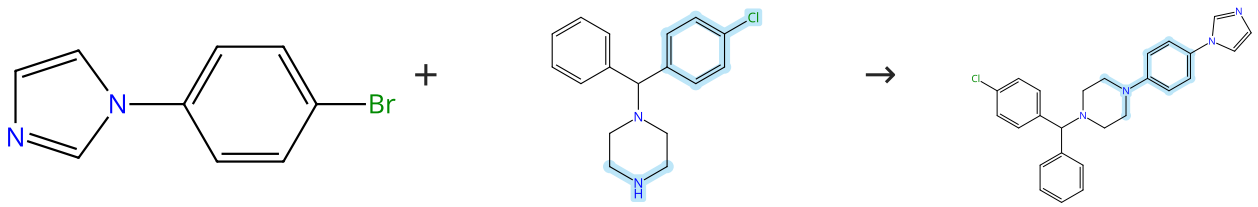
Experimental Protocols

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

By: Dharaniyedath, Jyothis; et al

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

**Scheme 209** (1 Reaction) Steps: **1** Yield: **85%**




Suppliers (76) Suppliers (102)

31-614-CAS-40801448 Steps: **1** Yield: **85%**

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

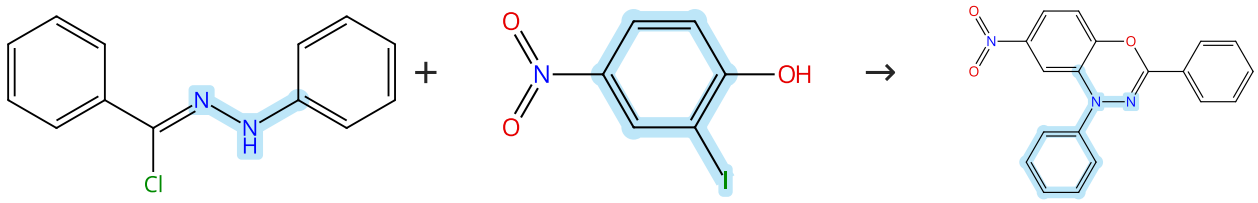
Experimental Protocols

**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 210** (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (38) Suppliers (63)

31-614-CAS-42420844 Steps: **1** Yield: **85%**

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

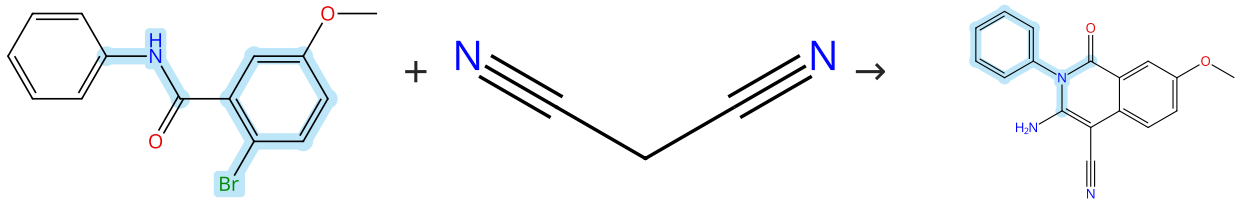
1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

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

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 211** (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (4) Suppliers (60)

31-614-CAS-38062437 Steps: **1** Yield: **85%**

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

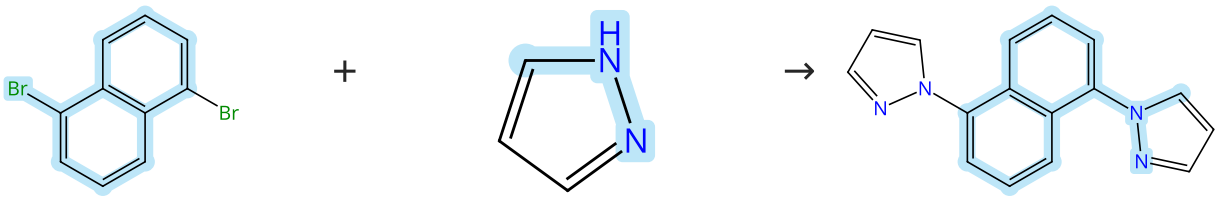
Experimental Protocols

**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 212** (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (72) Suppliers (93)

31-614-CAS-42065701 Steps: **1** Yield: **85%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Copper oxide ($Cu_2O$)
**Solvents:** Dimethylformamide; 24 h, 120 °C

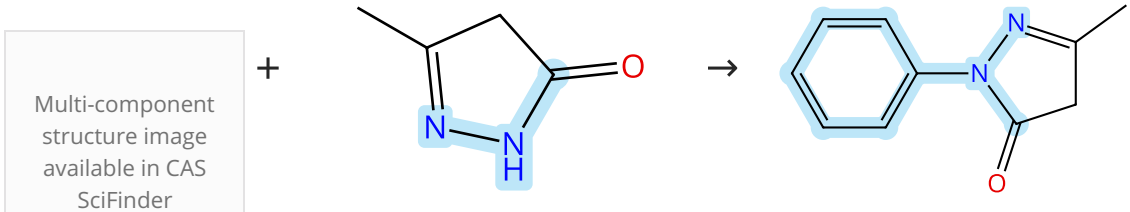
Experimental Protocols

**Molecular Design of Naphthalene- and Carbazole-Based Monomers for Regiospecific Synthesis of Poly(arylenevinylene)s via Co-Catalyzed Hydroarylation Polyaddition**

By: Iwamori, Ryota; et al

Macromolecular Rapid Communications (2024), 45(16), 2400168.

**Scheme 213** (1 Reaction) Steps: **1** Yield: **85%**




Suppliers (67) Suppliers (76) Suppliers (114)

31-614-CAS-38961884 Steps: **1** Yield: **85%**

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

1.2 **Reagents:** Water

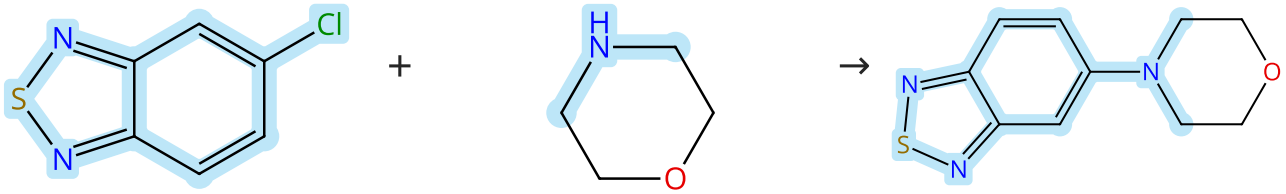
Experimental Protocols

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

By: Liao, Wenbo; et al

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

**Scheme 214** (1 Reaction) Steps: **1** Yield: **85%**




Suppliers (62) Suppliers (83) Suppliers (3)

31-614-CAS-41756954 Steps: **1** Yield: **85%**

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, 40 °C

Experimental Protocols

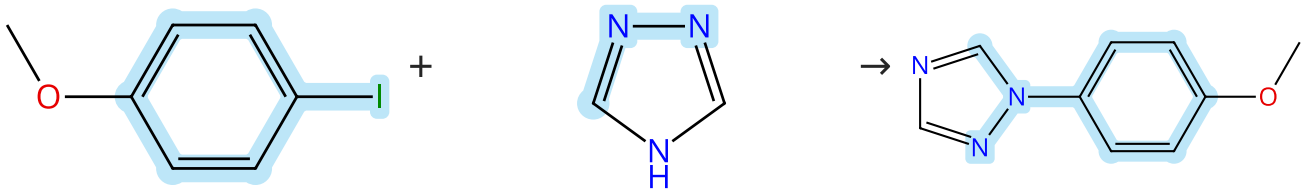
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 215** (1 Reaction)

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



Suppliers (89) | Suppliers (100) | Suppliers (39)

**31-614-CAS-40887396**

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

1.1 **Catalysts:** 1*H*-Benzotriazole, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 5 min, rt

1.2 **Reagents:** Potassium *tert*-butoxide; 24 h, 110 °C

Experimental Protocols

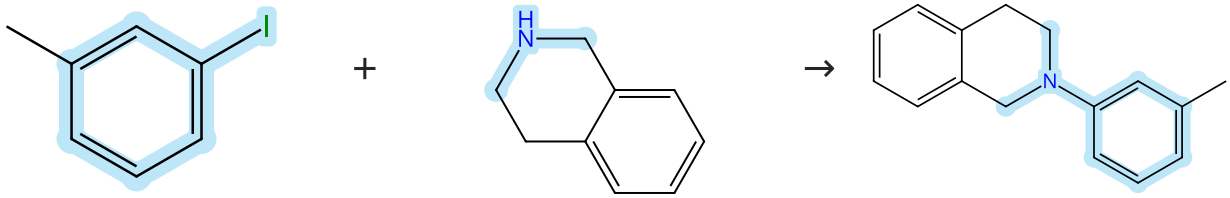
**Orchestrated Octuple C-H Activation: A Bottom-Up Topology Engineering Approach toward Stimuli-Responsive Double-Heptagon-Embedded Wavy Polycyclic Heteroar omatics**

By: Rana, Samim Sohel; et al

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

**Scheme 216** (2 Reactions)

Steps: **1** Yield: **80-85%**



Suppliers (74) | Suppliers (92) | Supplier (1)

**31-614-CAS-41429348**

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

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

Experimental Protocols

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

By: Marchan-Garcia, Joaquin; et al

Bioorganic Chemistry (2024), 143, 107008.

**31-614-CAS-40034156**

Steps: **1** Yield: **80%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** Isopropanol, Ethylene glycol; rt; 24 h, 85 - 90 °C

Experimental Protocols

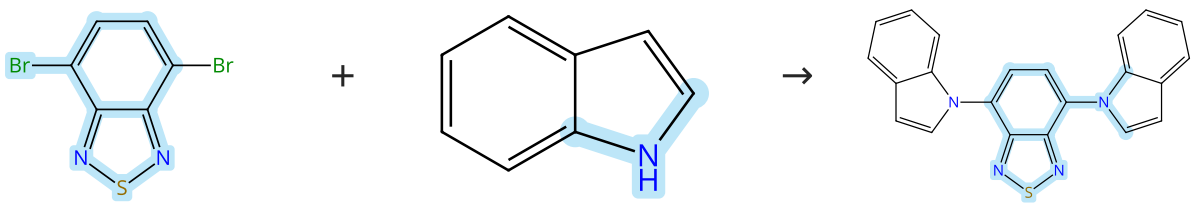
**Preparation of an OHCP nanofiber photocatalyst for cross-dehydrogenation coupling reactions**

By: Zhao, Xingshun; et al

Catalysis Science & Technology (2024), 14(10), 2848-2857.

**Scheme 217** (1 Reaction)

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



Suppliers (92) | Suppliers (109)

31-614-CAS-39503757 Steps: **1** Yield: **85%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide
**Solvents:** Dimethylformamide; 72 h, 150 °C

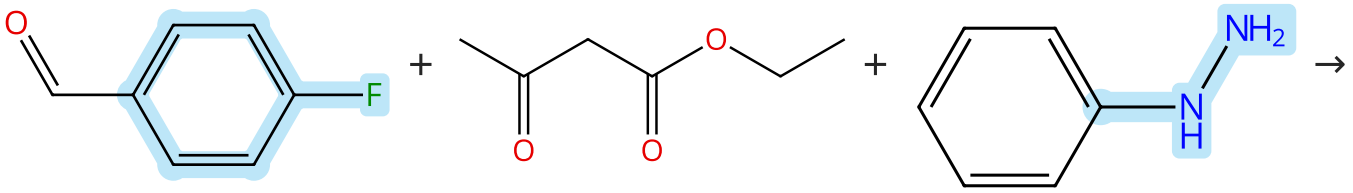
Experimental Protocols

**Photoactive benzothiadiazole-N-heterocycle derivatives: synthesis, photophysics and water sensing in organic solvents**

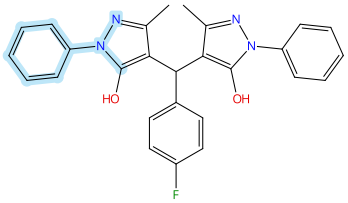
By: Ebersol, Camila P.; et al

New Journal of Chemistry (2024), 48(11), 4680-4689.

**Scheme 218** (1 Reaction) Steps: **1** Yield: **85%**




Suppliers (91) Suppliers (93) Suppliers (63)




Suppliers (5)

31-614-CAS-44172544 Steps: **1** Yield: **85%**

1.1 **Catalysts:** Copper oxide (CuO)
**Solvents:** Methanol; 35 min, 70 °C

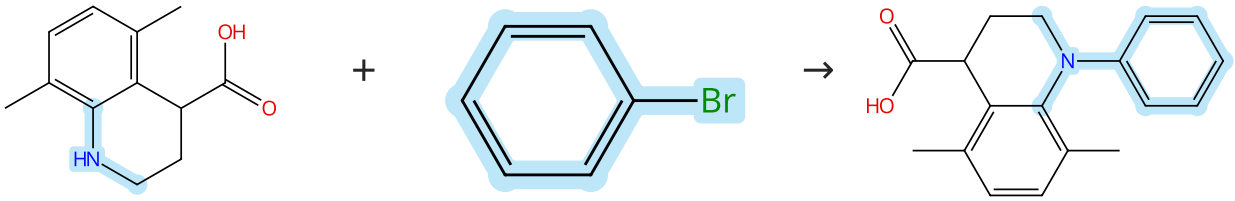
Experimental Protocols

**Synthesis of Bis-pyrazole Derivatives Using Coal Fly Ash @Cu O Coreshell Nanocomposite and their Molecular Docking against Human Tyrosyl DNA Phosphodiesterase I**

By: Thakare, Savita Vasantrao; et al

Current Catalysis (2024), 13(2), 117-130.

**Scheme 219** (1 Reaction) Steps: **1** Yield: **84%**




Suppliers (5) Suppliers (71)

31-614-CAS-42120045 Steps: **1** Yield: **84%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Pyridine, Cuprous iodide
**Solvents:** Dimethylformamide; 10 h, 110 - 120 °C

Experimental Protocols

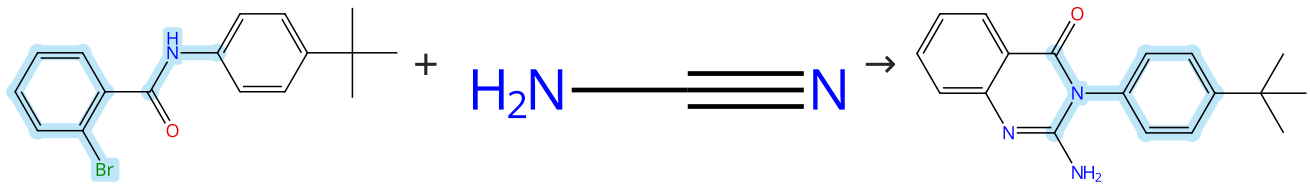
**Friedel-Crafts Chemistry. Part 63. Syntheses of some condensed N-heterocyclic systems via combined Darzens and Friedel-Crafts approaches**

By: Abd El-Aal, Hassan A. K.; et al

ARKIVOC (Gainesville, FL, United States) (2024), (8), 202412254.

**Scheme 220** (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (6)

Suppliers (60)

**31-614-CAS-42982612**

Steps: **1** Yield: **84%**

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

Experimental Protocols

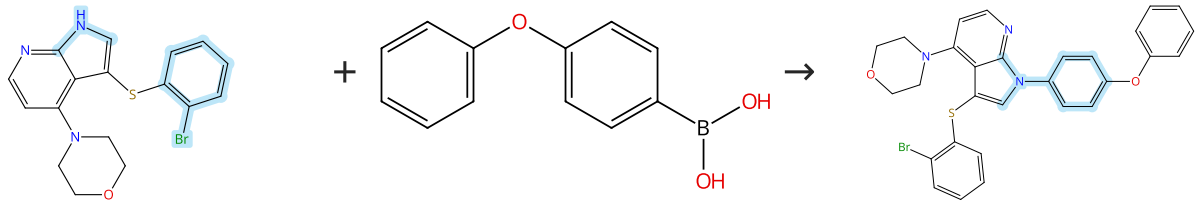
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 221** (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (102)

**31-614-CAS-42764263**

Steps: **1** Yield: **84%**

1.1 **Reagents:** 1,8-Diazabicyclo[5.4.0]undec-7-ene
**Catalysts:** Cupric acetate
**Solvents:** Dichloromethane; 30 min, rt

1.2 12 h, rt

Experimental Protocols

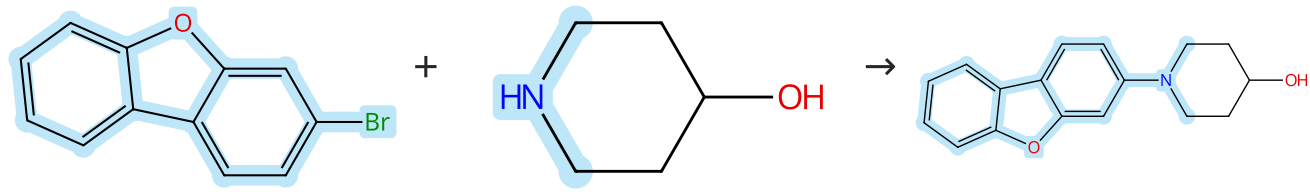
**Iodine-Catalyzed Regioselective C-3 Chalcogenation of 7-Azaindoles: Access to Benzothiophene-Fused 7-Azaindole Analogs**

By: Mondal, Krishanu; et al

Journal of Organic Chemistry (2024), 89(23), 17042-17058.

**Scheme 222** (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (69)

Suppliers (92)

**31-614-CAS-40801496**

Steps: **1** Yield: **84%**

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

Experimental Protocols

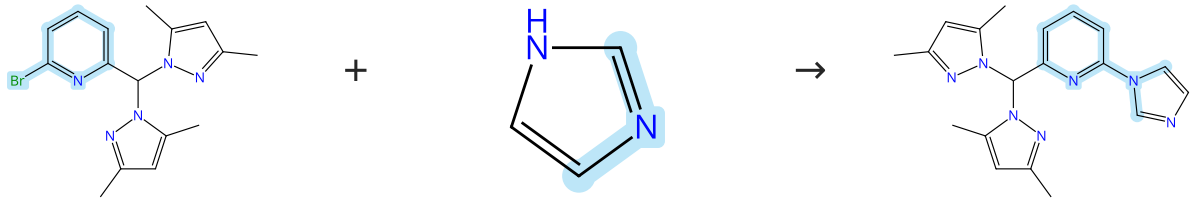
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 223** (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (201)

**31-614-CAS-42065999**

Steps: **1** Yield: **84%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 24 h, 100 °C

Experimental Protocols

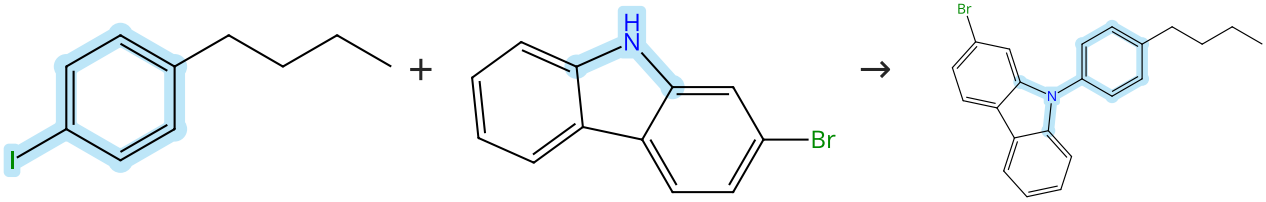
**Synthesis and catalytic activity of silver N-heterocyclic carbene complexes based on bis(3,5-dimethylpyrazol-1-yl) methyl-substituted pyridylimidazole**

By: Hao, Hai-Jun; et al

Journal of Coordination Chemistry (2024), 77(3-4), 375-391.

**Scheme 224** (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (56)

Suppliers (83)

**31-614-CAS-42275907**

Steps: **1** Yield: **84%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide
**Solvents:** 1,2-Dimethoxyethane, Water; 4 d, 95 °C

Experimental Protocols

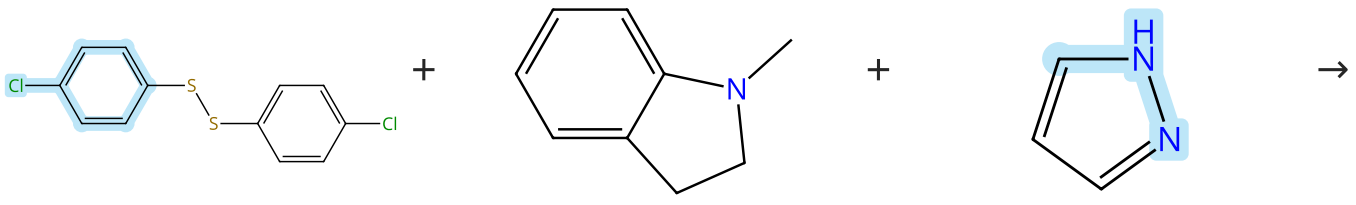
**Synthesis and Properties of Fused Polycyclic Donor- Acceptor Compounds Containing Carbazole and Diazapyrene Skeletons**

By: Kurimoto, Suzuho; et al

Asian Journal of Organic Chemistry (2024), 13(10), e202400289.

**Scheme 225** (1 Reaction)

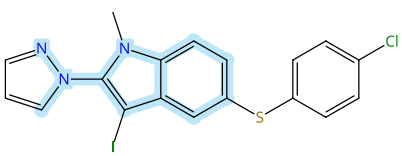
Steps: **1** Yield: **84%**



Suppliers (61)

Suppliers (59)

Suppliers (93)



31-614-CAS-39675959 Steps: **1** Yield: **84%**

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

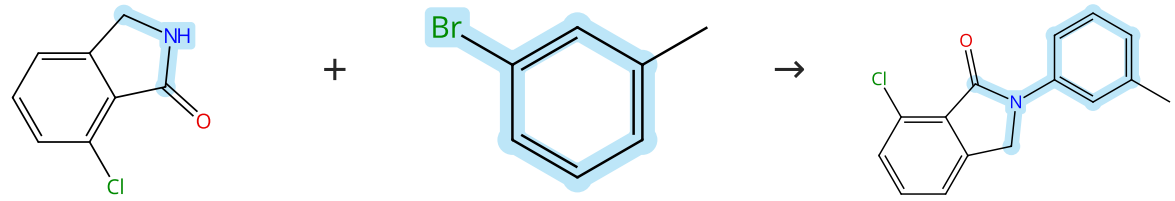
Experimental Protocols

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

By: Zhang, Xiaoxiang; et al

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

**Scheme 226** (1 Reaction) Steps: **1** Yield: **84%**




Suppliers (56) Suppliers (57)

31-614-CAS-41277510 Steps: **1** Yield: **84%**

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

1.2 10 min, rt

1.3 **Reagents:** Potassium carbonate; 35 min, rt

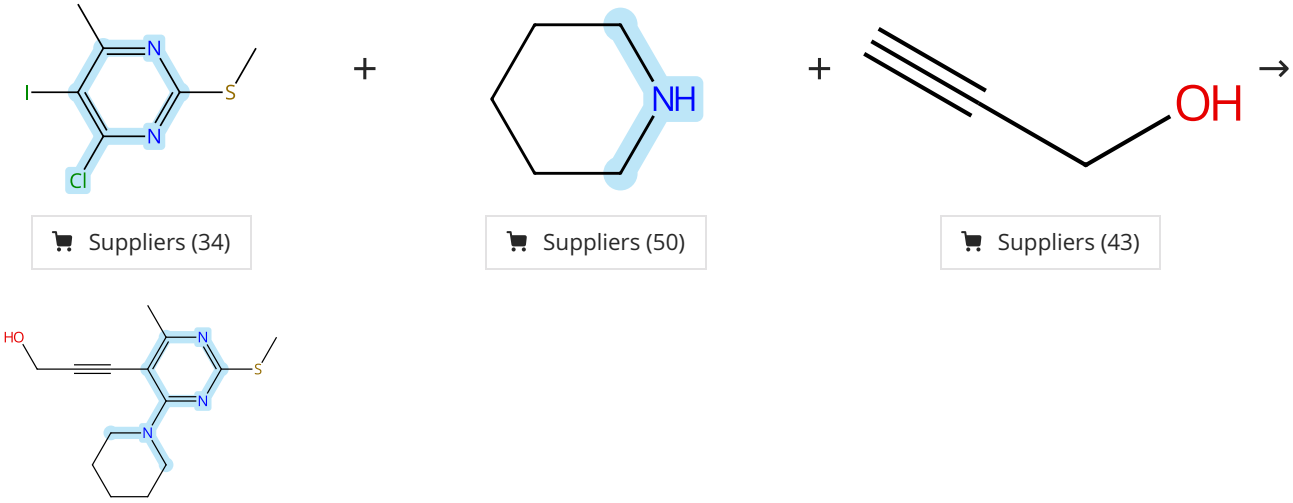
Experimental Protocols

**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 227** (1 Reaction) Steps: **1** Yield: **84%**




Suppliers (34) Suppliers (50) Suppliers (43)

31-614-CAS-41518135 Steps: **1** Yield: **84%**

1.1 **Reagents:** Triethylamine
**Solvents:** Dimethylformamide; 80 °C

1.2 **Catalysts:** Cuprous iodide, Dichlorobis(triphenylphosphine) palladium; 4 h, 80 °C

Experimental Protocols

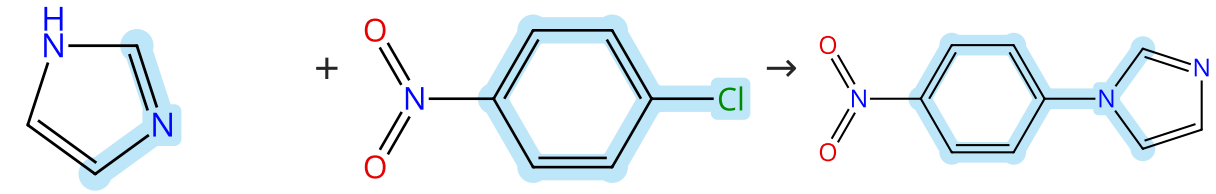
**Synthesis of new 4,5-disubstituted-6-methyl-2-(methylthio) pyrimidines via C-C coupling reactions**

By: Cheldavi, Forough; et al

Journal of Sulfur Chemistry (2024), 45(5), 690-702.

**Scheme 228** (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (201) | Suppliers (59) | Suppliers (83)

**31-614-CAS-35838784**

Steps: **1** Yield: **84%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 4 h, 100 °C

Experimental Protocols

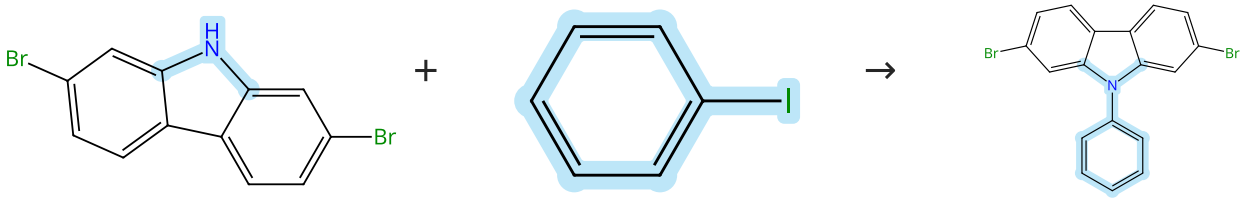
**Polyaniline-encapsulating $CuFe_2O_4/Cu_2O$ composite: a simple, effective and reusable heterogeneous catalyst for ligand-free N-arylation of amines and nitrogen heterocycles**

By: Ahrari, Vahide; et al

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

**Scheme 229** (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (79) | Suppliers (93) | Suppliers (60)

**31-614-CAS-41704775**

Steps: **1** Yield: **84%**

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

Experimental Protocols

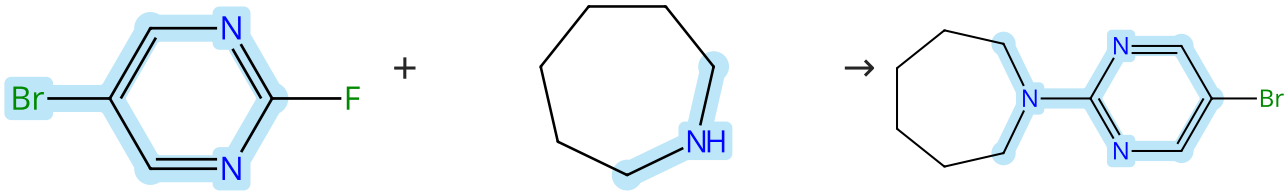
**Direct Population of Triplet States for Efficient Organic Afterglow through the Intra/Intermolecular Heavy-Atom Effect**

By: Yuan, Jie; et al

Molecules (2024), 29(5), 1014.

**Scheme 230** (1 Reaction)

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



Suppliers (83) | Suppliers (49) | Suppliers (40)

**31-614-CAS-40743600**

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

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatricyclo[3.3.1.1$^{3,7}$]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

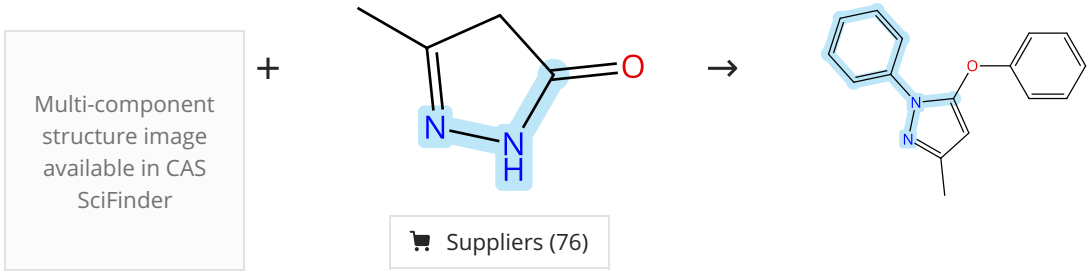
**Cu(II)/PTABS-Promoted, Chemoselective Amination of Halo Pyrimidines**

By: Phulwale, Vikram; et al

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

**Scheme 231** (1 Reaction)

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




Suppliers (67)

Suppliers (76)

**31-614-CAS-38961893**

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

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

1.2 **Reagents:** Water

Experimental Protocols

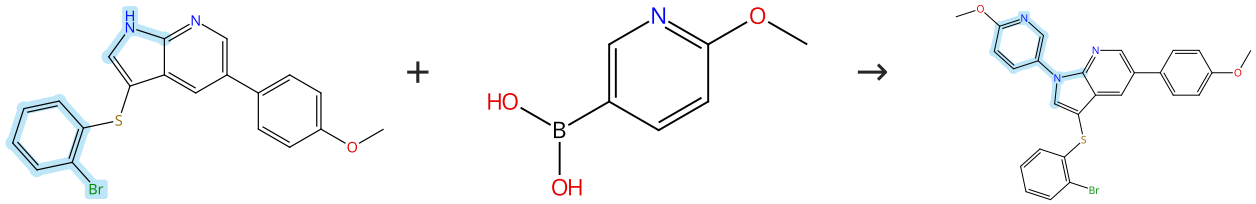
**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

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

**Scheme 232** (1 Reaction)

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




Suppliers (102)

**31-614-CAS-42764270**

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

1.1 **Reagents:** 1,8-Diazabicyclo[5.4.0]undec-7-ene
**Catalysts:** Cupric acetate
**Solvents:** Dichloromethane; 30 min, rt

1.2 12 h, rt

Experimental Protocols

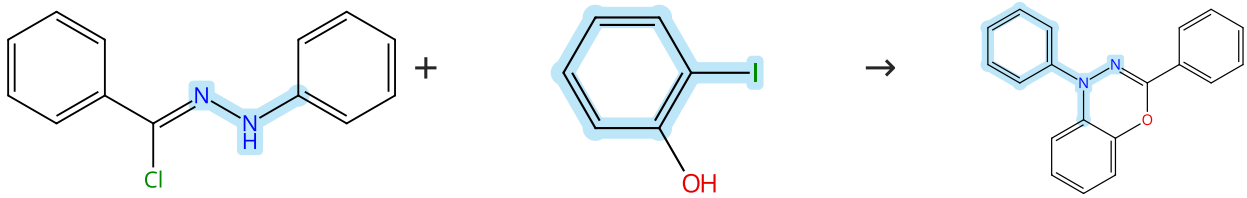
**Iodine-Catalyzed Regioselective C-3 Chalcogenation of 7-Azaindoles: Access to Benzothiophene-Fused 7-Azaindole Analogs**

By: Mondal, Krishanu; et al

Journal of Organic Chemistry (2024), 89(23), 17042-17058.

**Scheme 233** (1 Reaction)

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




Suppliers (38)

Suppliers (84)

**31-614-CAS-42420845**

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

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

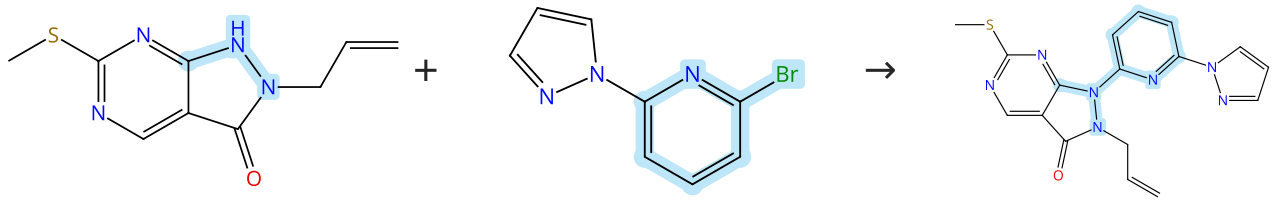
**A new route for the synthesis of substi tuted benzo [1,3,4] oxadiazine derivatives via copper-catalyzed N-arylation-cycliz ation of hydrazonoyl chlorides and 2-iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 234** (1 Reaction)

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



Suppliers (60)

Suppliers (57)

**31-614-CAS-40870494**

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

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

Experimental Protocols

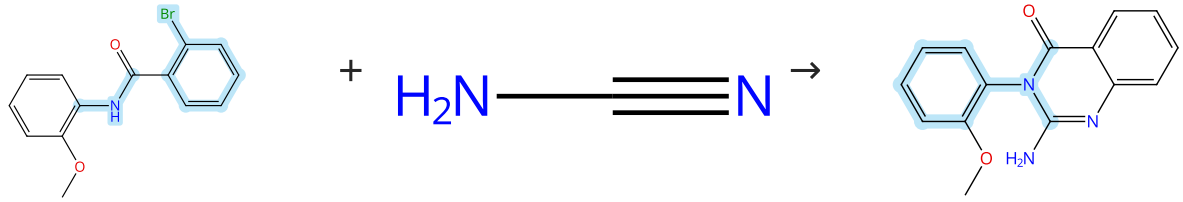
**Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy**

By: Wang, Yong; et al

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

**Scheme 235** (1 Reaction)

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



Suppliers (14)

Suppliers (60)

**31-614-CAS-42982593**

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

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

Experimental Protocols

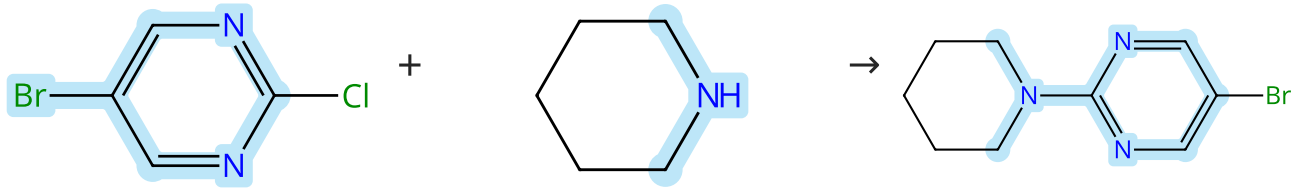
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 236** (1 Reaction)

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



Suppliers (105)

Suppliers (50)

Suppliers (57)

**31-614-CAS-40743587**

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

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatricyclo[3.3.1.1$^{3,7}$]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

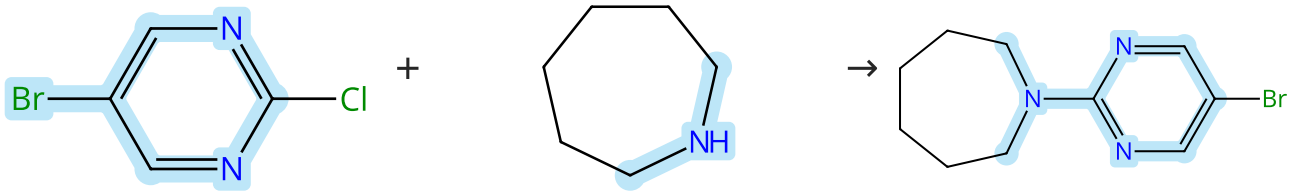
**Cu(II)/PTABS-Promoted, Chemoselective Amination of Halo Pyrimidines**

By: Phulwale, Vikram; et al

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

**Scheme 237** (1 Reaction)

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




Suppliers (105) Suppliers (49) Suppliers (40)

**31-614-CAS-40743586**

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

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatricyclo[3.3.1.1$^{3,7}$]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

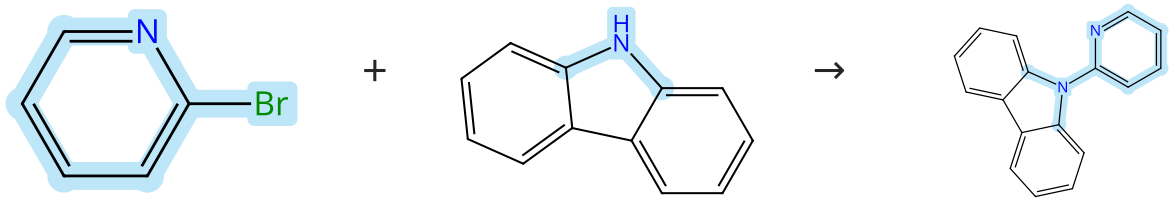
**Cu(II)/PTABS-Promoted, Chemoselective Amination of Halo Pyrimidines**

By: Phulwale, Vikram; et al

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

**Scheme 238** (1 Reaction)

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




Suppliers (86) Suppliers (109) Suppliers (17)

**31-614-CAS-41277567**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

Experimental Protocols

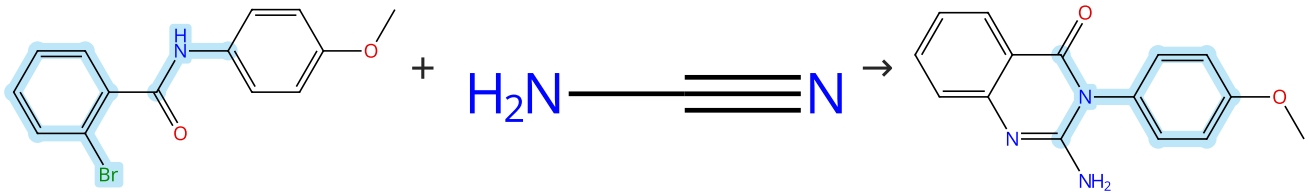
**Palladium-Catalyzed Direct Alkynylation of Carbazoles with Alkynyl Bromides**

By: Dharaniyedath, Jyothis; et al

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

**Scheme 239** (1 Reaction)

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




Suppliers (5) Suppliers (60)

**31-614-CAS-42982624**

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

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

Experimental Protocols

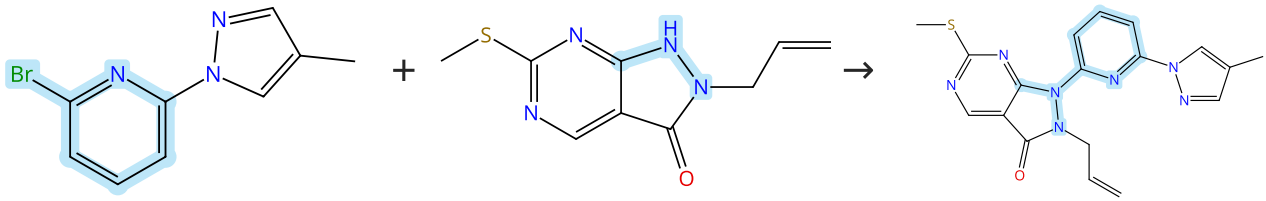
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 240** (1 Reaction)

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



Suppliers (43)

Suppliers (60)

**31-614-CAS-40870496**

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

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

Experimental Protocols

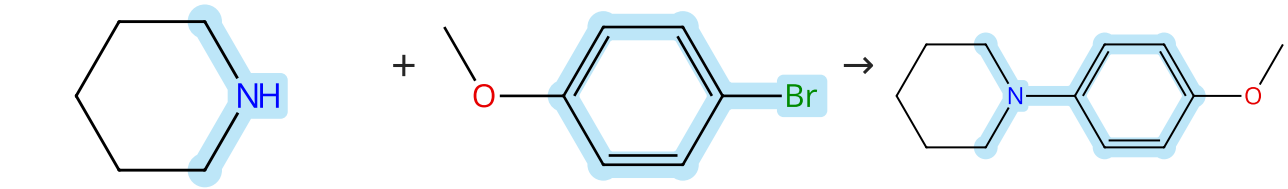
**Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy**

By: Wang, Yong; et al

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

**Scheme 241** (1 Reaction)

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



Suppliers (50)

Suppliers (69)

Suppliers (9)

**31-614-CAS-38947747**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, *N*-9*H*-Carbazol-9-yl-1*H*-pyrrole-2-carboxamide
**Solvents:** Diethylene glycol; 48 h, rt

Experimental Protocols

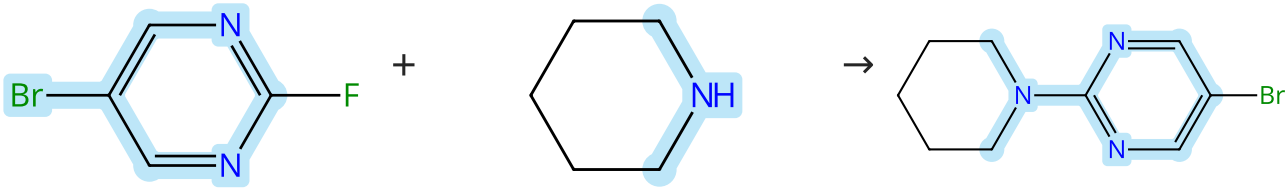
**Room-Temperature CuI-Catalyzed N-Arylation of Cyclopropylamine**

By: Hong, Peng; et al

Journal of Organic Chemistry (2024), 89(1), 57-67.

