



Présenté par

Tiphaine Dedours

Thèse effectuée du 10/2017 au 10/2020



Journées des doctorants

26/03/2019

Hydroboration asymétrique d'énamides catalysée au cuivre. Nouveaux développements méthodologiques en photocatalyse.

Responsables scientifiques :

Pr Eric Deniau & Dr Stéphane Lebrun



Introduction

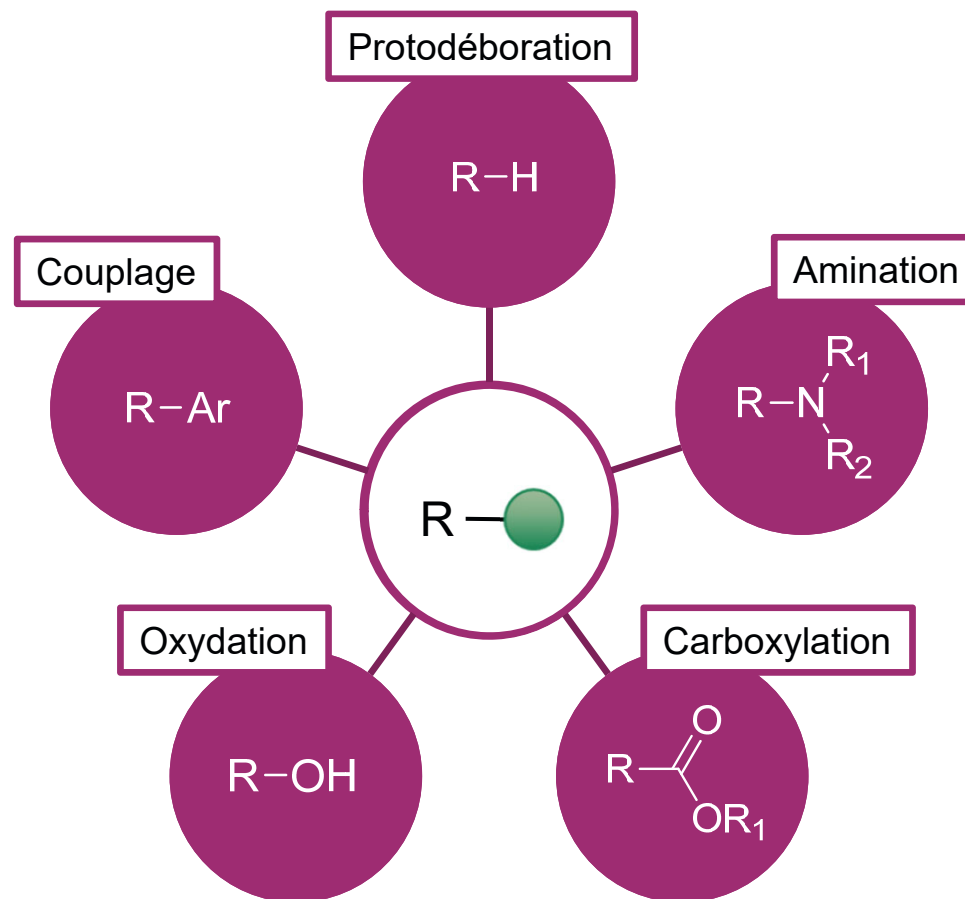
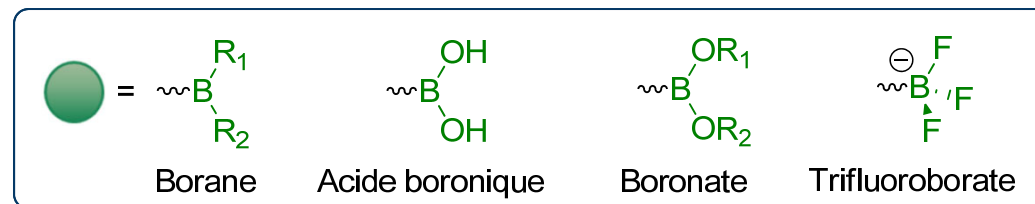
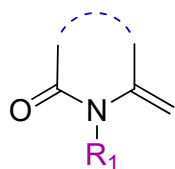


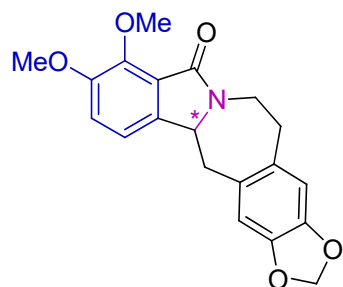


Schéma réactionnel

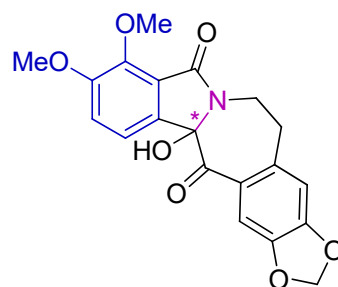


Enamides

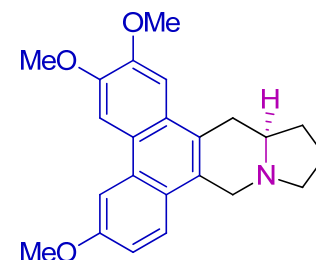
R= Alkyl, Aryl, GP, ...



