

# New diphosphine ligand **dcypt**

[3,4-Bis(dicyclohexylphosphino)thiophene]



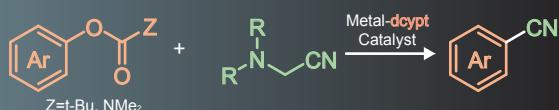
Kanto Reagents

## Metal-dcypt catalyzed...

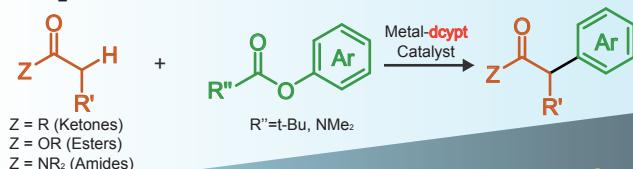
### Decarbonylative diaryl ether synthesis



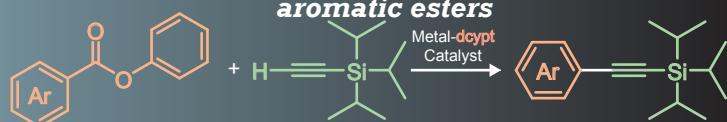
### Cyanation of phenol derivatives with aminoacetonitriles



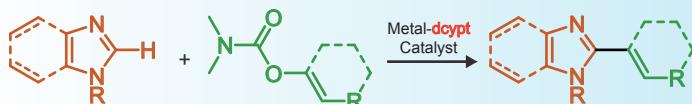
### $\alpha$ -Arylation of esters and amides with phenol derivatives



### Decarbonylative alkynylation of aromatic esters



### C-H Alkenylation of imidazole

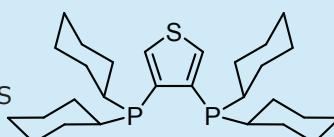


And more!!

## New diphosphine ligand catalyzing various new reaction

Kanto Chemical Co., INC. launched new diphosphine ligand "dcypt", which were developed by Prof. Itami, Nagoya University, Institute of Transformative Bio-Molecules and associate Prof. Yamaguchi, Waseda University, Department of Applied Chemistry. Dcypt ligand catalyze various new reactions as described above. This ligand is **stable in air** and easy to handle.

Cat. No.	Product name	Size
05806-95	3,4-Bis(dicyclohexylphosphino)thiophene abbreviation : dcypt CAS : 1638677-61-8 molecular formula : C <sub>28</sub> H <sub>46</sub> P <sub>2</sub> S	200 mg
05806-65		1 g



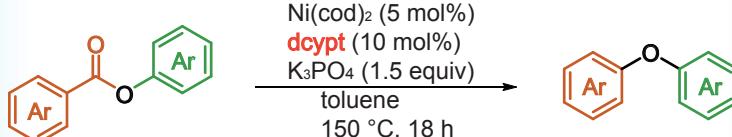
Kanto Kagaku

## Some reaction examples catalyzed by dcypt ligand + metal complex

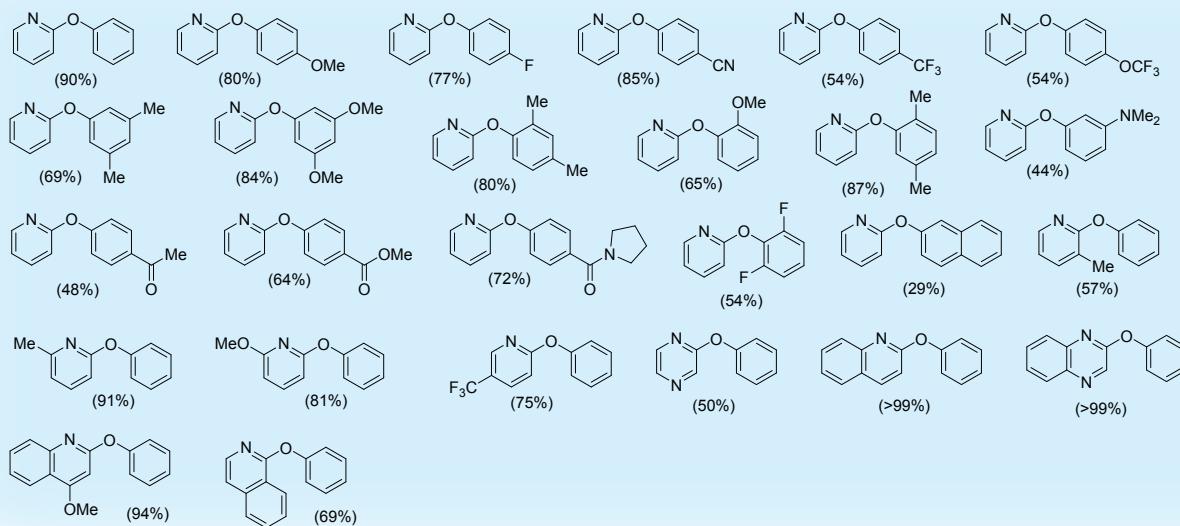
### Decarbonylative diaryl ether synthesis reaction

