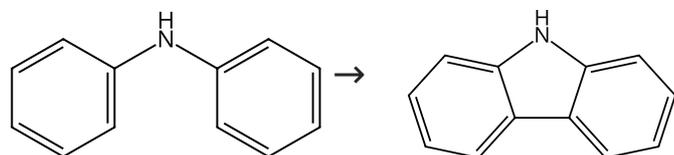


## Reactions (27) [View in SciFinder<sup>n</sup>](#)

### Scheme 1 (23 Reactions)



 Suppliers (92)

 Suppliers (92)

Steps: **1**

Yield: **40-95%**

Reaction Summary		Intramolecular Pd(II)-Catalyzed Oxidative Biaryl Synthesis Under Air: Reaction Development and Scope	
Reagents	Pivalic acid Potassium carbonate	Steps: <b>1</b> Yield: <b>95%</b>	By: Liegault, Benoit; et al Journal of Organic Chemistry (2008), 73(13), 5022-5028.
Catalysts	Palladium diacetate		
Solvents	-		
Conditions	14 h, 110 °C		
Experimental Protocols			
Reaction Summary		Palladium(II) acetate	
Reagents	-	Steps: <b>1</b> Yield: <b>90%</b>	By: Grennberg, Helena; et al e-EROS Encyclopedia of Reagents for Organic Synthesis (2015), 1-35.
Catalysts	Palladium diacetate		
Solvents	Acetic acid		
Conditions	reflux		
Reaction Summary		Preparation of supported palladium hydroxide solid catalysts for dehydrocyclization and preparation of dibenzo compounds from diphenyl compounds with them	
Reagents	Oxygen	Steps: <b>1</b> Yield: <b>85%</b>	By: Ishida, Gyokusei; et al Japan, JP2013212499 A 2013-10-17 <b>PATENTPAK</b> available
Catalysts	Palladium dihydroxide		
Solvents	Acetic acid 1,4-Dioxane		
Conditions	12 h, 100 °C		
Reaction Summary		Acid-Free Synthesis of Carbazoles and Carbazole quinones by Intramolecular Pd-Catalyzed, Microwave-Assisted Oxidative Biaryl Coupling Reactions - Efficient Syntheses of Murrayafoline A, 2-Methoxy-3-methylcarbazole, and Glycozolidine	
Reagents	Cupric acetate	Steps: <b>1</b> Yield: <b>84%</b>	By: Sridharan, Vellaisamy; et al European Journal of Organic Chemistry (2009), (27), 4614-4621, S4614/1-S4614/39.
Catalysts	Palladium diacetate		
Solvents	Dimethylformamide		
Conditions	60 min, 130 °C; 130 °C → 40 °C		
Experimental Protocols			

Reaction Summary		Catalytic synthesis method for preparing carbazole from diphenylamine	
Reagents	-	Steps: <b>1</b>	By: Ma, Jiantai; et al
Catalysts	Phosphorus pentoxide Vanadium oxide (V <sub>2</sub> O <sub>5</sub> ) Potassium chloride View all on Reaction Detail	Yield: <b>82%</b>	China, CN104059014 A 2014-09-24 <b>PATENTPAK</b> available
Solvents	Water		
Conditions	rt → 100 °C; 100 °C → 190 °C		
Reaction Summary		Synthesis of oxygenated carbazoles by palladium-mediated oxidative double C-H activation of diarylamines assisted by microwave irradiation	
Reagents	-	Steps: <b>1</b>	By: Sridharan, Vellaisamy; et al
Catalysts	Dimethylformamide Palladium diacetate	Yield: <b>80%</b>	Synlett (2006), (15), 2375-2378.
Solvents	-		
Conditions	1 min		
Experimental Protocols			
Reaction Summary		Supported palladium hydroxide-catalyzed intramolecular double CH bond functionalization for synthesis of carbazoles and dibenzofurans	
Reagents	Oxygen	Steps: <b>1</b>	By: Ishida, Tamao; et al
Catalysts	Palladium dihydroxide	Yield: <b>78%</b>	Applied Catalysis, B: Environmental (2014), 150-151, 523-531.
Solvents	Acetic acid 1,4-Dioxane		
Conditions	12 h, 0.25 MPa, 100 °C		
Reaction Summary		Carbazole synthesis by platinum-catalyzed C-H functionalizing reaction using water as reoxidizing reagent	
Reagents	-	Steps: <b>1</b>	By: Yamamoto, Mitsuru; et al
Catalysts	Platinum	Yield: <b>69%</b>	Chemistry Letters (2007), 36(1), 172-173.
Solvents	Water		
Conditions	48 h, 250 °C		
Reaction Summary		C-H bond activation by water on a palladium or platinum metal surface	
Reagents	-	Steps: <b>1</b>	By: Matsubara, Seiji; et al
Catalysts	Platinum	Yield: <b>69%</b>	Synthesis (2007), (13), 2055-2059.
Solvents	Water		
Conditions	12 h, 250 °C		
Experimental Protocols			