Lennoxamine



Chilenine



Antofine

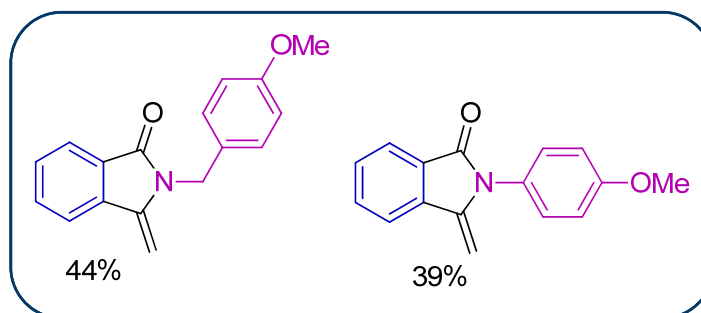
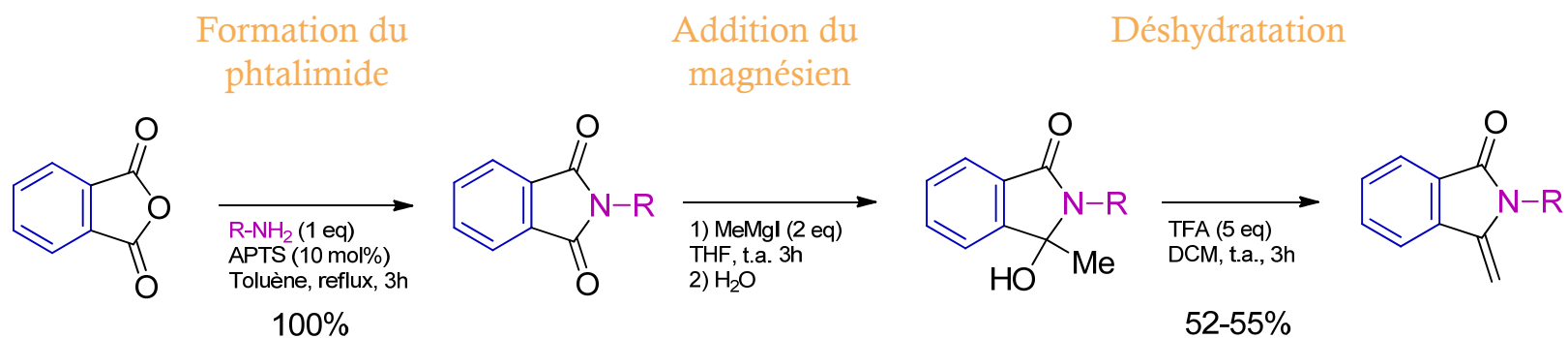
Extraits de végétaux de la
famille des Berbérís