**Scheme 242** (1 Reaction)

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



Suppliers (83)

Suppliers (50)

Suppliers (57)

**31-614-CAS-40743597**

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

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatricyclo[3.3.1.1$^{3,7}$]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

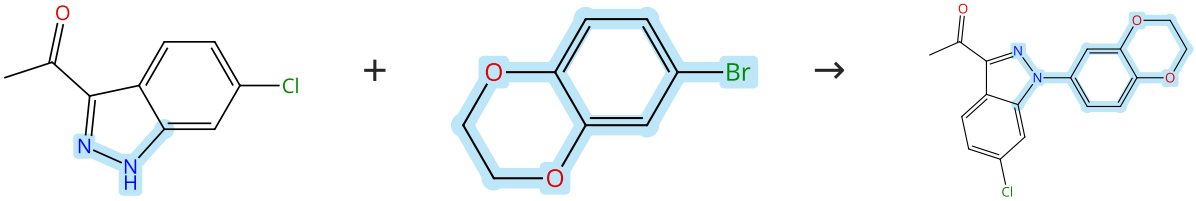
**Cu(II)/PTABS-Promoted, Chemoselective Amination of Halo Pyrimidines**

By: Phulwale, Vikram; et al

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

**Scheme 243** (1 Reaction)

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



Suppliers (5)

Suppliers (92)

**31-614-CAS-40106805**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

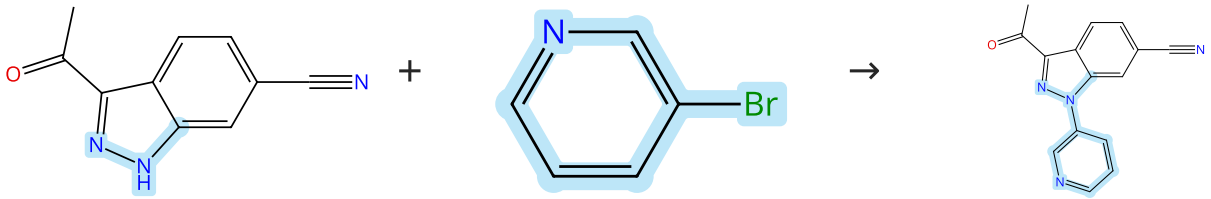
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 244** (1 Reaction)

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



Suppliers (89)

**31-614-CAS-40106787**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

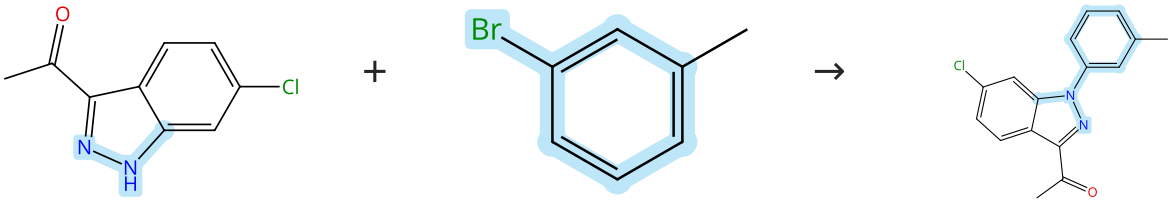
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 245** (1 Reaction)

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



Suppliers (5)

Suppliers (57)

**31-614-CAS-40106802**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

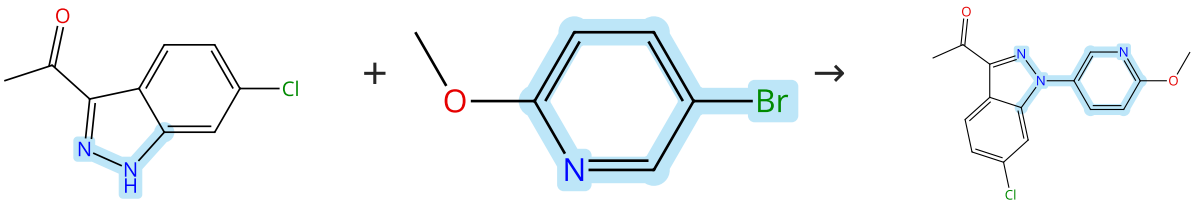
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 246** (1 Reaction)

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



Suppliers (5)

Suppliers (93)

**31-614-CAS-40106809**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

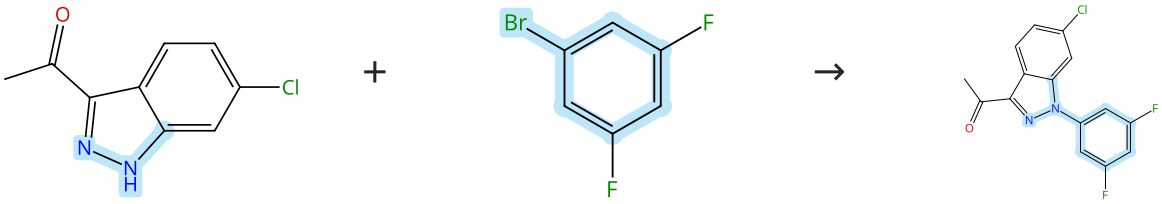
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 247** (1 Reaction)

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



Suppliers (5)

Suppliers (77)

**31-614-CAS-40106790**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

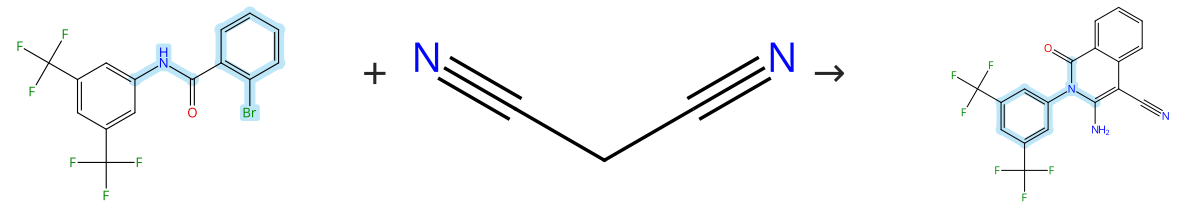
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 248** (1 Reaction)

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



Suppliers (3)

Suppliers (60)

**31-614-CAS-38062429**

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

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

Experimental Protocols

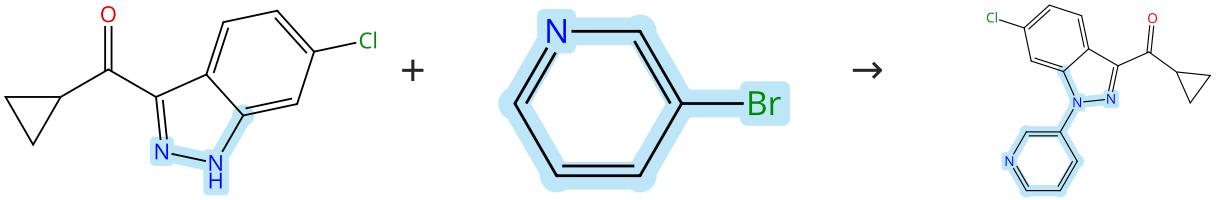
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

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

**Scheme 249** (1 Reaction)

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



Suppliers (89)

**31-614-CAS-40106789**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

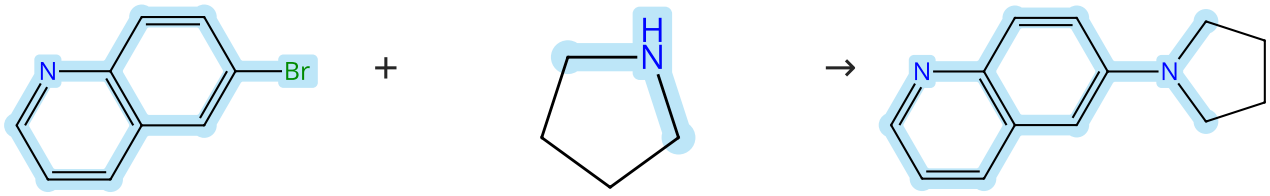
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 250** (1 Reaction)

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



Suppliers (98) Suppliers (74) Suppliers (6)

**31-614-CAS-41175793**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 48 h, 80 °C

Experimental Protocols

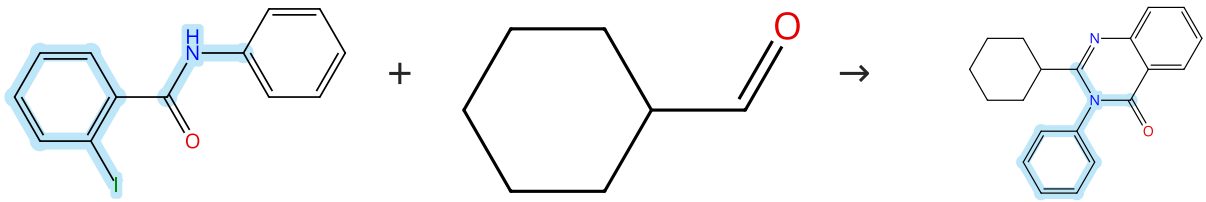
**α-Amino bicycloalkylation through organophotoredox catalysis**

By: Nugent, Jeremy; et al

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

**Scheme 251** (1 Reaction)

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



Suppliers (38) Suppliers (84) Supplier (1)

**31-614-CAS-39791006**

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

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

Experimental Protocols

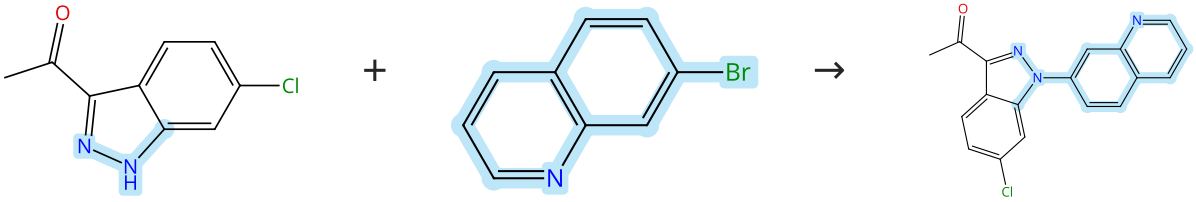
**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**Scheme 252** (1 Reaction)

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



Suppliers (5)

Suppliers (88)

**31-614-CAS-40106816**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

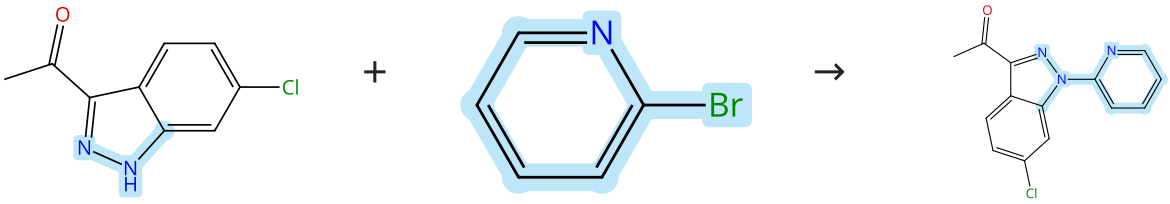
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 253** (1 Reaction)

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



Suppliers (5)

Suppliers (86)

**31-614-CAS-40106806**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

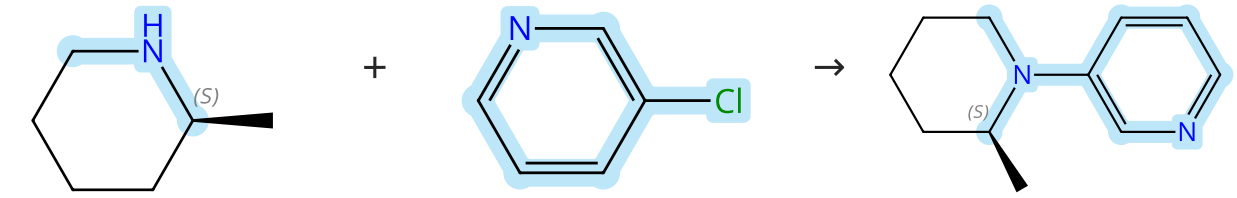
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 254** (1 Reaction)

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



Absolute stereochemistry shown, Rotation (+)

Suppliers (57)

Suppliers (79)

Absolute stereochemistry shown

**31-614-CAS-41757032**

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

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

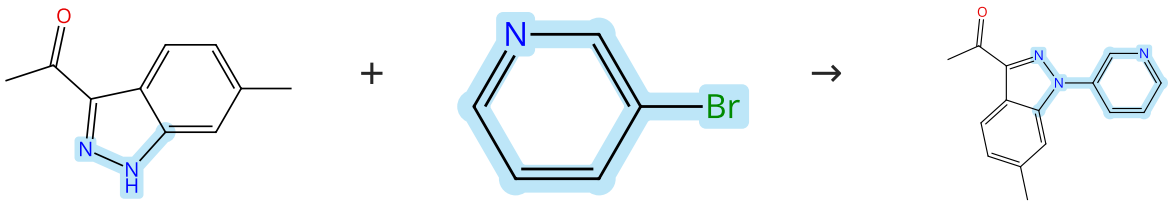
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 255** (1 Reaction)

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



Suppliers (5)

Suppliers (89)

**31-614-CAS-40106783**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

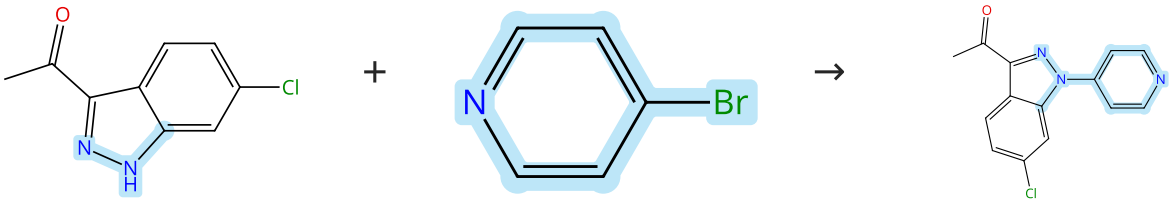
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 256** (1 Reaction)

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



Suppliers (5)

Suppliers (40)

**31-614-CAS-40106807**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

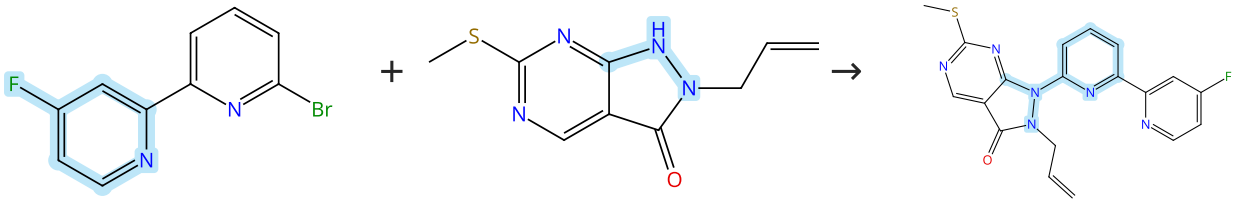
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 257** (1 Reaction)

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



Suppliers (60)

**31-614-CAS-40870522**

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

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

Experimental Protocols

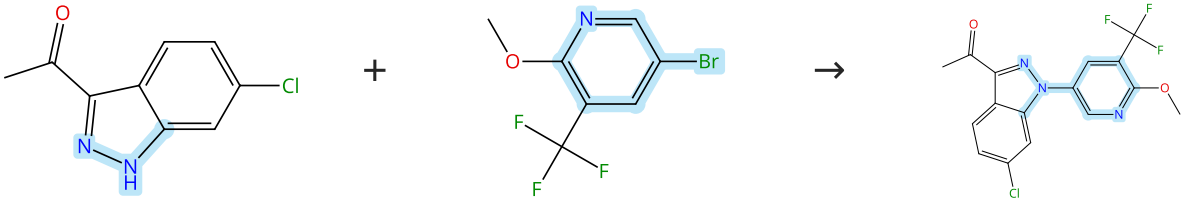
**Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy**

By: Wang, Yong; et al

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

**Scheme 258** (1 Reaction)

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



Suppliers (5)

Suppliers (73)

**31-614-CAS-40106808**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

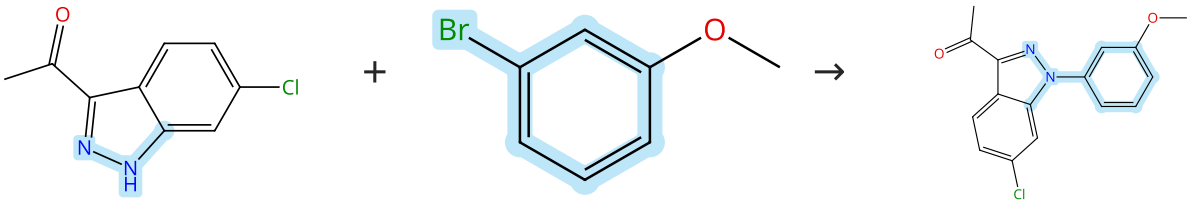
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 259** (1 Reaction)

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



Suppliers (5)

Suppliers (80)

**31-614-CAS-40106800**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

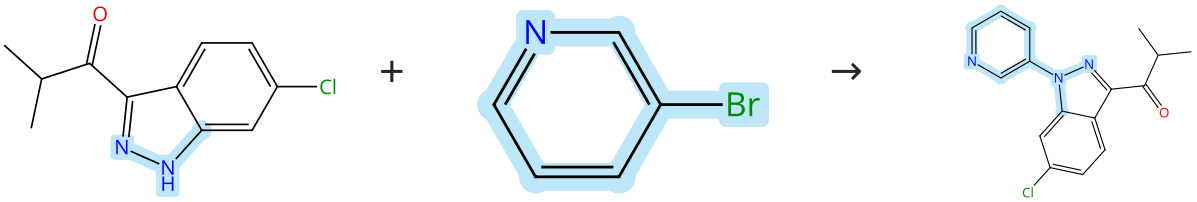
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 260** (1 Reaction)

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



Suppliers (2)

Suppliers (89)

**31-614-CAS-40106803**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

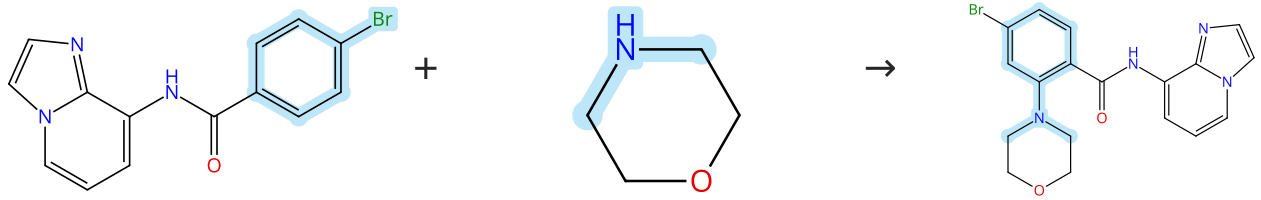
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 261** (1 Reaction)

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



Supplier (1)

Suppliers (83)

**31-614-CAS-41354754**

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

1.1 **Catalysts:** Cupric acetate
**Solvents:** Pyridine; 5 h, 100 °C

Experimental Protocols

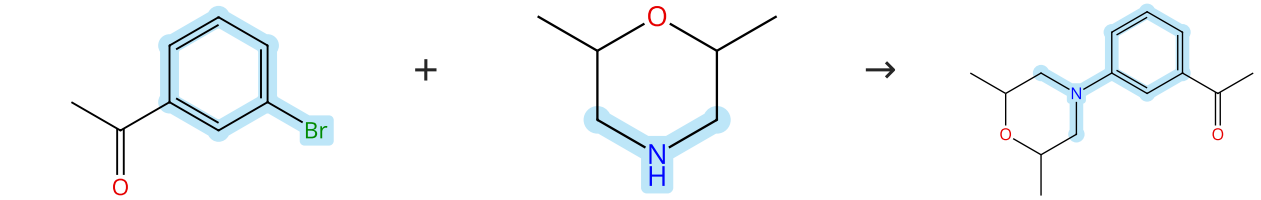
**Copper(II)-catalyzed, site-selective C(sp)$^2$-H amination using 8-aminoimidazo[1,2-a]pyridine (8-AIP) as a directing group**

By: Hajra, Arun Kumar; et al

Organic & Biomolecular Chemistry (2024), 22(32), 6617-6630.

**Scheme 262** (1 Reaction)

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



Suppliers (86)

Suppliers (48)

Supplier (1)

**31-614-CAS-40801430**

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

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

Experimental Protocols

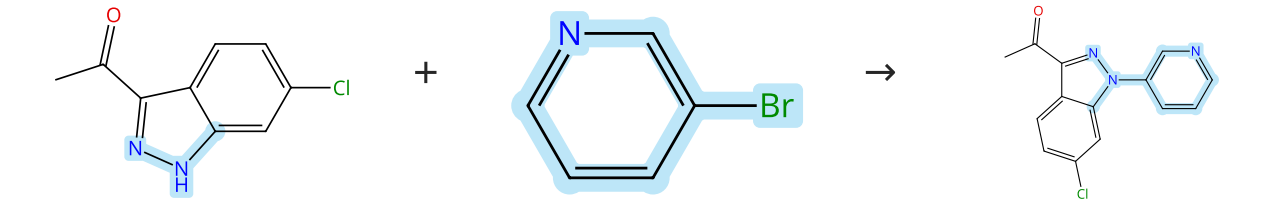
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 263** (1 Reaction)

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



Suppliers (5)

Suppliers (89)

**31-614-CAS-40106785**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

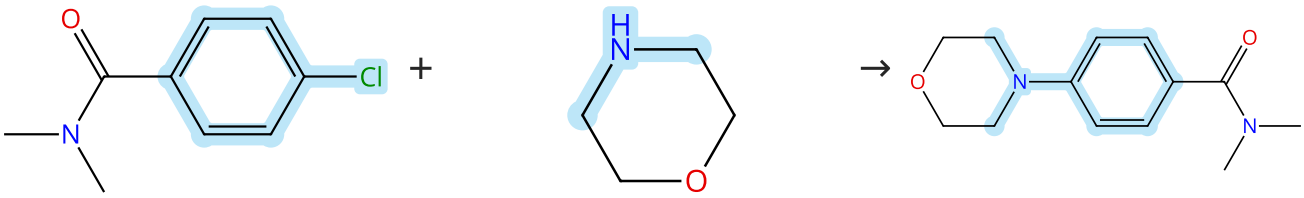
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 264** (1 Reaction)

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



Suppliers (62) | Suppliers (83) | Suppliers (2)

**31-614-CAS-41757026**

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

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

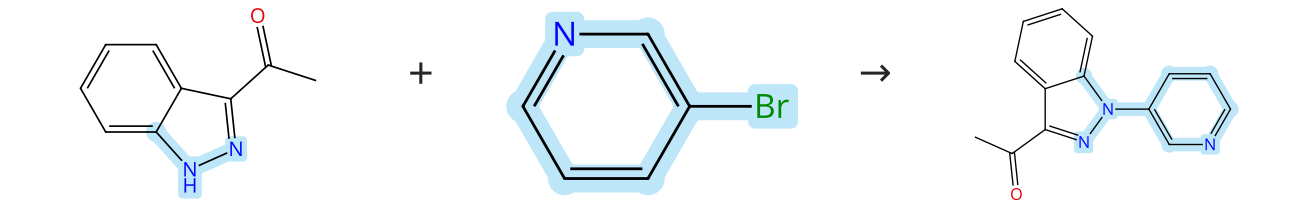
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 265** (1 Reaction)

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



Suppliers (75) | Suppliers (89)

**31-614-CAS-40106788**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

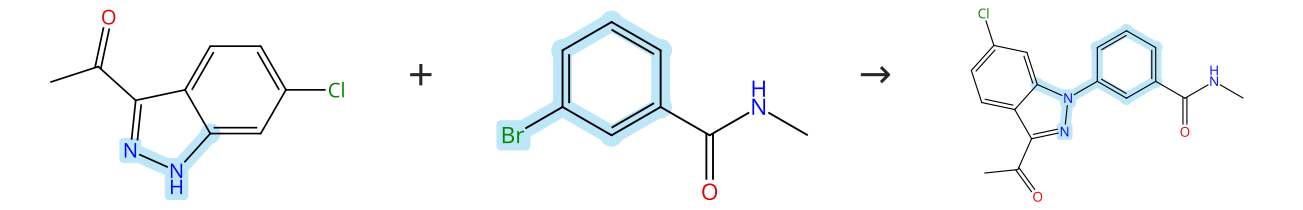
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 266** (1 Reaction)

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



Suppliers (5) | Suppliers (69)

**31-614-CAS-40106799**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

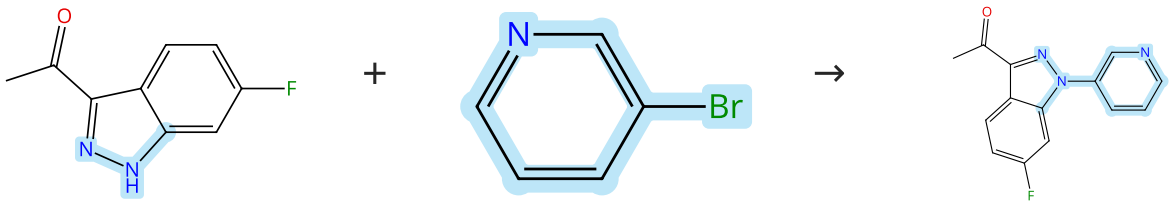
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 267** (1 Reaction)

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



Supplier (1)

Suppliers (89)

**31-614-CAS-40106784**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

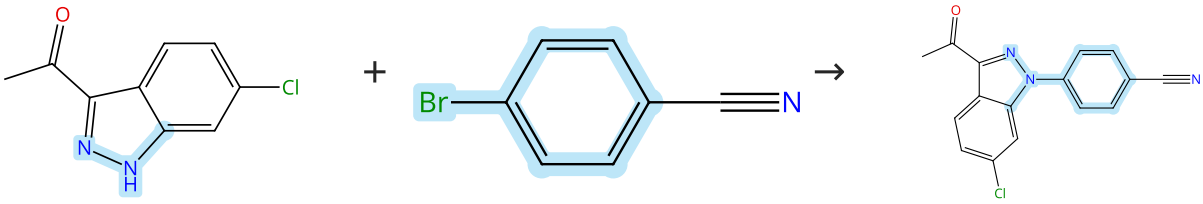
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 268** (1 Reaction)

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



Suppliers (5)

Suppliers (93)

**31-614-CAS-40106797**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

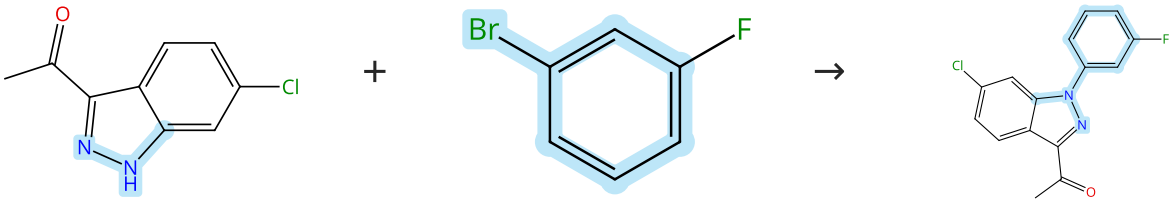
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 269** (1 Reaction)

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



Suppliers (5)

Suppliers (77)

**31-614-CAS-40106791**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

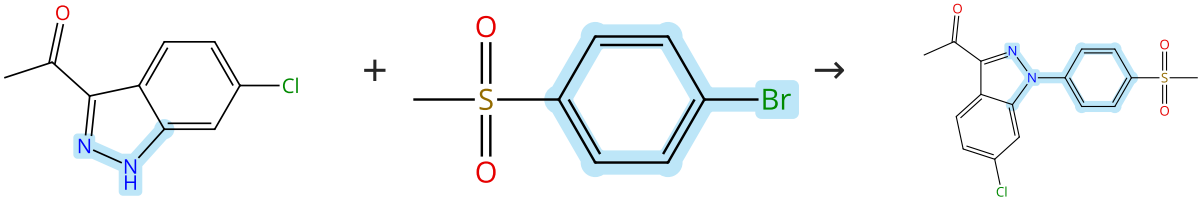
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 270** (1 Reaction)

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



Suppliers (5)

Suppliers (75)

**31-614-CAS-40106796**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

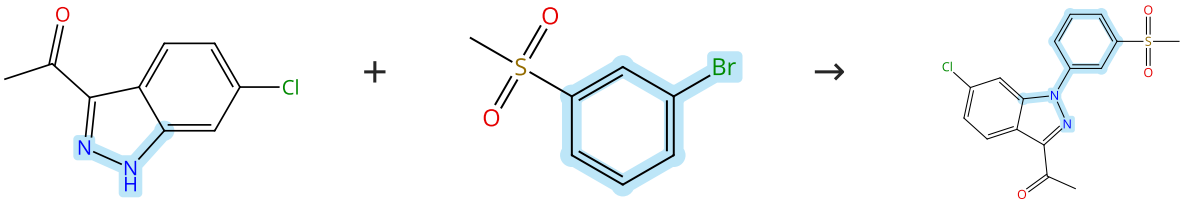
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 271** (1 Reaction)

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



Suppliers (5)

Suppliers (68)

**31-614-CAS-40106795**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

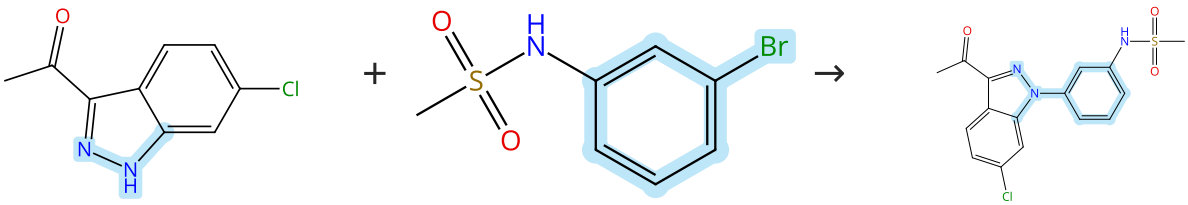
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 272** (1 Reaction)

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



Suppliers (5)

Suppliers (62)

**31-614-CAS-40106792**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

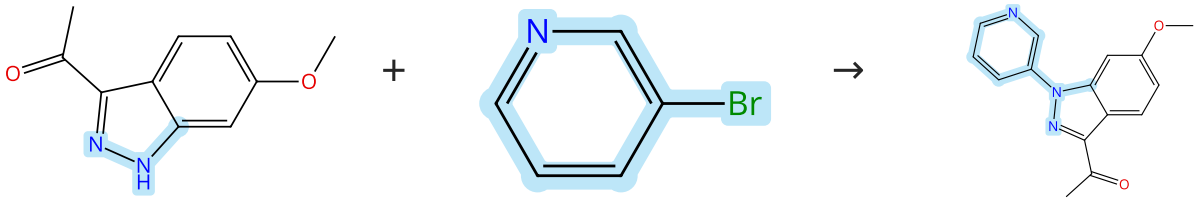
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 273** (1 Reaction)

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



Suppliers (7)

Suppliers (89)

**31-614-CAS-40106801**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

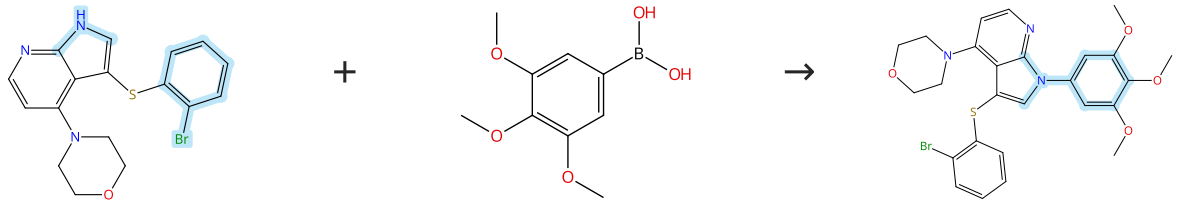
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 274** (1 Reaction)

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



Suppliers (91)

**31-614-CAS-42764261**

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

1.1 **Reagents:** 1,8-Diazabicyclo[5.4.0]undec-7-ene
**Catalysts:** Cupric acetate
**Solvents:** Dichloromethane; 30 min, rt

1.2 12 h, rt

Experimental Protocols

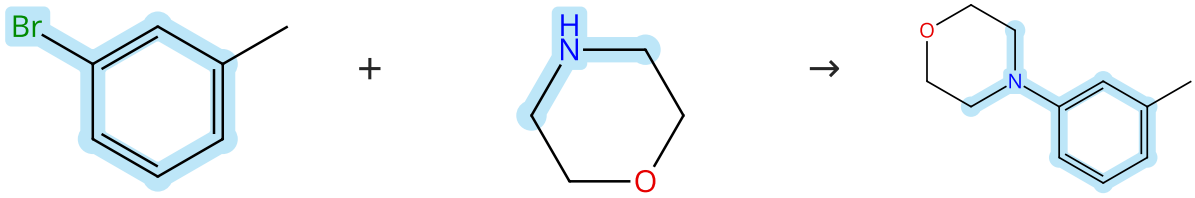
**Iodine-Catalyzed Regioselective C-3 Chalcogenation of 7-Azaindoles: Access to Benzothiophene-Fused 7-Azaindole Analogs**

By: Mondal, Krishanu; et al

Journal of Organic Chemistry (2024), 89(23), 17042-17058.

**Scheme 275** (1 Reaction)

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



Suppliers (57)

Suppliers (83)

Suppliers (28)

**31-614-CAS-41277514**

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

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

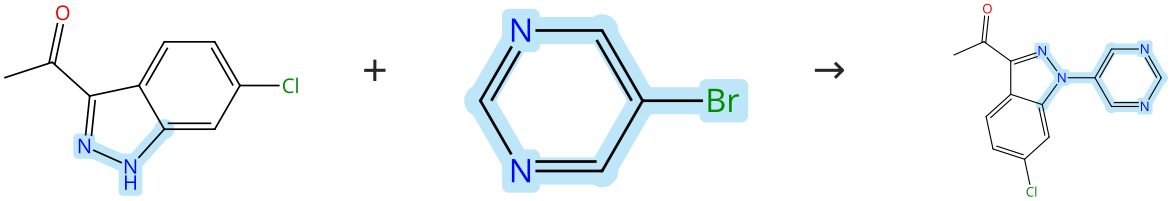
**Kanamycin-Cu(II) Complex Catalyzed Ullmann Amine Synthesis at Room Temperature: A Tool for Mechanistic Insights into Methylene Blue Degradation**

By: Basheer, Huma; et al

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

**Scheme 276** (1 Reaction)

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



Suppliers (5)

Suppliers (98)

**31-614-CAS-40106810**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

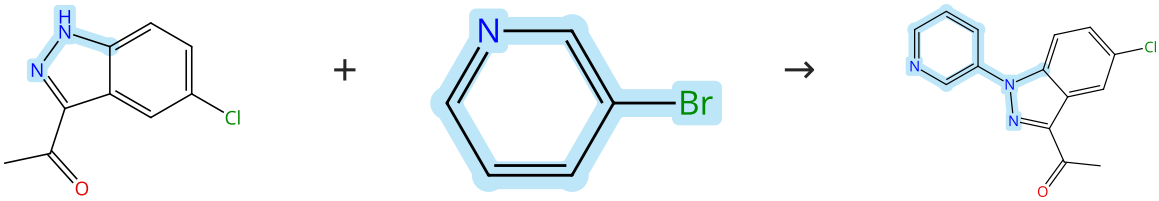
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 277** (1 Reaction)

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



Suppliers (21)

Suppliers (89)

**31-614-CAS-40106793**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

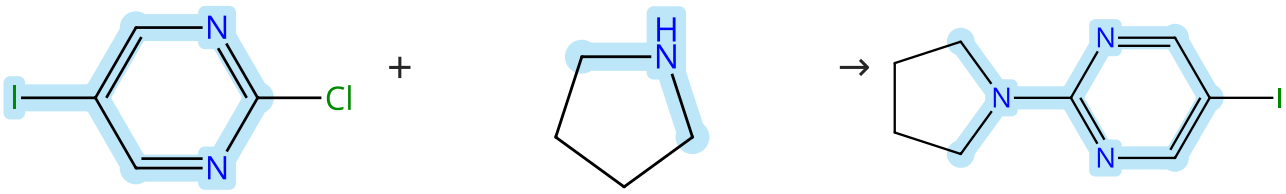
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 278** (1 Reaction)

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



Suppliers (84)

Suppliers (74)

Suppliers (16)

**31-614-CAS-40743595**

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

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphat ricyclo[3.3.1.1$^{3,7}$]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

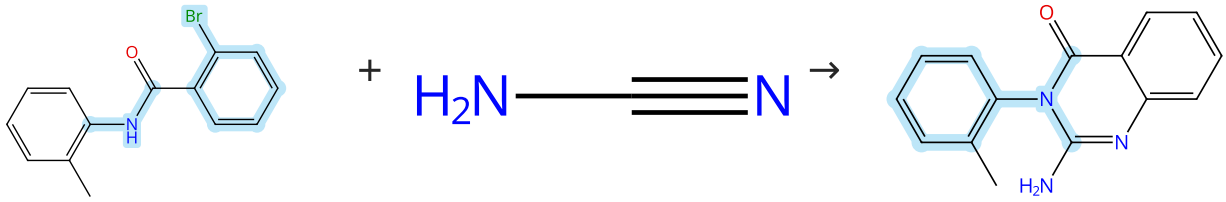
**Cu(II)/PTABS-Promoted, Chemoselective Amination of Halo Pyrimidines**

By: Phulwale, Vikram; et al

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

**Scheme 279** (1 Reaction)

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



Suppliers (43)

Suppliers (60)

**31-614-CAS-42982591**

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

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

Experimental Protocols

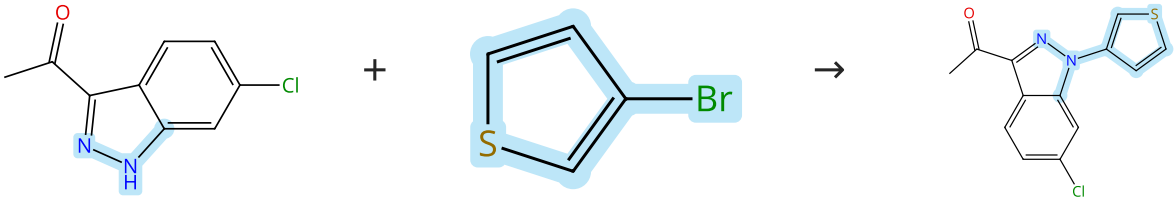
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 280** (1 Reaction)

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



Suppliers (5)

Suppliers (76)

**31-614-CAS-40106812**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

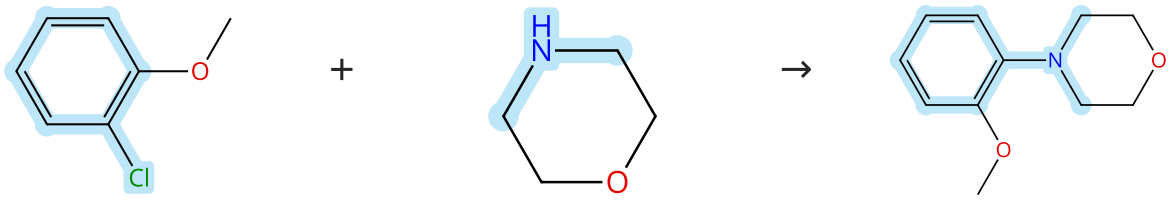
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 281** (1 Reaction)

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



Suppliers (63)

Suppliers (83)

Suppliers (28)

**31-614-CAS-41757035**

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

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

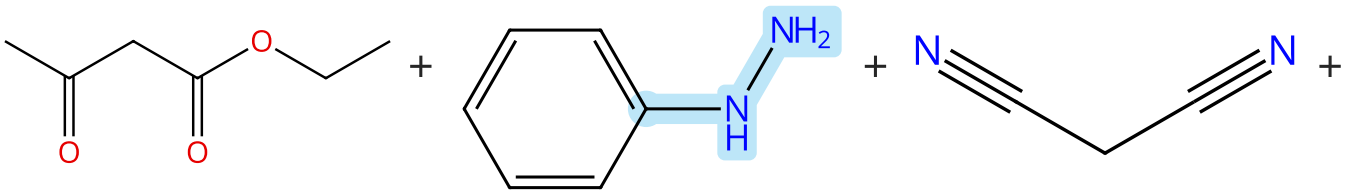
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

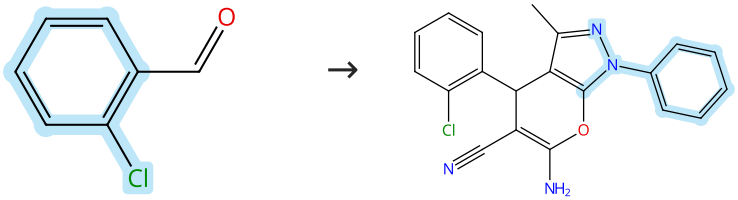
Journal of the American Chemical Society (2024), 146(38), 25949-25955.

