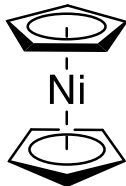


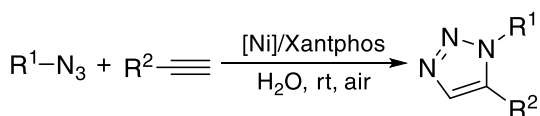
Catalog # 28-1301 Bis(cyclopentadienyl)nickel, 99% (Nickelocene)



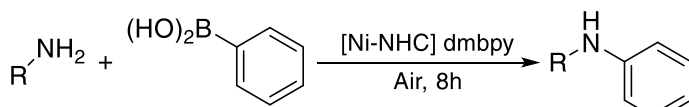
### Catalysis Applications

#### Technical Notes:

1. Used for Ni-catalyzed azide-alkyne cycloaddition to generate 1,5-disubstituted 1,2,3-triazoles in air and water.
2. Used in Ni-catalyzed N-arylation of amines with arylboronic acids under open air.
3. Used in the C-S cross-coupling reactions between iodobenzene and thiols.
4. Catalyst for [3+2] cycloaddition of unsymmetrical alkynes with organic azides to afford functionalized 1,2,3-triazoles with excellent regioand chemoselectivity.
5. Air- and moisture-tolerant catalyst for the regioselective synthesis of multisubstituted pyridines.

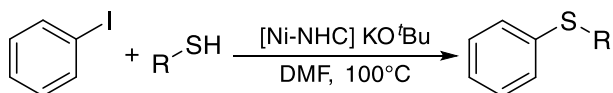


**Tech Note (1)**  
**Ref. (1)**

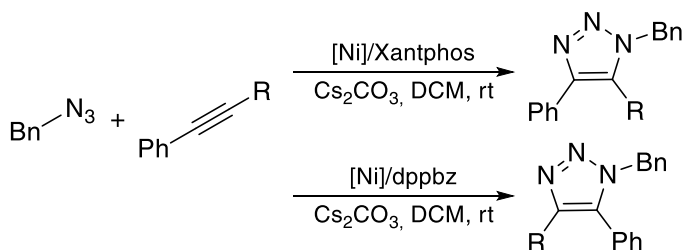


**Tech Note (2)**  
**Ref. (2)**

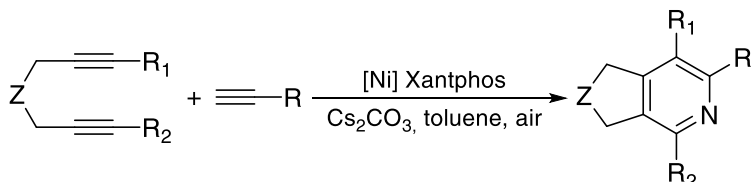
R = Alkyl or Ar



**Tech Note (3)**  
**Ref. (3)**



**Tech Note (4)**  
**Ref. (4)**



**Tech Note (5)**  
**Ref. (5)**

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2. [Tetrahedron Lett. 2019, 60, 1277.](#)
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## CVD/ALD Applications

## Thermal Behavior:

- Melting point: 173-174°C
- Decomposition: 186°C [1]
- Vapor pressure: 0.4 torr/70°C [1], 0.15 torr/60°C [8]
- TGA diagram and data is available in [1]

## Technical Notes:

1. ALD/CVD precursor for thin nickel containing films and nanocomposite deposition.

Target Deposit	Deposition Technique	Delivery Temperature	Pressure	Co-reactants	Deposition Temperature	Ref.
Ni	CVD	70°C	100 Torr	H <sub>2</sub>	170-300°C	1
	ALD	50°C	3 Torr	H <sub>2</sub> O → H·	165°C	2
	ALD	90°C	2x10 <sup>-1</sup> Torr	H <sub>2</sub> O or O <sub>3</sub> → H <sub>2</sub>	270-300°C	3
	ALD	92°C	-	H <sub>2</sub>	300°C	4-5
	PE-CVD	80°C	1 Torr	<sup>PL</sup> NH <sub>3</sub>	160-320°C	6
	PE-CVD	70°C	0.4 Torr	<sup>PL</sup> Ar e <sup>-</sup>	35-50°C	7
NiO <sub>x</sub>	CVD	60°C	100 Torr	O <sub>2</sub>	200-500°C	8
	ALD	40°C	-	O <sub>3</sub>	150-300°C	9
	ALD	110°C	-	O <sub>3</sub>	230°C	10
	ALD	60°C	-	H <sub>2</sub> O	260°C	11
Ni <sub>x</sub> Fe <sub>y</sub> O	ALD	80°C	-	Cp <sub>2</sub> Fe, O <sub>3</sub>	200°C	12
	CVD	60°C	17 Torr	<sup>nBu</sup> Cp <sub>2</sub> Fe, O <sub>2</sub>	200-500°C	13
Ni <sub>x</sub> Cu <sub>y</sub> O	ALD	110°C	1 Torr	Cu(NO <sub>3</sub> ) <sub>2</sub> ·3H <sub>2</sub> O, O <sub>3</sub>	150°C	14
Ni:ZnO	CVD	90-95°C	22, 30 and 100 Torr	DEZn, O <sub>2</sub>	450°C, 500°C	15

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