Anticancéreux



Synthèses des isoindolinones

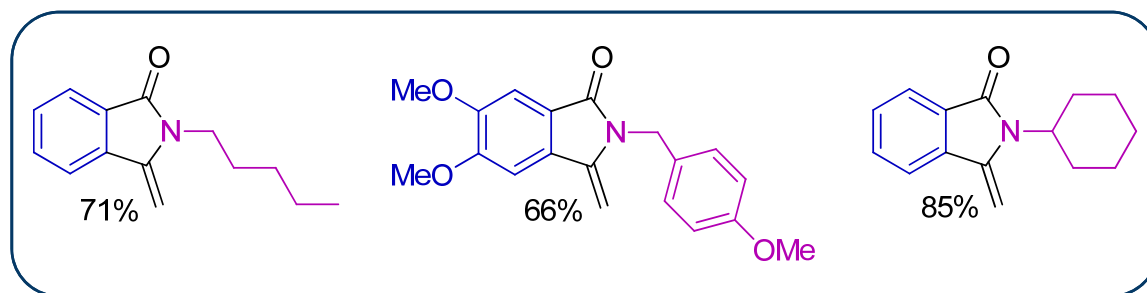
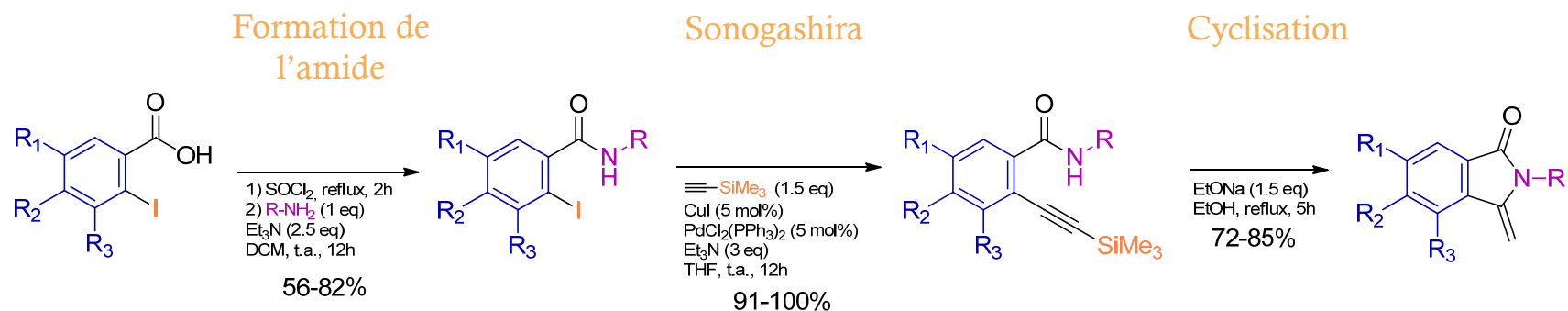