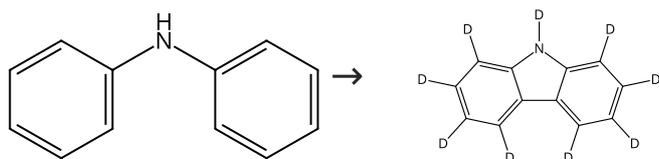
Reaction Summary		Oxygen as oxidant in palladium-catalyzed inter- and intramolecular coupling reactions	
Reagents	Tin tetraacetate Oxygen	Steps: <b>1</b> Yield: <b>66%</b>	By: Hagelin, Helena; et al Chemistry - A European Journal (1999), 5(8), 2413-2416.
Catalysts	Palladium trifluoroacetate		
Solvents	Acetic acid		
Conditions	-		
Reaction Summary		Photocyclization of stilbenes and related molecules	
Reagents	-	Steps: <b>1</b> Yield: <b>62%</b>	By: Mallory, Frank B.; et al Organic Reactions (Hoboken, NJ, United States) (1984), 30, No pp. given.
Catalysts	-		
Solvents	-		
Conditions	-		
Reaction Summary		Photocyclization of stilbenes and related molecules	
Reagents	-	Steps: <b>1</b> Yield: <b>62%</b>	By: Mallory, Frank B.; et al Organic Reactions (Hoboken, NJ, United States) (1984), 30, No pp. given.
Catalysts	-		
Solvents	Tetrahydrofuran		
Conditions	-		
Reaction Summary		Radical cyclization reactions	
Reagents	2-(4-Biphenyl)-5-phenyloxazole	Steps: <b>1</b> Yield: <b>40%</b>	By: Giese, B.; et al Organic Reactions (Hoboken, NJ, United States) (1996), 48, No pp. given.
Catalysts	-		
Solvents	Chloroform		
Conditions	-		
Reaction Summary		Gas-phase dehydrocyclization of diphenylamine	
Reagents	Hydrogen	Steps: <b>1</b>	By: Vlcko, Miroslav; et al Applied Catalysis, A: General (2007), 328(2), 183-188.
Catalysts	Alumina Platinum		
Solvents	Aniline		
Conditions	5 h, 560 °C		
Reaction Summary		Dehydrocyclization of diphenylamine to carbazole over platinum catalysts	
Reagents	Hydrogen	Steps: <b>1</b>	By: Vlcko, Miroslav; et al Collection of Czechoslovak Chemical Communications (2008), 73(8-9), 1149-1160.
Catalysts	Alumina Chloroplatinic acid		
Solvents	Water		
Conditions	550 °C		