**Scheme 282** (1 Reaction)

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



Suppliers (93) | Suppliers (63) | Suppliers (60)



Suppliers (83) | Suppliers (8)

**31-614-CAS-35485668**

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

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 $Fe_3O_4$); 10 min, rt

1.2 9 min, 65 °C

Experimental Protocols

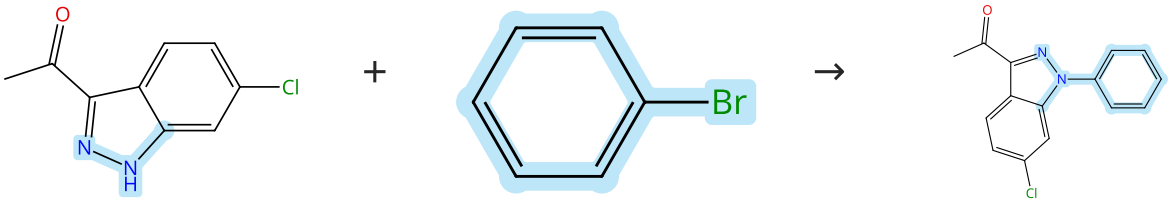
**Fabrication of Copper(II)-coated Magnetic Core-shell Nanopar ticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives**

By: Soleimani, Maryam; et al

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

**Scheme 283** (1 Reaction)

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



Suppliers (5) | Suppliers (71)

**31-614-CAS-40106798**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

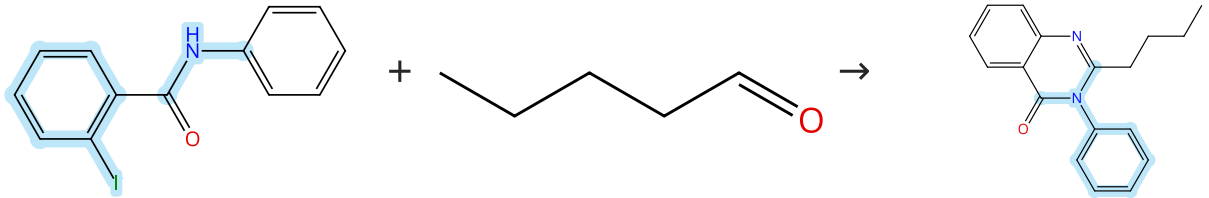
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 284** (1 Reaction)

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



Suppliers (38) | Suppliers (55) | Suppliers (5)

31-614-CAS-39791003 Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (CuO)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

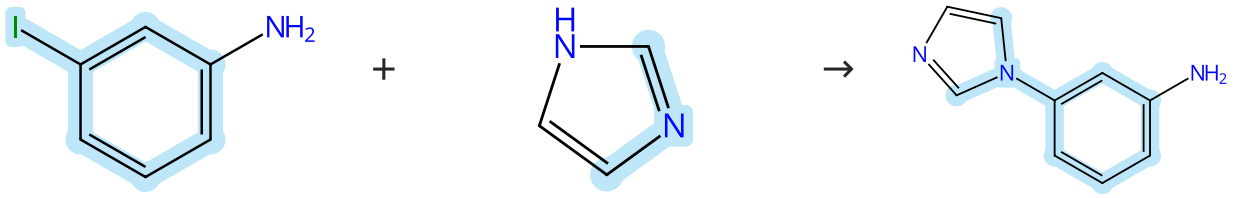
Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**Scheme 285** (1 Reaction) Steps: **1** Yield: **82%**



Suppliers (77) Suppliers (201) Suppliers (65)

31-614-CAS-40389256 Steps: **1** Yield: **82%**

1.1 **Reagents:** 1,10-Phenanthroline, Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** 1,4-Dioxane; 24 h, 110 °C; 110 °C → rt

1.2 **Solvents:** Ethyl acetate; rt

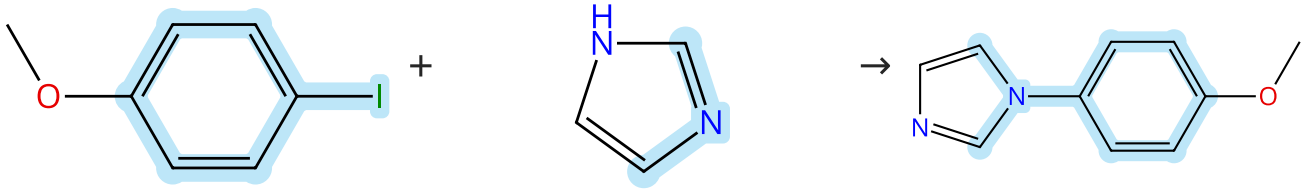
Experimental Protocols

**Tetrahydropyridine LIMK inhibitors: Structure activity studies and biological characterization**

By: Champire, Anthony; et al

European Journal of Medicinal Chemistry (2024), 271, 116391.

**Scheme 286** (1 Reaction) Steps: **1** Yield: **82%**



Suppliers (89) Suppliers (201) Suppliers (55)

31-614-CAS-35838765 Steps: **1** Yield: **82%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 6 h, 100 °C

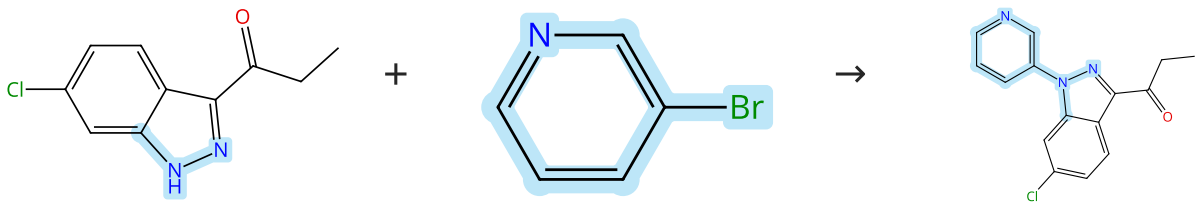
Experimental Protocols

**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 287** (1 Reaction) Steps: **1** Yield: **82%**



Suppliers (89)

31-614-CAS-40106804

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

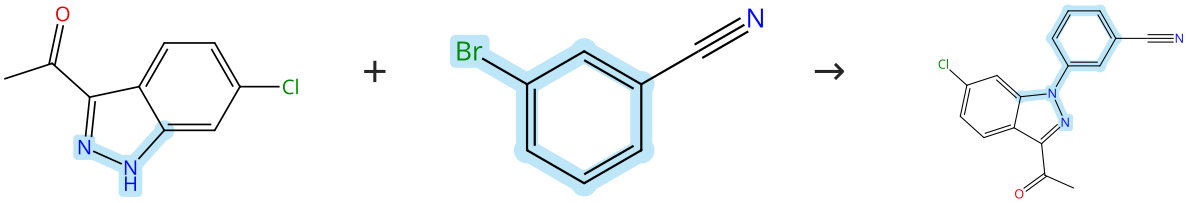
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 288** (1 Reaction)

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



Suppliers (5)

Suppliers (82)

31-614-CAS-40106794

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

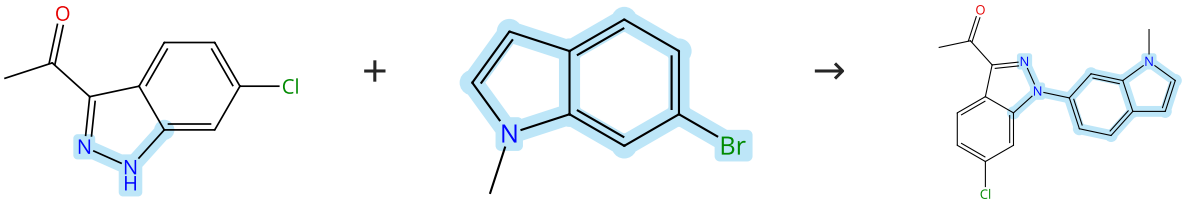
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 289** (1 Reaction)

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



Suppliers (5)

Suppliers (66)

31-614-CAS-40106811

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 2 h, 120 °C

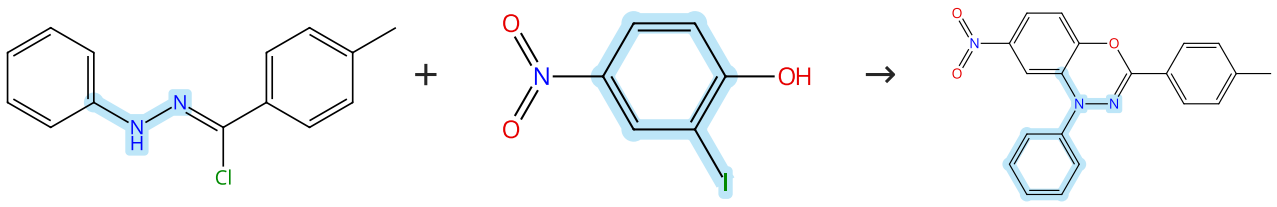
**Discovery of Potent and Selective PI3Kδ Inhibitors for the Treatment of Acute Myeloid Leukemia**

By: Tang, Yongmei; et al

Journal of Medicinal Chemistry (2024), 67(8), 6638-6657.

**Scheme 290** (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (7)

Suppliers (63)

31-614-CAS-42420849 Steps: **1** Yield: **81%**

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

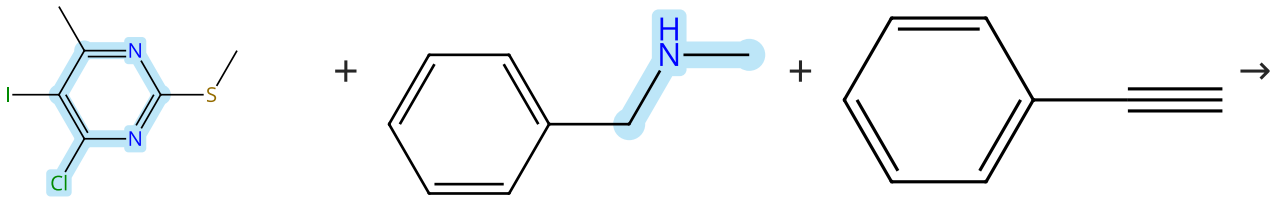
1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

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

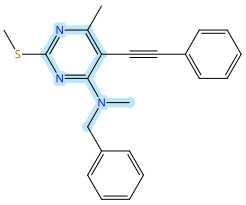
By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 291** (1 Reaction) Steps: **1** Yield: **81%**



Suppliers (34) Suppliers (81) Suppliers (66)



31-614-CAS-41518139 Steps: **1** Yield: **81%**

1.1 **Reagents:** Triethylamine
**Solvents:** Dimethylformamide; 80 °C

1.2 **Catalysts:** Cuprous iodide, Dichlorobis(triphenylphosphine) palladium; 4 h, 80 °C

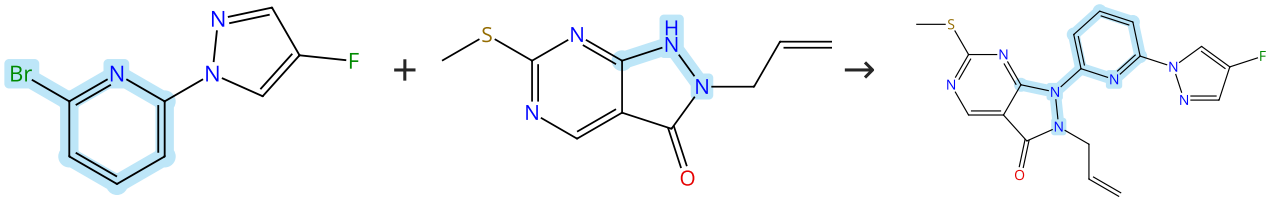
Experimental Protocols

**Synthesis of new 4,5-disubstituted-6-methyl-2-(methylthio) pyrimidines via C-C coupling reactions**

By: Cheldavi, Forough; et al

Journal of Sulfur Chemistry (2024), 45(5), 690-702.

**Scheme 292** (1 Reaction) Steps: **1** Yield: **81%**



Suppliers (60)

31-614-CAS-40870499 Steps: **1** Yield: **81%**

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

Experimental Protocols

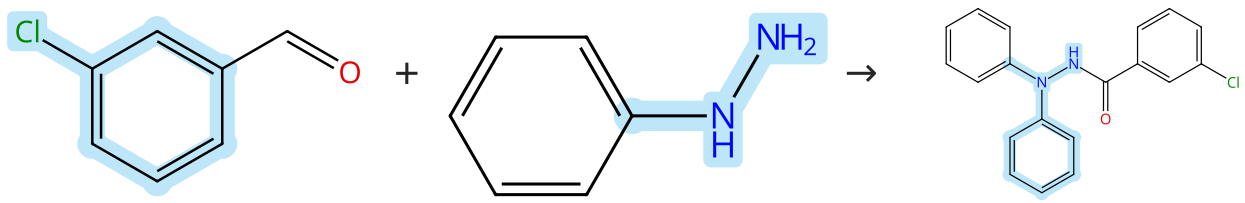
**Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy**

By: Wang, Yong; et al

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

**Scheme 293** (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (87)

Suppliers (63)

**31-614-CAS-39391293**

Steps: **1** Yield: **81%**

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

Experimental Protocols

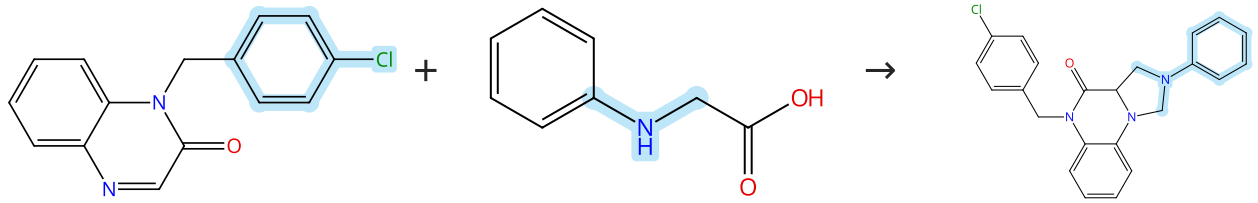
**An aerobic copper-catalyzed multi-component reaction strategy for N',N'-diaryl acylhydrazine synthesis: reactions and mechanism**

By: Deng, Lei; et al

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

**Scheme 294** (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (88)

**31-614-CAS-39663061**

Steps: **1** Yield: **81%**

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

Experimental Protocols

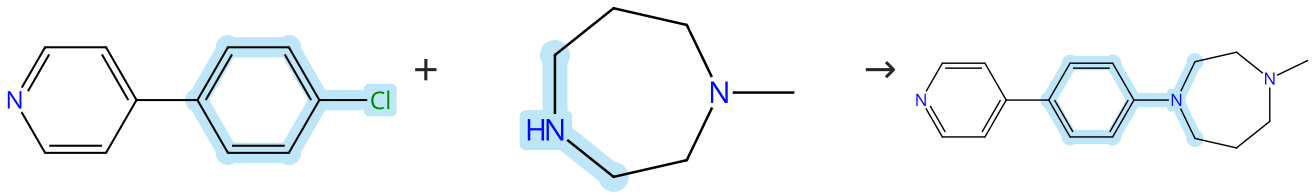
**Visible-light-promoted tandem decarboxylation coupling/cyclization of N-aryl glycines with quinoxalinones: easy access to tetrahydroimidazo[1,5-a]quinoxalin-4(5H)-ones**

By: Tang, Zhen; et al

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

**Scheme 295** (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (64)

Suppliers (70)

**31-614-CAS-41756941**

Steps: **1** Yield: **81%**

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

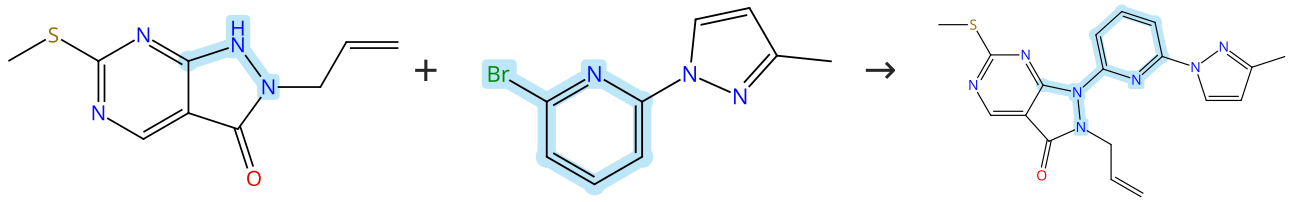
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 296** (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (60)

Suppliers (27)

**31-614-CAS-40870504**

Steps: **1** Yield: **81%**

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

Experimental Protocols

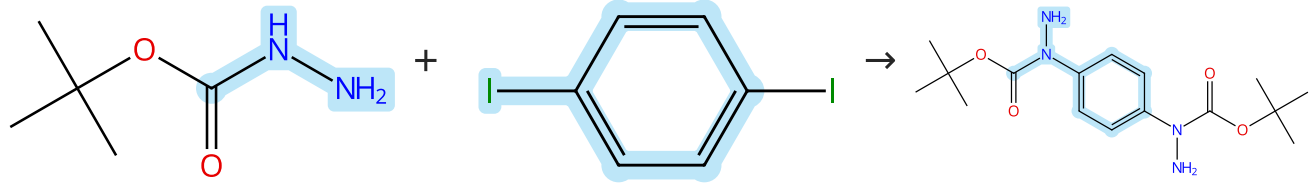
**Advanced Design, Synthesis, and Evaluation of Highly Selective Wee1 Inhibitors: Enhancing Pharmacokinetics and Antitumor Efficacy**

By: Wang, Yong; et al

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

**Scheme 297** (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (96)

Suppliers (103)

Supplier (1)

**31-614-CAS-41148462**

Steps: **1** Yield: **81%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide
**Solvents:** Dimethylformamide; 21 h, 80 °C

Experimental Protocols

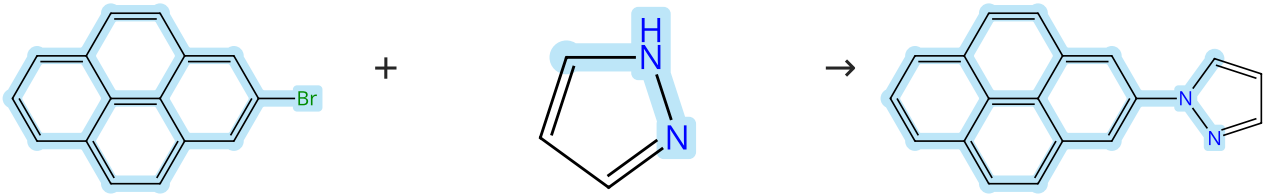
**Aryl Azocyclopropeniums: Minimalist, Visible-Light Photosw itches**

By: Fink, Moritz; et al

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

**Scheme 298** (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (41)

Suppliers (93)

**31-614-CAS-41137264**

Steps: **1** Yield: **81%**

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

Experimental Protocols

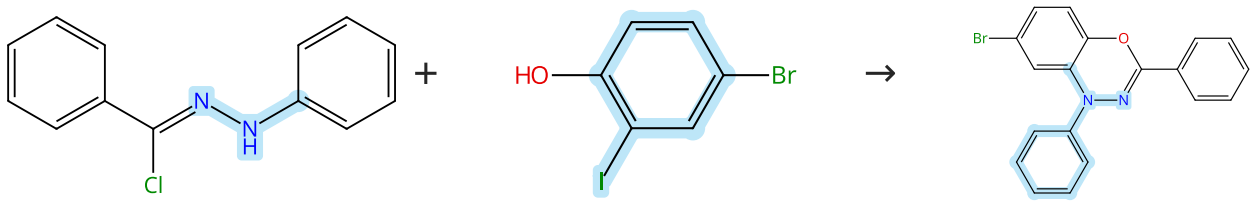
**Pyrene-pyrazole systems-Elucidating the impact of substi tution patterns in the group of Mono-, Di-, Tri- and tetrasub stituted derivatives on emission behaviour through experi mental and theoretical approaches**

By: Zych, Dawid; et al

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

**Scheme 299** (1 Reaction)

Steps: **1** Yield: **81%**




Suppliers (38)

Suppliers (75)

**31-614-CAS-42420859**

Steps: **1** Yield: **81%**

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

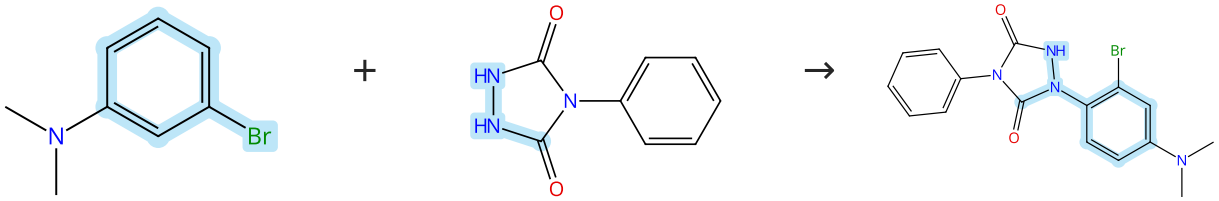
**A new route for the synthesis of substi tuted benzo [1,3,4] oxadiazine derivatives via copper-catalyzed N-arylation-cycliz ation of hydrazonoyl chlorides and 2-iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 300** (1 Reaction)

Steps: **1** Yield: **81%**




Suppliers (85)

Suppliers (81)

**31-614-CAS-44140346**

Steps: **1** Yield: **81%**

1.1 **Reagents:** Oxygen
**Catalysts:** NAD (complex with copper), Copper (complex with NAD)
**Solvents:** Water; 6 h, pH 7, 25 °C

Experimental Protocols

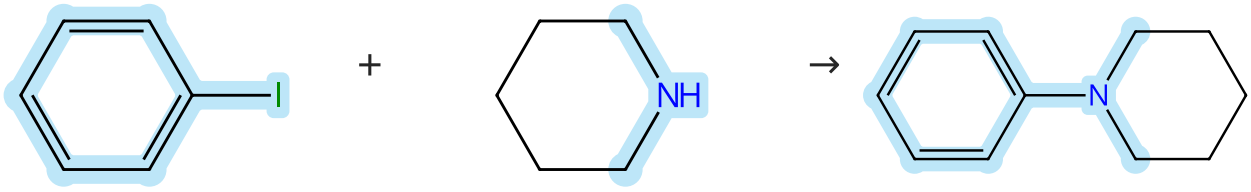
**Cu-NADH as laccase mimics for efficient aryl C-H amination**

By: Tang, Xuyong; et al

Inorganic Chemistry Communications (2024), 167, 112726.

**Scheme 301** (1 Reaction)

Steps: **1** Yield: **81%**




Suppliers (93)

Suppliers (50)

Suppliers (60)

**31-614-CAS-35838770**

Steps: **1** Yield: **81%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 2 h, 100 °C

Experimental Protocols

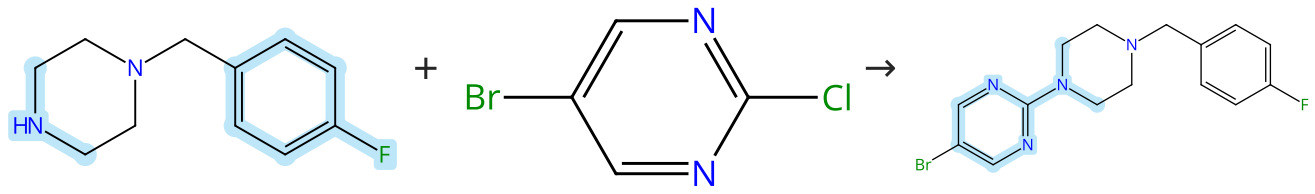
**Polyaniline-encapsulating $CuFe_2O_4/Cu_2O$ composite: a simple, effective and reusable heterogeneous catalyst for ligand-free N-arylation of amines and nitrogen heterocycles**

By: Ahrari, Vahide; et al

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

**Scheme 302** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (74)

Suppliers (105)

**31-614-CAS-40743591**

Steps: **1** Yield: **80%**

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphat ricyclo[3.3.1.1$^{3,7}$]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

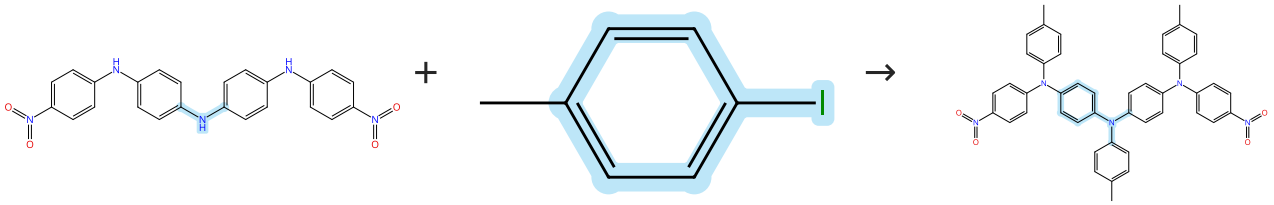
**Cu(II)/PTABS-Promoted, Chemoselective Amination of Halo Pyrimidines**

By: Phulwale, Vikram; et al

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

**Scheme 303** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (82)

**31-614-CAS-41527437**

Steps: **1** Yield: **80%**

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

Experimental Protocols

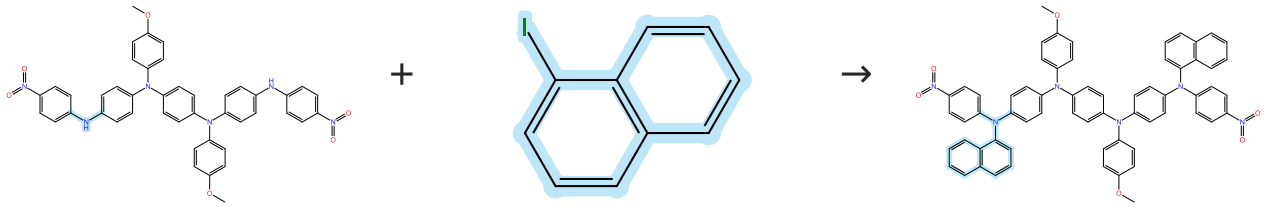
**Substituents and Resonance Effects on the Electroc hemical Stability of Polyelectrochromic Triarylamine-Based Polymers**

By: Chern, Yaw-Terng; et al

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

**Scheme 304** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (87)

**31-614-CAS-42041530**

Steps: **1** Yield: **80%**

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

Experimental Protocols

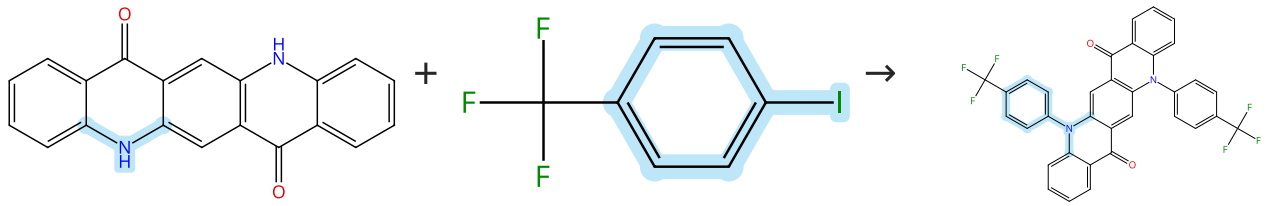
**Redox-Stable and Multicolor Electrochromic Polyamides with Four Triarylamine Cores in the Repeating Unit**

By: Chern, Yaw-Terng; et al

Polymers (Basel, Switzerland) (2024), 16(12), 1644.

**Scheme 305** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (71)

Suppliers (85)

**31-614-CAS-45494121**

Steps: **1** Yield: **80%**

1.1 **Reagents:** Potassium carbonate, 2,2,6,6-Tetramethyl-3,5-heptanedione
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; rt → 146 °C; 36 h, reflux

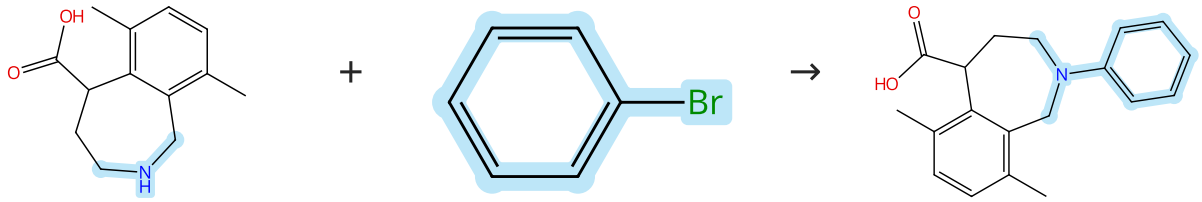
**Synthesis, structure and photophysical fluorescence mechanism of quinacridone molecules**

By: Wang, Suhao; et al

Huaxue Xuebao (2024), 82(9), 925-931.

**Scheme 306** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (71)

**31-614-CAS-42120041**

Steps: **1** Yield: **80%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Pyridine, Cuprous iodide
**Solvents:** Dimethylformamide; 10 h, 110 - 120 °C

Experimental Protocols

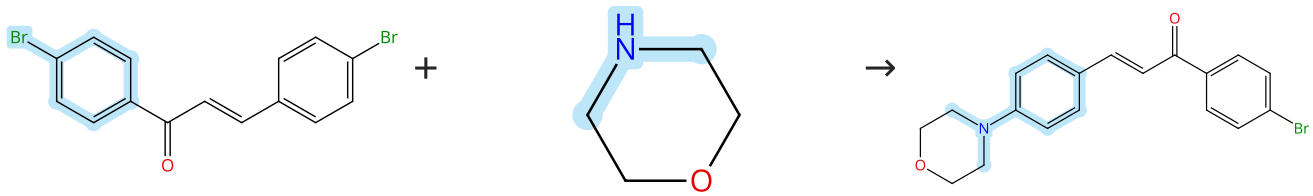
**Friedel-Crafts Chemistry. Part 63. Syntheses of some condensed N-heterocyclic systems via combined Darzens and Friedel-Crafts approaches**

By: Abd El-Aal, Hassan A. K.; et al

ARKIVOC (Gainesville, FL, United States) (2024), (8), 202412254.

**Scheme 307** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (12)

Suppliers (83)

Supplier (1)

**31-614-CAS-41678028**

Steps: **1** Yield: **80%**

1.1 **Catalysts:** Cupric acetate, Iron, nonacarbonyldi-μ3-selenoxotri-, (2*Fe*-*Fe*)
**Solvents:** Toluene; 4 h, 100 °C

Experimental Protocols

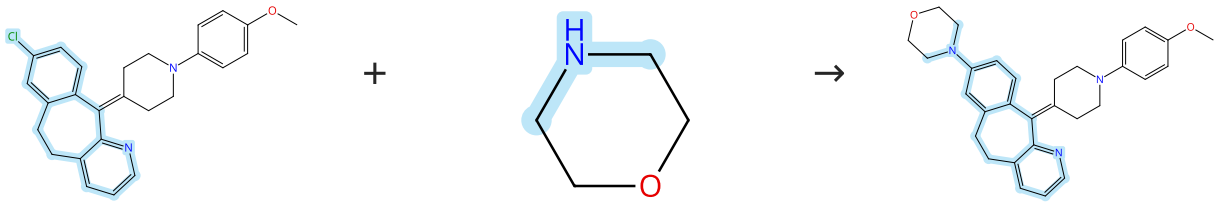
**Iron-Catalyzed Chemoselective Transfer Hydrogenation of α, β-Unsaturated Ketones Using $H_2O$ as a Surrogate of Hydrogen**

By: Manisha, Manisha; et al

Journal of Organic Chemistry (2024), 89(17), 11983-11993.

**Scheme 308** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (83)

**31-614-CAS-41756980**

Steps: **1** Yield: **80%**

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

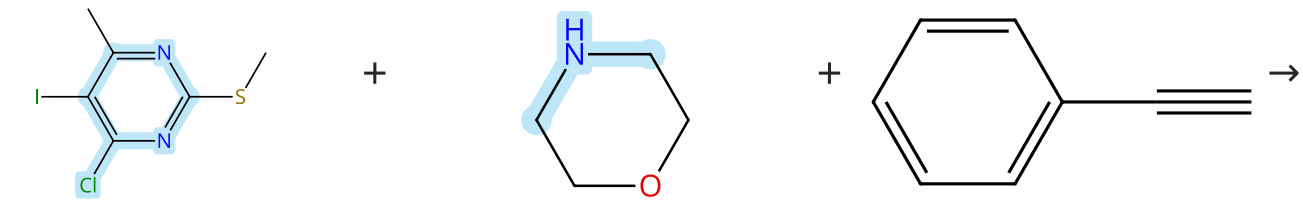
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 309** (1 Reaction)

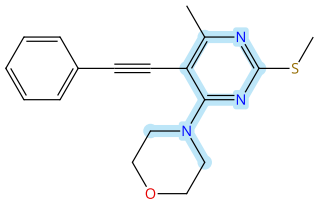
Steps: **1** Yield: **80%**



Suppliers (34)

Suppliers (83)

Suppliers (66)



**31-614-CAS-41518143**

Steps: **1** Yield: **80%**

1.1 **Reagents:** Triethylamine
**Solvents:** Dimethylformamide; 80 °C

1.2 **Catalysts:** Cuprous iodide, Dichlorobis(triphenylphosphine) palladium; 4 h, 80 °C

Experimental Protocols

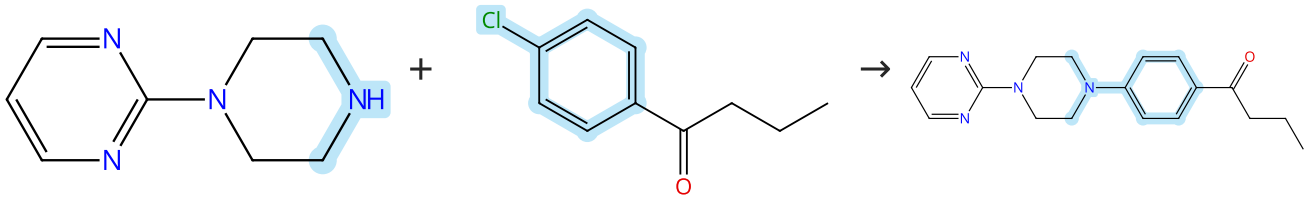
**Synthesis of new 4,5-disubstituted-6-methyl-2-(methylthio) pyrimidines via C-C coupling reactions**

By: Cheldavi, Forough; et al

Journal of Sulfur Chemistry (2024), 45(5), 690-702.

**Scheme 310** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (101)

Suppliers (64)

31-614-CAS-41757067 Steps: **1** Yield: **80%**

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

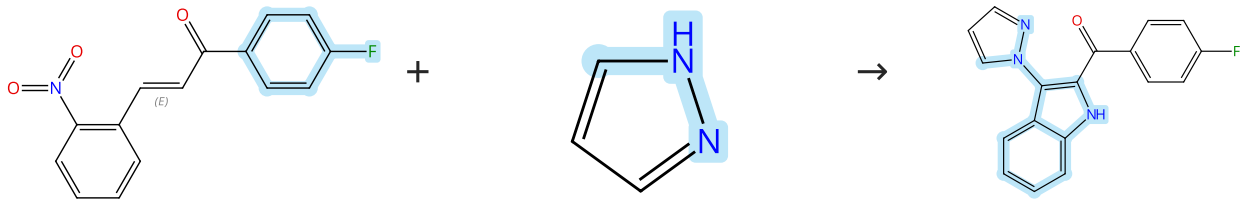
Experimental Protocols

**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 311** (1 Reaction) Steps: **1** Yield: **80%**



Double bond geometry shown

Suppliers (9) Suppliers (93)

31-614-CAS-42761447 Steps: **1** Yield: **80%**

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

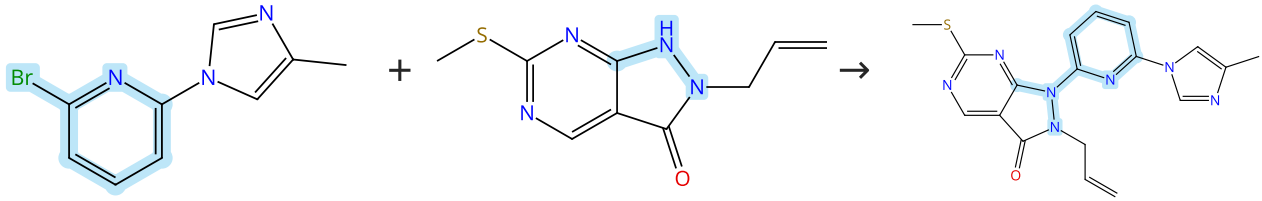
Experimental Protocols

**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 312** (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (18) Suppliers (60)

31-614-CAS-40870505 Steps: **1** Yield: **80%**

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

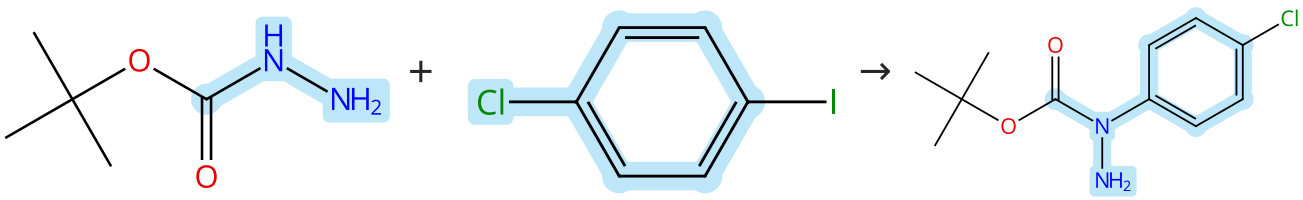
Experimental Protocols

**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 313** (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (96) Suppliers (83) Suppliers (3)

31-614-CAS-41148465 Steps: **1** Yield: **80%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide
**Solvents:** Dimethylformamide; 21 h, 80 °C

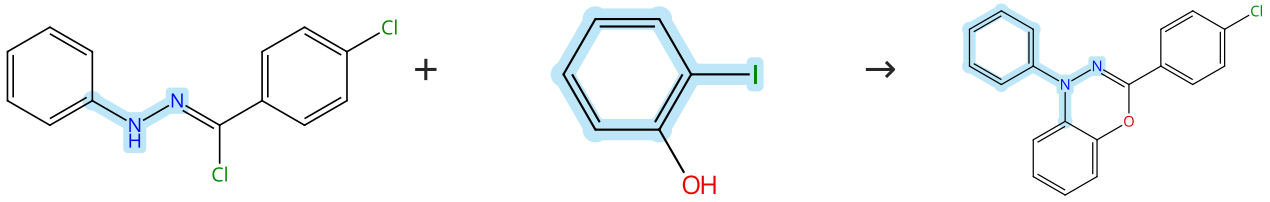
Experimental Protocols

**Aryl Azocyclopropeniums: Minimalist, Visible-Light Photosw itches**

By: Fink, Moritz; et al

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

**Scheme 314** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (4) Suppliers (84)

31-614-CAS-42420847 Steps: **1** Yield: **80%**

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

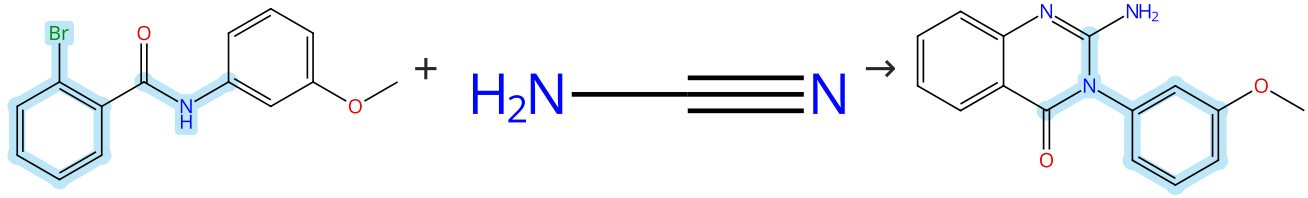
1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

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

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 315** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (14) Suppliers (60)

31-614-CAS-42982602 Steps: **1** Yield: **80%**

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

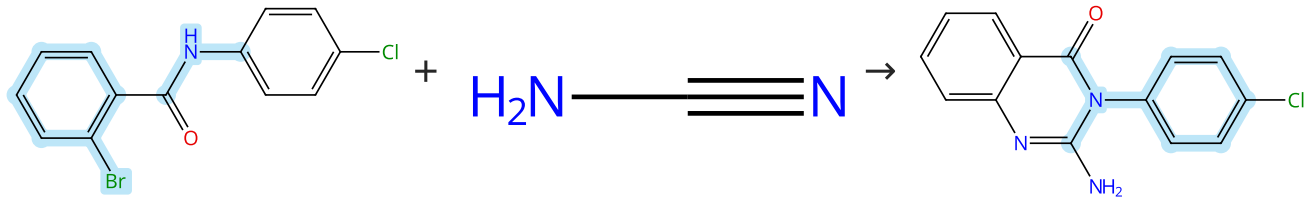
Experimental Protocols

**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 316** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (41) Suppliers (60)

31-614-CAS-42982625 Steps: **1** Yield: **80%**

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

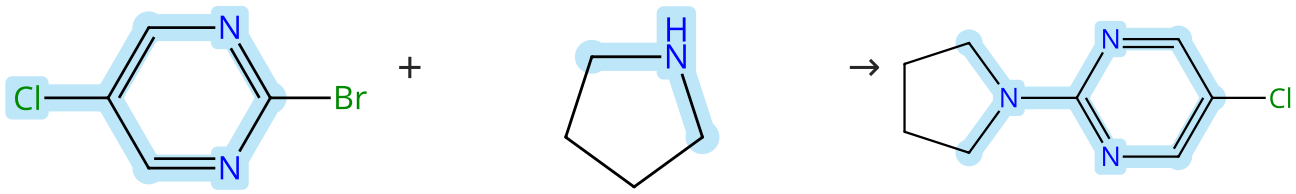
Experimental Protocols

**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 317** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (67) Suppliers (74) Suppliers (9)

31-614-CAS-40743590 Steps: **1** Yield: **80%**

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatricyclo[3.3.1.1$^{3,7}$]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

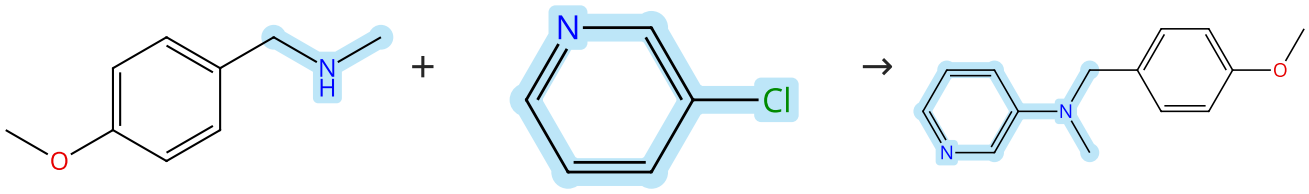
Experimental Protocols

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

By: Phulwale, Vikram; et al

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

**Scheme 318** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (92) Suppliers (79)

31-614-CAS-41757039 Steps: **1** Yield: **80%**

1.1 **Reagents:** Sodium methoxide
**Catalysts:** Copper bromide (CuBr), 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

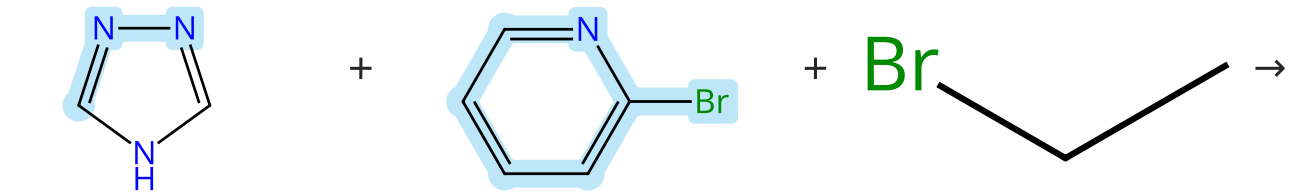
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 319** (1 Reaction)

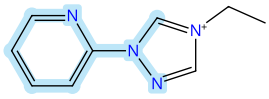
Steps: **1** Yield: **80%**



Suppliers (100)

Suppliers (86)

Suppliers (49)



- $Br^-$

**31-614-CAS-43496297**

Steps: **1** Yield: **80%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper oxide (CuO)
**Solvents:** Dimethyl sulfoxide; 24 h, 150 °C

1.2 **Solvents:** Acetonitrile; 12 h, 90 °C

Experimental Protocols

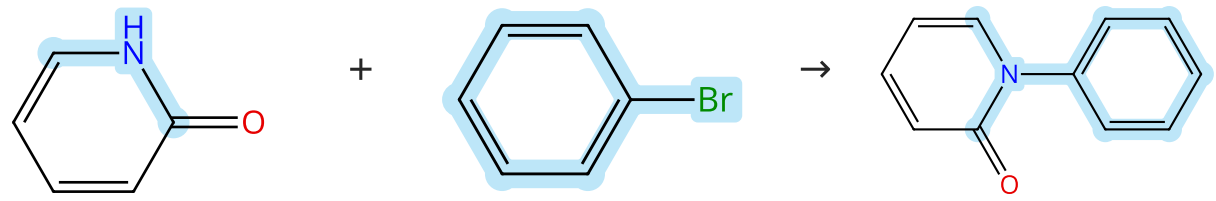
**Cobalt(III) Complexes of Pyridine-Functionalized Chelating NHC Ligands: Effective Catalysts for the Olefination of Alcohols Using Sulfones**

By: Siddique, Misba; et al

Organometallics (2024), 43(13), 1482-1489.