- Synthèse à partir de l'anhydride phtalique





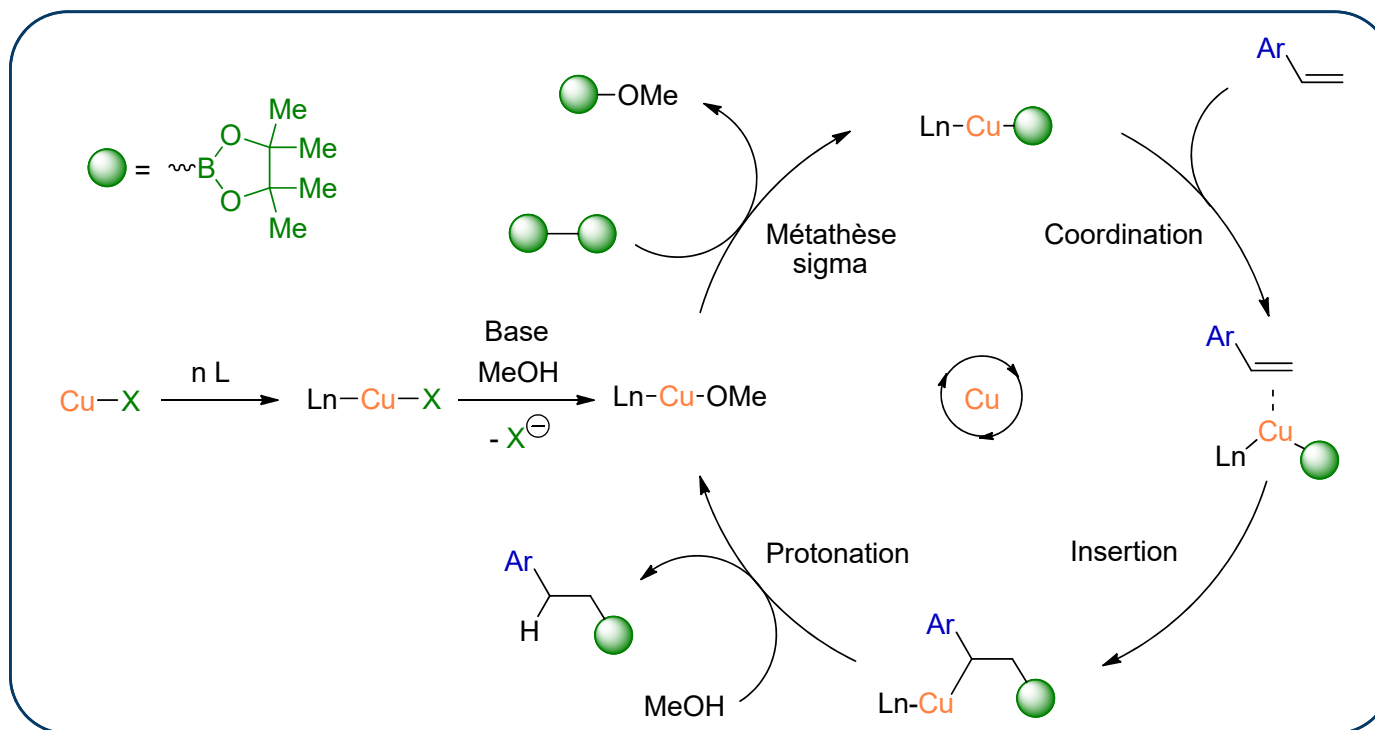
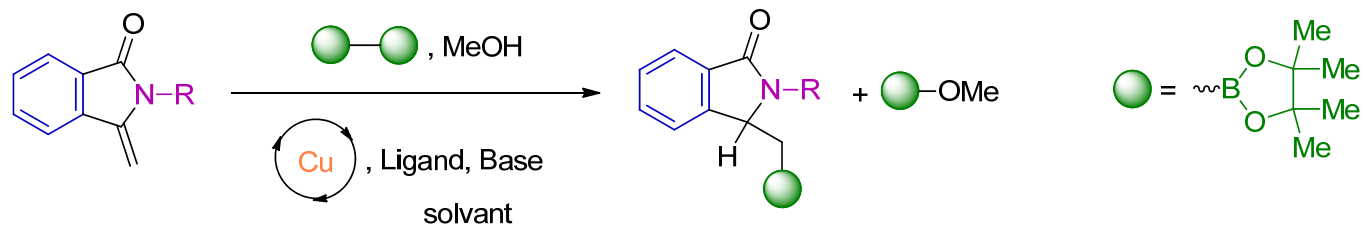
Synthèse des isoindolinones