Reaction Summary		Steps: <b>1</b>	Multifunctional and robust covalent organic framework-nanoparticle hybrids By: Pachfule, Pradip; et al Journal of Materials Chemistry A: Materials for Energy and Sustainability (2014), 2(21), 7944-7952.
Reagents	Potassium carbonate Oxygen		
Catalysts	Palladium diacetate		
Solvents	-		
Conditions	12 h, 120 °C		
Experimental Protocols			
Reaction Summary		Steps: <b>1</b>	Free radical cyclization of diphenylamine: a convenient synthesis of carbazole and 3-methylcarbazole By: Bhattacharyya, Prantosh; et al Journal of the Chemical Society, Chemical Communications (1984), (24), 1668-9.
Reagents	-		
Catalysts	Benzoyl peroxide		
Solvents	-		
Conditions	-		
Reaction Summary		Steps: <b>1</b>	Gas-phase dehydrocyclization of diphenylamine By: Vlcko, Miroslav; et al Edited by Palinko, Istvan Sampling Catalysis Research in the Pannonian Region, Proceedings of the Pannonian International Catalysis Symposium, 8th, Szeged, Hungary, July 4-7, 2006 (2006), 268-272.
Reagents	-		
Catalysts	Magnesium oxide Palladium		
Solvents	-		
Conditions	400 °C		
Reaction Summary		Steps: <b>1</b>	Product class 15: carbazoles By: Gallagher, P. T. Science of Synthesis (2001), 10, 693-744.
Reagents	-		
Catalysts	-		
Solvents	-		
Conditions	-		
Reaction Summary		Steps: <b>1</b>	Dehydrocyclization of diphenylamine to carbazole over platinum-based bimetallic catalysts By: Vlcko, Miroslav; et al Cuihua Xuebao (2010), 31(12), 1439-1444.
Reagents	Hydrogen		
Catalysts	Platinum Tin		
Solvents	Aniline		
Conditions	6 h, 550 °C		
Reaction Summary		Steps: <b>1</b>	Photocleavage of diarylnitrosamines in neutral media By: Crumrine, David S.; et al Journal of Organic Chemistry (1982), 47(22), 4246-9.
Reagents	-		
Catalysts	-		
Solvents	Acetone		
Conditions	-		

Reaction Summary		Method for gas-phase synthesizing carbazole from diphenylamine via catalytic dehydrogenation cyclization by use of fixed bed By: Cao, Hongsheng; et al China, CN104059015 A 2014-09-24 <b>PATENTPAK</b> available
Reagents	-	
Catalysts	Chromia (with Fe <sub>2</sub> O <sub>3</sub> supported on Al <sub>2</sub> O <sub>3</sub> ) Iron oxide (Fe <sub>2</sub> O <sub>3</sub> ) (with Cr <sub>2</sub> O <sub>3</sub> supported on Al <sub>2</sub> O <sub>3</sub> )	
Solvents	-	
Conditions	0.01 atm, 450 °C	

Reaction Summary		Method for preparing carbazole from diphenylamine By: Xin, Yang; et al China, CN103772267 A 2014-05-07 <b>PATENTPAK</b> available
Reagents	Oxygen	
Catalysts	Palladium trifluoroacetate	
Solvents	Butyric acid	
Conditions	5 h, 120 °C	

## Scheme 2 (1 Reaction)

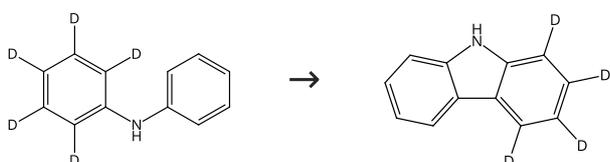


Steps: 2

Suppliers (92)

Reaction Summary		C-H bond activation by water on a palladium or platinum metal surface By: Matsubara, Seiji; et al Synthesis (2007), (13), 2055-2059.
Reagents	Water- <i>d</i> <sub>2</sub>	
Catalysts	Platinum Platinum dioxide	
Solvents	Water Water- <i>d</i> <sub>2</sub>	
Conditions	Multiple Steps - View Reaction Detail	
Experimental Protocols		