**Scheme 320** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (128)

Suppliers (71)

Suppliers (33)

**31-614-CAS-43193382**

Steps: **1** Yield: **80%**

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

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

Experimental Protocols

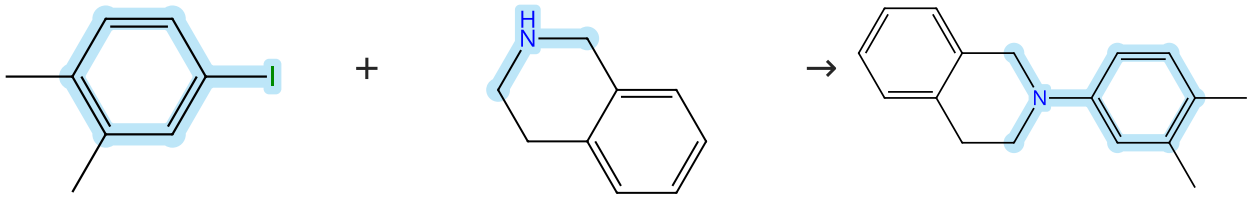
**Direct Synthesis of Benzhydryl-Functionalized 3,4-Dihydropyridin-2-ones from 2-Pyridones and Their Use in the Formation of Bridged δ-Lactams**

By: Myk, Zofia M.; et al

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

**Scheme 321** (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (67)

Suppliers (92)

Suppliers (3)

31-614-CAS-40034153 Steps: **1** Yield: **80%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** Isopropanol, Ethylene glycol; rt; 24 h, 85 - 90 °C

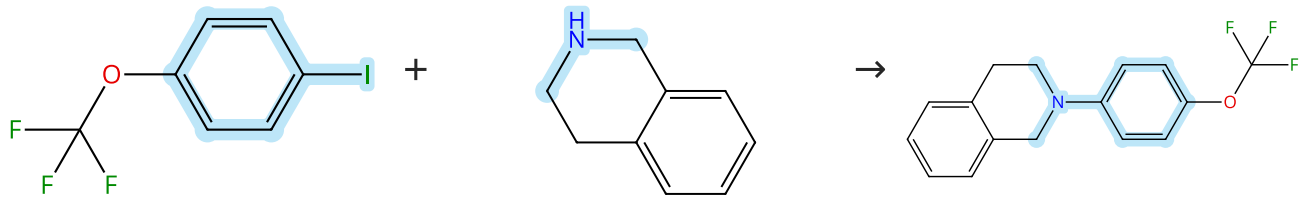
Experimental Protocols

**Preparation of an OHCP nanofiber photocatalyst for cross-dehydrogenation coupling reactions**

By: Zhao, Xingshun; et al

Catalysis Science & Technology (2024), 14(10), 2848-2857.

**Scheme 322** (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (76) Suppliers (92) Suppliers (2)

31-614-CAS-40034152 Steps: **1** Yield: **80%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** Isopropanol, Ethylene glycol; rt; 24 h, 85 - 90 °C

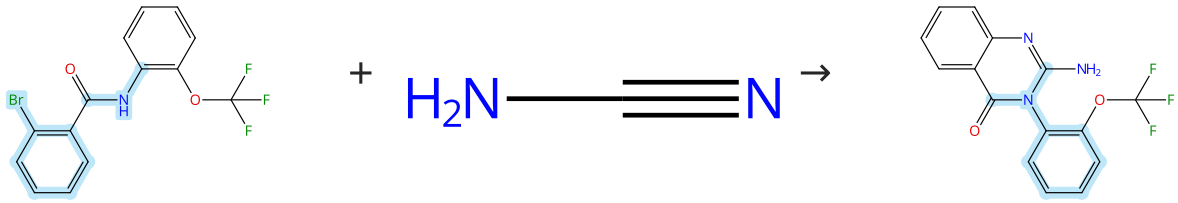
Experimental Protocols

**Preparation of an OHCP nanofiber photocatalyst for cross-dehydrogenation coupling reactions**

By: Zhao, Xingshun; et al

Catalysis Science & Technology (2024), 14(10), 2848-2857.

**Scheme 323** (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (3) Suppliers (60)

31-614-CAS-42982596 Steps: **1** Yield: **80%**

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

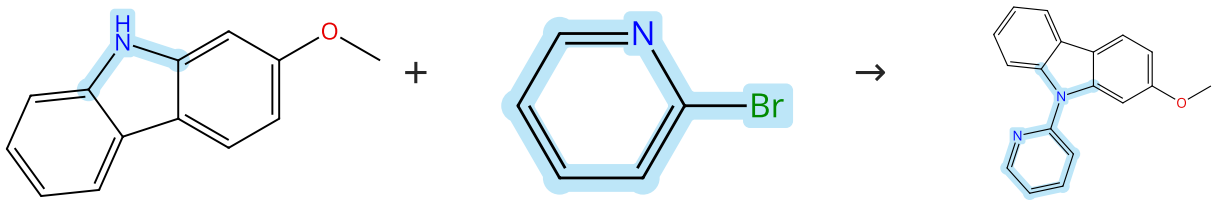
Experimental Protocols

**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 324** (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (69) Suppliers (86) Suppliers (2)

31-614-CAS-41277577 Steps: **1** Yield: **80%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

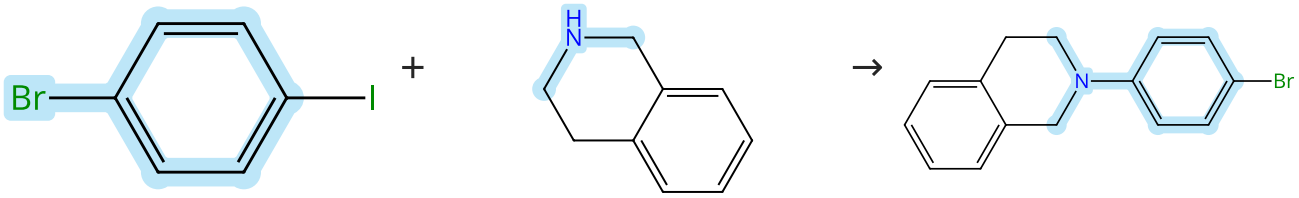
Experimental Protocols

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

By: Dharaniyedath, Jyothis; et al

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

**Scheme 325** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (94) Suppliers (92) Suppliers (22)

31-614-CAS-40034155 Steps: **1** Yield: **80%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** Isopropanol, Ethylene glycol; rt; 24 h, 85 - 90 °C

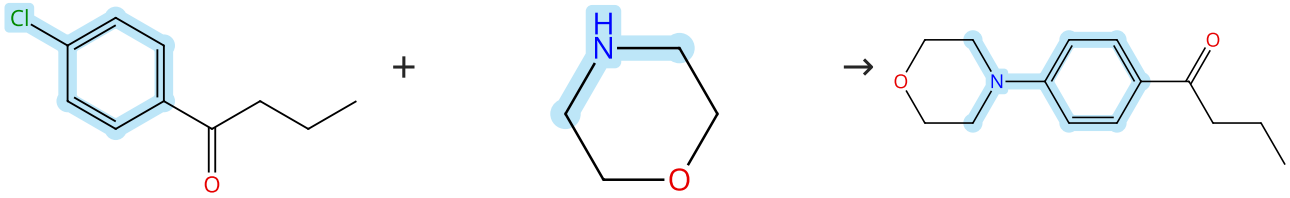
Experimental Protocols

**Preparation of an OHCP nanofiber photocatalyst for cross-dehydrogenation coupling reactions**

By: Zhao, Xingshun; et al

Catalysis Science & Technology (2024), 14(10), 2848-2857.

**Scheme 326** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (64) Suppliers (83) Suppliers (12)

31-614-CAS-41757018 Steps: **1** Yield: **80%**

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

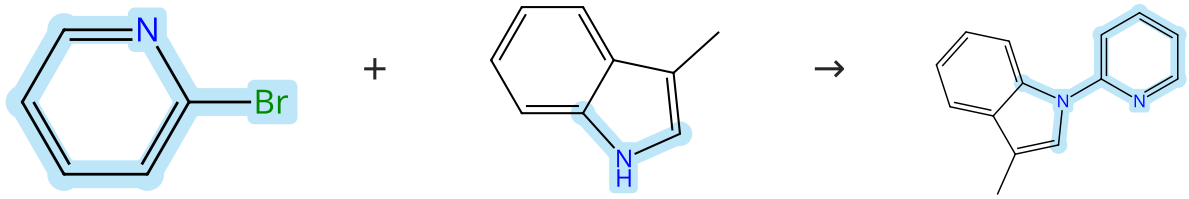
Experimental Protocols

**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 327** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (86) Suppliers (105) Suppliers (9)

31-614-CAS-41544741 Steps: **1** Yield: **80%**

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

1.2 **Reagents:** Ammonium chloride
**Solvents:** Water

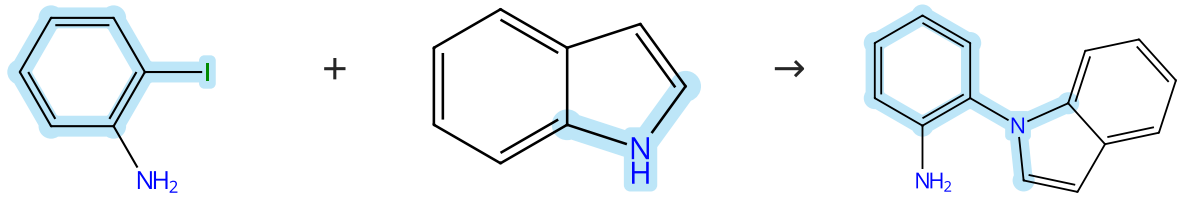
Experimental Protocols

**Regioselective C (2) methylthiolation and $d_3$-methylthiolation of indoles based on dimethyl sulfoxide (DMSO-$d_6$) reagents**

By: Zhang, Juan; et al

Youji Huaxue (2024), 44(5), 1576-1583.

**Scheme 328** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (97) Suppliers (109) Suppliers (30)

31-614-CAS-41164535 Steps: **1** Yield: **80%**

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

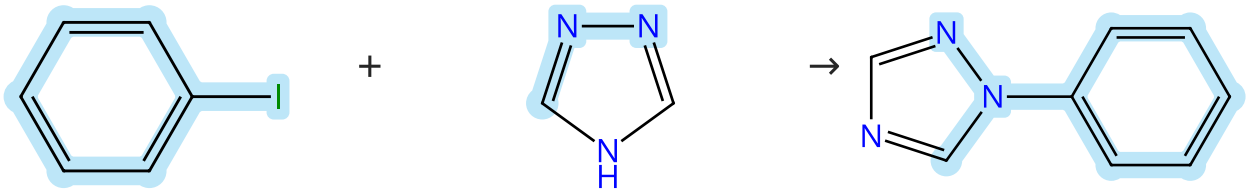
Experimental Protocols

**$InCl_3$-Catalyzed One-Pot Synthesis of Pyrrolo/Indolo- and Benzooxazepino-Fused Quinoxalines**

By: Aksakal, Nuray Esra; et al

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

**Scheme 329** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (93) Suppliers (100) Suppliers (56)

31-614-CAS-40887387 Steps: **1** Yield: **80%**

1.1 **Catalysts:** 1*H*-Benzotriazole, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 5 min, rt

1.2 **Reagents:** Potassium *tert*-butoxide; 24 h, 110 °C

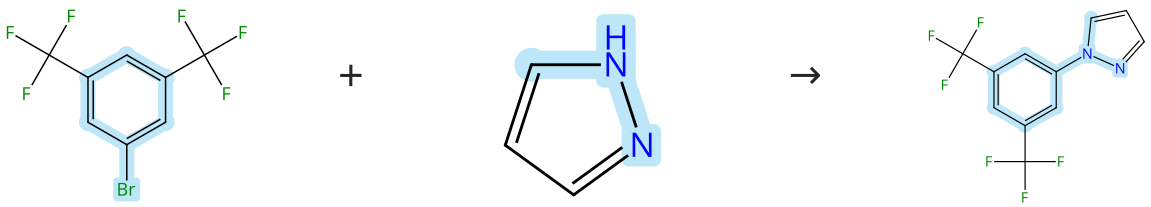
Experimental Protocols

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

By: Rana, Samim Sohel; et al

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

**Scheme 330** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (79) Suppliers (93)

31-614-CAS-42413846 Steps: **1** Yield: **80%**

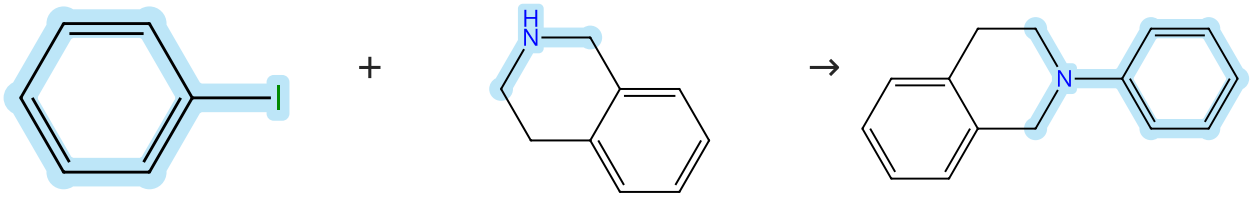
1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Copper oxide ($Cu_2O$), $N^1$,$N^2$-Bis(2-furanylmethyl) ethanediamide
**Solvents:** Dimethyl sulfoxide; 10 min, rt; 24 h, 120 °C

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

By: Li, Zhibin; et al

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

**Scheme 331** (2 Reactions) Steps: **1** Yield: **78-80%**




Suppliers (93) Suppliers (92) Suppliers (51)

31-614-CAS-40034150 Steps: **1** Yield: **80%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** Isopropanol, Ethylene glycol; rt; 24 h, 85 - 90 °C

Experimental Protocols

**Preparation of an OHCP nanofiber photocatalyst for cross-dehydrogenation coupling reactions**

By: Zhao, Xingshun; et al

Catalysis Science & Technology (2024), 14(10), 2848-2857.

31-614-CAS-40305464 Steps: **1** Yield: **78%**

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

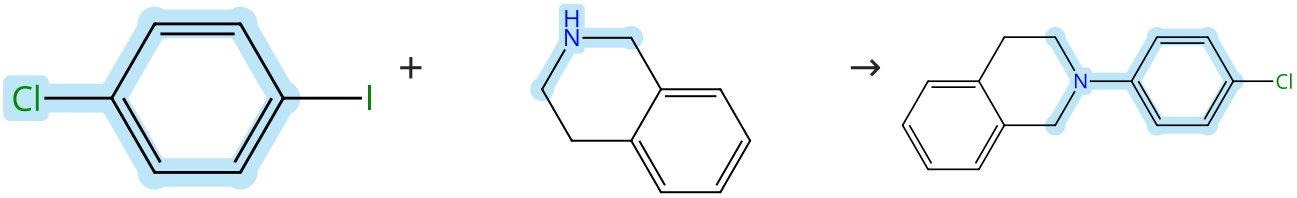
Experimental Protocols

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

By: Marchan-Garcia, Joaquin; et al

Bioorganic Chemistry (2024), 143, 107008.

**Scheme 332** (1 Reaction) Steps: **1** Yield: **80%**




Suppliers (83) Suppliers (92) Suppliers (29)

31-614-CAS-40034154 Steps: **1** Yield: **80%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** Isopropanol, Ethylene glycol; rt; 24 h, 85 - 90 °C

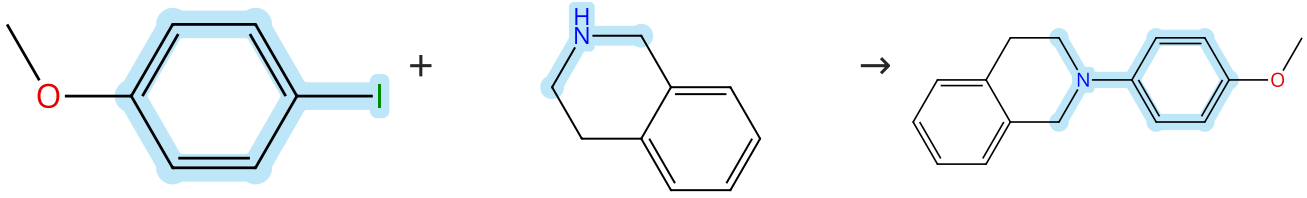
Experimental Protocols

**Preparation of an OHCP nanofiber photocatalyst for cross-dehydrogenation coupling reactions**

By: Zhao, Xingshun; et al

Catalysis Science & Technology (2024), 14(10), 2848-2857.

**Scheme 333** (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (89)

Suppliers (92)

Suppliers (32)

31-614-CAS-40034158 Steps: **1** Yield: **80%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Cuprous iodide
**Solvents:** Isopropanol, Ethylene glycol; rt; 24 h, 85 - 90 °C

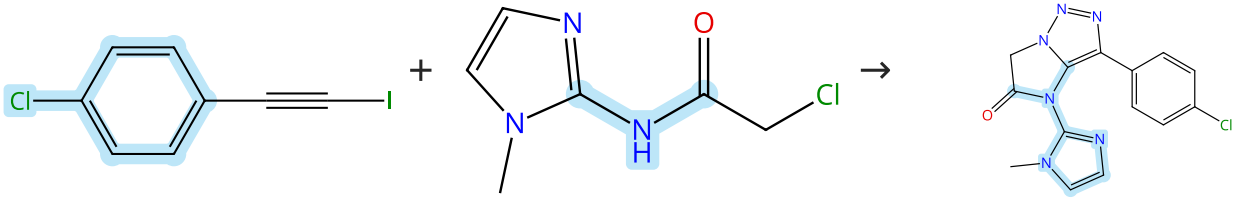
Experimental Protocols

**Preparation of an OHCP nanofiber photocatalyst for cross-dehydrogenation coupling reactions**

By: Zhao, Xingshun; et al

Catalysis Science & Technology (2024), 14(10), 2848-2857.

**Scheme 334** (1 Reaction) Steps: **1** Yield: **79%**



Suppliers (28)

Suppliers (5)

31-614-CAS-40408095 Steps: **1** Yield: **79%**

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

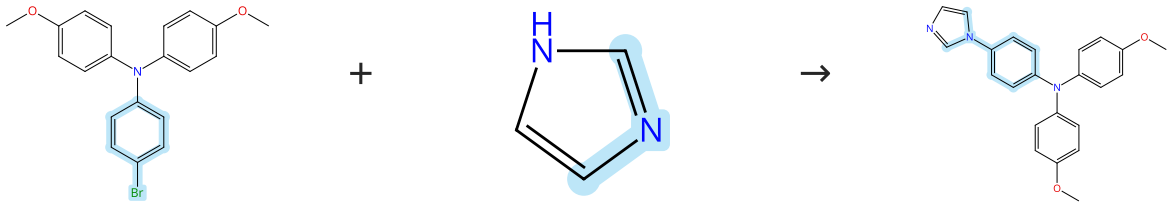
Experimental Protocols

**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 335** (1 Reaction) Steps: **1** Yield: **79%**



Suppliers (61)

Suppliers (201)

31-614-CAS-39175695 Steps: **1** Yield: **79%**

1.1 **Reagents:** 1,10-Phenanthroline, Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 72 h, 100 °C

Experimental Protocols

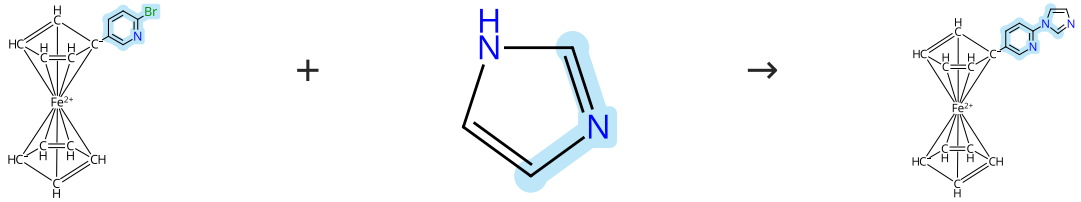
**Charged Hole-Transporting Materials Based on Imidazolium for Defect Passivation in Inverted Perovskite Solar Cells**

By: Tingare, Yogesh S.; et al

Solar RRL (2024), 8(3), 2300817.

**Scheme 336** (1 Reaction)

Steps: **1** Yield: **79%**



Suppliers (201)

**31-614-CAS-38712813**

Steps: **1** Yield: **79%**

1.1 **Reagents:** Potassium *tert*-butoxide
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 24 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water

Experimental Protocols

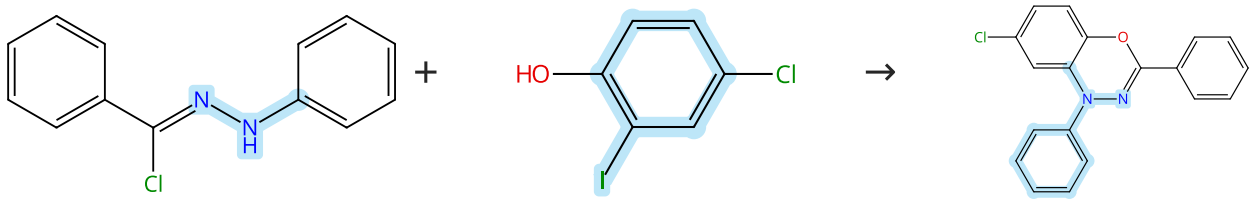
**A redox switchable ferrocene decorated n-heterocyclic carbene (NHC) palladium catalyst for cross coupling of arylbo ronic acid and acetic anhydride in phosphine, base and additive free conditions**

By: Bora, Debashree; et al

New Journal of Chemistry (2024), 48(2), 615-620.

**Scheme 337** (1 Reaction)

Steps: **1** Yield: **79%**



Suppliers (38)

Suppliers (78)

**31-614-CAS-42420850**

Steps: **1** Yield: **79%**

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

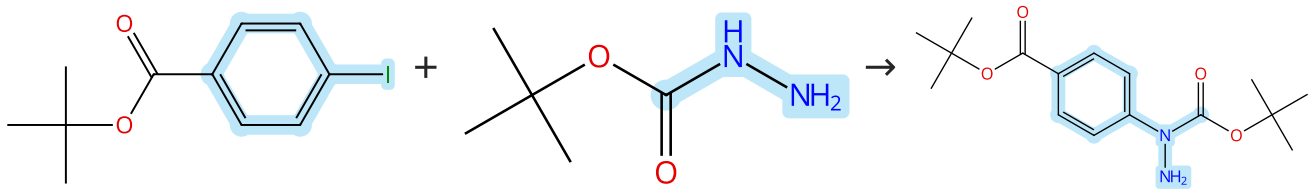
**A new route for the synthesis of substi tuted benzo [1,3,4] oxadiazine derivatives via copper-catalyzed N-arylation-cycliz ation of hydrazonoyl chlorides and 2-iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 338** (1 Reaction)

Steps: **1** Yield: **79%**



Suppliers (64)

Suppliers (96)

**31-614-CAS-41148464**

Steps: **1** Yield: **79%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** 1,10-Phenanthroline, Cuprous iodide
**Solvents:** Dimethylformamide; 21 h, 80 °C

Experimental Protocols

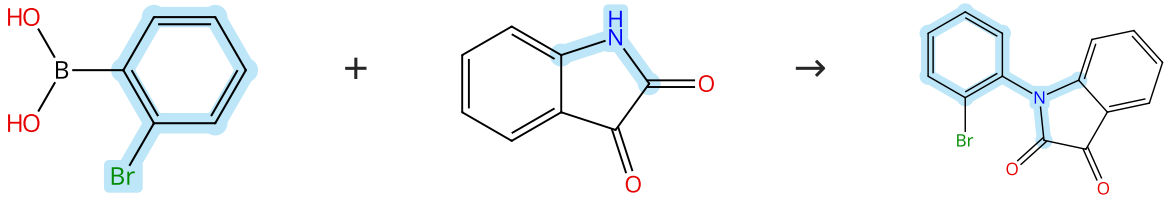
**Aryl Azocyclopropeniums: Minimalist, Visible-Light Photosw itches**

By: Fink, Moritz; et al

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

**Scheme 339** (1 Reaction)

Steps: **1** Yield: **79%**



Suppliers (100)

Suppliers (114)

**31-614-CAS-39585616**

Steps: **1** Yield: **79%**

1.1 **Reagents:** Trifluoroacetic acid, Triethylamine
**Catalysts:** Cupric acetate, Sodium bis(2-ethylhexyl) sulfosuccinate
**Solvents:** Water; 4 h, rt

Experimental Protocols

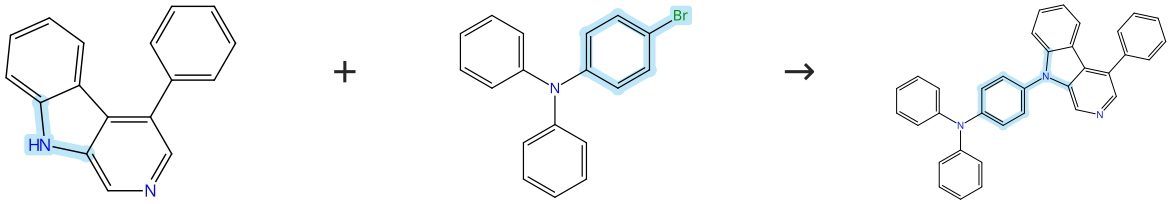
**Cu(II)-catalyzed 'in-water' N-arylation of electron-deficient NH-heterocycles**

By: Sunny, Steeva; et al

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

**Scheme 340** (1 Reaction)

Steps: **1** Yield: **79%**



Suppliers (3)

Suppliers (85)

**31-614-CAS-39264821**

Steps: **1** Yield: **79%**

1.1 **Reagents:** L-Proline, Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 24 h, 140 °C

Experimental Protocols

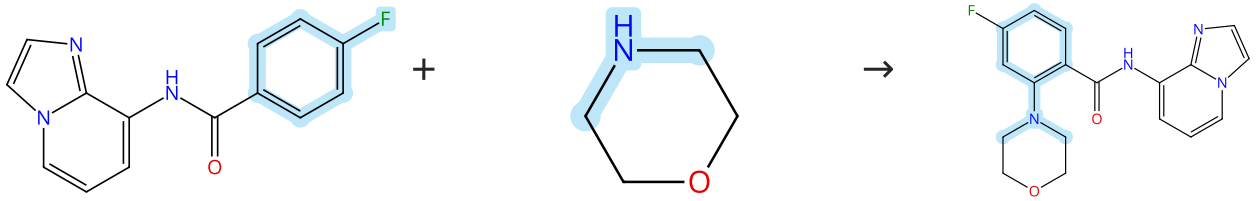
**TMSOTf-Promoted Cyclization of Indole-2-methyl-α-aminoketones: Access to 4-Aryl-Substituted β-Carbolines**

By: Yang, Xin-Yu; et al

Organic Letters (2024), 26(5), 1105-1109.

**Scheme 341** (1 Reaction)

Steps: **1** Yield: **79%**



Supplier (1)

Suppliers (83)

**31-614-CAS-41354753**

Steps: **1** Yield: **79%**

1.1 **Catalysts:** Cupric acetate
**Solvents:** Pyridine; 5 h, 100 °C

Experimental Protocols

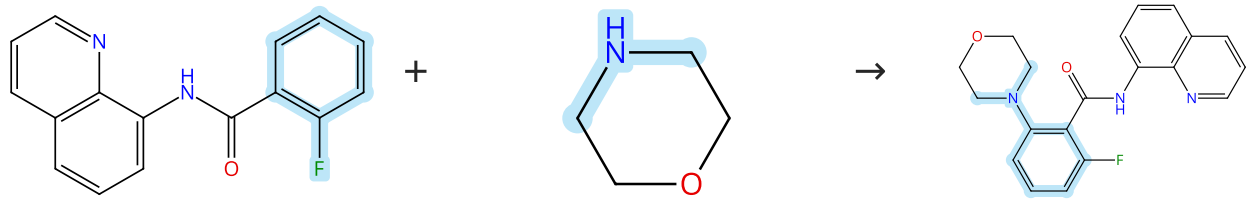
**Copper(II)-catalyzed, site-selective C(sp)$^2$-H amination using 8-aminoimidazo[1,2-a]pyridine (8-AIP) as a directing group**

By: Hajra, Arun Kumar; et al

Organic & Biomolecular Chemistry (2024), 22(32), 6617-6630.

**Scheme 342** (1 Reaction)

Steps: **1** Yield: **79%**



Suppliers (15)

Suppliers (83)

**31-614-CAS-41880649**

Steps: **1** Yield: **79%**

1.1 **Reagents:** Propanoic acid, 2,2-dimethyl-, sodium salt (1:1), Oxygen
**Catalysts:** Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride
**Solvents:** Dimethyl sulfoxide; 24 h, rt

Experimental Protocols

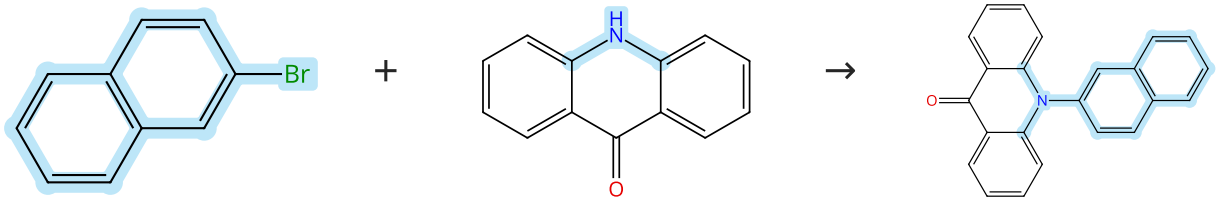
**Dual Copper Photoredox C-H Alkynylation with Arylacetylenes**

By: Nair, Akshay M.; et al

Organic Letters (2024), 26(37), 7822-7827.

**Scheme 343** (1 Reaction)

Steps: **1** Yield: **79%**



Suppliers (88)

Suppliers (103)

**31-614-CAS-39473889**

Steps: **1** Yield: **79%**

1.1 **Reagents:** Potassium carbonate, 2,2,6,6-Tetramethyl-3,5-heptanedione
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 24 h, 150 °C

Experimental Protocols

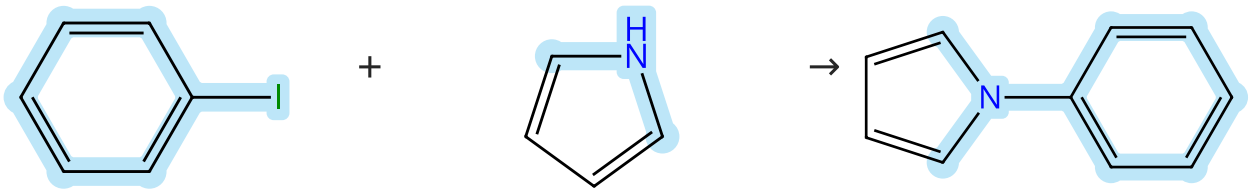
**Enhancing the photocatalytic upcycling of polystyrene to benzoic acid: a combined computational-experimental approach for acridinium catalyst design**

By: Ong, Albert; et al

Chemical Science (2024), 15(3), 1061-1067.

**Scheme 344** (1 Reaction)

Steps: **1** Yield: **79%**



Suppliers (93)

Suppliers (73)

Suppliers (71)

**31-614-CAS-35838775**

Steps: **1** Yield: **79%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 4 h, 100 °C

Experimental Protocols

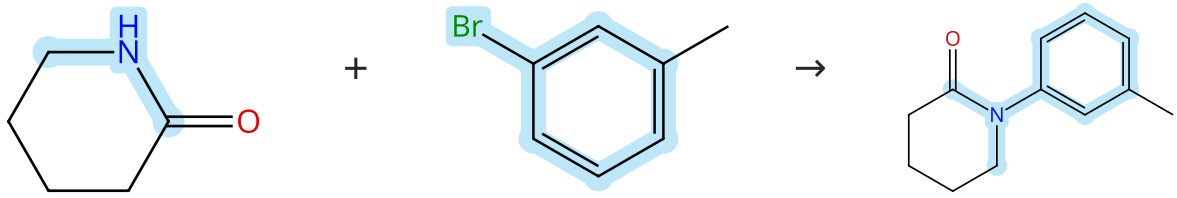
**Polyaniline-encapsulating $CuFe_2O_4/Cu_2O$ composite: a simple, effective and reusable heterogeneous catalyst for ligand-free N-arylation of amines and nitrogen heterocycles**

By: Ahrari, Vahide; et al

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

**Scheme 345** (1 Reaction)

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



Suppliers (88) | Suppliers (57) | Suppliers (12)

**31-614-CAS-41277507**

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

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

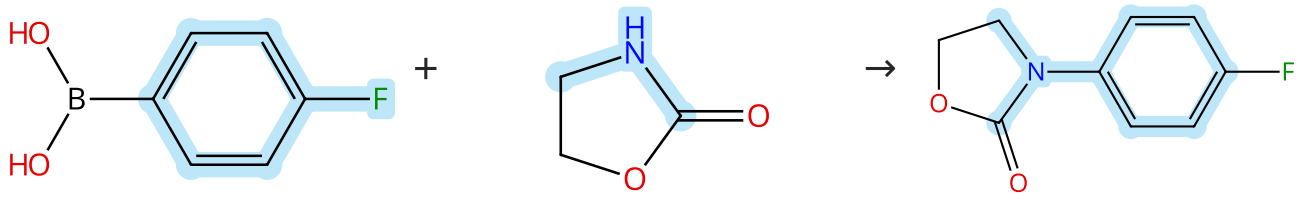
**Kanamycin-Cu(II) Complex Catalyzed Ullmann Amine Synthesis at Room Temperature: A Tool for Mechanistic Insights into Methylene Blue Degradation**

By: Basheer, Huma; et al

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

**Scheme 346** (1 Reaction)

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



Suppliers (104) | Suppliers (85) | Suppliers (7)

**31-614-CAS-39585648**

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

1.1 **Reagents:** Trifluoroacetic acid, Triethylamine
**Catalysts:** Cupric acetate, Sodium bis(2-ethylhexyl) sulfosuccinate, Polyoxyethylene sorbitan monooleate
**Solvents:** Water; 12 h, rt

Experimental Protocols

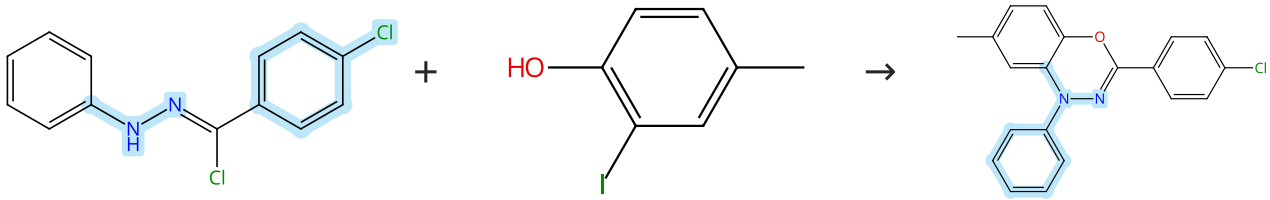
**Cu(II)-catalyzed 'in-water' N-arylation of electron-deficient NH-heterocycles**

By: Sunny, Steeva; et al

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

**Scheme 347** (1 Reaction)

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



Suppliers (4) | Suppliers (64)

**31-614-CAS-42420854**

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

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

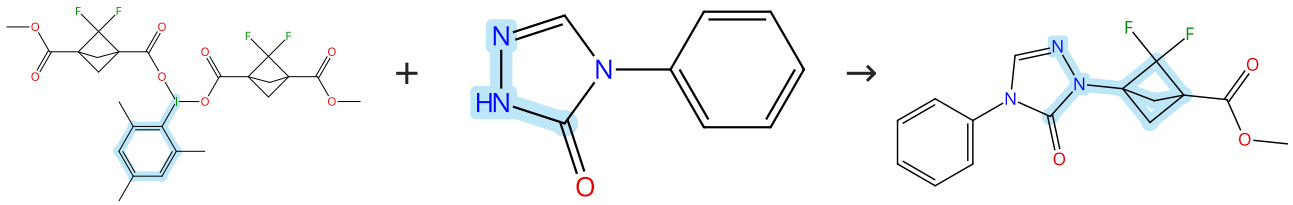
**A new route for the synthesis of substituted benzo [1,3,4] oxadiazine derivatives via copper-catalyzed N-arylation-cyclization of hydrazonoyl chlorides and 2-iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 348** (1 Reaction)

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



Suppliers (53)

**31-614-CAS-39519408**

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

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

Experimental Protocols

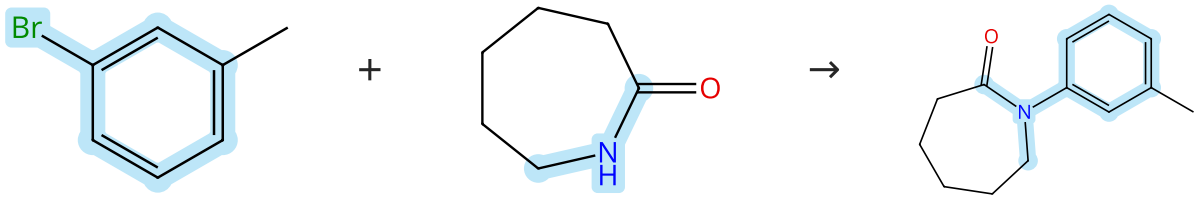
**Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-$F_2$) Building Blocks**

By: Ma, Xiaoshen; et al

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

**Scheme 349** (1 Reaction)

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



Suppliers (57)

Suppliers (108)

**31-614-CAS-41277512**

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

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

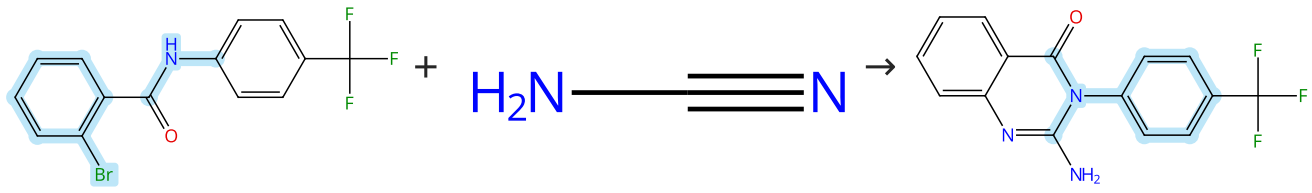
**Kanamycin-Cu(II) Complex Catalyzed Ullmann Amine Synthesis at Room Temperature: A Tool for Mechanistic Insights into Methylene Blue Degradation**

By: Basheer, Huma; et al

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

**Scheme 350** (1 Reaction)

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



Suppliers (4)

Suppliers (60)

**31-614-CAS-42982616**

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

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

Experimental Protocols

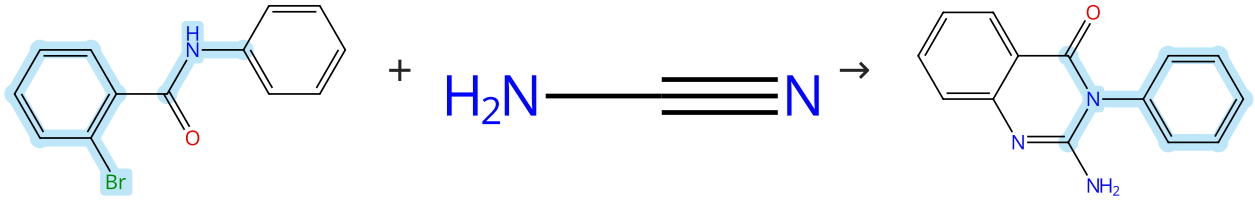
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 351** (1 Reaction)

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



Suppliers (16)

Suppliers (60)

Suppliers (30)

**31-614-CAS-42982590**

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

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

Experimental Protocols

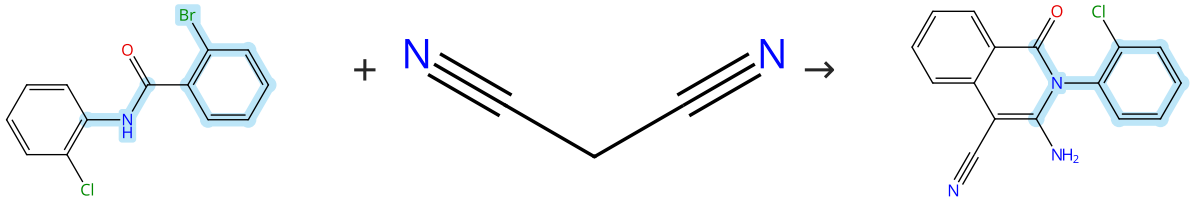
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 352** (1 Reaction)

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



Suppliers (6)

Suppliers (60)

**31-614-CAS-38062434**

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

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

Experimental Protocols

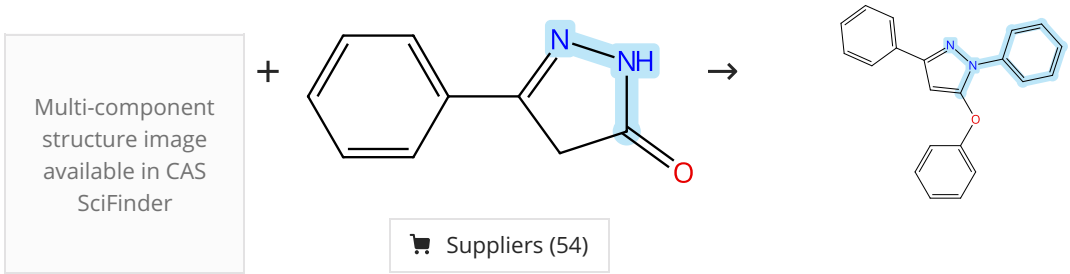
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