- Synthèse par hydroamination intramoléculaire d'alcynes



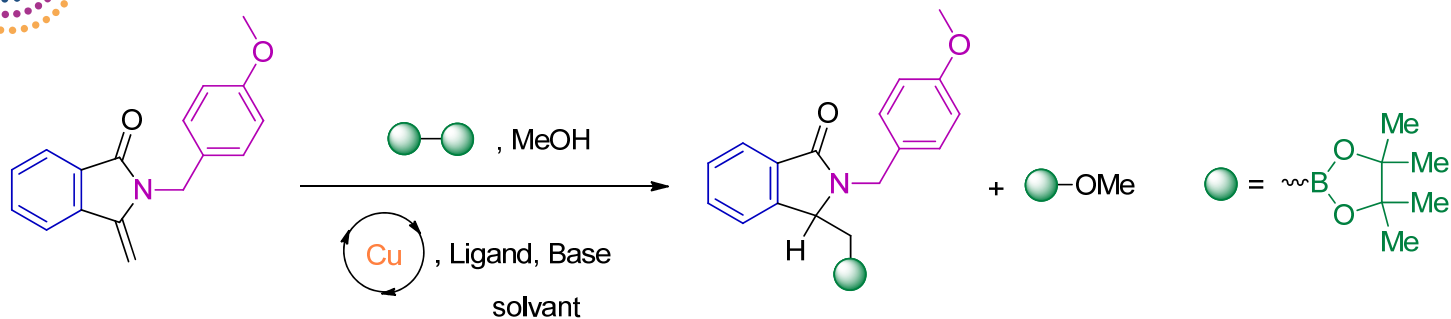


Hydroboration catalysée au cuivre





Hydroboration catalysée au cuivre



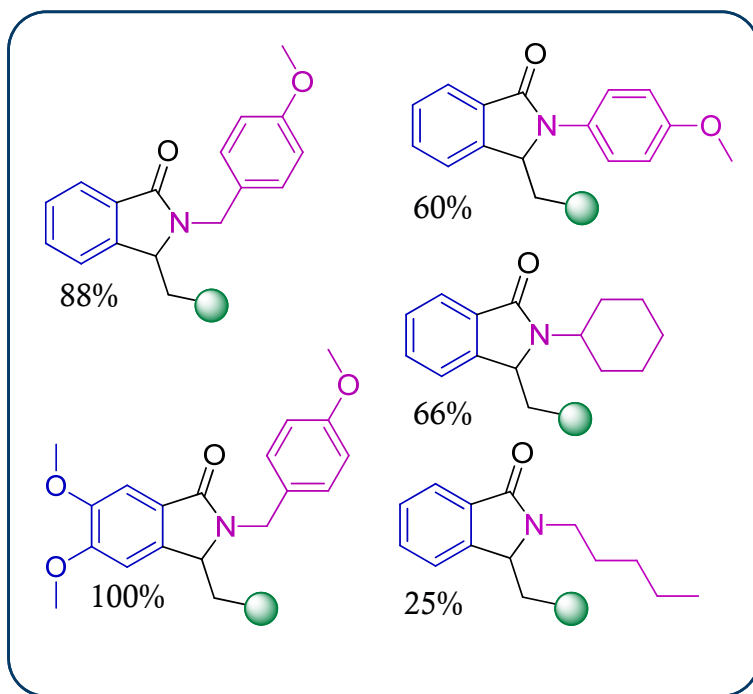
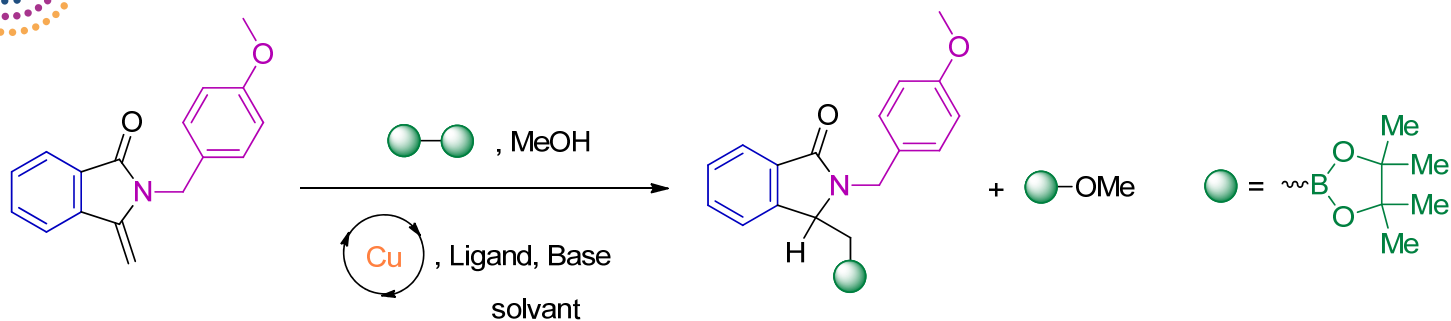
Cu₂O	
Base Cs ₂ CO ₃ Na ₂ CO ₃ NaHCO ₃ K ₃ PO ₄	Sans base
Ligands	
Solvant MeOH THF DCM Acétone	



Cu₂O
Sans base
MeOH
100% de conversion en 3h



Hydroboration catalysée au cuivre



Cu_2O

Sans base

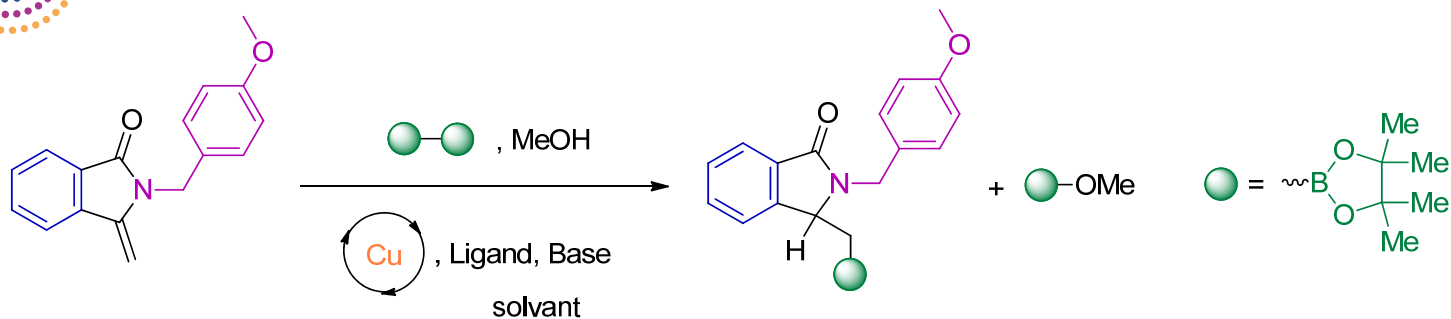
Triphenylphosphine structure: $\text{P}(\text{C}_6\text{H}_5)_3$