Ni/dcypt or Pd/dcypt complex catalyze decarbonylative diaryl ether synthesis reaction of aromatic aryl ester.

#### Example



#### Some of reaction products



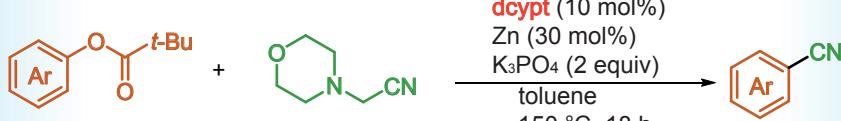
Reference : Decarbonylative Diaryl Ether Synthesis by Pd and Ni Catalysis

Takise, R.; Isshiki, R. Muto K.; Itami, K.; Yamaguchi, J. *J. Am. Chem. Soc.* **2017**, *139*(9), 3340-3343.

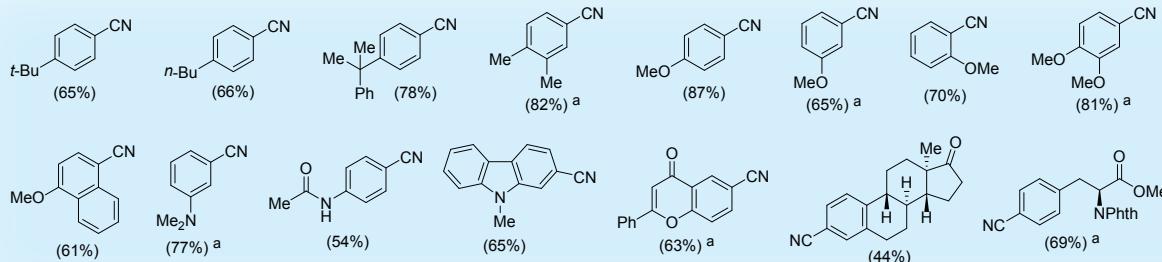
### Cyanation of phenol derivatives by using aminoacetonitriles

Ni/dcypt complex catalyze cyanation reaction of phenol derivatives with aminoacetonitriles as organic cyanating agents. This reaction does not use toxic metal.

#### Example



#### Some of reaction products



<sup>a</sup> : NiBr<sub>2</sub>(10 mol%), Zn(60 mol%), dcypt(20 mol%)

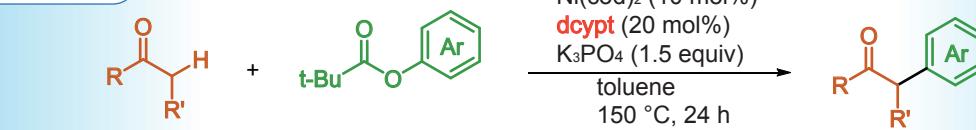
Reference : Cyanation of Phenol Derivatives with Aminoacetonitriles by Nickel Catalysis

Takise, R.; Itami, K.; Yamaguchi, J. *Org. Lett.* **2016**, *18*(17), 4428-4431.