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

**Scheme 353** (1 Reaction)

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




Suppliers (54)

Suppliers (67)

**31-614-CAS-38961907**

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

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

1.2 **Reagents:** Water

Experimental Protocols

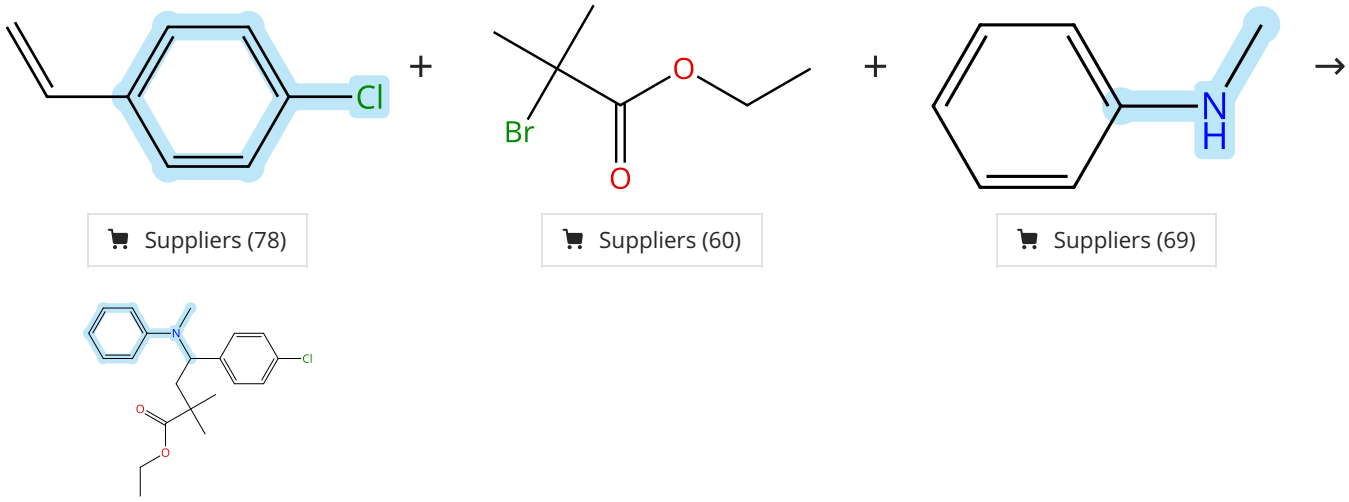
**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

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

**Scheme 354** (1 Reaction)

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



Suppliers (78)

Suppliers (60)

Suppliers (69)

**31-614-CAS-41720179**

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

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

Experimental Protocols

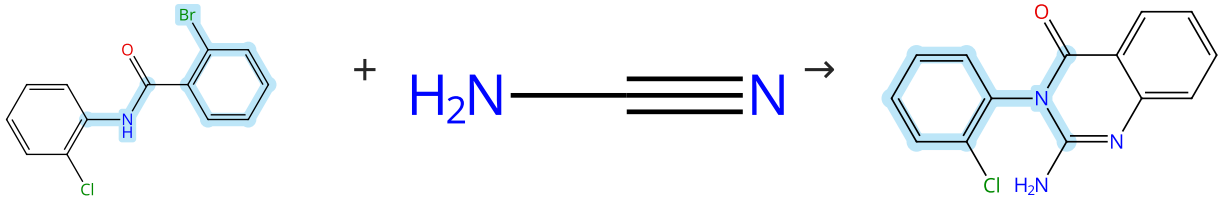
**Cu-Catalyzed Three-Component Alkene Carboamination: Mechanistic Insights and Rational Design to Overcome Limita tions**

By: Ho, Tam D.; et al

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

**Scheme 355** (1 Reaction)

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



Suppliers (6)

Suppliers (60)

**31-614-CAS-42982600**

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

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

Experimental Protocols

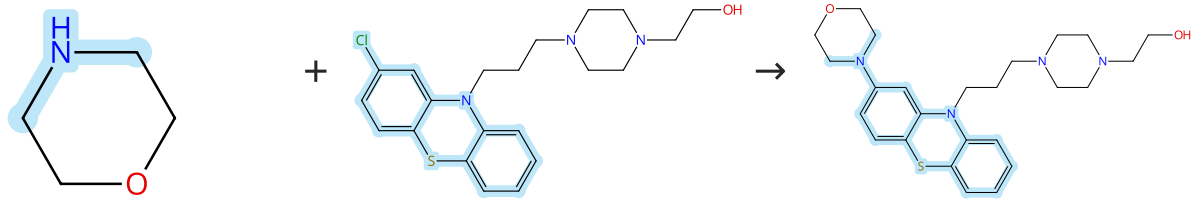
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 356** (1 Reaction)

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



Suppliers (83)

Suppliers (61)

31-614-CAS-41756973 Steps: **1** Yield: **78%**

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

1.2 24 h, 55 °C

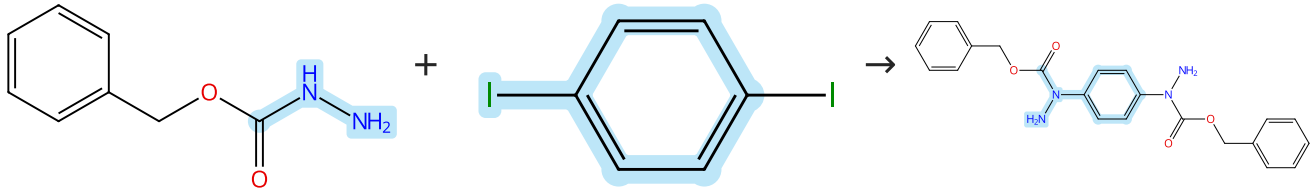
Experimental Protocols

**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 357** (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (73) Suppliers (103)

31-614-CAS-41194612 Steps: **1** Yield: **78%**

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

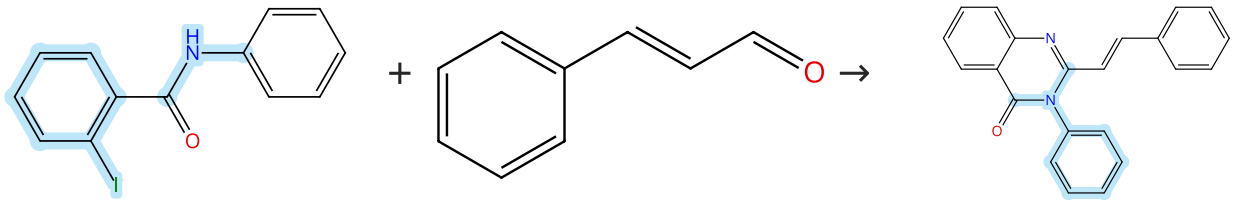
Experimental Protocols

**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 358** (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (38) Suppliers (49) Suppliers (2)

31-614-CAS-39790999 Steps: **1** Yield: **78%**

1.1 **Reagents:** Sodium azide
**Catalysts:** Copper oxide (Cu O)
**Solvents:** Polyethylene glycol; 10 h, 80 °C

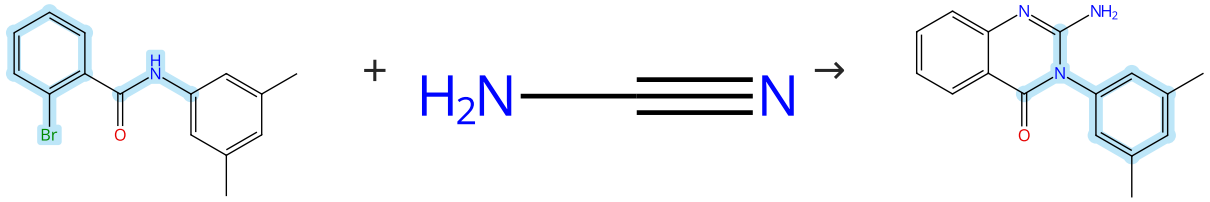
Experimental Protocols

**Biomass derived $Cu_2O$ nanoparticles for N-atom insertion reactions: a base-free synthesis of quinazolinones with a green approach**

By: R., Thrilokraj; et al

Green Chemistry (2024), 26(8), 4723-4732.

**Scheme 359** (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (11) Suppliers (60)

31-614-CAS-42982603 Steps: **1** Yield: **78%**

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

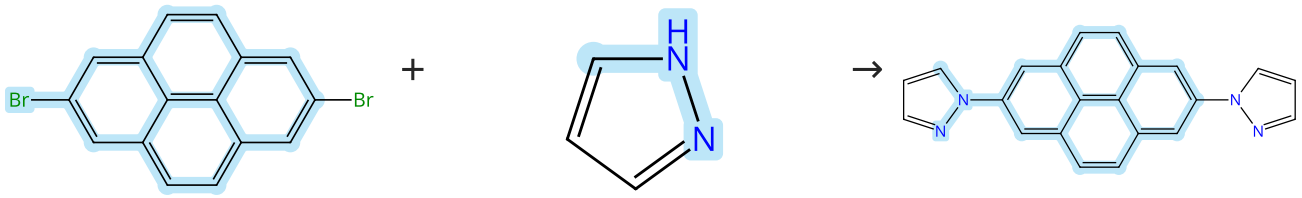
Experimental Protocols

**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 360** (1 Reaction) Steps: **1** Yield: **78%**




Suppliers (59) Suppliers (93)

31-614-CAS-41137271 Steps: **1** Yield: **78%**

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

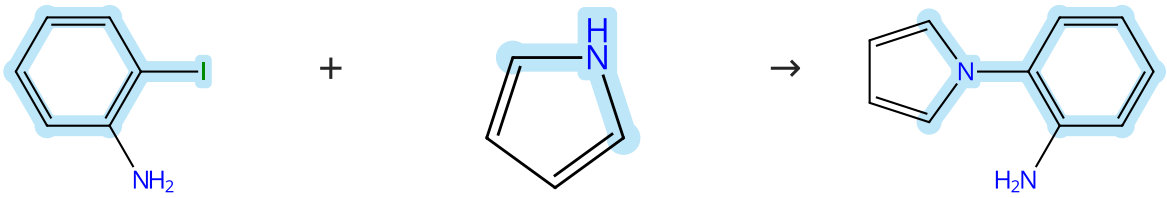
Experimental Protocols

**Pyrene-pyrazole systems-Elucidating the impact of substi tution patterns in the group of Mono-, Di-, Tri- and tetrasub stituted derivatives on emission behaviour through experi mental and theoretical approaches**

By: Zych, Dawid; et al

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

**Scheme 361** (1 Reaction) Steps: **1** Yield: **78%**




Suppliers (97) Suppliers (73) Suppliers (73)

31-614-CAS-39317998 Steps: **1** Yield: **78%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 15 min, rt

1.2 12 h, 80 °C

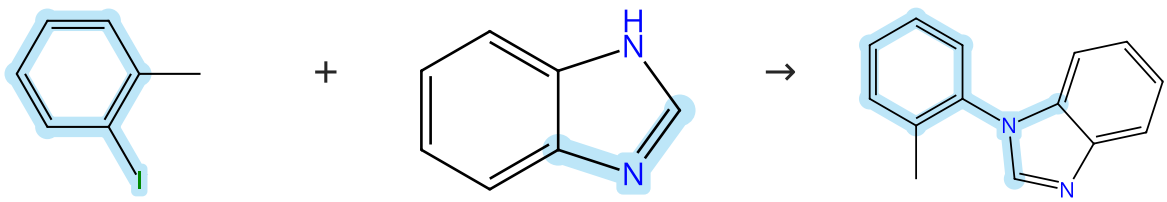
Experimental Protocols

**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 362** (1 Reaction) Steps: **1** Yield: **78%**




Suppliers (75) Suppliers (95) Suppliers (4)

31-614-CAS-39810074 Steps: **1** Yield: **78%**

1.1 **Reagents:** Potassium *tert*-butoxide
**Catalysts:** 1*H*-Benzotriazole, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 48 h, 140 °C

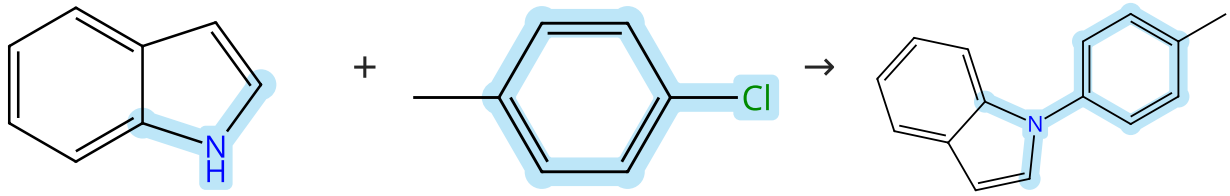
Experimental Protocols

**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 363** (1 Reaction) Steps: **1** Yield: **78%**




Suppliers (109) Suppliers (76) Suppliers (7)

31-614-CAS-41844043 Steps: **1** Yield: **78%**

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

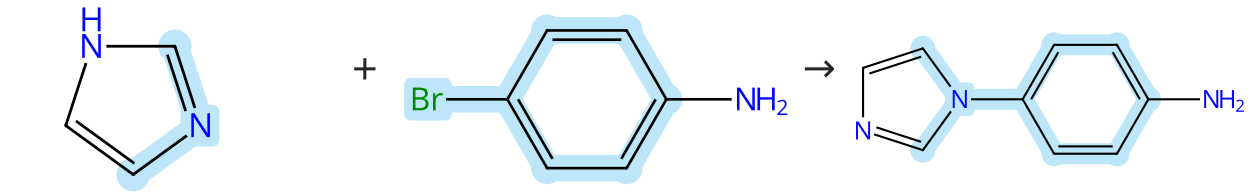
Experimental Protocols

**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 364** (1 Reaction) Steps: **1** Yield: **78%**




Suppliers (201) Suppliers (80) Suppliers (98)

31-614-CAS-35838785 Steps: **1** Yield: **78%**

1.1 **Reagents:** Potassium hydroxide
**Catalysts:** Copper oxide ($Cu_2O$), Copper iron oxide ($CuFe_2O_4$), Polyaniline
**Solvents:** Dimethyl sulfoxide; 10 h, 100 °C

Experimental Protocols

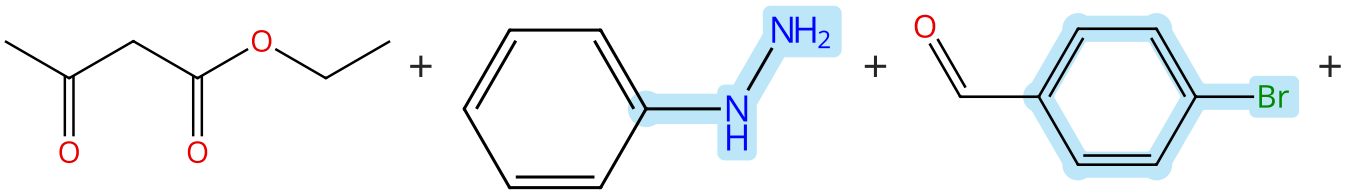
**Polyaniline-encapsulating $CuFe_2O_4/Cu_2O$ composite: a simple, effective and reusable heterogeneous catalyst for ligand-free N-arylation of amines and nitrogen heterocycles**

By: Ahrari, Vahide; et al

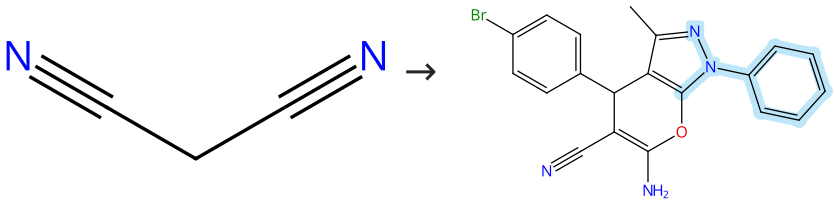
Inorganic and Nano-Metal Chemistry (2024), 54(12), 1211-1220.

**Scheme 365** (1 Reaction)

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



Suppliers (93) | Suppliers (63) | Suppliers (89)



Suppliers (60) | Suppliers (9)

**31-614-CAS-35485670**

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

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 $Fe_3O_4$); 10 min, rt

1.2 10 min, 65 °C

Experimental Protocols

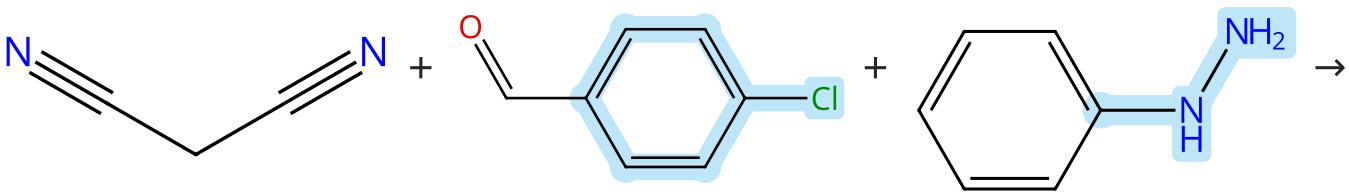
**Fabrication of Copper(II)-coated Magnetic Core-shell Nanoparticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives**

By: Soleimani, Maryam; et al

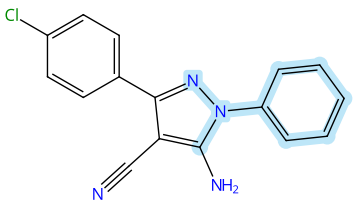
Polycyclic Aromatic Compounds (2024), 44(1), 90-116.

**Scheme 366** (1 Reaction)

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



Suppliers (60) | Suppliers (90) | Suppliers (63)



Suppliers (2)

**31-614-CAS-35485675**

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

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 $Fe_3O_4$); 7 min, 65 °C

Experimental Protocols

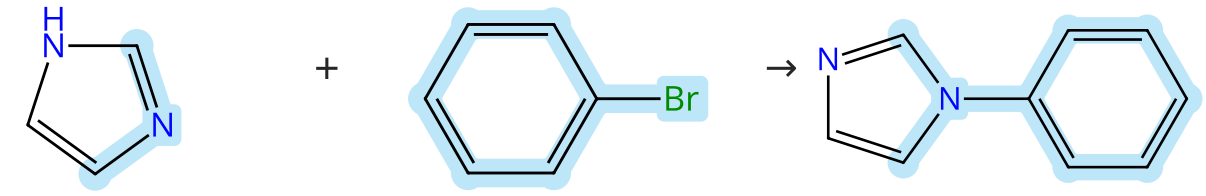
**Fabrication of Copper(II)-coated Magnetic Core-shell Nanoparticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives**

By: Soleimani, Maryam; et al

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

**Scheme 367** (1 Reaction)

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



Suppliers (201) | Suppliers (71) | Suppliers (81)

**31-614-CAS-41844050**

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

1.1 **Reagents:** Triethylamine
**Catalysts:** Copper oxide (CuO), Guar gum
**Solvents:** Dimethylformamide; 8 h, 80 °C

Experimental Protocols

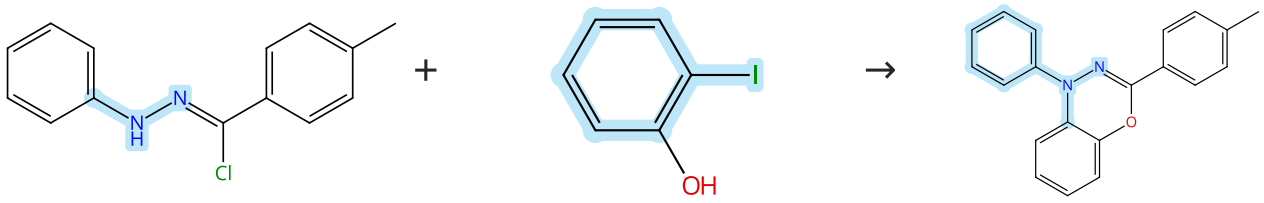
**An eco-friendly convenient approach for the synthesis of guar gum integrated copper nanoparticles: Investigation of its catalytic activity in the C-N Ullmann coupling reactions and study of its anti-human kidney cancer effects**

By: Li, Nana; et al

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

**Scheme 368** (1 Reaction)

Steps: **1** Yield: **77%**



Suppliers (7) | Suppliers (84)

**31-614-CAS-42420843**

Steps: **1** Yield: **77%**

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

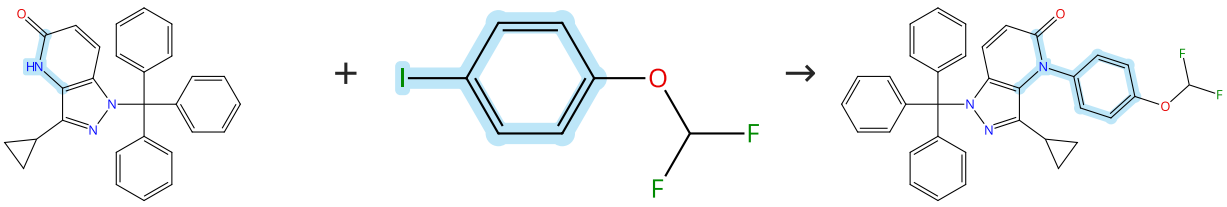
**A new route for the synthesis of substi tuted benzo [1,3,4] oxadiazine derivatives via copper-catalyzed N-arylation-cycliz ation of hydrazonoyl chlorides and 2- iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 369** (1 Reaction)

Steps: **1** Yield: **77%**



Suppliers (56)

**31-614-CAS-39638208**

Steps: **1** Yield: **77%**

1.1 **Reagents:** Potassium carbonate, *N,N*-Dimethylglycine
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 5 min, rt; 5 h, rt → 120 °C

1.2 **Reagents:** *N,N,N′,N′*-Tetramethylethylenediamine
**Solvents:** 2-Methyltetrahydrofuran, Water

Experimental Protocols

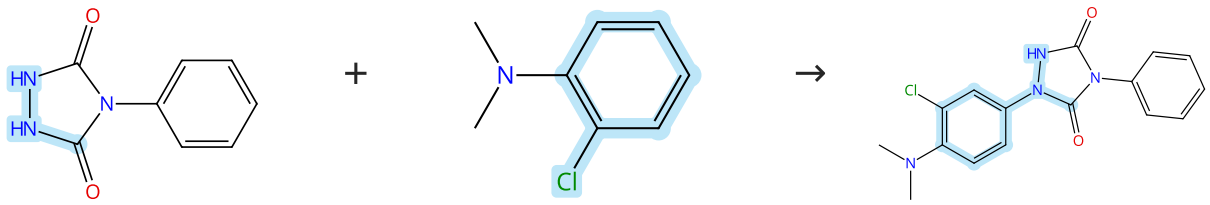
**Development of a Series of Pyrrolopyridone MAT2A Inhibitors**

By: Atkinson, Stephen J.; et al

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

**Scheme 370** (1 Reaction)

Steps: **1** Yield: **77%**



Suppliers (81)

Suppliers (64)

**31-614-CAS-44140343**

Steps: **1** Yield: **77%**

1.1 **Reagents:** Oxygen
**Catalysts:** NAD (complex with copper), Copper (complex with NAD)
**Solvents:** Water; 6 h, pH 7, 25 °C

Experimental Protocols

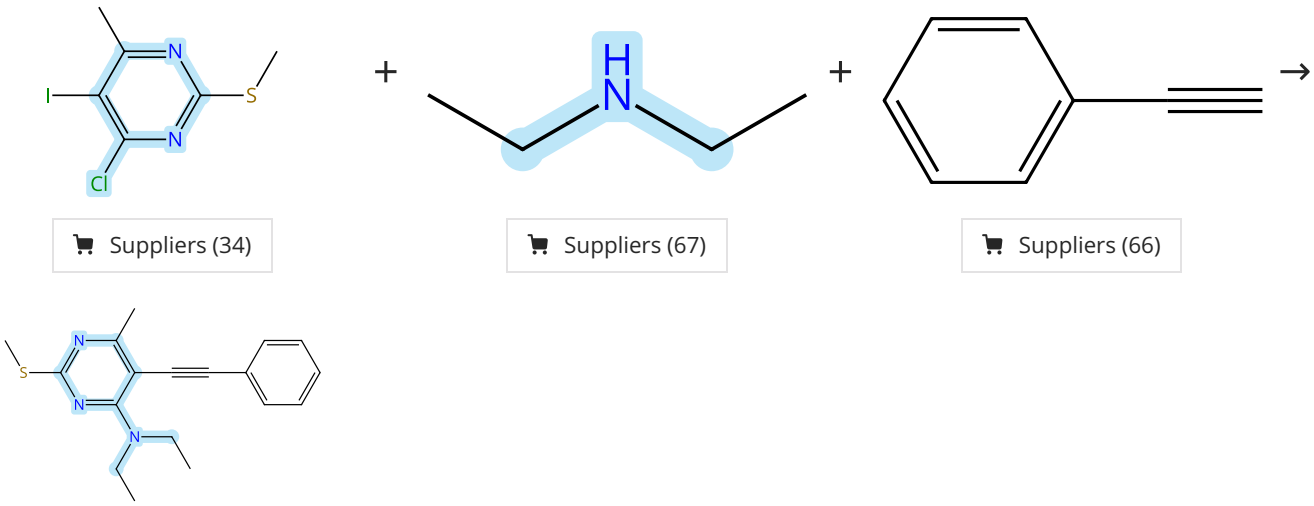
**Cu-NADH as laccase mimics for efficient aryl C-H amination**

By: Tang, Xuyong; et al

Inorganic Chemistry Communications (2024), 167, 112726.

**Scheme 371** (1 Reaction)

Steps: **1** Yield: **77%**



Suppliers (34)

Suppliers (67)

Suppliers (66)

**31-614-CAS-41518145**

Steps: **1** Yield: **77%**

1.1 **Reagents:** Triethylamine
**Solvents:** Dimethylformamide; 80 °C

1.2 **Catalysts:** Cuprous iodide, Dichlorobis(triphenylphosphine) palladium; 4 h, 80 °C

Experimental Protocols

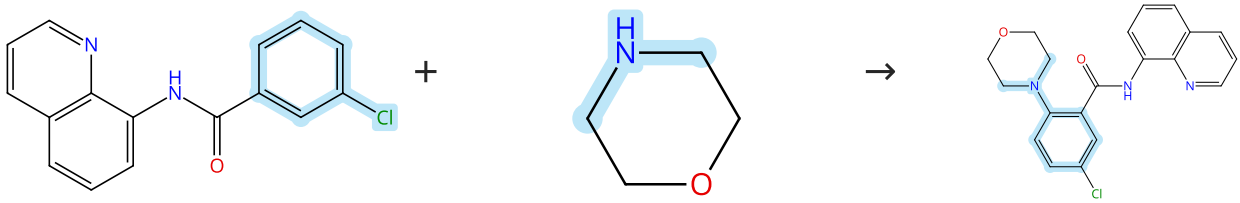
**Synthesis of new 4,5-disubstituted-6-methyl-2-(methylthio) pyrimidines via C-C coupling reactions**

By: Cheldavi, Forough; et al

Journal of Sulfur Chemistry (2024), 45(5), 690-702.

**Scheme 372** (1 Reaction)

Steps: **1** Yield: **77%**



Suppliers (5)

Suppliers (83)

31-614-CAS-41880648 Steps: **1** Yield: **77%**

1.1 **Reagents:** Propanoic acid, 2,2-dimethyl-, sodium salt (1:1), Oxygen
**Catalysts:** Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride
**Solvents:** Dimethyl sulfoxide; 24 h, rt

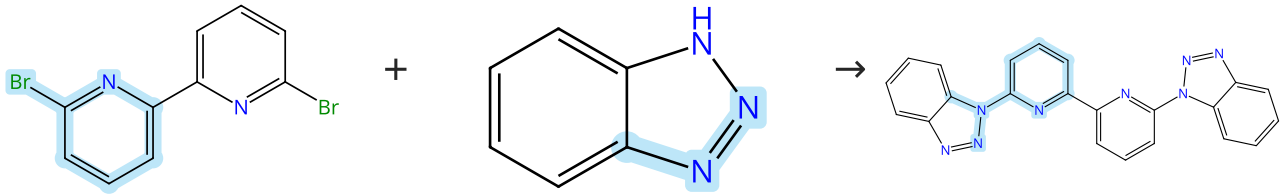
Experimental Protocols

**Dual Copper Photoredox C-H Alkynylation with Arylacetylenes**

By: Nair, Akshay M.; et al

Organic Letters (2024), 26(37), 7822-7827.

**Scheme 373** (1 Reaction) Steps: **1** Yield: **77%**




Suppliers (70) Suppliers (104)

31-614-CAS-43178397 Steps: **1** Yield: **77%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 48 h, 120 °C

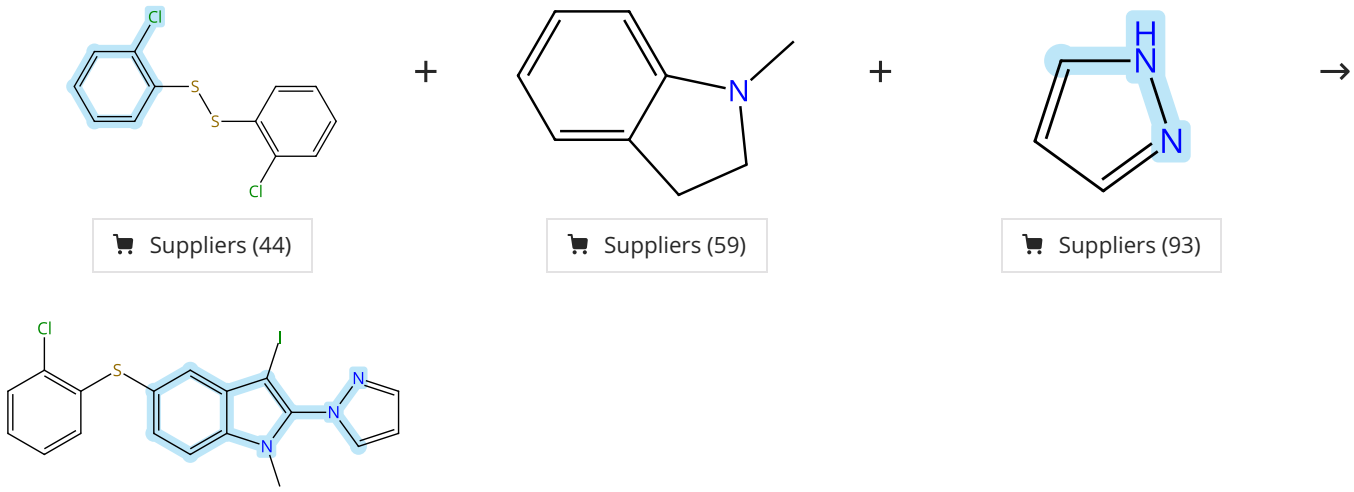
Experimental Protocols

**Design of a Copper(II) Complex with Tetradentate Bis-Benzotriazole-Appended Bipyridine Ligand and its Catalytic Application in $A^3$ Coupling Reaction**

By: Pandey, Sharmila; et al

European Journal of Inorganic Chemistry (2024), 27(16), e202400052.

**Scheme 374** (1 Reaction) Steps: **1** Yield: **77%**




Suppliers (44) Suppliers (59) Suppliers (93)

31-614-CAS-39675950 Steps: **1** Yield: **77%**

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

Experimental Protocols

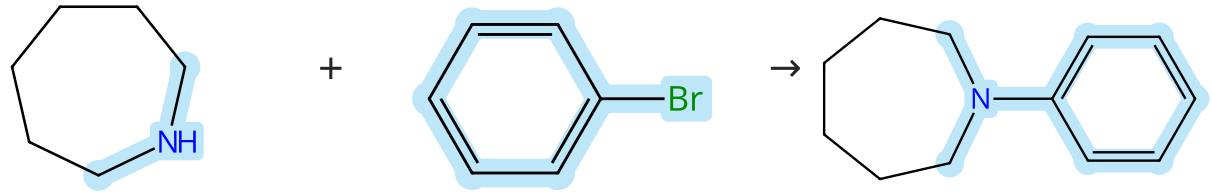
**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

By: Zhang, Xiaoxiang; et al

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

**Scheme 375** (1 Reaction)

Steps: **1** Yield: **77%**




Suppliers (49) | Suppliers (71) | Suppliers (8)

**31-614-CAS-41175790**

Steps: **1** Yield: **77%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 72 h, 80 °C

Experimental Protocols

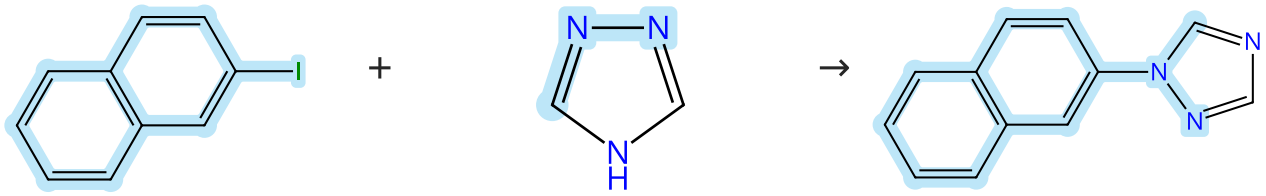
**α-Amino bicycloalkylation through organophotoredox catalysis**

By: Nugent, Jeremy; et al

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

**Scheme 376** (1 Reaction)

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




Suppliers (68) | Suppliers (100)

**31-614-CAS-40887394**

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

1.1 **Catalysts:** 1*H*-Benzotriazole, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 5 min, rt

1.2 **Reagents:** Potassium *tert*-butoxide; 24 h, 110 °C

Experimental Protocols

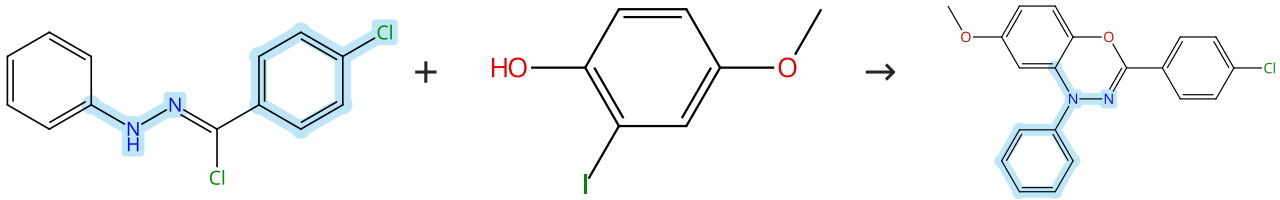
**Orchestrated Octuple C-H Activation: A Bottom-Up Topology Engineering Approach toward Stimuli-Responsive Double-Heptagon-Embedded Wavy Polycyclic Heteroar omatics**

By: Rana, Samim Sohel; et al

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

**Scheme 377** (1 Reaction)

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




Suppliers (4) | Suppliers (42)

**31-614-CAS-42420853**

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

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

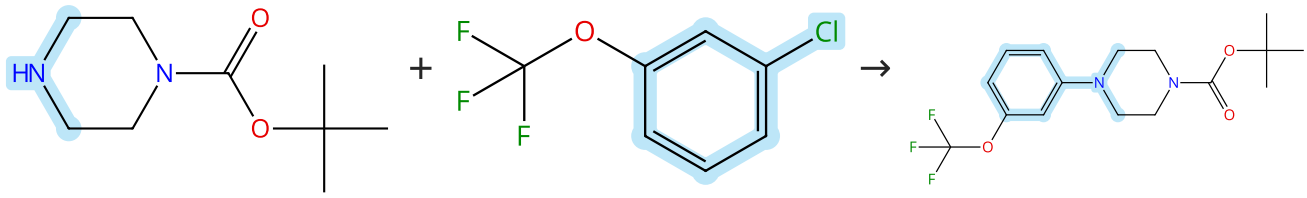
**A new route for the synthesis of substi tuted benzo [1,3,4] oxadiazine derivatives via copper-catalyzed N-arylation-cycliz ation of hydrazonoyl chlorides and 2-iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 378** (1 Reaction)

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



Suppliers (112) | Suppliers (59) | Suppliers (6)

**31-614-CAS-41756925**

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

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, 40 °C

Experimental Protocols

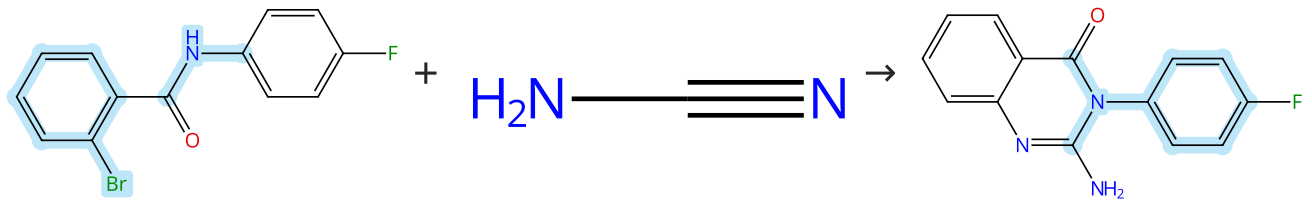
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 379** (1 Reaction)

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



Suppliers (9) | Suppliers (60)

**31-614-CAS-42982618**

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

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

Experimental Protocols

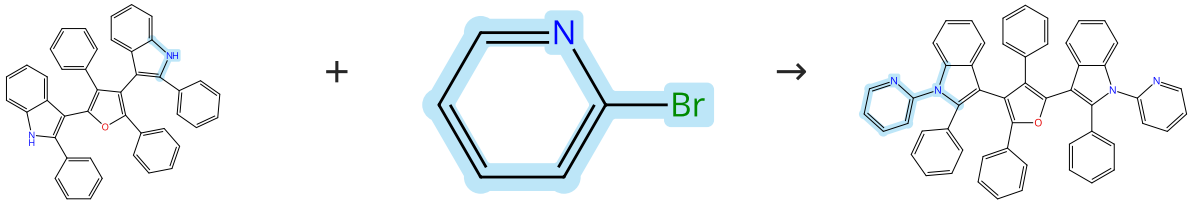
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 380** (1 Reaction)

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



Suppliers (86)

**31-614-CAS-42506476**

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

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N*,*N*'-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 24 h, 120 °C

Experimental Protocols

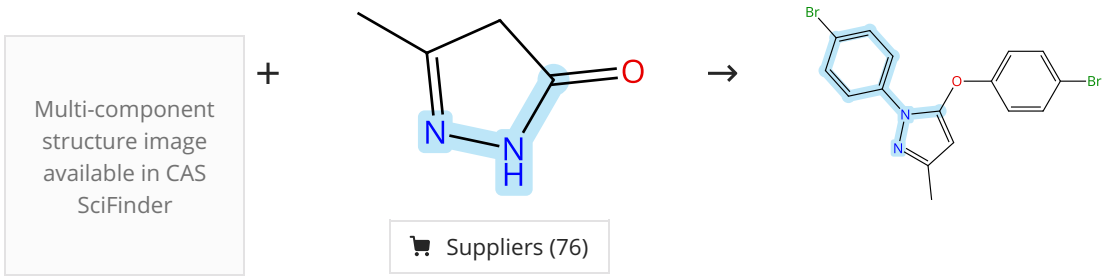
**Two-Fold Oxidative Coupling of Furan with Indole Provides Modular Access to a New Class of Tetra-(Hetero)Arylated Furans with Up to Four Different Substituents**

By: Mhaske, Krishna; et al

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

**Scheme 381** (1 Reaction)

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




Suppliers (48)

Suppliers (76)

**31-614-CAS-38961898**

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

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

1.2 **Reagents:** Water

Experimental Protocols

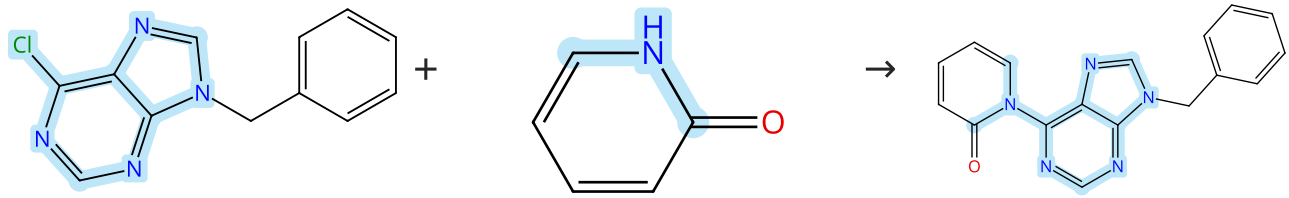
**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

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

**Scheme 382** (1 Reaction)

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




Suppliers (56)

Suppliers (128)

**31-614-CAS-42413568**

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

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** *N,N'*-Dimethylethylenediamine, Cuprous iodide
**Solvents:** Toluene; 15 - 20 h, 120 °C

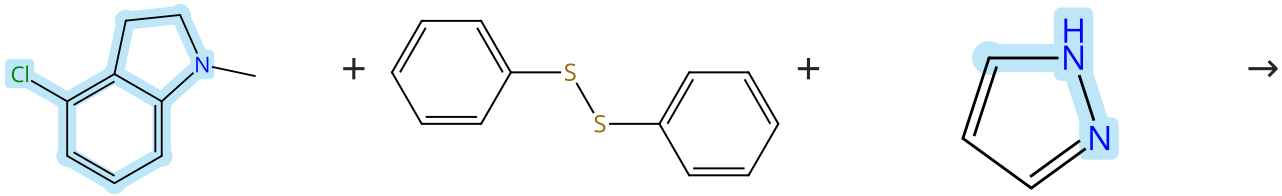
**Nickel Catalyzed Aryl-Aryl Bridging C-N Bond Activation of 2-Pyridylpyridones and 6-Purinylpyridones**

By: Prusty, Namrata; et al

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

**Scheme 383** (1 Reaction)

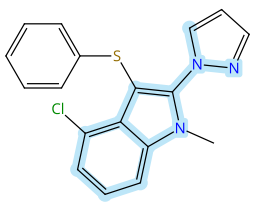
Steps: **1** Yield: **76%**




Suppliers (4)

Suppliers (84)

Suppliers (93)



31-614-CAS-39026174 Steps: **1** Yield: **76%**

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

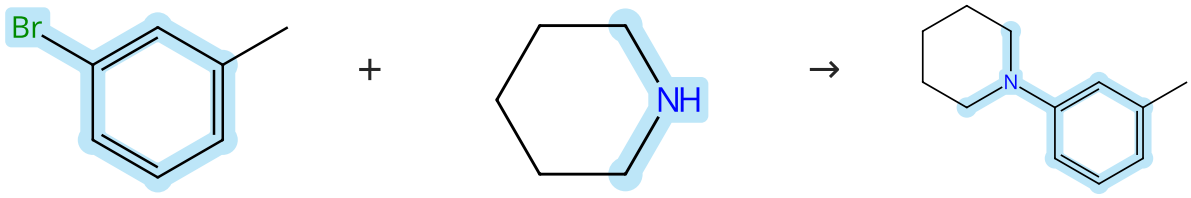
Experimental Protocols

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

By: Zhang, Xiaoxiang; et al

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

**Scheme 384** (1 Reaction) Steps: **1** Yield: **76%**




Suppliers (57) Suppliers (50) Suppliers (8)

31-614-CAS-41277516 Steps: **1** Yield: **76%**

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

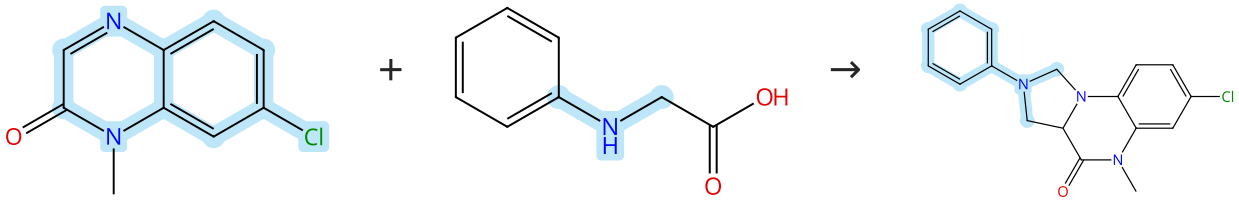
Experimental Protocols

**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 385** (1 Reaction) Steps: **1** Yield: **76%**




Suppliers (5) Suppliers (88)

31-614-CAS-39663076 Steps: **1** Yield: **76%**

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

Experimental Protocols

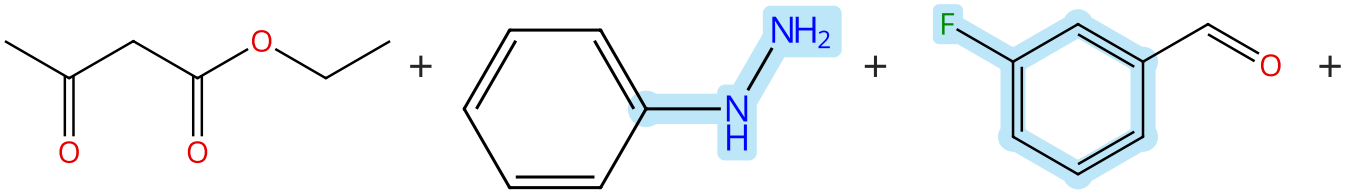
**Visible-light-promoted tandem decarboxylation coupling/cyclization of N-aryl glycines with quinoxalinones: easy access to tetrahydroimidazo[1,5-a]quinoxalin-4(5H)-ones**

By: Tang, Zhen; et al

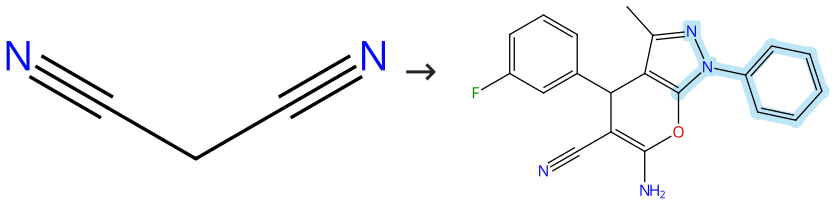
Green Synthesis and Catalysis (2024), 5(1), 31-34.