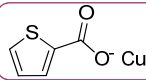
MeOH

100% de conversion en 3h



Hydroboration catalysée au cuivre

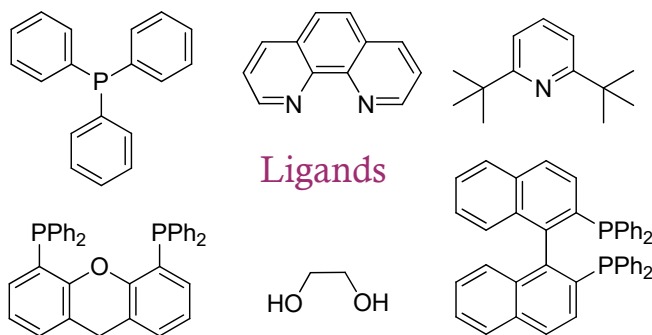


 **CuTC**

Cs_2CO_3 Na_2CO_3
Base
 NaHCO_3 K_3PO_4

Sans base

Ligands

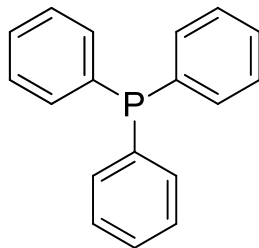


MeOH THF Solvant DCM Acétone



CuTC

Sans base

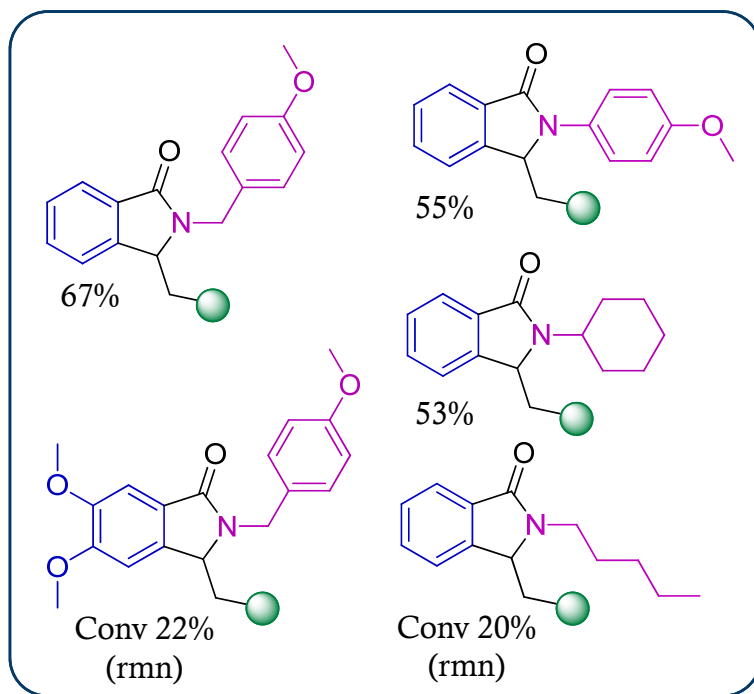
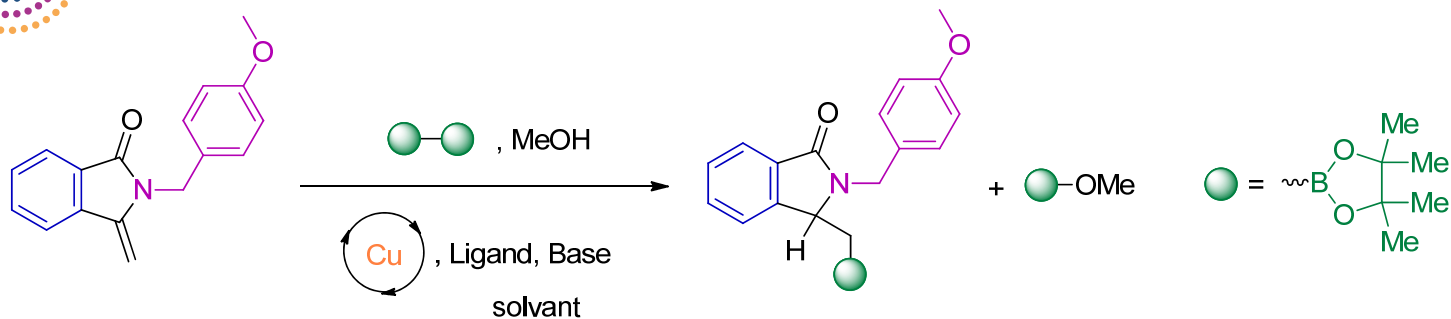