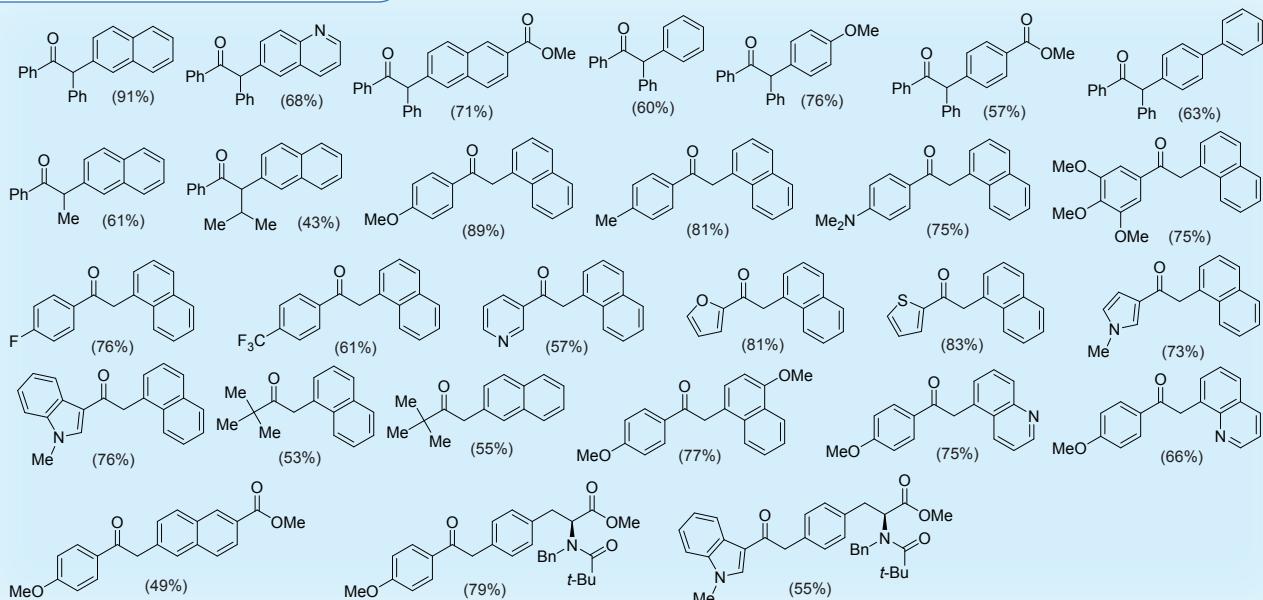
## Coupling reaction of carbonyl compound with phenol derivatives

Ni/dcypt complex catalyze  $\alpha$ -arylation of ketone, ester or amide with phenol derivatives as arylating agent.

### Example



### Some of reaction products



Reference : Nickel-catalyzed  $\alpha$ -arylation of ketones with phenol derivatives

Takise, R.; Muto, K.; Yamaguchi, J.; Itami, K. *Angew. Chem. Int. Ed.* **2014**, *53*(26), 6791-6794.

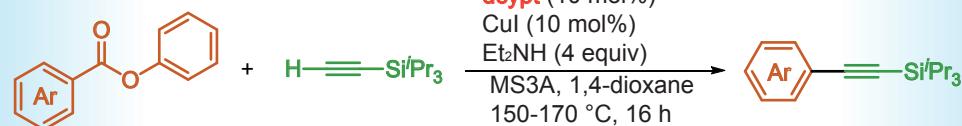
Ni-Catalyzed  $\alpha$ -arylation of esters and amides with phenol derivatives

Koch, E.; Takise, R.; Studer, A.; Yamaguchi, J.; Itami, K. *Chem. Commun.* **2015**, *51*(5), 855-857.