**Scheme 386** (1 Reaction)

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



Suppliers (93) | Suppliers (63) | Suppliers (81)



Suppliers (60) | Suppliers (5)

**31-614-CAS-35485659**

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

1.1 **Catalysts:** Cupric acetate (complex with bis(2-thienylmethylene)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 $Fe_3O_4$); 10 min, rt

1.2 12 min, 65 °C

Experimental Protocols

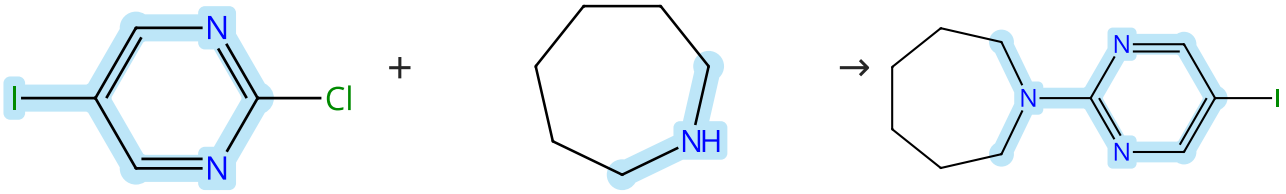
**Fabrication of Copper(II)-coated Magnetic Core-shell Nanoparticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives**

By: Soleimani, Maryam; et al

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

**Scheme 387** (1 Reaction)

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



Suppliers (84) | Suppliers (49) | Suppliers (3)

**31-614-CAS-40743588**

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

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatricyclo[3.3.1.1$^{3,7}$]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

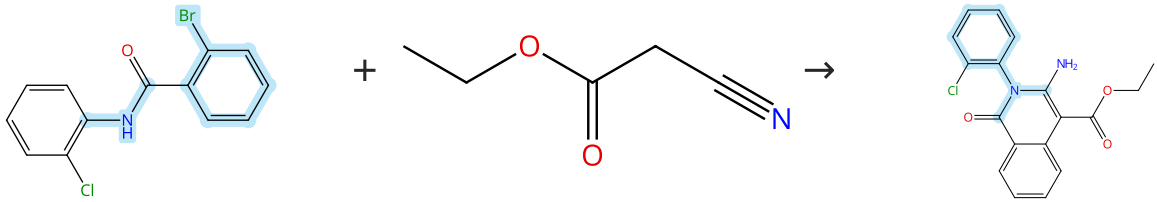
**Cu(II)/PTABS-Promoted, Chemoselective Amination of Halo Pyrimidines**

By: Phulwale, Vikram; et al

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

**Scheme 388** (1 Reaction)

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



Suppliers (6)

Suppliers (69)

**31-614-CAS-38062425**

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

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

Experimental Protocols

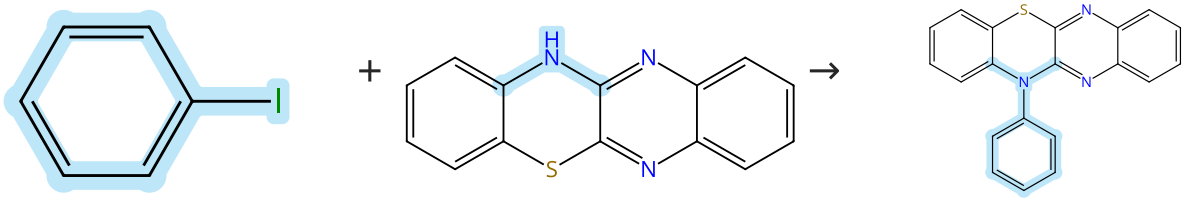
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

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

**Scheme 389** (1 Reaction)

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



Suppliers (93)

Suppliers (19)

Suppliers (3)

**31-614-CAS-39965293**

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

1.1 **Reagents:** Sodium carbonate
**Catalysts:** Copper; 72 h, reflux

Experimental Protocols

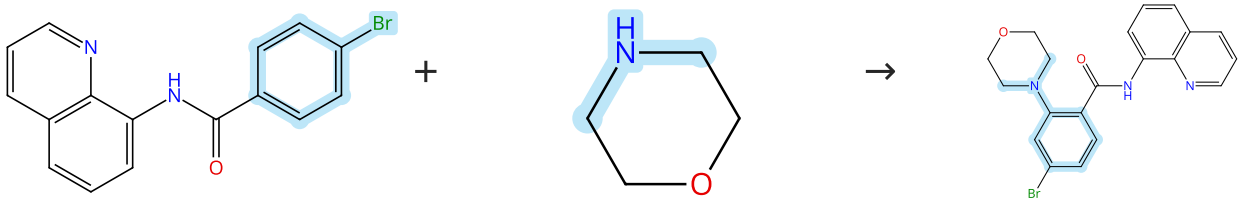
**Photo- and Cobalt-Catalyzed Synthesis of Heterocycles via Cycloisomerization of Unactivated Olefins**

By: Lindner, Henry; et al

Angewandte Chemie, International Edition (2024), 63(19), e202319515.

**Scheme 390** (1 Reaction)

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



Suppliers (7)

Suppliers (83)

**31-614-CAS-41880647**

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

1.1 **Reagents:** Propanoic acid, 2,2-dimethyl-, sodium salt (1:1), Oxygen
**Catalysts:** Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride
**Solvents:** Dimethyl sulfoxide; 24 h, rt

Experimental Protocols

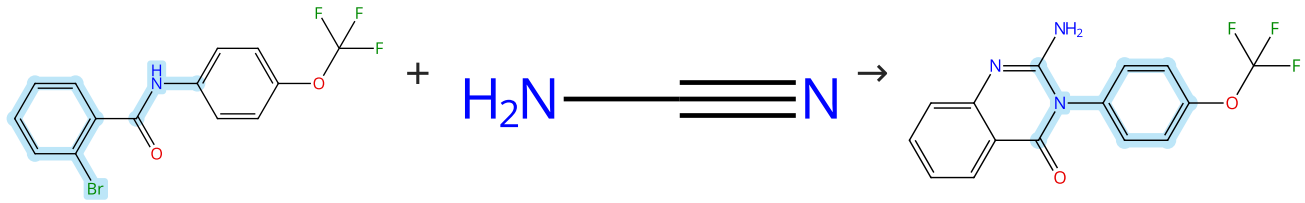
**Dual Copper Photoredox C-H Alkynylation with Arylacetylenes**

By: Nair, Akshay M.; et al

Organic Letters (2024), 26(37), 7822-7827.

**Scheme 391** (1 Reaction)

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



Suppliers (3)

Suppliers (60)

**31-614-CAS-42982613**

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

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

Experimental Protocols

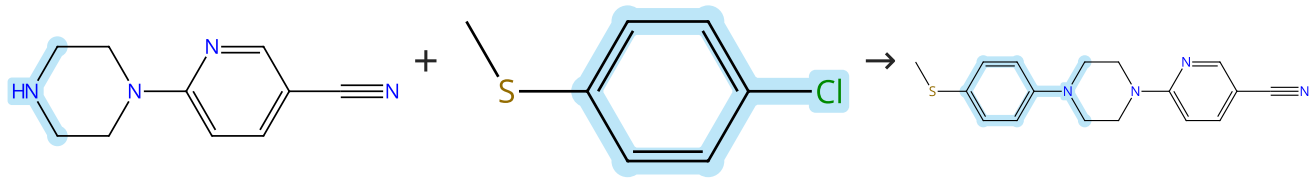
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 392** (1 Reaction)

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



Suppliers (66)

Suppliers (74)

**31-614-CAS-41756910**

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

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

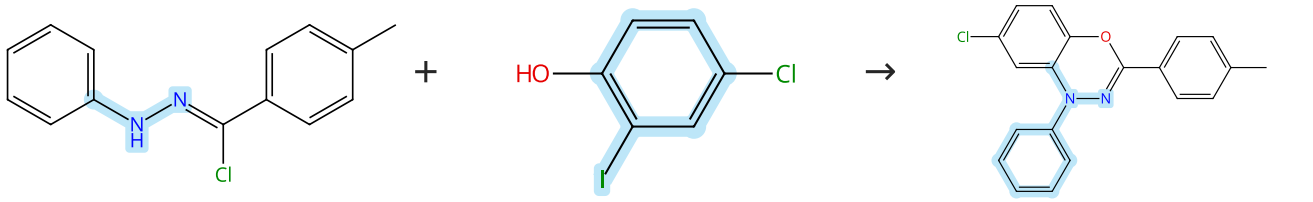
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 393** (1 Reaction)

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



Suppliers (7)

Suppliers (78)

**31-614-CAS-42420846**

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

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

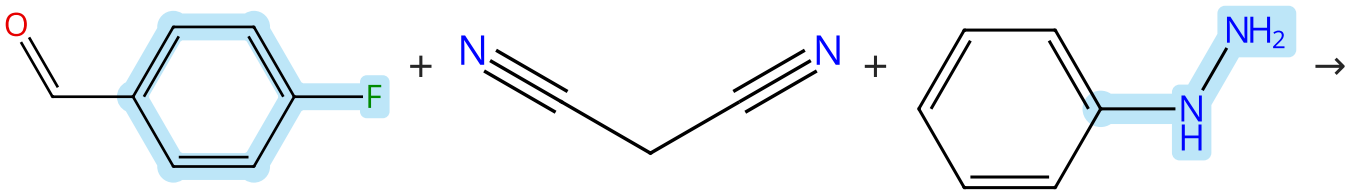
**A new route for the synthesis of substi tuted benzo [1,3,4] oxadiazine derivatives via copper-catalyzed N-arylation-cycliz ation of hydrazonoyl chlorides and 2-iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 394** (1 Reaction)

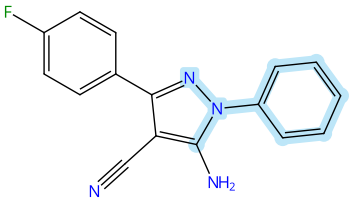
Steps: **1** Yield: **76%**



Suppliers (91)

Suppliers (60)

Suppliers (63)



Suppliers (2)

**31-614-CAS-35485672**

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

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 $Fe_3O_4$); 15 min, 65 °C

Experimental Protocols

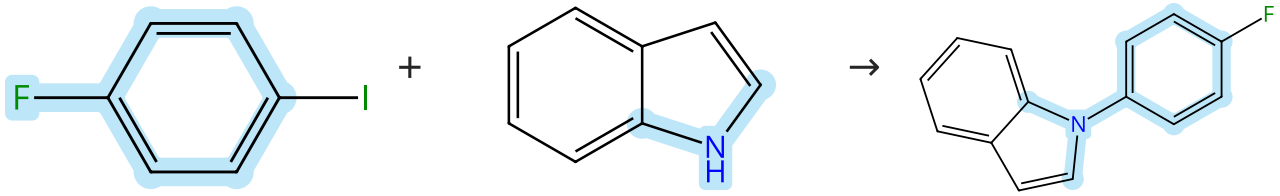
**Fabrication of Copper(II)-coated Magnetic Core-shell Nanoparticles as an Engineered Nano-magnetic Catalyst for the Synthesis of Pyranopyrazole and Pyrazole Derivatives**

By: Soleimani, Maryam; et al

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

**Scheme 395** (1 Reaction)

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



Suppliers (82)

Suppliers (109)

Suppliers (6)

**31-614-CAS-39303566**

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

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

Experimental Protocols

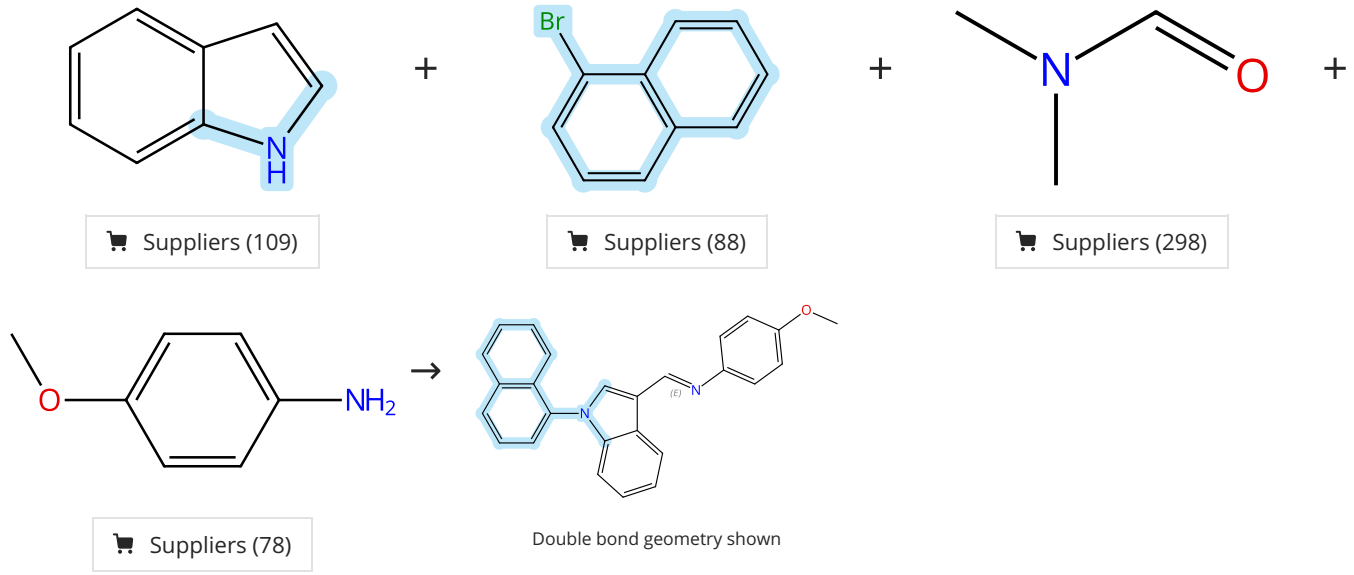
**Tosylazide as N1-Synthon: Iron-Catalyzed Nitrogenative Dimerization of Indoles to p-Bisindolopyrazine Derivatives**

By: Li, Jianan; et al

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

**Scheme 396** (1 Reaction)

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




Suppliers (109) | Suppliers (88) | Suppliers (298) | Suppliers (78)

Double bond geometry shown

**31-614-CAS-40180087**

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

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

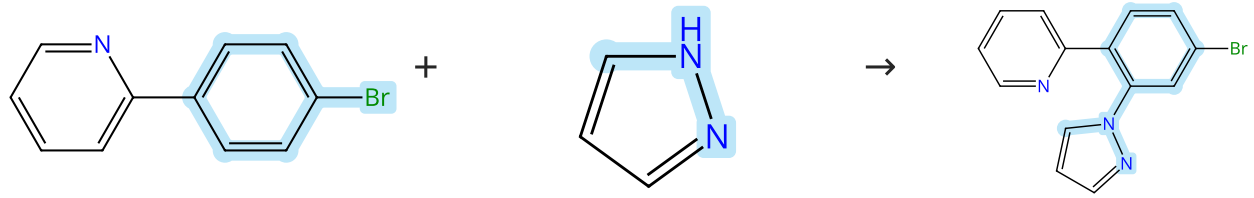
**Iron-catalyzed stereoselective C-H alkylation for simultaneous construction of C-N axial and C-central chirality**

By: Zhang, Zi-Jing; et al

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

**Scheme 397** (1 Reaction)

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




Suppliers (71) | Suppliers (93)

**31-614-CAS-41633166**

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

1.1 **Reagents:** 2,4,6-Trimethylbenzoic acid, Sodium carbonate, Silver fluoride, Oxygen
**Catalysts:** Cupric acetate
**Solvents:** *m*-Xylene, 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 160 °C

Experimental Protocols

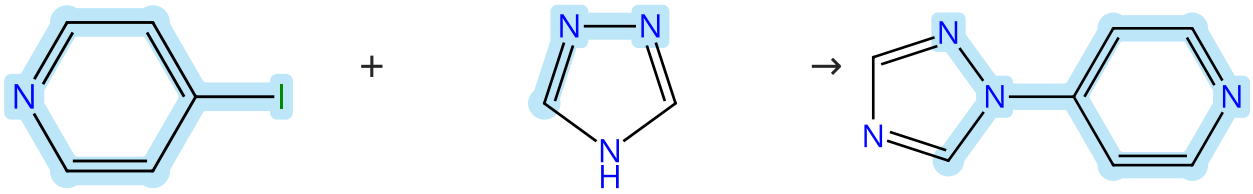
**Copper-promoted ortho-directed C-H amination of 2-arylpyridines with NH-heterocycles**

By: Zeng, Yang-Hao; et al

Organic & Biomolecular Chemistry (2024), 22(36), 7390-7394.

**Scheme 398** (1 Reaction)

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



Suppliers (80) | Suppliers (100) | Suppliers (9)

**31-614-CAS-40887397**

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

1.1 **Catalysts:** 1*H*-Benzotriazole, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 5 min, rt

1.2 **Reagents:** Potassium *tert*-butoxide; 24 h, 110 °C

Experimental Protocols

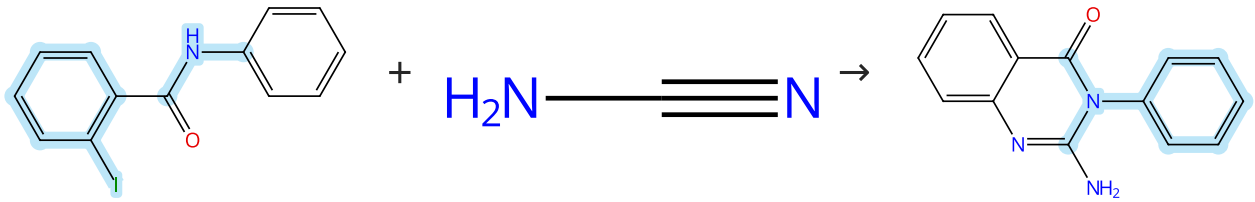
**Orchestrated Octuple C-H Activation: A Bottom-Up Topology Engineering Approach toward Stimuli-Responsive Double-Heptagon-Embedded Wavy Polycyclic Heteroar omatics**

By: Rana, Samim Sohel; et al

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

**Scheme 399** (1 Reaction)

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



Suppliers (38) | Suppliers (60) | Suppliers (30)

**31-614-CAS-42982669**

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

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

Experimental Protocols

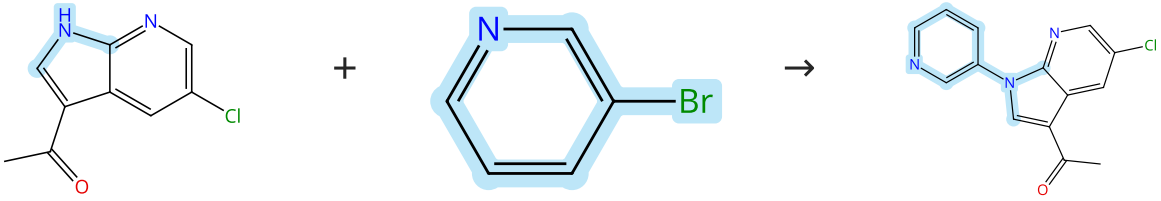
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 400** (1 Reaction)

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



Suppliers (15) | Suppliers (89)

**31-614-CAS-40701627**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

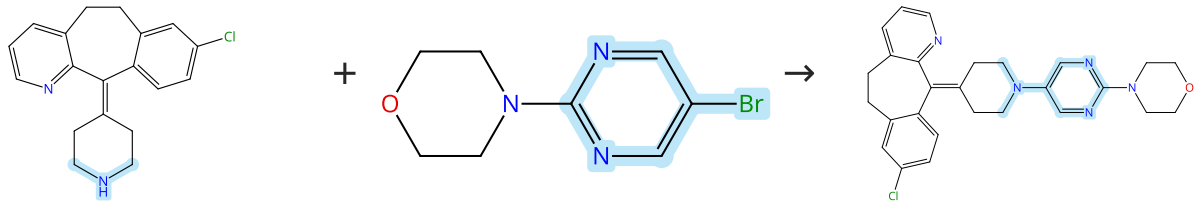
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 401** (1 Reaction)

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



Suppliers (98)

Suppliers (76)

**31-614-CAS-40801446**

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

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

Experimental Protocols

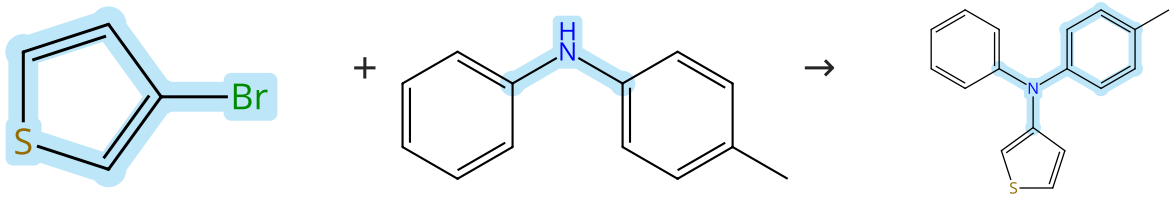
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 402** (1 Reaction)

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



Suppliers (76)

Suppliers (66)

**31-614-CAS-41277501**

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

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

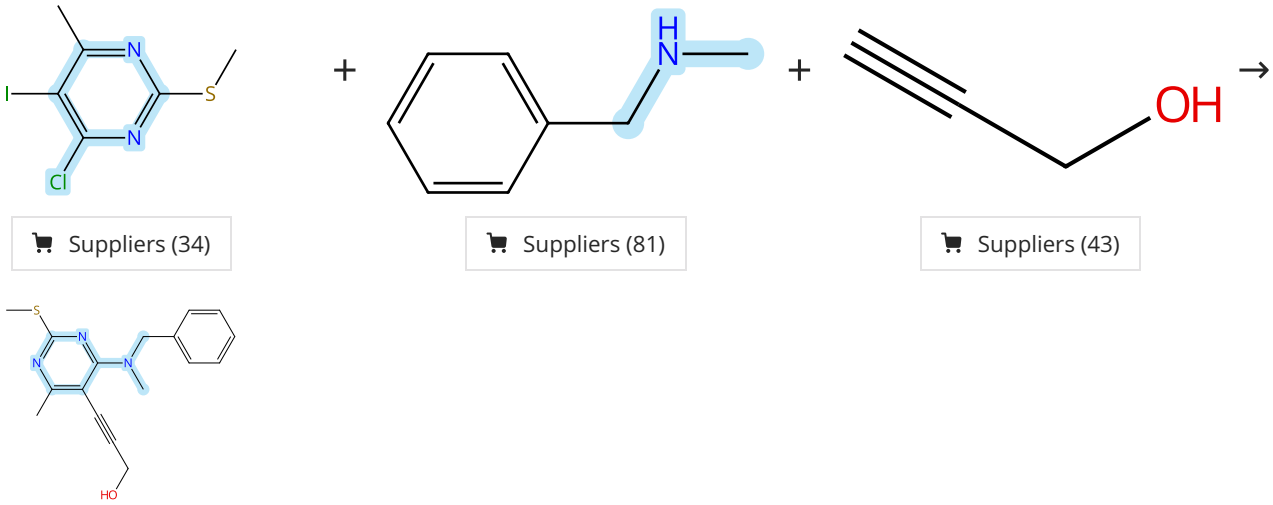
**Kanamycin-Cu(II) Complex Catalyzed Ullmann Amine Synthesis at Room Temperature: A Tool for Mechan istic Insights into Methylene Blue Degradation**

By: Basheer, Huma; et al

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

**Scheme 403** (1 Reaction)

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



Suppliers (34)

Suppliers (81)

Suppliers (43)

31-614-CAS-41518140 Steps: **1** Yield: **75%**

1.1 **Reagents:** Triethylamine
**Solvents:** Dimethylformamide; 80 °C

1.2 **Catalysts:** Cuprous iodide, Dichlorobis(triphenylphosphine) palladium; 4 h, 80 °C

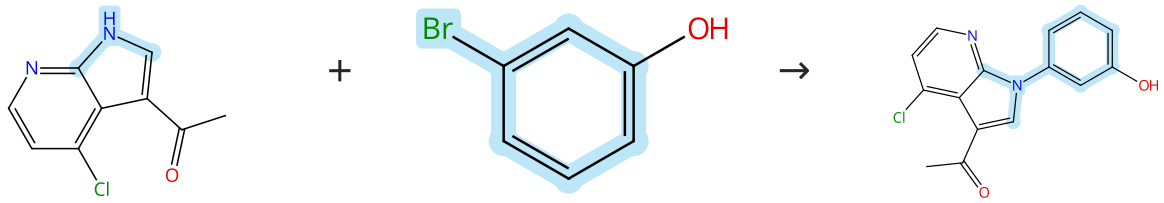
Experimental Protocols

**Synthesis of new 4,5-disubstituted-6-methyl-2-(methylthio) pyrimidines via C-C coupling reactions**

By: Cheldavi, Forough; et al

Journal of Sulfur Chemistry (2024), 45(5), 690-702.

**Scheme 404** (1 Reaction) Steps: **1** Yield: **75%**




Suppliers (52) Suppliers (71)

31-614-CAS-40701635 Steps: **1** Yield: **75%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

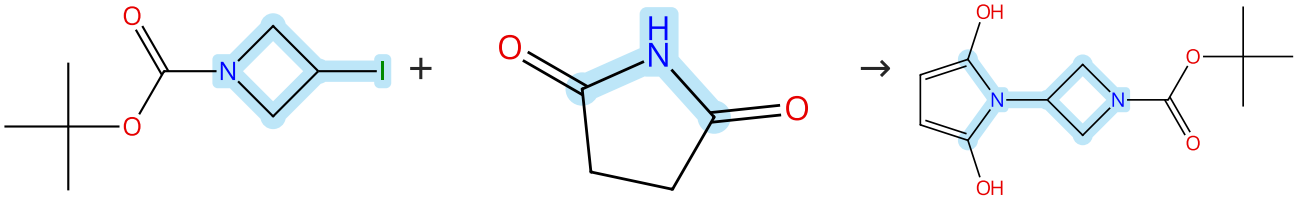
Experimental Protocols

**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 405** (2 Reactions) Steps: **1** Yield: **72-75%**




Suppliers (94) Suppliers (79) Supplier (1)

31-614-CAS-41192898 Steps: **1** Yield: **75%**

1.1 **Reagents:** Trimethylamineborane
**Catalysts:** Cupric acetate, 4,7-Diphenyl-1,10-phenanthroline
**Solvents:** Ethyl acetate; 30 min, rt

1.2 **Reagents:** 1-Methyl-1-phenylethyl triethylsilyl peroxide; rt; 16 h, rt

Experimental Protocols

**A Radical Strategy for the Alkylation of Amides with Alkyl Halides by Merging Boryl Radical-Mediated Halogen-Atom Transfer and Copper Catalysis**

By: Zhang, Zhenhua; et al

Journal of the American Chemical Society (2024), 146(32), 22424-22430.

31-614-CAS-41192942 Steps: **1** Yield: **72%**

1.1 **Reagents:** Trimethylamineborane
**Catalysts:** Cupric acetate, 4,7-Diphenyl-1,10-phenanthroline
**Solvents:** Ethyl acetate; 30 min, rt

1.2 **Reagents:** 1-Methyl-1-phenylethyl triethylsilyl peroxide; rt; 12 h, rt

Experimental Protocols

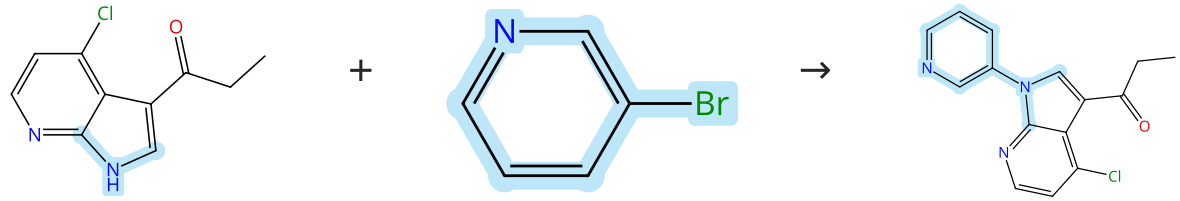
**A Radical Strategy for the Alkylation of Amides with Alkyl Halides by Merging Boryl Radical-Mediated Halogen-Atom Transfer and Copper Catalysis**

By: Zhang, Zhenhua; et al

Journal of the American Chemical Society (2024), 146(32), 22424-22430.

**Scheme 406** (1 Reaction)

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



Suppliers (3)

Suppliers (89)

**31-614-CAS-40701642**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

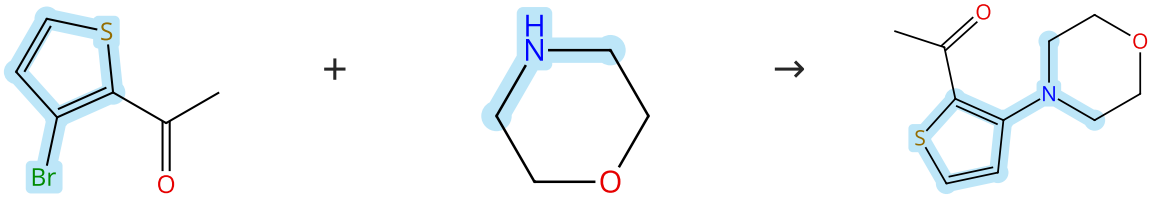
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 407** (1 Reaction)

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



Suppliers (61)

Suppliers (83)

**31-614-CAS-40801482**

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

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

Experimental Protocols

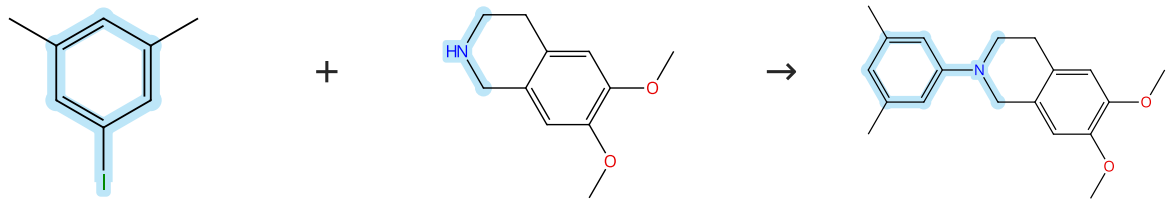
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

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

**Scheme 408** (1 Reaction)

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



Suppliers (83)

Suppliers (83)

**31-614-CAS-41371856**

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

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

1.2 **Reagents:** Water; rt

Experimental Protocols

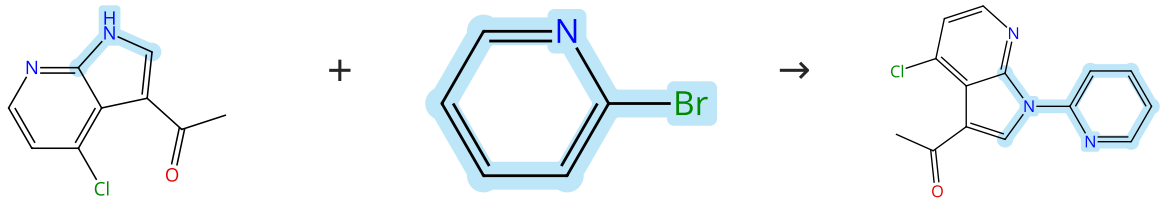
**Cross Dehydrogenative Coupling of S$F_4$-Alkyne with Tetrahydroisoquinolines**

By: Yadav, Arvind Kumar; et al

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

**Scheme 409** (1 Reaction)

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



Suppliers (52)

Suppliers (86)

**31-614-CAS-40701626**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

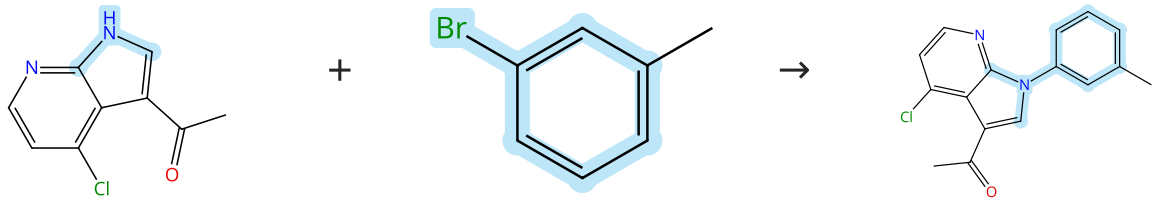
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 410** (1 Reaction)

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



Suppliers (52)

Suppliers (57)

**31-614-CAS-40701641**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

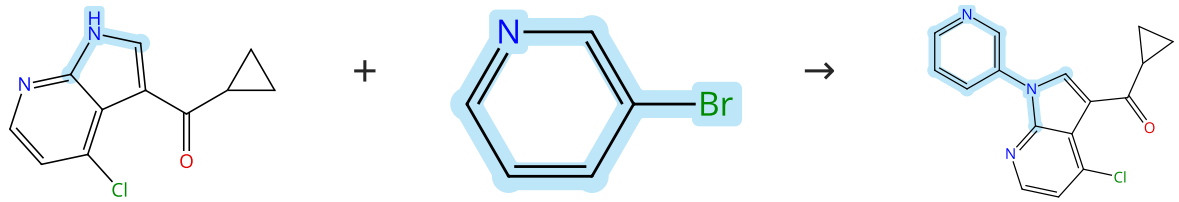
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 411** (1 Reaction)

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



Suppliers (15)

Suppliers (89)

**31-614-CAS-40701647**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

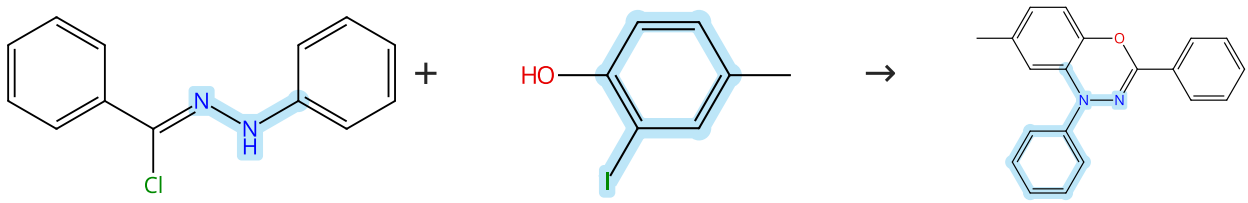
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 412** (1 Reaction)

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




Suppliers (38)

Suppliers (64)

**31-614-CAS-42420848**

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

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

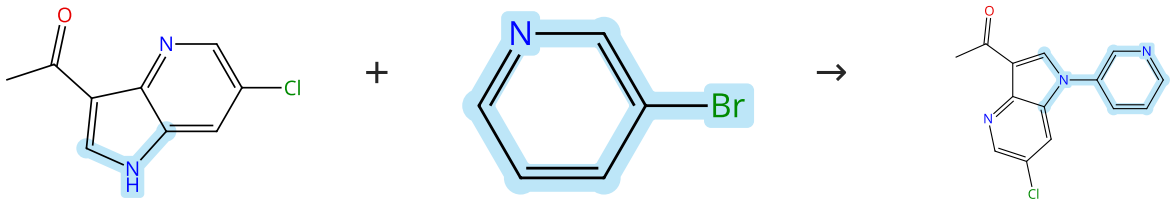
**A new route for the synthesis of substi tuted benzo [1,3,4] oxadiazine derivatives via copper-catalyzed N-arylation-cycliz ation of hydrazonoyl chlorides and 2-iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 413** (1 Reaction)

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




Suppliers (7)

Suppliers (89)

**31-614-CAS-40701632**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexa nediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

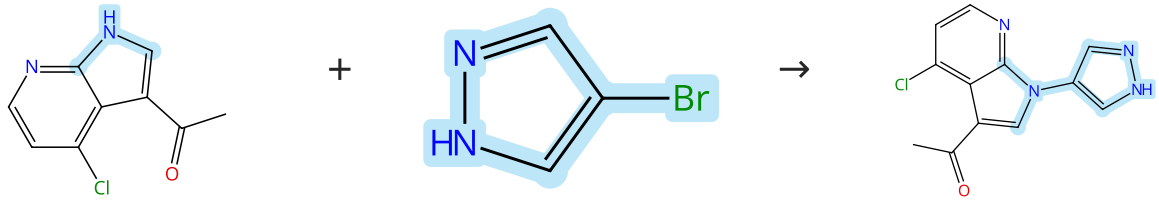
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 414** (1 Reaction)

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




Suppliers (52)

Suppliers (108)

**31-614-CAS-40701637**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexa nediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

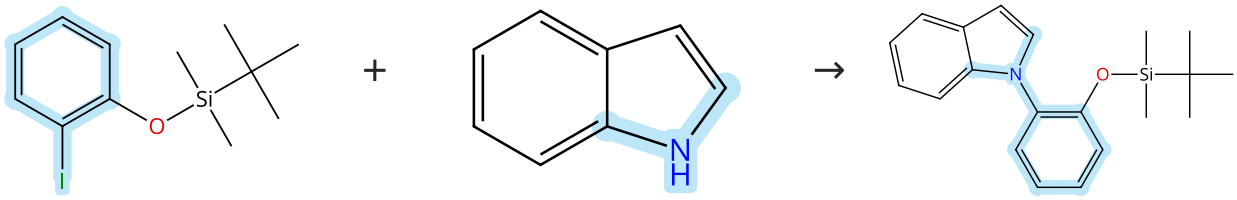
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 415** (1 Reaction)

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



Suppliers (7)

Suppliers (109)

**31-614-CAS-42512880**

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

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** 1,2-Diaminocyclohexane, Cuprous iodide
**Solvents:** Toluene; 24 h, 90 °C

Experimental Protocols

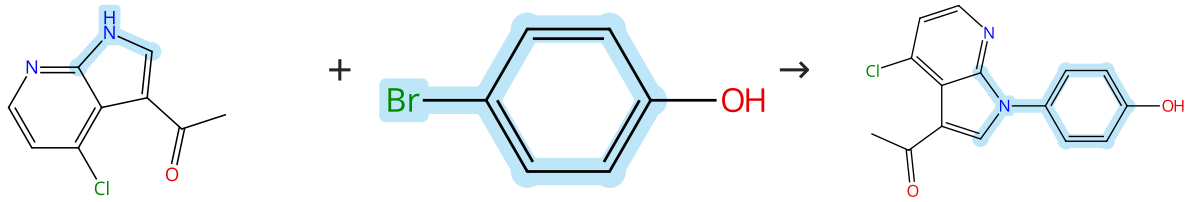
**Palladium-Catalyzed Synthesis of Substituted Phenanthrenes via a C-H Annulation of 2-Biaryl Triflates with Alkynes**

By: Prabhakaran, Mohan; et al

Journal of Organic Chemistry (2024), 89(22), 16363-16374.