MeOH

100% de conversion en 3h



Hydroboration catalysée au cuivre



CuTC

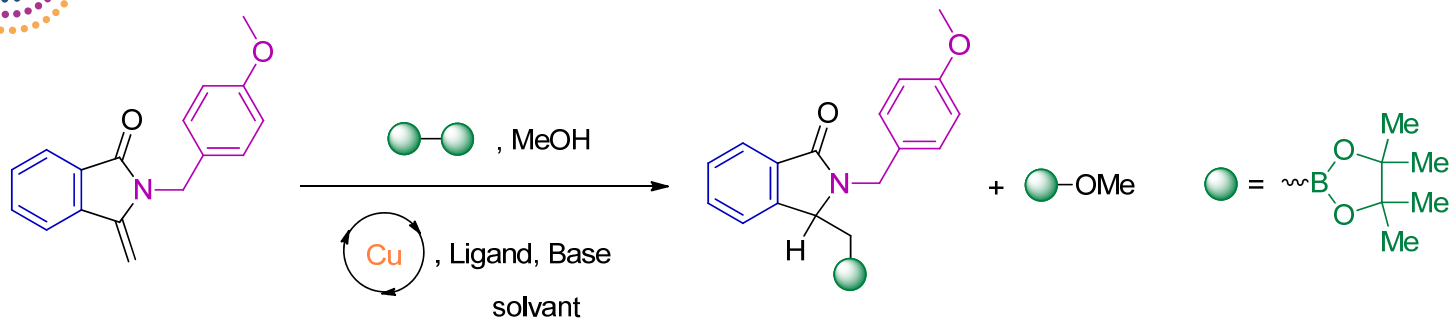
Sans base

MeOH

100% de conversion en 3h



Hydroboration catalysée au cuivre



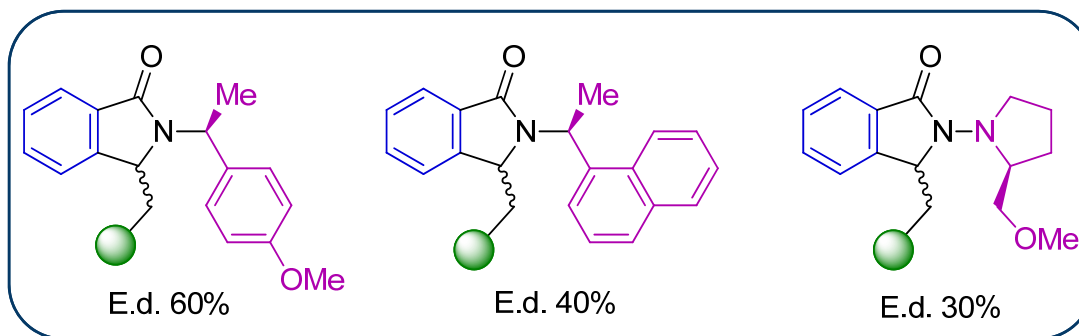
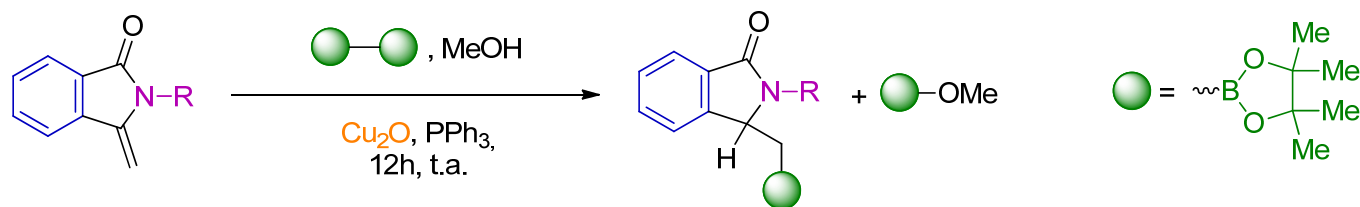
Conditions optimales

Dérivé boré	B ₂ Pin ₂
Catalyseur	Cu ₂ O (10mol%)
Ligand	PPh ₃ (15mol%)
Solvant	MeOH
Durée	3h
Température	t.a.



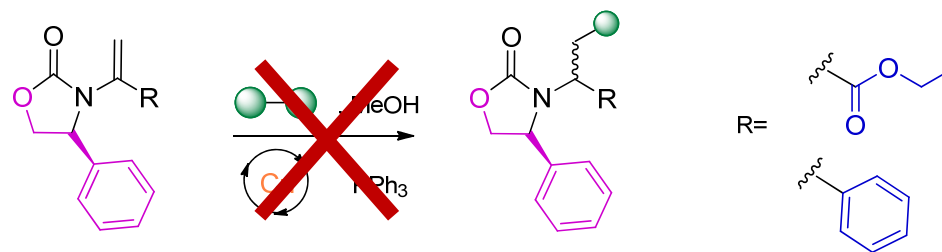
Hydroboration diastéréosélective

(Thèse Hamida Jellali)