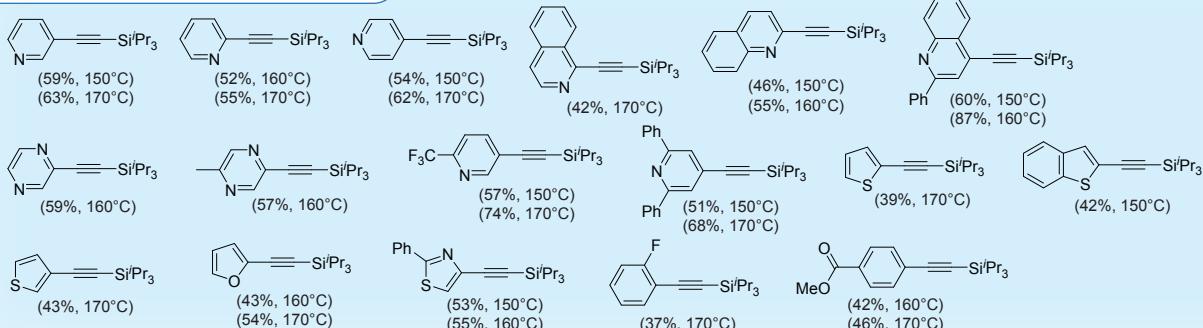
## Decarbonylative alkynylation of aromatic esters

Pd/dcypt complex catalyze halogen-free Sonogashira coupling of aromatic esters with terminal alkynes.

### Example



### Some of reaction products



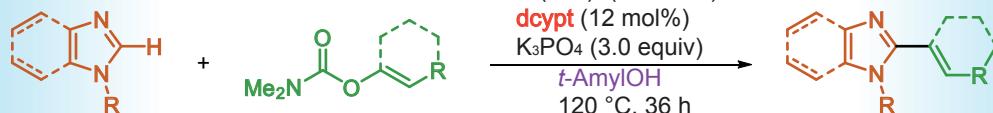
Reference : Palladium-catalyzed Decarbonylative Alkynylation of Aromatic Esters

T. Okita, K. Kumazawa, R. Takise, K. Muto, K. Itami, J. Yamaguchi, *Chem Lett.* **2017**, *46*, 218.

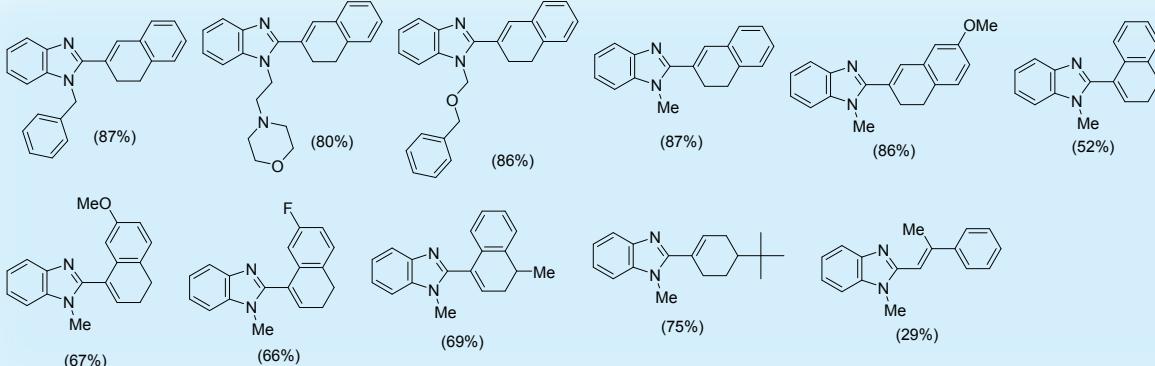
## C-H alkenylation of imidazoles with enol derivatives

Ni/dcyp complex catalyze C-H alkenylation of imidazoles with enole derivatives in *t*-amyl alcohol.

### Example



### Some of reaction products



Reference : C-H arylation and alkenylation of imidazoles by nickel catalysis: solvent-accelerated imidazole C-H activation  
Muto, K.; Hatakeyama, T.; Yamaguchi, J.; Itami, K. *Chem. Sci.* **2015**, 6(12), 6792-6798.

## Related products

Cat. No.	Product name abbreviation : CAS :	Size
04870-65	[1,2-Bis(dicyclohexylphosphino)ethane]dicarbonylnickel(0) abbreviation : Ni-dcype CAS : 141974-66-5	500 mg
04870-55		5 g
04874-65	1,2-Bis(dicyclohexylphosphino)ethane abbreviation : dcype CAS : 23743-26-2	1 g
04874-45		10 g
04875-65	Bis(1,5-cyclooctadiene)nickel(0) abbreviation : Ni(cod) <sub>2</sub> CAS : 1295-35-8	1 g
04875-55		5 g



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