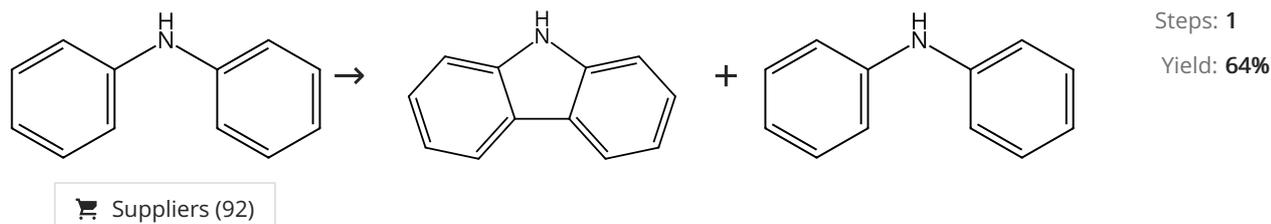
## Scheme 3 (1 Reaction)



Steps: 1

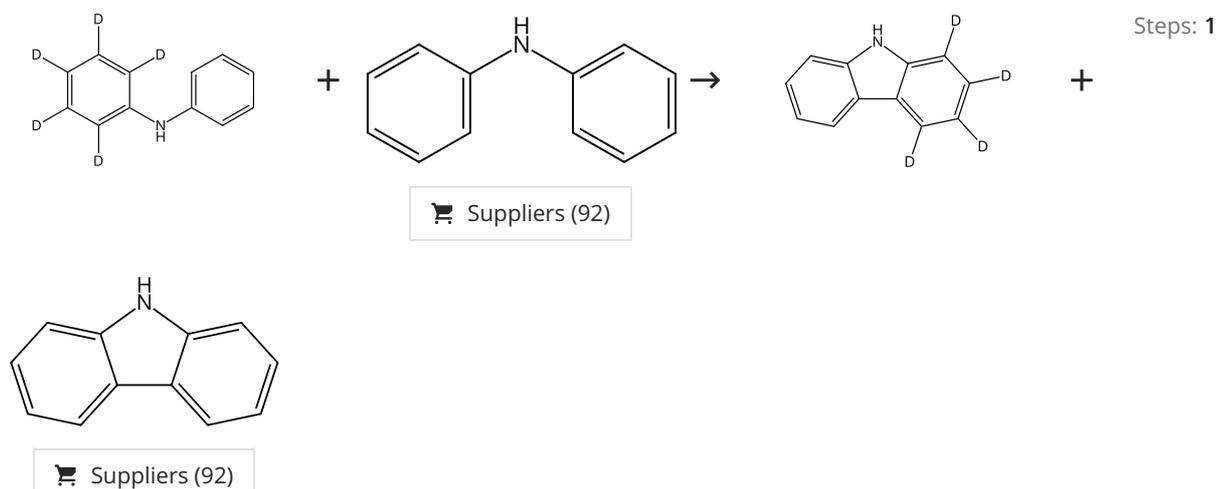
Reaction Summary		Ligand-Free Pd-Catalyzed Domino Synthesis of Carbazoles via Dehydrogenative Aromatization/C(sp <sup>2</sup> )-C(sp <sup>2</sup> ) Coupling Sequence By: Wen, Lixian; et al Organic Letters (2016), 18(6), 1278-1281.
Reagents	Cupric acetate	
Catalysts	Palladium diacetate	
Solvents	Pivalic acid	
Conditions	24 h, 140 °C	
Experimental Protocols		

## Scheme 4 (1 Reaction)



Reaction Summary		Carbazole synthesis by platinum-catalyzed C-H functionalizing reaction using water as reoxidizing reagent By: Yamamoto, Mitsuru; et al Chemistry Letters (2007), 36(1), 172-173.
Reagents	Water- <i>d</i> <sub>2</sub>	
Catalysts	Platinum	
Solvents	Water- <i>d</i> <sub>2</sub>	
Conditions	2 h, 250 °C	
Experimental Protocols		

## Scheme 5 (1 Reaction)



Reaction Summary		Ligand-Free Pd-Catalyzed Domino Synthesis of Carbazoles via Dehydrogenative Aromatization/C(sp <sup>2</sup> )-C(sp <sup>2</sup> ) Coupling Sequence By: Wen, Lixian; et al Organic Letters (2016), 18(6), 1278-1281.
Reagents	Cupric acetate	
Catalysts	Palladium diacetate	
Solvents	Pivalic acid	
Conditions	12 h, 140 °C	
Experimental Protocols		

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