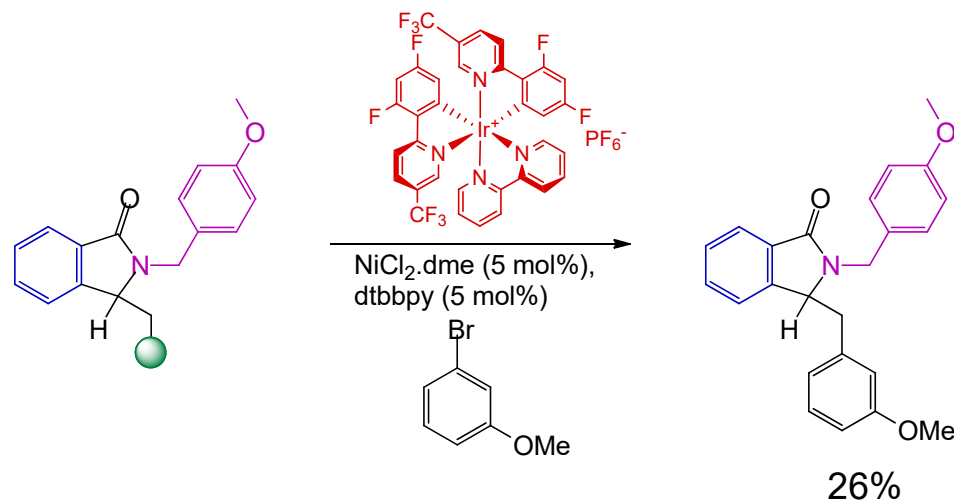


UCCS Perspectives

- Finir la mise au point de la synthèse stéréosélective
- Hydroboration catalysée au cuivre d'oxazolidinones



- Mise au point de la réaction de couplage en photocatalyse



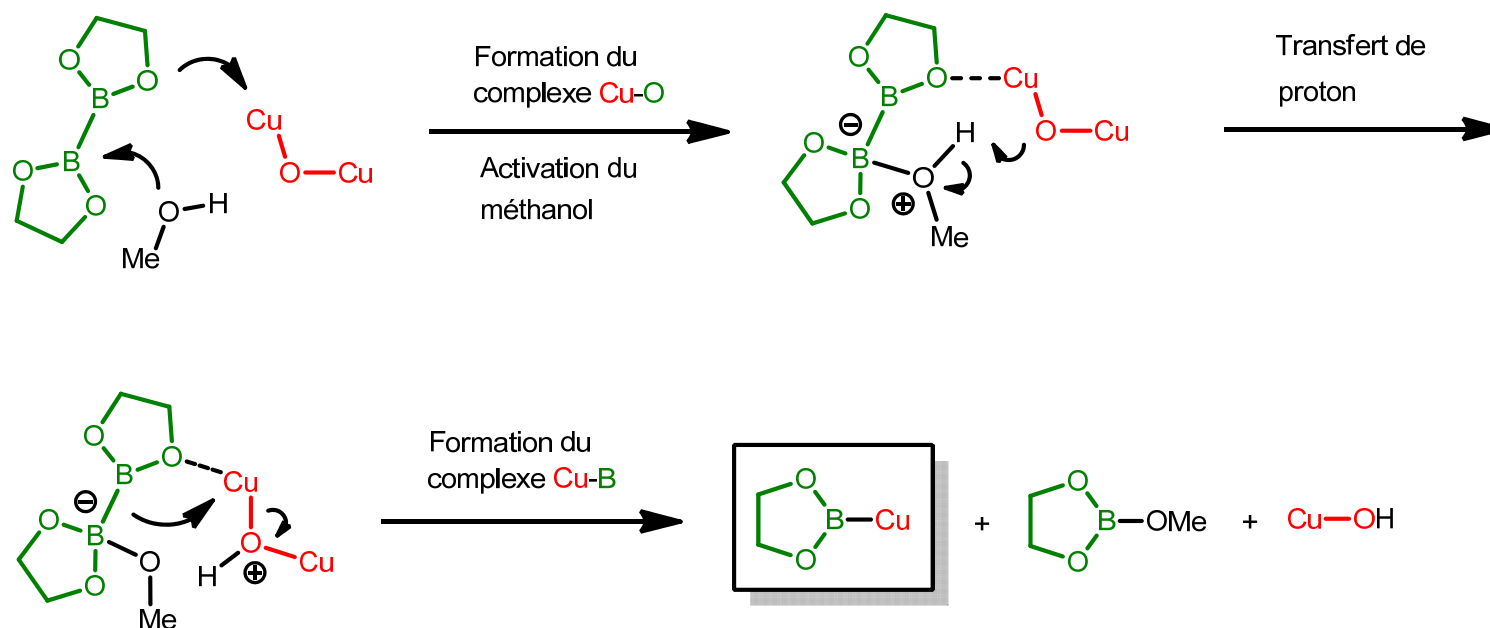


Merci de votre attention





Mécanisme d'hydroboration catalysée au cuivre sans base



ChemCatChem **2013**, *5*, 2233.