**Scheme 416** (1 Reaction)

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



Suppliers (52)

Suppliers (80)

**31-614-CAS-40701639**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

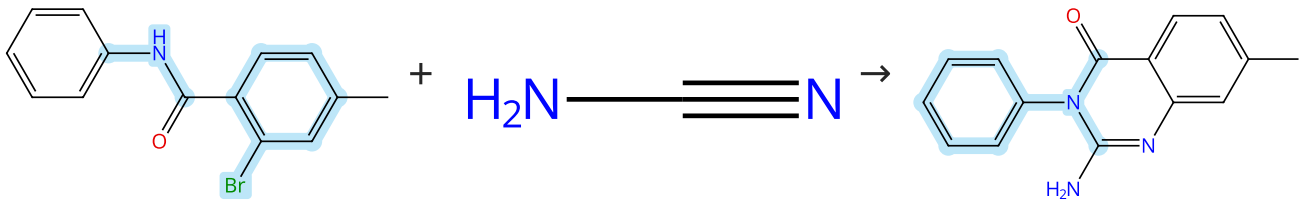
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 417** (1 Reaction)

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



Suppliers (2)

Suppliers (60)

**31-614-CAS-42982638**

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

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

Experimental Protocols

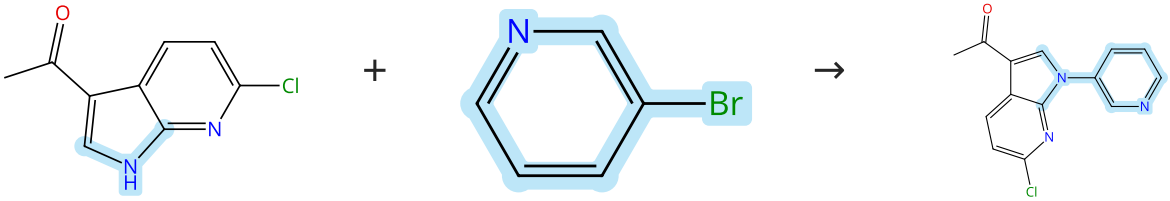
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

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

**Scheme 418** (1 Reaction)

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



Suppliers (33)

Suppliers (89)

**31-614-CAS-40701631**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

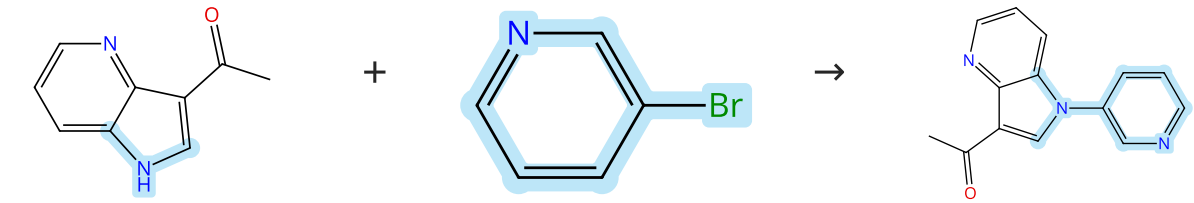
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 419** (1 Reaction)

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



Suppliers (45)

Suppliers (89)

**31-614-CAS-40701623**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

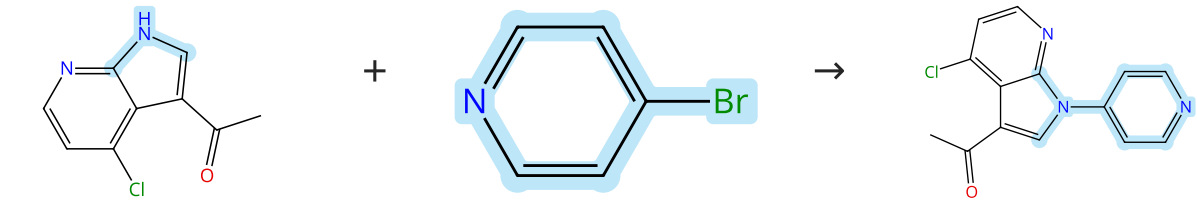
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 420** (1 Reaction)

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



Suppliers (52)

Suppliers (40)

**31-614-CAS-40701630**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

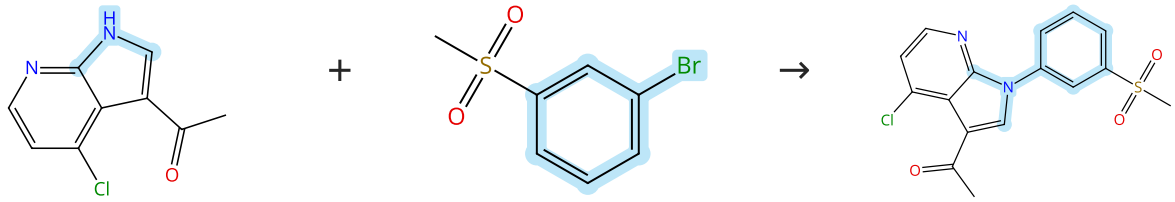
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 421** (1 Reaction)

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



Suppliers (52)

Suppliers (68)

**31-614-CAS-40701633**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

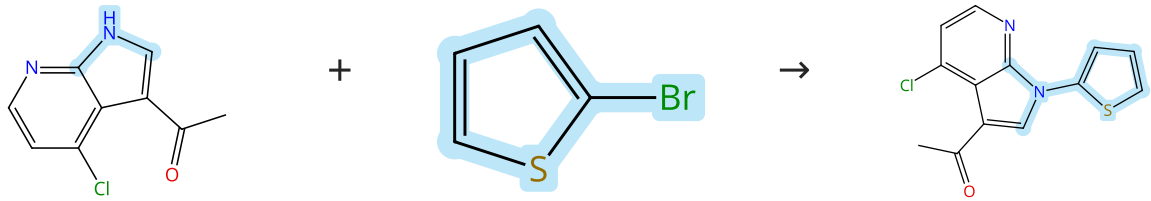
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 422** (1 Reaction)

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



Suppliers (52)

Suppliers (71)

**31-614-CAS-40701640**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

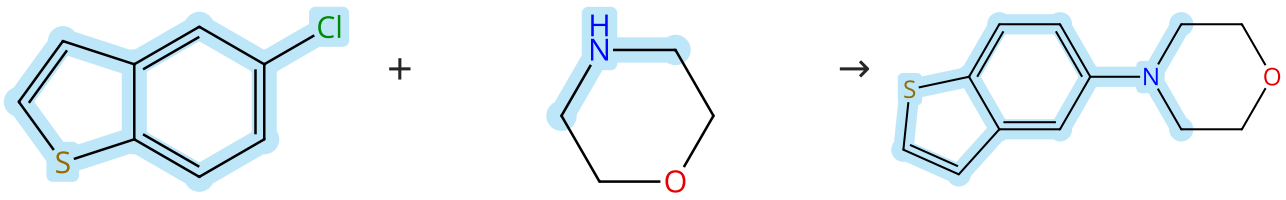
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 423** (1 Reaction)

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



Suppliers (65)

Suppliers (83)

Suppliers (2)

**31-614-CAS-41757031**

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

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

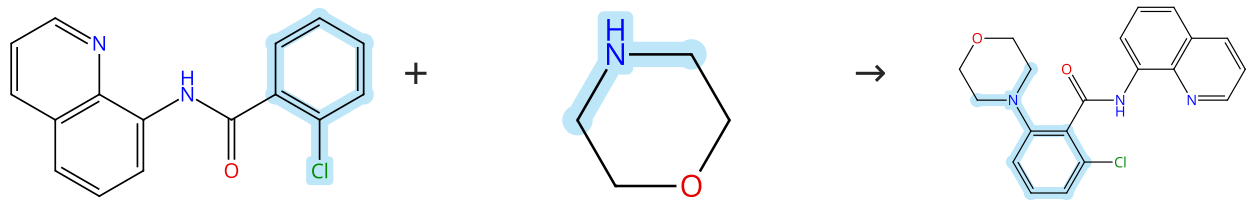
**Copper-Catalyzed Amination of Aryl Chlorides under Mild Reaction Conditions**

By: Ai, Han-Jun; et al

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

**Scheme 424** (1 Reaction)

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



Suppliers (18)

Suppliers (83)

**31-614-CAS-41880650**

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

1.1 **Reagents:** Propanoic acid, 2,2-dimethyl-, sodium salt (1:1), Oxygen
**Catalysts:** Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride
**Solvents:** Dimethyl sulfoxide; 24 h, rt

Experimental Protocols

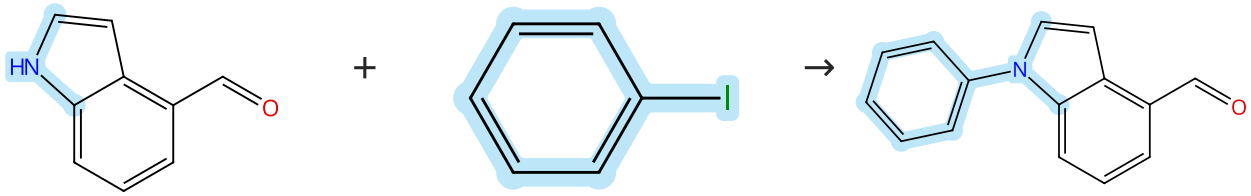
**Dual Copper Photoredox C-H Alkynylation with Arylacetylenes**

By: Nair, Akshay M.; et al

Organic Letters (2024), 26(37), 7822-7827.

**Scheme 425** (1 Reaction)

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



Suppliers (92)

Suppliers (93)

**31-614-CAS-42202542**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Toluene; 10 h, reflux; reflux → rt

1.2 **Reagents:** Water; rt

Experimental Protocols

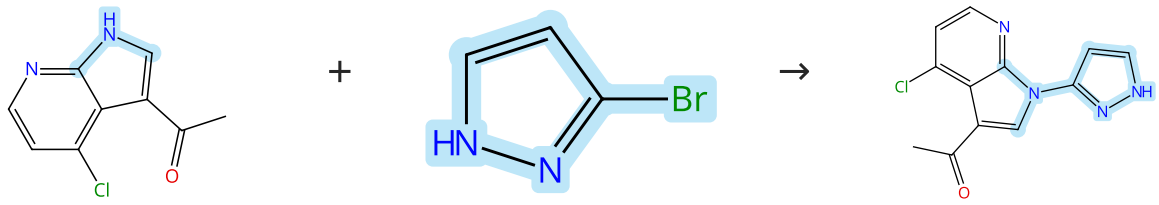
**Rh-Catalyzed [4+3] Annulation of N-Sulfonyl-1,2,3-Triazoles with 4-Vinyl Indoles to Access Azepinoindoles**

By: Wang, Ze-Hua; et al

European Journal of Organic Chemistry (2024), 27(33), e202400532.

**Scheme 426** (1 Reaction)

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



Suppliers (52)

Suppliers (112)

**31-614-CAS-40701638**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

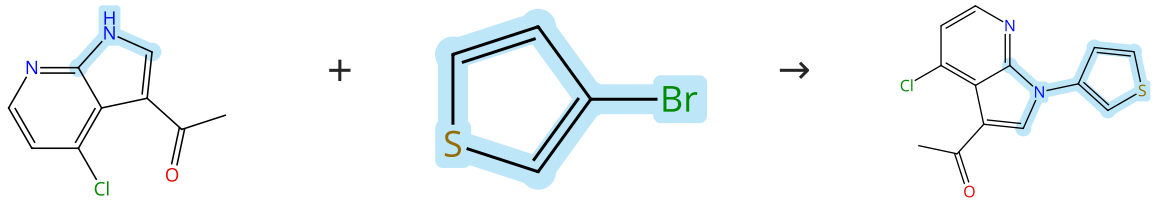
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 427** (1 Reaction)

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



Suppliers (52)

Suppliers (76)

**31-614-CAS-40701643**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

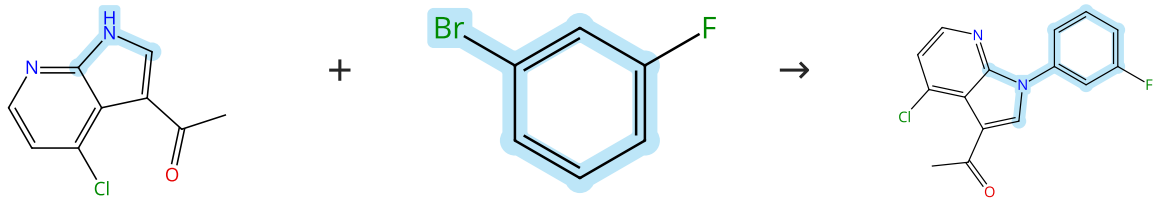
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 428** (1 Reaction)

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



Suppliers (52)

Suppliers (77)

**31-614-CAS-40701634**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

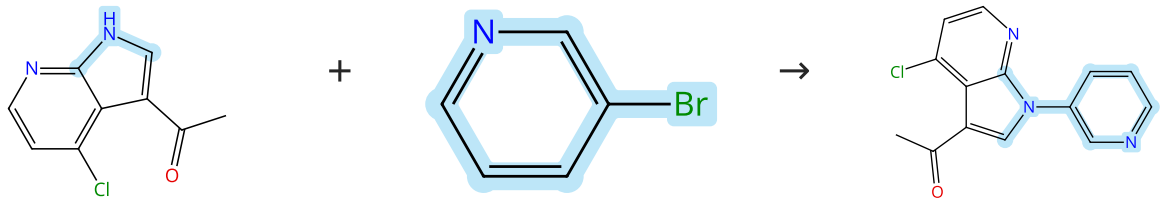
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 429** (1 Reaction)

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



Suppliers (52)

Suppliers (89)

**31-614-CAS-40701629**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

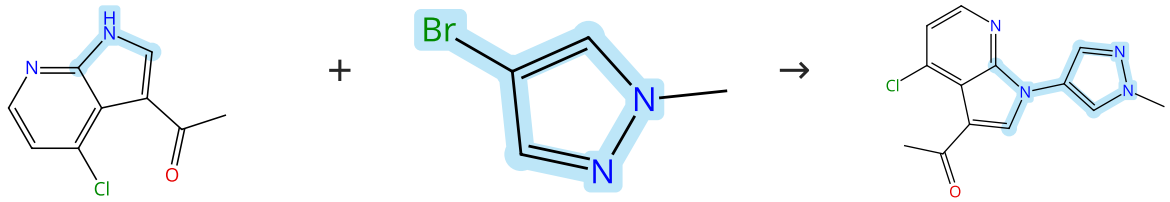
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 430** (1 Reaction)

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



Suppliers (52)

Suppliers (105)

**31-614-CAS-40701644**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

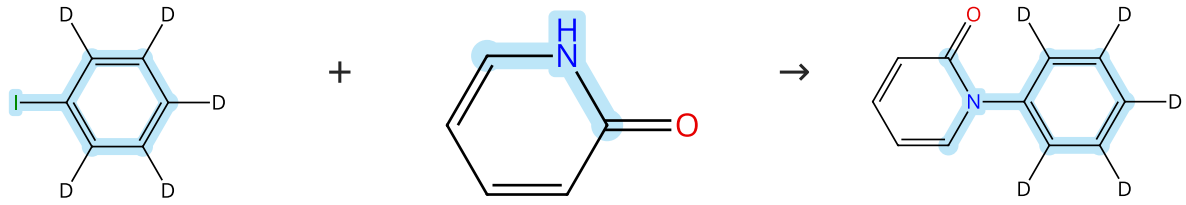
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 431** (1 Reaction)

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



Suppliers (27)

Suppliers (128)

**31-614-CAS-40029717**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 6 h, 150 °C

Experimental Protocols

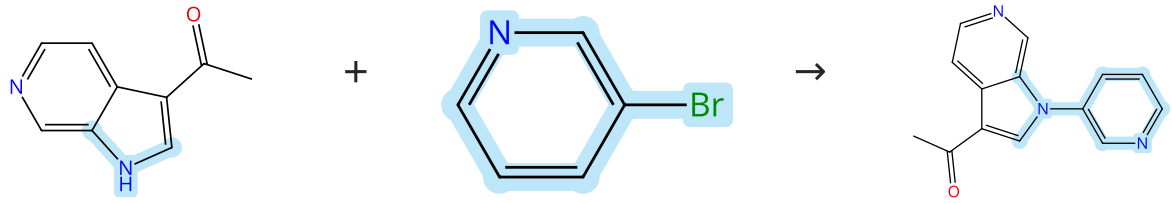
**Palladium-Catalyzed Weak Chelation-Assisted Site-Selective C-H Arylation of N-Aryl Pyridones via 2-fold C-H Activation**

By: Nanjegowda, Maniya V.; et al

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

**Scheme 432** (1 Reaction)

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



Suppliers (60)

Suppliers (89)

**31-614-CAS-40701628**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

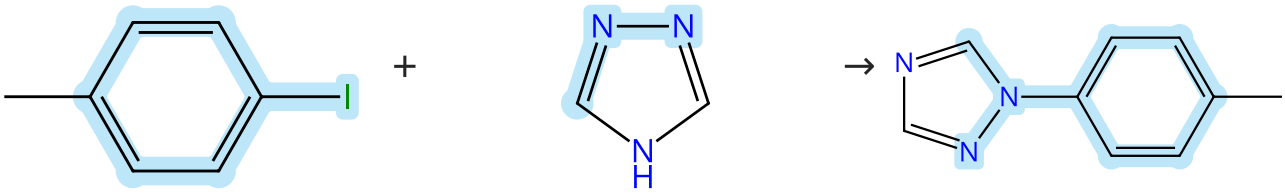
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 433** (1 Reaction)

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



Suppliers (82) | Suppliers (100) | Suppliers (5)

**31-614-CAS-40887385**

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

1.1 **Catalysts:** 1*H*-Benzotriazole, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 5 min, rt

1.2 **Reagents:** Potassium *tert*-butoxide; 24 h, 110 °C

Experimental Protocols

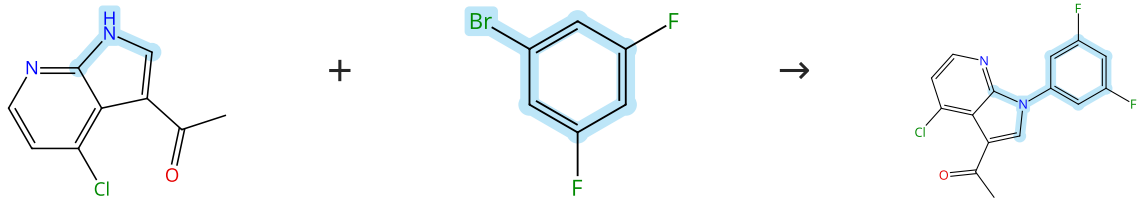
**Orchestrated Octuple C-H Activation: A Bottom-Up Topology Engineering Approach toward Stimuli-Responsive Double-Heptagon-Embedded Wavy Polycyclic Heteroar omatics**

By: Rana, Samim Sohel; et al

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

**Scheme 434** (1 Reaction)

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



Suppliers (52) | Suppliers (77)

**31-614-CAS-40701636**

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

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

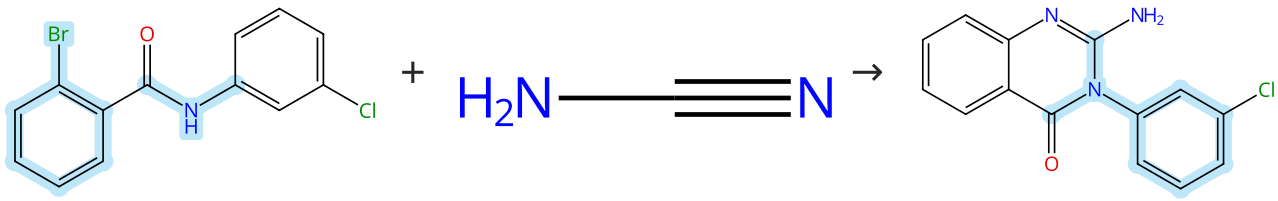
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 435** (1 Reaction)

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



Suppliers (8) | Suppliers (60)

**31-614-CAS-42982623**

Steps: **1** Yield: **75%**

1.1 **Reagents:** Potassium *tert*-butoxide
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

Experimental Protocols

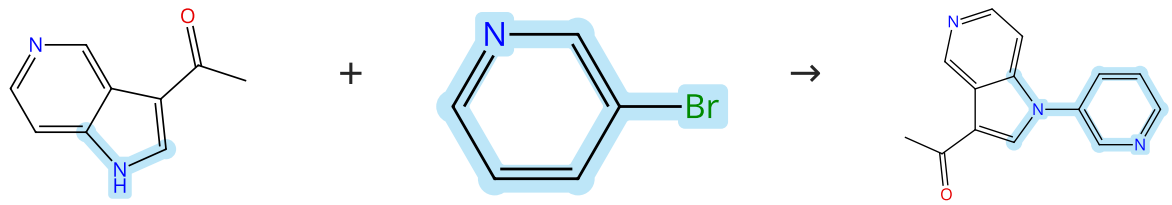
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

Journal of Organic Chemistry (2024), 89(24), 18255-18268.

**Scheme 436** (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (54)

Suppliers (89)

**31-614-CAS-40701625**

Steps: **1** Yield: **75%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

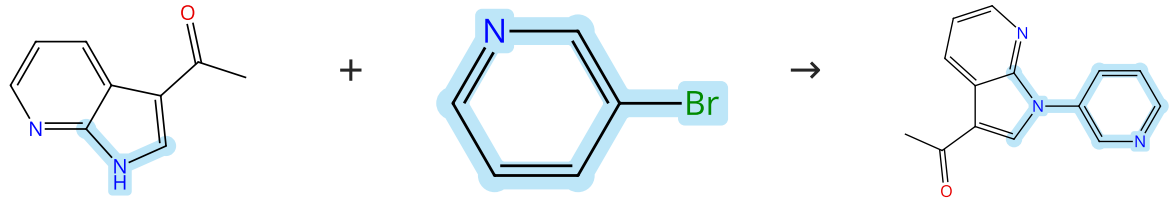
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 437** (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (65)

Suppliers (89)

**31-614-CAS-40701624**

Steps: **1** Yield: **75%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (*R*,*R*)-*N*,*N*'-Dimethyl-1,2-cyclohexanediamine
**Solvents:** Dimethyl sulfoxide; 2 h, 90 °C

1.2 **Reagents:** Water

Experimental Protocols

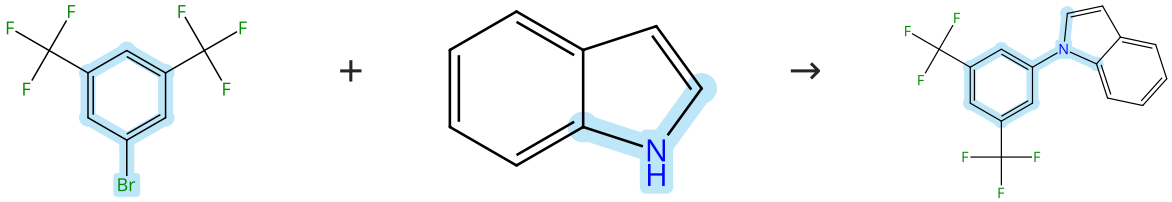
**Discovery of Novel Azaindoles as Potent and Selective PI3Kδ Inhibitors for Treatment of Multiple Sclerosis**

By: Yu, Mengyao; et al

Journal of Medicinal Chemistry (2024), 67(11), 9628-9644.

**Scheme 438** (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (79)

Suppliers (109)

Supplier (1)

**31-614-CAS-42413833**

Steps: **1** Yield: **75%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** Copper oxide ($Cu_2O$), $N^1$,$N^2$-Bis(2-furanylmethyl)ethanediamide
**Solvents:** Dimethyl sulfoxide; 10 min, rt; 24 h, 120 °C

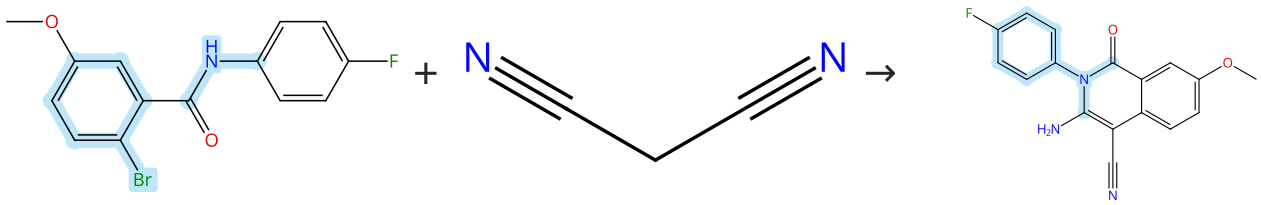
**Defluorinative Multicomponent Cascade Reaction of Trifluoromethylarenes via Photoexcited Palladium Catalysis**

By: Li, Zhibin; et al

JACS Au (2024), 4(11), 4223-4233.

**Scheme 439** (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (3)

Suppliers (60)

**31-614-CAS-38062431**

Steps: **1** Yield: **75%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide, 2999684-17-0
**Solvents:** Dimethylformamide; 12 h, 90 °C

Experimental Protocols

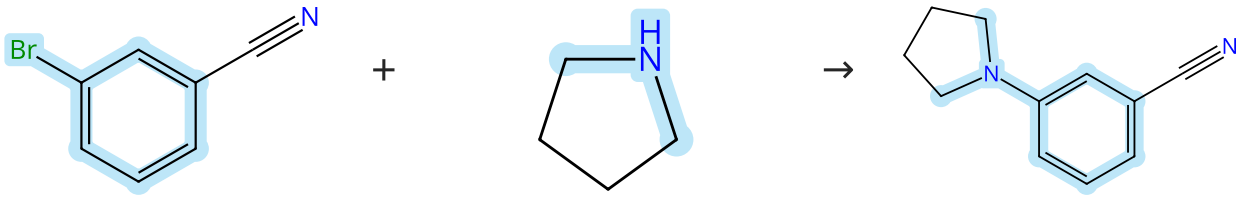
**Glycosyl Triazole Based Pyridinamide/CuI-Catalyzed Coupling of 2-Halobenzamides with Active Methylene Compounds**

By: Singh, Sumit K.; et al

Synthesis (2024), 56(6), 975-988.

**Scheme 440** (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (82)

Suppliers (74)

Suppliers (49)

**31-614-CAS-41175788**

Steps: **1** Yield: **75%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** L-Proline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 72 h, 80 °C

Experimental Protocols

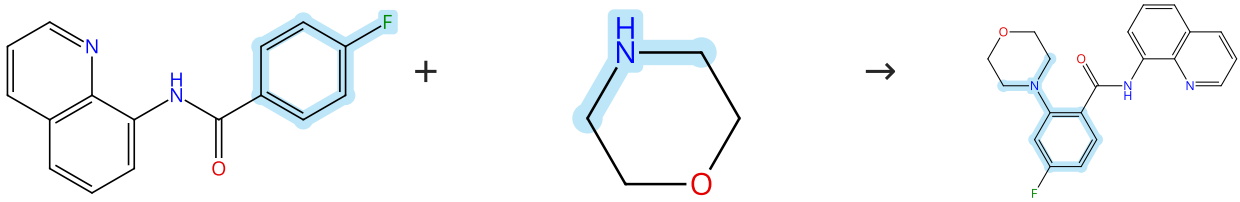
**α-Amino bicycloalkylation through organophotoredox catalysis**

By: Nugent, Jeremy; et al

Chemical Science (2024), 15(28), 10918-10925.

**Scheme 441** (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (8)

Suppliers (83)

**31-614-CAS-41880646**

Steps: **1** Yield: **75%**

1.1 **Reagents:** Propanoic acid, 2,2-dimethyl-, sodium salt (1:1), Oxygen
**Catalysts:** Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride
**Solvents:** Dimethyl sulfoxide; 24 h, rt

Experimental Protocols

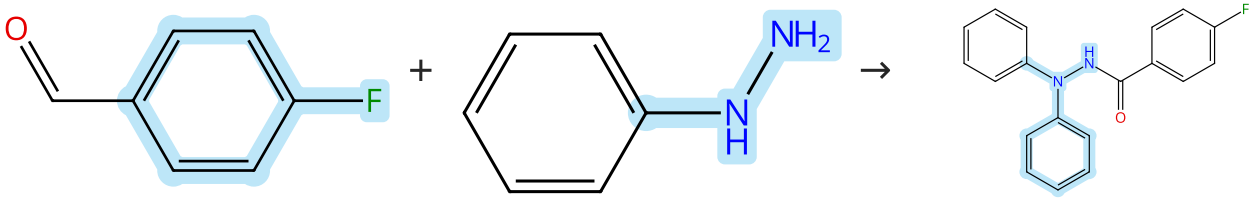
**Dual Copper Photoredox C-H Alkynylation with Arylacetylenes**

By: Nair, Akshay M.; et al

Organic Letters (2024), 26(37), 7822-7827.

**Scheme 442** (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (91) | Suppliers (63) | Suppliers (3)

**31-614-CAS-39391299**

Steps: **1** Yield: **75%**

1.1 **Reagents:** Dipotassium phosphate
**Catalysts:** Copper(II) triflate
**Solvents:** Acetonitrile; 12 h, 0 °C

Experimental Protocols

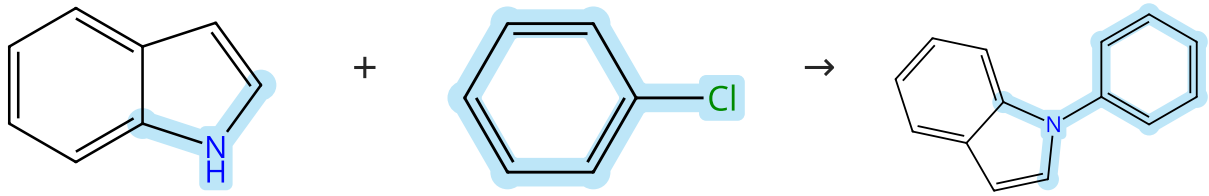
**An aerobic copper-catalyzed multi-component reaction strategy for N',N'-diaryl acylhydrazine synthesis: reactions and mechanism**

By: Deng, Lei; et al

Organic Chemistry Frontiers (2024), 11(4), 1132-1139.

**Scheme 443** (1 Reaction)

Steps: **1** Yield: **75%**



Suppliers (109) | Suppliers (119) | Suppliers (68)

**31-614-CAS-41844035**

Steps: **1** Yield: **75%**

1.1 **Reagents:** Triethylamine
**Catalysts:** Copper oxide (CuO), Guar gum
**Solvents:** Dimethylformamide; 12 h, 80 °C

Experimental Protocols

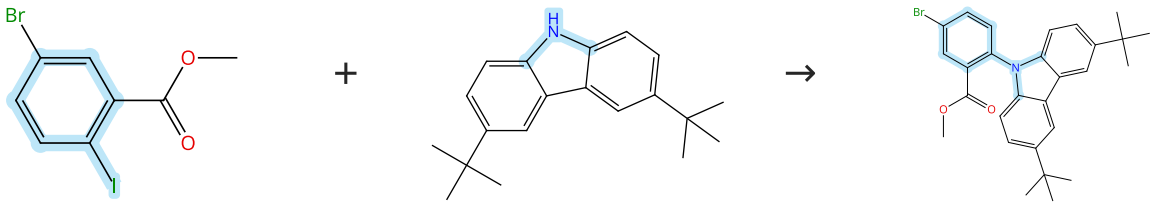
**An eco-friendly convenient approach for the synthesis of guar gum integrated copper nanoparticles: Investigation of its catalytic activity in the C-N Ullmann coupling reactions and study of its anti-human kidney cancer effects**

By: Li, Nana; et al

Journal of Organometallic Chemistry (2024), 1020, 123329.

**Scheme 444** (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (73) | Suppliers (69)

**31-614-CAS-38838825**

Steps: **1** Yield: **74%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 12 h, 140 °C

Experimental Protocols

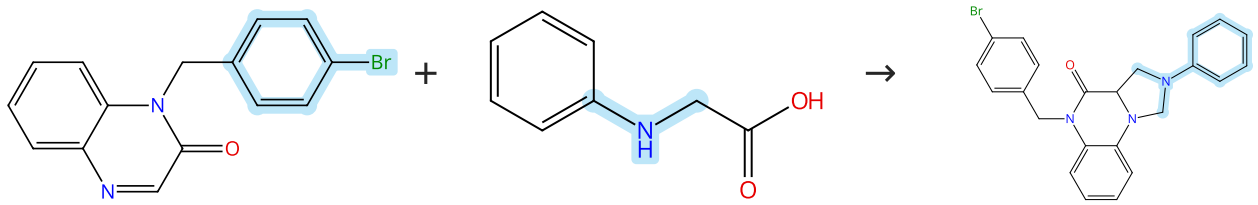
**A multifunctional emitter with synergistical adjustment of rigidity and flexibility for high-performance data-recording and organic light-emitting devices with "hot exciton" channel**

By: Chen, Guowei; et al

Chemical Engineering Journal (Amsterdam, Netherlands) (2024), 479, 147616.

**Scheme 445** (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (2)

Suppliers (88)

**31-614-CAS-39663063**

Steps: **1** Yield: **74%**

1.1 **Reagents:** Oxygen
**Catalysts:** Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride
**Solvents:** 1,2-Dichloroethane; 12 h, rt

Experimental Protocols

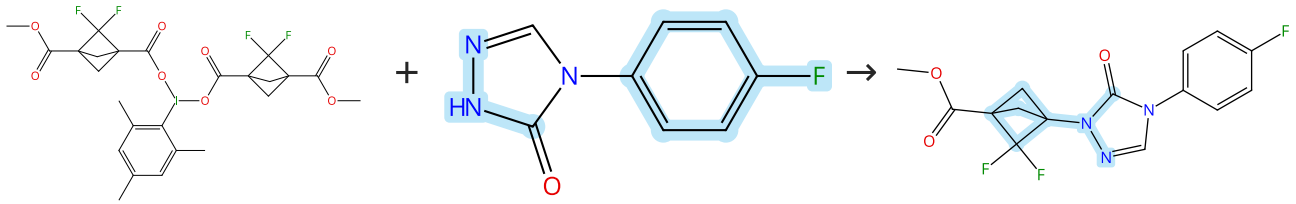
**Visible-light-promoted tandem decarboxylation coupling/cyclization of N-aryl glycines with quinoxalinones: easy access to tetrahydroimidazo[1,5-a]quinoxalin-4(5H)-ones**

By: Tang, Zhen; et al

Green Synthesis and Catalysis (2024), 5(1), 31-34.

**Scheme 446** (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (41)

**31-614-CAS-39519419**

Steps: **1** Yield: **74%**

1.1 **Catalysts:** Copper(II) acetylacetonate, Iridium(1+), [4,4'-bis(1,1-dimethylethyl)-2,2'-bipyridine-κ*N*$^1$,κ*N*$^{1'}$]bis[2-(2-pyridinyl-κ*N*)phenyl-κ*C*]-, (*OC*-6-33)-, hexafluorophosphate(1-) (1:1)
**Solvents:** Acetonitrile; 2.5 h, 24 °C

Experimental Protocols

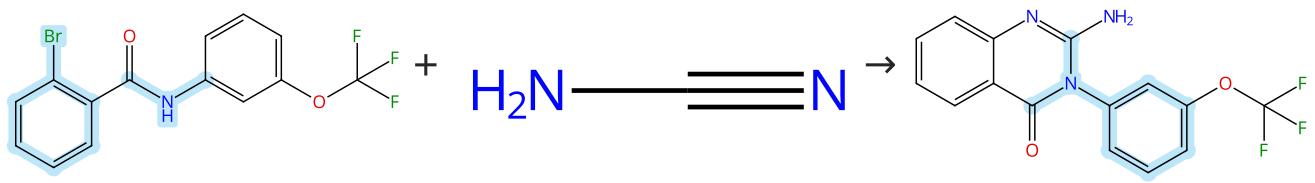
**Decarboxylative C-N Coupling of 2,2-Difluorobicyclo[1.1.1]pentane (BCP-$F_2$) Building Blocks**

By: Ma, Xiaoshen; et al

Organic Letters (2024), 26(9), 1947-1951.

**Scheme 447** (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (2)

Suppliers (60)

**31-614-CAS-42982609**

Steps: **1** Yield: **74%**

1.1 **Reagents:** Potassium *tert*-butoxide
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

Experimental Protocols

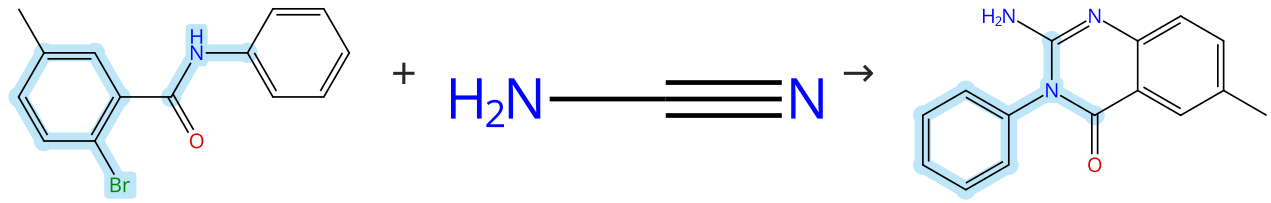
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

Journal of Organic Chemistry (2024), 89(24), 18255-18268.

**Scheme 448** (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (2)

Suppliers (60)

**31-614-CAS-42982632**

Steps: **1** Yield: **74%**

1.1 **Reagents:** Potassium *tert*-butoxide
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

Experimental Protocols

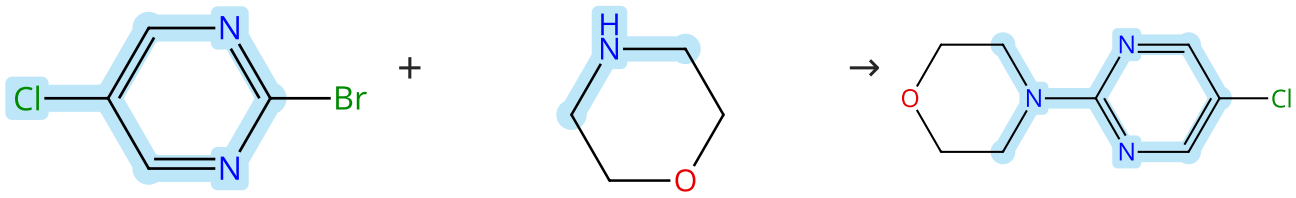
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

Journal of Organic Chemistry (2024), 89(24), 18255-18268.

**Scheme 449** (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (67)

Suppliers (83)

Suppliers (14)

**31-614-CAS-40743598**

Steps: **1** Yield: **74%**

1.1 **Catalysts:** Cupric acetate, 3,5-Diaza-1-azonia-7-phosphatricyclo[3.3.1.1$^{3,7}$]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

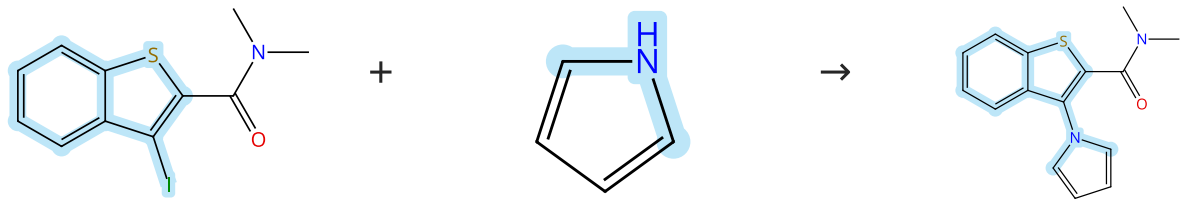
**Cu(II)/PTABS-Promoted, Chemoselective Amination of Halo Pyrimidines**

By: Phulwale, Vikram; et al

Journal of Organic Chemistry (2024), 89(13), 9243-9254.

**Scheme 450** (1 Reaction)

Steps: **1** Yield: **74%**



Supplier (1)

Suppliers (73)

**31-614-CAS-40981145**

Steps: **1** Yield: **74%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Copper oxide ($Cu_2O$)
**Solvents:** Dimethyl sulfoxide; 32 h, 120 °C

Experimental Protocols

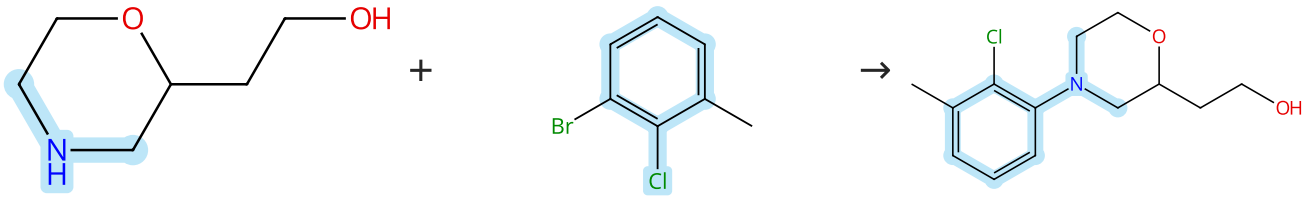
**Deprotonative Metallation of Benzofuran and Benzothiophene Derivatives for the Formation of Tetracyclic and Pentacyclic Heteroaromatic Compounds**

By: Elmir, Loubna; et al

European Journal of Organic Chemistry (2024), 27(27), e202400374.

**Scheme 451** (2 Reactions)

Steps: **1** Yield: **74%**




Suppliers (58)

Suppliers (68)

**31-614-CAS-40801505**

Steps: **1** Yield: **74%**

1.1 **Reagents:** Sodium trimethylsilanolate
**Catalysts:** Cuprous iodide, 1,2-Benzenediamine, $N^1$,$N^2$-bis(2-phenyl-1-naphthalenyl)-
**Solvents:** Dimethyl sulfoxide; 24 °C; 16 h, 24 °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.

**31-614-CAS-40801479**

Steps: **1** Yield: **74%**

1.1 **Reagents:** Sodium *tert*-butoxide
**Catalysts:** Cuprous iodide, 1,2-Benzenediamine, $N^1$,$N^2$-bis(2-phenyl-1-naphthalenyl)-
**Solvents:** Dimethyl sulfoxide; 50 °C; 16 h, 50 °C

Experimental Protocols

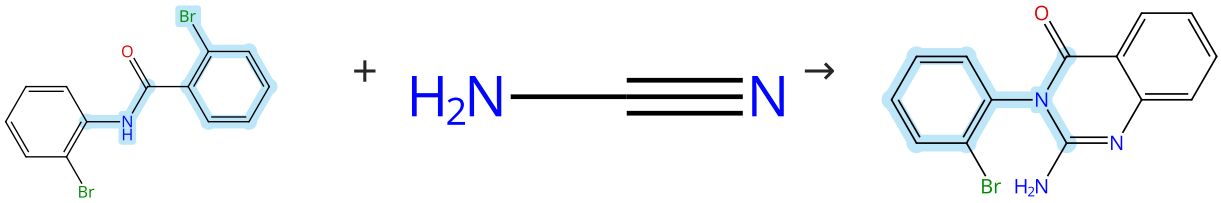
**Cu-Catalyzed Amination of Base-Sensitive Aryl Bromides and the Chemoselective N- and O-Arylation of Amino Alcohols**

By: Strauss, Michael J.; et al

Journal of the American Chemical Society (2024), 146(27), 18616-18625.

**Scheme 452** (1 Reaction)

Steps: **1** Yield: **73%**




Suppliers (3)

Suppliers (60)

**31-614-CAS-42982608**

Steps: **1** Yield: **73%**

1.1 **Reagents:** Potassium *tert*-butoxide
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

Experimental Protocols

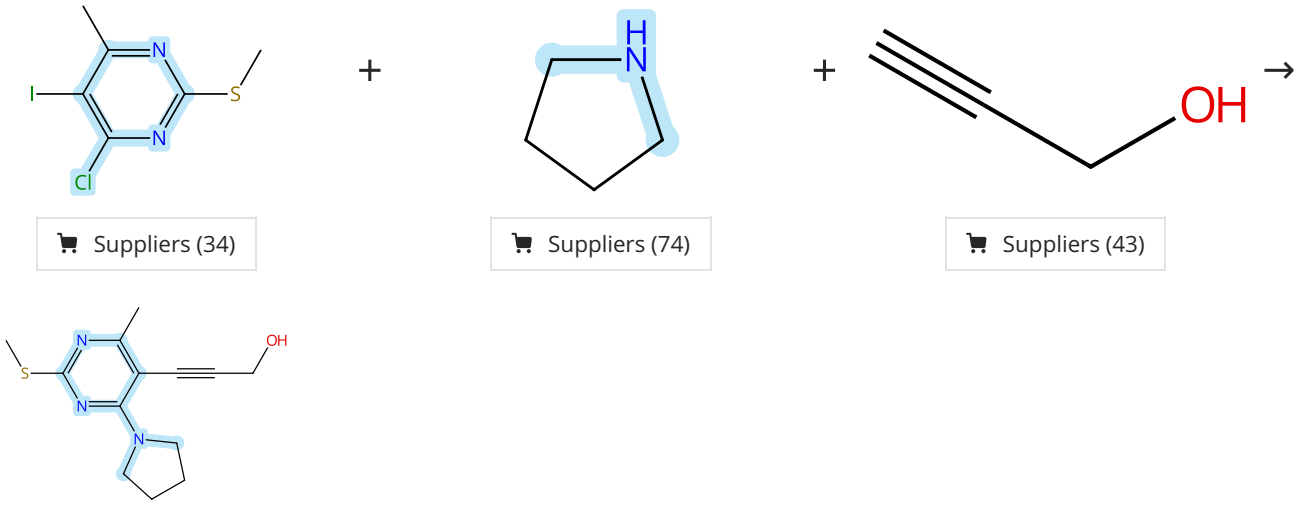
**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

By: Wang, Zhongjie; et al

Journal of Organic Chemistry (2024), 89(24), 18255-18268.

**Scheme 453** (1 Reaction)

Steps: **1** Yield: **73%**




Suppliers (34)

Suppliers (74)

Suppliers (43)




**31-614-CAS-41518138**

Steps: **1** Yield: **73%**

1.1 **Reagents:** Triethylamine
**Solvents:** Dimethylformamide; 80 °C

1.2 **Catalysts:** Cuprous iodide, Dichlorobis(triphenylphosphine) palladium; 4 h, 80 °C

Experimental Protocols

**Synthesis of new 4,5-disubstituted-6-methyl-2-(methylthio) pyrimidines via C-C coupling reactions**

By: Cheldavi, Forough; et al

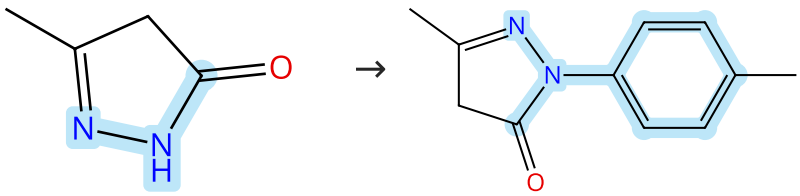
Journal of Sulfur Chemistry (2024), 45(5), 690-702.

**Scheme 454** (1 Reaction)

Steps: **1** Yield: **73%**

Multi-component structure image available in CAS SciFinder

Suppliers (36)




Suppliers (76)

Suppliers (71)

**31-614-CAS-38961886**

Steps: **1** Yield: **73%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Toluene; 3 h, 110 °C

1.2 **Reagents:** Water

Experimental Protocols

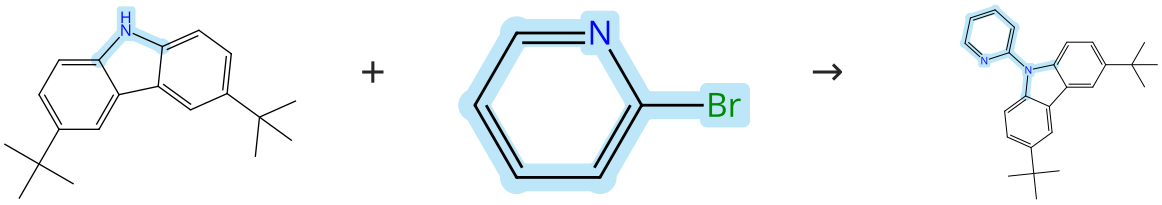
**Sequential regioselective arylation of pyrazolones with diaryli odonium salts**

By: Liao, Wenbo; et al

Organic & Biomolecular Chemistry (2024), 22(4), 708-713.

**Scheme 455** (1 Reaction)

Steps: **1** Yield: **73%**




Suppliers (69)

Suppliers (86)

31-614-CAS-41277572 Steps: **1** Yield: **73%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Copper
**Solvents:** Dimethylformamide; 30 h, 140 °C

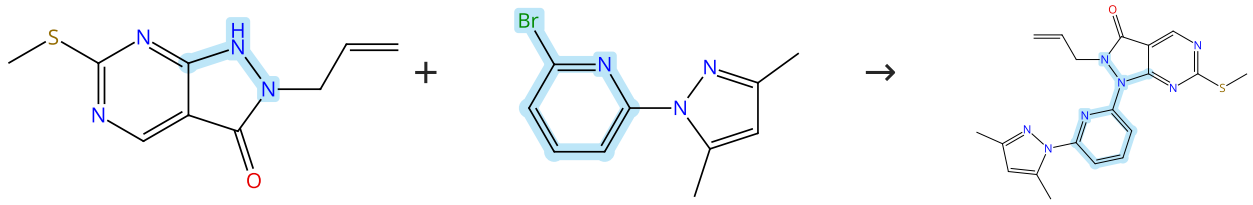
Experimental Protocols

**Palladium-Catalyzed Direct Alkynylation of Carbazoles with Alkynyl Bromides**

By: Dharaniyedath, Jyothis; et al

European Journal of Organic Chemistry (2024), 27(40), e202400649.

**Scheme 456** (1 Reaction) Steps: **1** Yield: **73%**



Suppliers (60) Suppliers (17)

31-614-CAS-40870512 Steps: **1** Yield: **73%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, (1*S*,2*S*)-$N^1$,$N^2$-Dimethyl-1,2-cyclohexanediamine
**Solvents:** 1,4-Dioxane; overnight, 95 °C

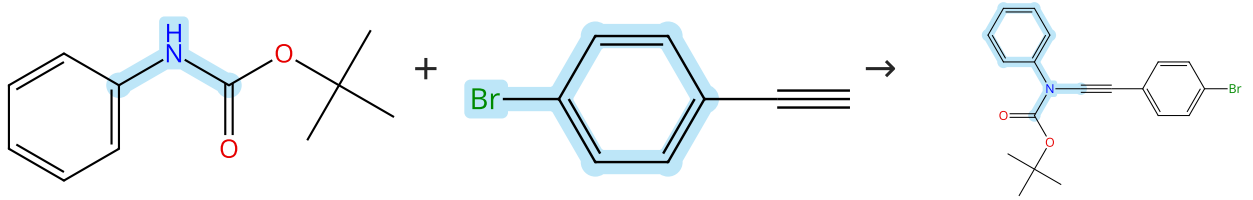
Experimental Protocols

**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 457** (1 Reaction) Steps: **1** Yield: **73%**



Suppliers (71) Suppliers (81)

31-614-CAS-41090748 Steps: **1** Yield: **73%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** 1,10-Phenanthroline, Copper sulfate
**Solvents:** Toluene; 72 h, 80 °C

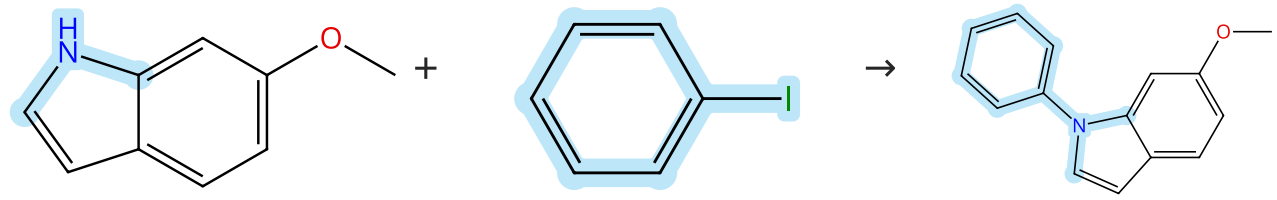
Experimental Protocols

**Cycloaddition of Phenyltriazolinedione with Carbazole-Alkynes and Yne-Carbamates to Access Diazacyclobutenes**

By: Miller, Brock A.; et al

Journal of Organic Chemistry (2024), 89(7), 4990-4999.

**Scheme 458** (1 Reaction) Steps: **1** Yield: **73%**



Suppliers (98) Suppliers (93) Suppliers (13)

31-614-CAS-39303580 Steps: **1** Yield: **73%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; overnight, 120 °C

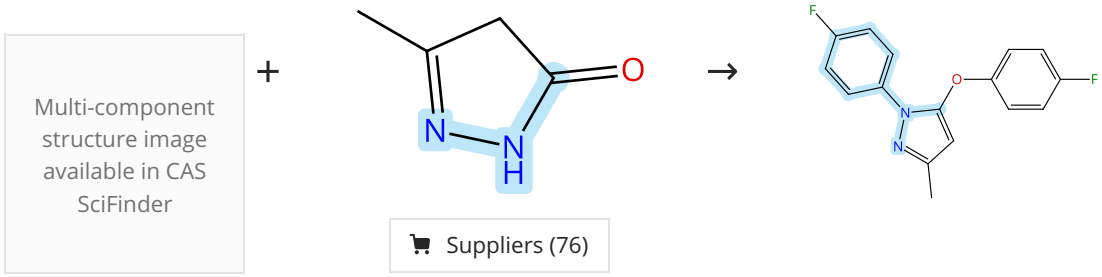
Experimental Protocols

**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 459** (1 Reaction) Steps: **1** Yield: **73%**




Suppliers (53) Suppliers (76)

31-614-CAS-38961895 Steps: **1** Yield: **73%**

1.1 **Reagents:** Sodium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Toluene; 3 h, 110 °C

1.2 **Reagents:** Water

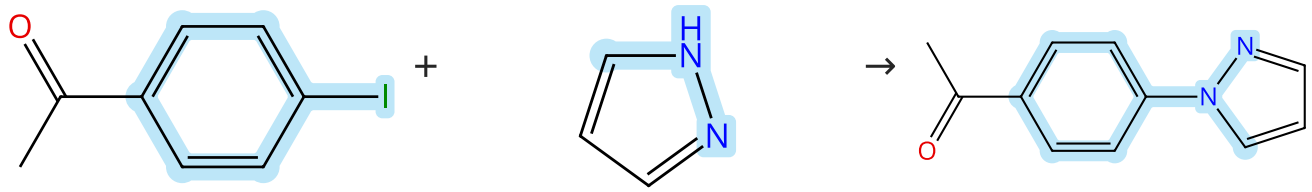
Experimental Protocols

**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

Organic & Biomolecular Chemistry (2024), 22(4), 708-713.

**Scheme 460** (1 Reaction) Steps: **1** Yield: **73%**




Suppliers (87) Suppliers (93) Suppliers (58)

31-614-CAS-40921728 Steps: **1** Yield: **73%**

1.1 **Reagents:** Cesium carbonate
**Catalysts:** Copper oxide ($Cu_2O$)
**Solvents:** Dimethylformamide; 24 h, 100 °C

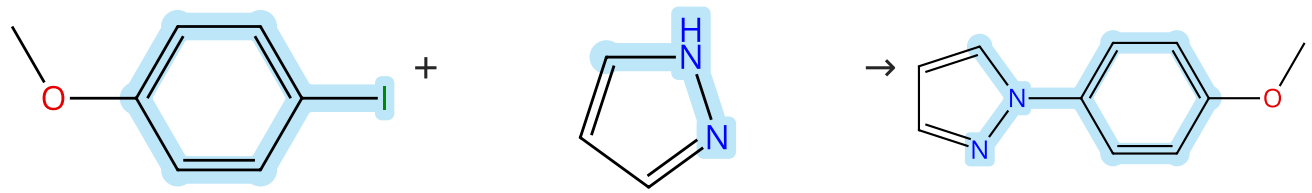
Experimental Protocols

**Design Principle of Heparanase Inhibitors: A Combined In Vitro and In Silico Study**

By: Zhang, Yuzhao; et al

ACS Medicinal Chemistry Letters (2024), 15(7), 1032-1040.

**Scheme 461** (1 Reaction) Steps: **1** Yield: **73%**




Suppliers (89) Suppliers (93) Suppliers (58)

31-614-CAS-38947750 Steps: **1** Yield: **73%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide, *N*-9*H*-Carbazol-9-yl-1*H*-pyrrole-2-carboxamide
**Solvents:** Diethylene glycol; 3 d, rt

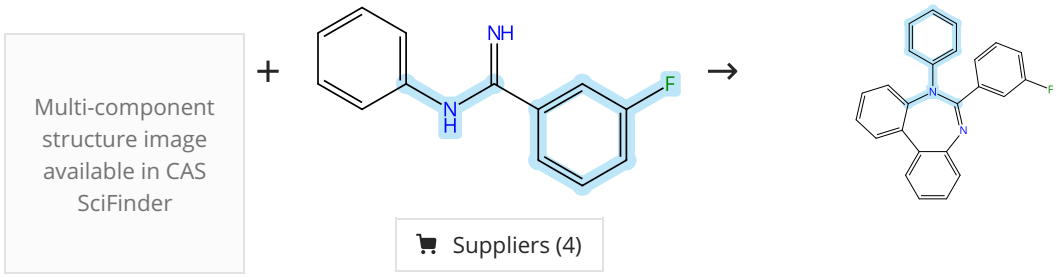
Experimental Protocols

**Room-Temperature CuI-Catalyzed N-Arylation of Cyclopropylamine**

By: Hong, Peng; et al

Journal of Organic Chemistry (2024), 89(1), 57-67.

**Scheme 462** (1 Reaction) Steps: **1** Yield: **72%**




Suppliers (30)

Suppliers (4)

31-614-CAS-42088096 Steps: **1** Yield: **72%**

1.1 **Reagents:** Potassium acetate
**Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; 6 h, 80 °C

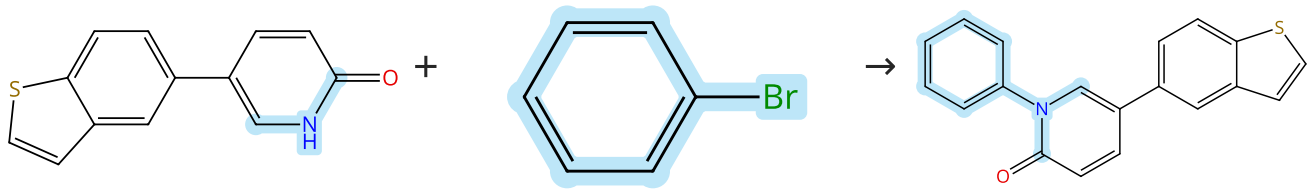
Experimental Protocols

**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 463** (1 Reaction) Steps: **1** Yield: **72%**




Suppliers (71)

31-614-CAS-43193388 Steps: **1** Yield: **72%**

1.1 **Reagents:** Potassium carbonate, Calcium chloride
**Solvents:** Dimethylformamide; 5 min, rt

1.2 **Catalysts:** Cuprous iodide; 22 h, 150 °C

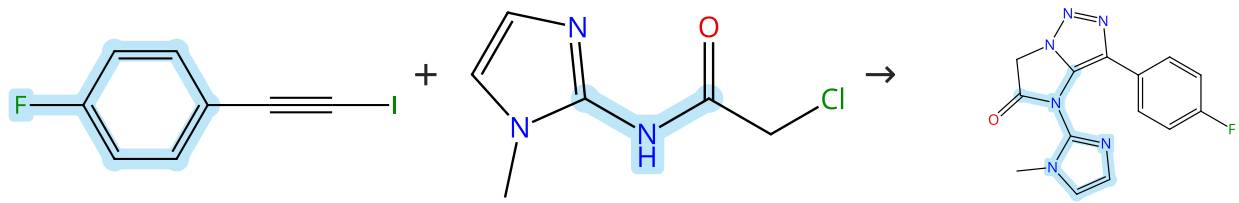
Experimental Protocols

**Direct Synthesis of Benzhydryl-Functionalized 3,4-Dihydropyridin-2-ones from 2-Pyridones and Their Use in the Formation of Bridged δ-Lactams**

By: Myk, Zofia M.; et al

Molecules (2024), 29(22), 5274.

**Scheme 464** (1 Reaction) Steps: **1** Yield: **72%**




Suppliers (30)

Suppliers (5)

31-614-CAS-40408103 Steps: **1** Yield: **72%**

1.1 **Reagents:** Potassium *tert*-butoxide, Sodium azide
**Catalysts:** Cuprous iodide
**Solvents:** Polyethylene glycol; 60 min, 80 °C

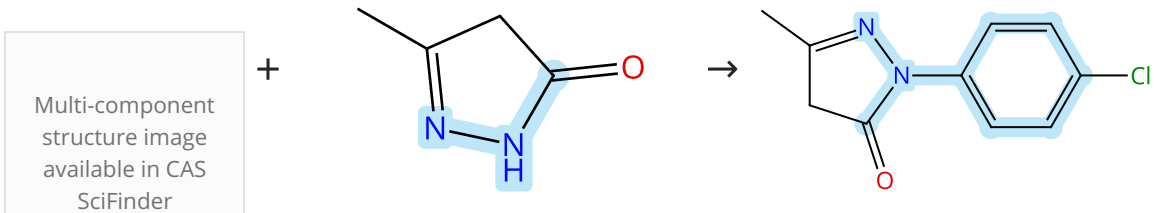
Experimental Protocols

**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 465** (1 Reaction) Steps: **1** Yield: **72%**




Suppliers (28) Suppliers (76) Suppliers (63)

31-614-CAS-38961889 Steps: **1** Yield: **72%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Toluene; 3 h, 110 °C

1.2 **Reagents:** Water

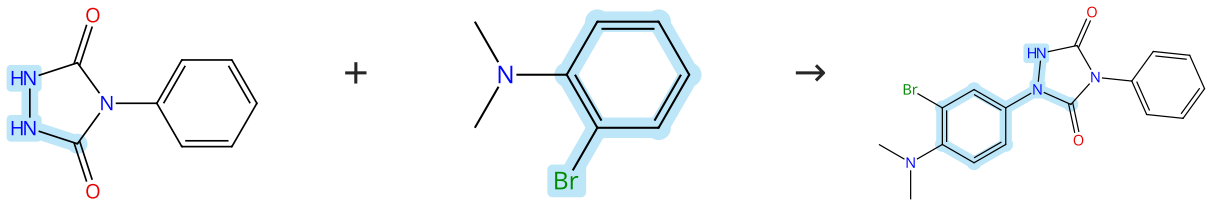
Experimental Protocols

**Sequential regioselective arylation of pyrazolones with diaryliodonium salts**

By: Liao, Wenbo; et al

Organic & Biomolecular Chemistry (2024), 22(4), 708-713.

**Scheme 466** (1 Reaction) Steps: **1** Yield: **72%**




Suppliers (81) Suppliers (79)

31-614-CAS-44140340 Steps: **1** Yield: **72%**

1.1 **Reagents:** Oxygen
**Catalysts:** NAD (complex with copper), Copper (complex with NAD)
**Solvents:** Water; 6 h, pH 7, 25 °C

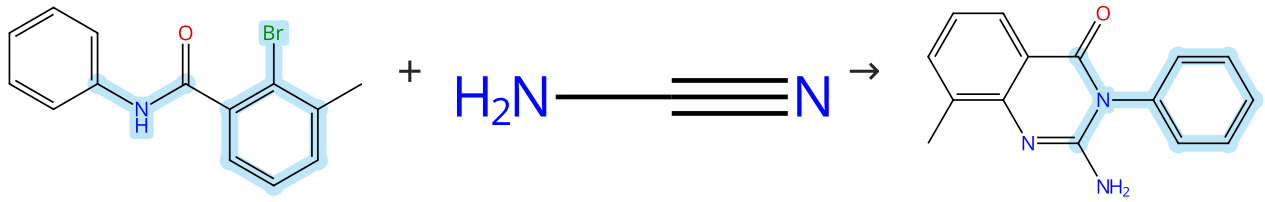
Experimental Protocols

**Cu-NADH as laccase mimics for efficient aryl C-H amination**

By: Tang, Xuyong; et al

Inorganic Chemistry Communications (2024), 167, 112726.

**Scheme 467** (1 Reaction) Steps: **1** Yield: **72%**




Suppliers (2) Suppliers (60)

31-614-CAS-42982631 Steps: **1** Yield: **72%**

1.1 **Reagents:** Potassium *tert*-butoxide
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 8 h, 130 °C

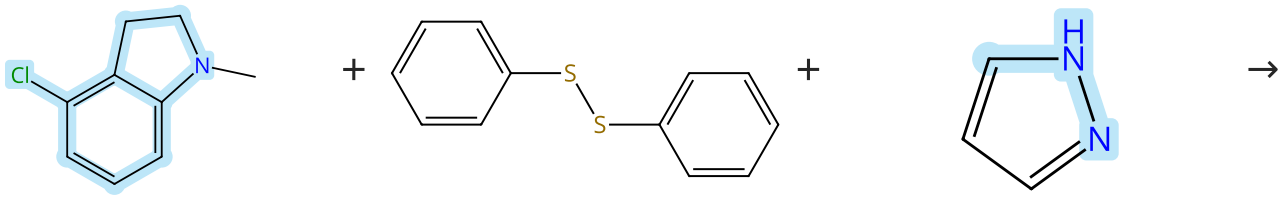
Experimental Protocols

**Synthesis of 2-Amino-quinazolin-4(3H)-ones using 2-Bromo-N-phenylbenzamide and Cyanamide Ullmann Cross-Coupling**

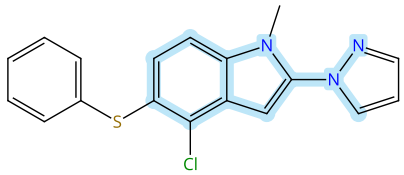
By: Wang, Zhongjie; et al

Journal of Organic Chemistry (2024), 89(24), 18255-18268.

**Scheme 468** (1 Reaction) Steps: **1** Yield: **72%**




Suppliers (4) Suppliers (84) Suppliers (93)




31-614-CAS-39026152 Steps: **1** Yield: **72%**

1.1 **Reagents:** Oxygen
**Catalysts:** Iodine, Cuprous iodide
**Solvents:** 1,2-Dichloroethane; 12 h, 80 °C

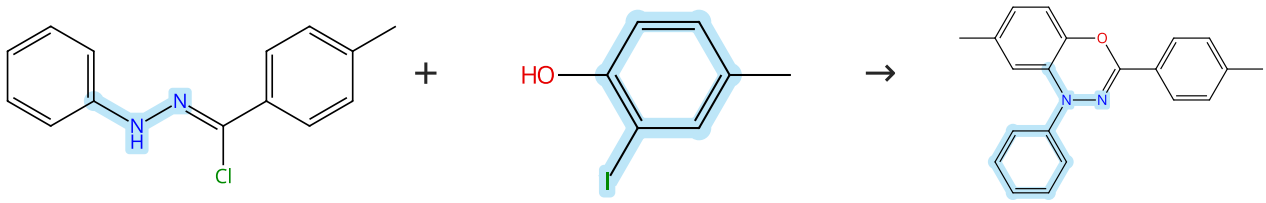
Experimental Protocols

**Iodine-dependent oxidative regioselective aminochalcogenation of indolines**

By: Zhang, Xiaoxiang; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(9), 1152-1155.

**Scheme 469** (1 Reaction) Steps: **1** Yield: **72%**




Suppliers (7) Suppliers (64)

31-614-CAS-42420856 Steps: **1** Yield: **72%**

1.1 **Reagents:** Triethylamine
**Solvents:** Acetonitrile; 10 min, rt

1.2 **Catalysts:** Cuprous iodide
**Solvents:** Acetonitrile; rt; 5 h, rt

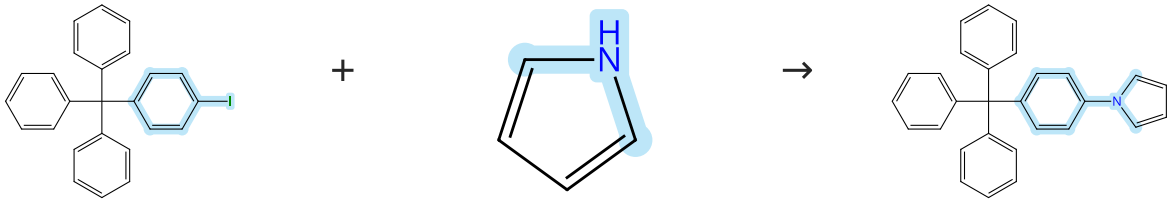
**A new route for the synthesis of substituted benzo [1,3,4] oxadiazine derivatives via copper-catalyzed N-arylation-cyclization of hydrazonoyl chlorides and 2-iodophenol**

By: Nematpour, Manijeh

Tetrahedron Letters (2024), 151, 155333.

**Scheme 470** (1 Reaction)

Steps: **1** Yield: **72%**



Suppliers (10) | Suppliers (73) | Suppliers (4)

**31-614-CAS-39946985**

Steps: **1** Yield: **72%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 12 h, 110 °C

Experimental Protocols

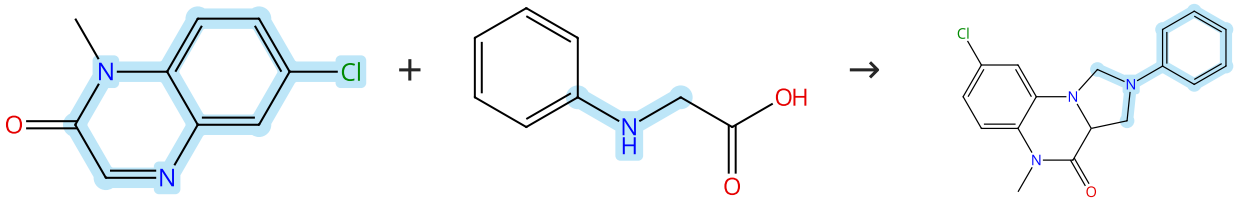
**Tetraphenylmethane Derivatives Containing Nitrogen Heterocycles**

By: Kotha, Sambasivarao; et al

SynOpen (2024), 8(1), 91-99.

**Scheme 471** (1 Reaction)

Steps: **1** Yield: **72%**



Suppliers (8) | Suppliers (88)

**31-614-CAS-39663078**

Steps: **1** Yield: **72%**

1.1 **Reagents:** Oxygen
**Catalysts:** Cupric acetate, Tris(2,2'-bipyridyl)ruthenium(II) chloride
**Solvents:** 1,2-Dichloroethane; 12 h, rt

Experimental Protocols

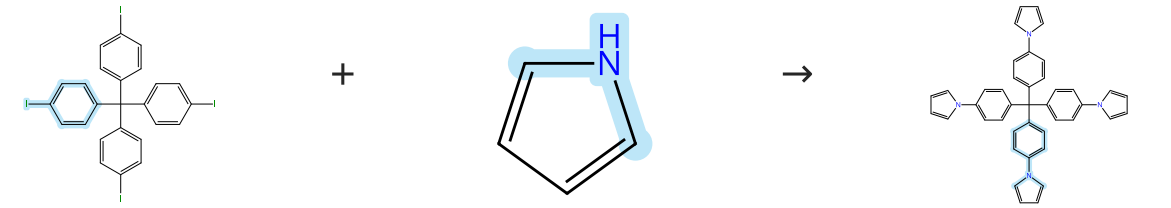
**Visible-light-promoted tandem decarboxylation coupling/cyclization of N-aryl glycines with quinoxalinones: easy access to tetrahydroimidazo[1,5-a]quinoxalin-4(5H)-ones**

By: Tang, Zhen; et al

Green Synthesis and Catalysis (2024), 5(1), 31-34.

**Scheme 472** (1 Reaction)

Steps: **1** Yield: **72%**



Suppliers (31) | Suppliers (73)

**31-614-CAS-39946989**

Steps: **1** Yield: **72%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 12 h, 110 °C

Experimental Protocols

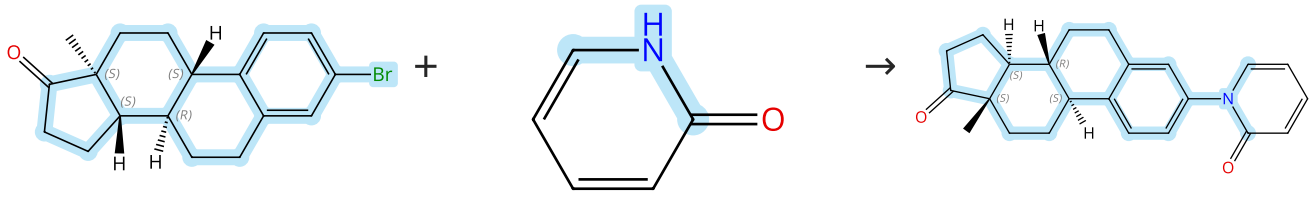
**Tetraphenylmethane Derivatives Containing Nitrogen Heterocycles**

By: Kotha, Sambasivarao; et al

SynOpen (2024), 8(1), 91-99.

**Scheme 473** (1 Reaction)

Steps: **1** Yield: **72%**



Absolute stereochemistry shown

Suppliers (128)

Absolute stereochemistry shown

**31-614-CAS-40029694**

Steps: **1** Yield: **72%**

1.1 **Reagents:** Potassium carbonate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethylformamide; 6 h, 150 °C

1.2 **Reagents:** Water

Experimental Protocols

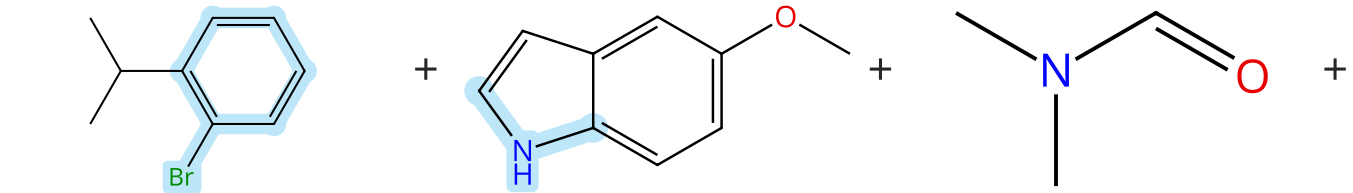
**Palladium-Catalyzed Weak Chelation-Assisted Site-Selective C-H Arylation of N-Aryl Pyridones via 2-fold C-H Activation**

By: Nanjegowda, Maniya V.; et al

Journal of Organic Chemistry (2024), 89(9), 6564-6574.

**Scheme 474** (1 Reaction)

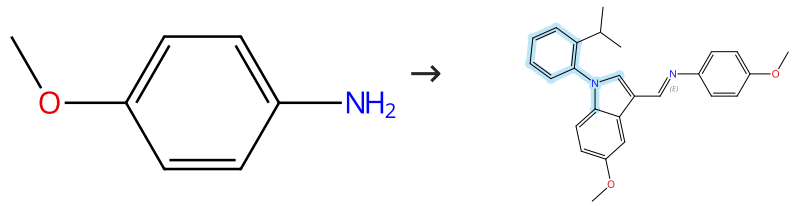
Steps: **1** Yield: **72%**



Suppliers (72)

Suppliers (106)

Suppliers (298)



Suppliers (78)

Double bond geometry shown

**31-614-CAS-40180117**

Steps: **1** Yield: **72%**

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

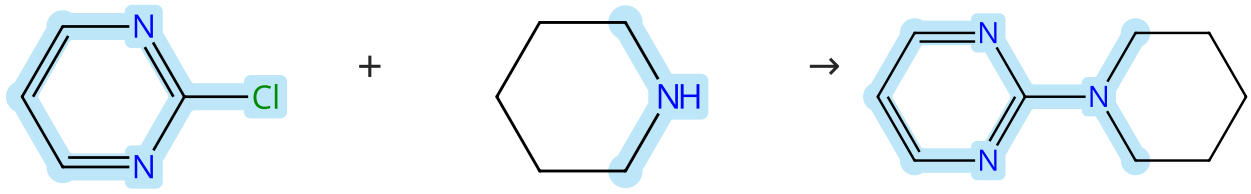
**Iron-catalyzed stereoselective C-H alkylation for simultaneous construction of C-N axial and C-central chirality**

By: Zhang, Zi-Jing; et al

Nature Communications (2024), 15(1), 3503.

**Scheme 475** (1 Reaction)

Steps: **1** Yield: **72%**



Suppliers (87) | Suppliers (50) | Suppliers (31)

**31-614-CAS-40748950**

Steps: **1** Yield: **72%**

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$^{3,7}$]decane, 1-(4-sulfobutyl)-, inner salt; 18 h, 50 °C

Experimental Protocols

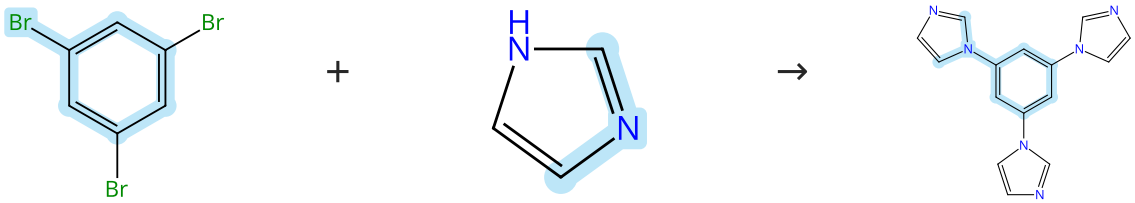
**Ambient Temperature Metal-Free Thiomethylation of Chloroheteroarenes and Chloropurines**

By: Patel, Manisha A.; et al

Chemistry - An Asian Journal (2024), 19(11), e202400114.

**Scheme 476** (1 Reaction)

Steps: **1** Yield: **72%**



Suppliers (76) | Suppliers (201) | Suppliers (55)

**31-614-CAS-38926690**

Steps: **1** Yield: **72%**

1.1 **Catalysts:** Potassium carbonate, Copper sulfate; 24 h, rt → 150 °C; 24 h, 150 °C → rt

Experimental Protocols

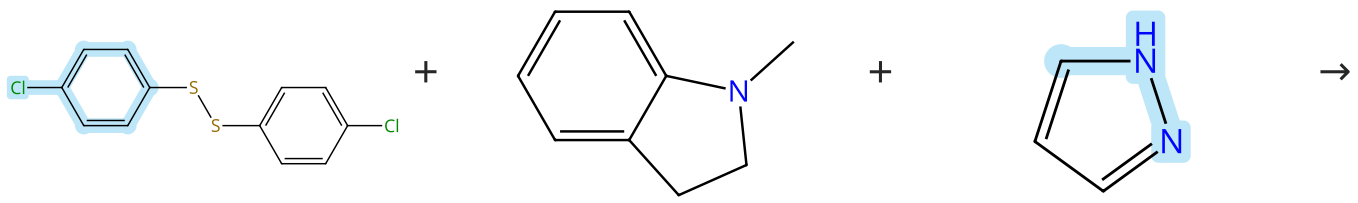
**Incorporation of phenolic skeleton into imidaz olium ionic polymers as recyclable catalysts for efficient fixation of $CO_2$ into cyclic carbonates**

By: Zhu, Lihua; et al

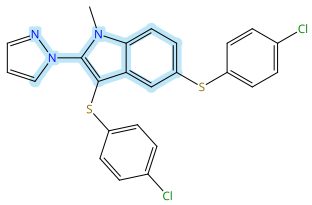
Chemical Engineering Journal (Amsterdam, Netherlands) (2024), 481, 148359.

**Scheme 477** (1 Reaction)

Steps: **1** Yield: **71%**



Suppliers (61) | Suppliers (59) | Suppliers (93)



31-614-CAS-39675979 Steps: **1** Yield: **71%**

1.1 **Reagents:** Iodine, Oxygen
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide, 1,4-Dioxane; 24 h, 80 °C

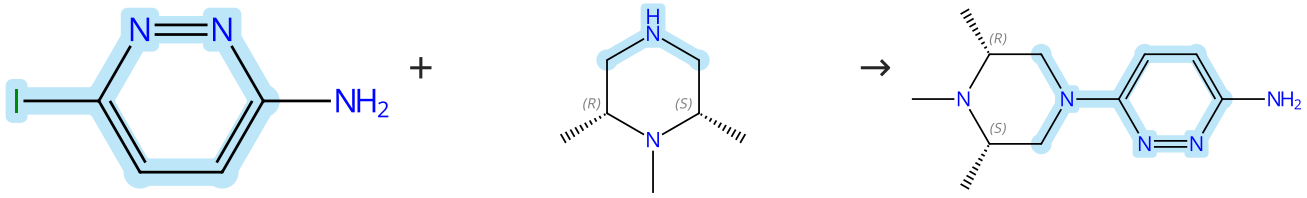
Experimental Protocols

**Solvent-controlled switchable multicomponent tandem oxidative triple functionalization of indolines**

By: Zhang, Xiaoxiang; et al

Organic Chemistry Frontiers (2024), 11(7), 1933-1940.

**Scheme 478** (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (59)

Relative stereochemistry shown

Suppliers (66)

Absolute stereochemistry shown

Supplier (1)

31-614-CAS-40948405 Steps: **1** Yield: **71%**

1.1 **Reagents:** Tripotassium phosphate
**Catalysts:** L-Hydroxyproline, Cuprous iodide
**Solvents:** Dimethyl sulfoxide; 48 h, 60 °C

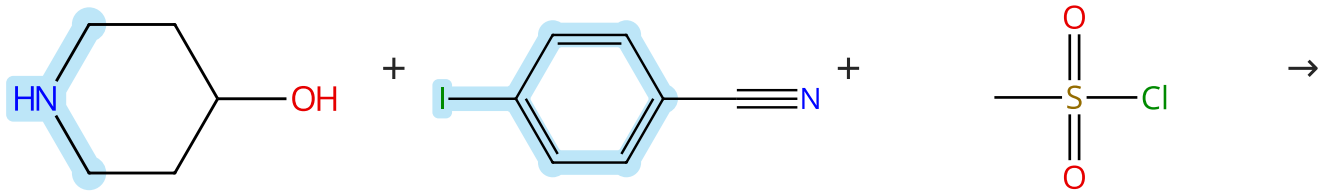
Experimental Protocols

**Discovery of GLPG3667, a Selective ATP Competitive Tyrosine Kinase 2 Inhibitor for the Treatment of Autoimmune Diseases**

By: Mammoliti, Oscar; et al

Journal of Medicinal Chemistry (2024), 67(11), 8545-8568.

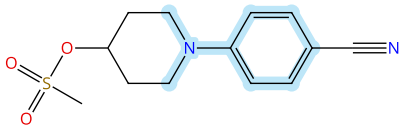
**Scheme 479** (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (92)

Suppliers (79)

Suppliers (39)



Supplier (1)

31-614-CAS-41632326 Steps: **1** Yield: **71%**

1.1 **Reagents:** Potassium acetate
**Catalysts:** Cuprous iodide
**Solvents:** Dimethyl sulfoxide; overnight, 140 °C

1.2 **Reagents:** Triethylamine
**Catalysts:** 4-(Dimethylamino)pyridine
**Solvents:** Dichloromethane; 3 h, rt

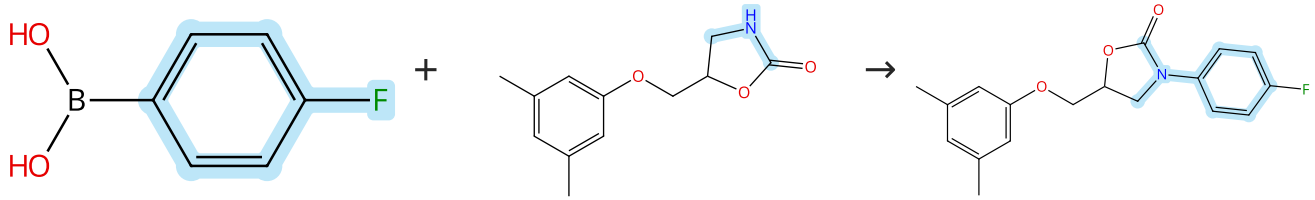
Experimental Protocols

**Photoredox/Nickel Dual Catalysis for C(sp$^2$)-C(sp$^3$) Cross Electrophile Coupling Reaction of Mesylates of Phenols and Primary Alcohols**

By: Jana, Sayan K.; et al

ACS Catalysis (2024), 14(18), 14172-14182.

**Scheme 480** (1 Reaction) Steps: **1** Yield: **71%**




Suppliers (104) Suppliers (82)

31-614-CAS-39585653 Steps: **1** Yield: **71%**

1.1 **Reagents:** Trifluoroacetic acid, Triethylamine
**Catalysts:** Cupric acetate, Sodium bis(2-ethylhexyl) sulfosuccinate, Polyoxyethylene sorbitan monooleate
**Solvents:** Water; 12 h, 50 °C

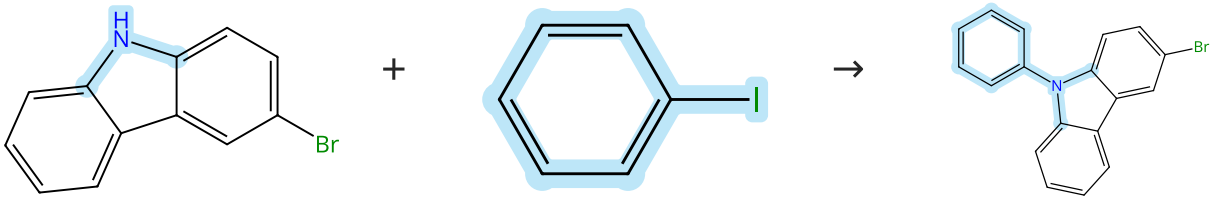
Experimental Protocols

**Cu(II)-catalyzed 'in-water' N-arylation of electron-deficient NH-heterocycles**

By: Sunny, Steeva; et al

Green Chemistry (2024), 26(6), 3149-3158.

**Scheme 481** (1 Reaction) Steps: **1** Yield: **71%**




Suppliers (90) Suppliers (93) Suppliers (87)

31-614-CAS-41704773 Steps: **1** Yield: **71%**

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.

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