

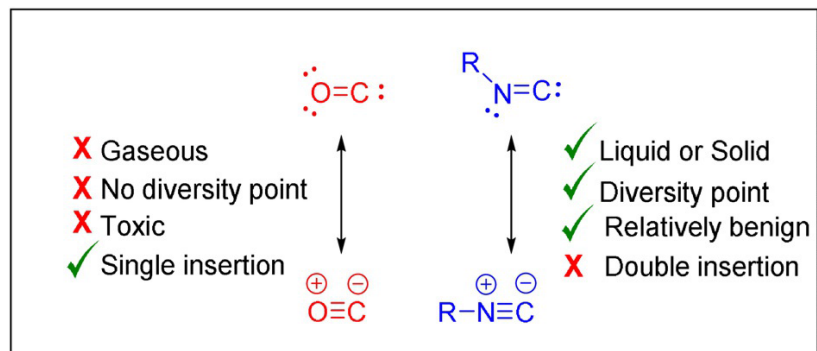
# Isocyanides and their insertion reactions

16-12-2021

Hung-Chien Lin

# Introduction

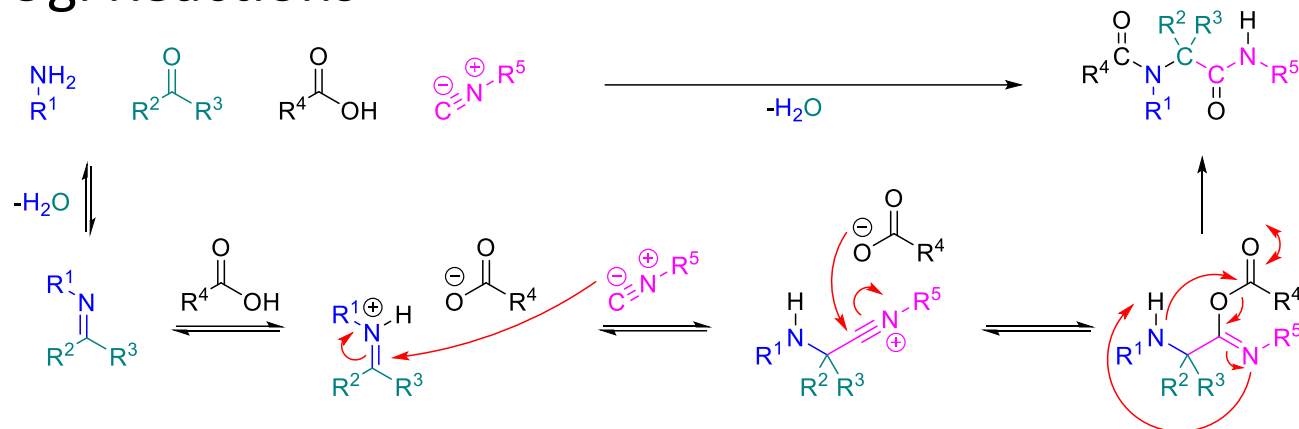
- Isocyanides are diverse C<sub>1</sub> building blocks



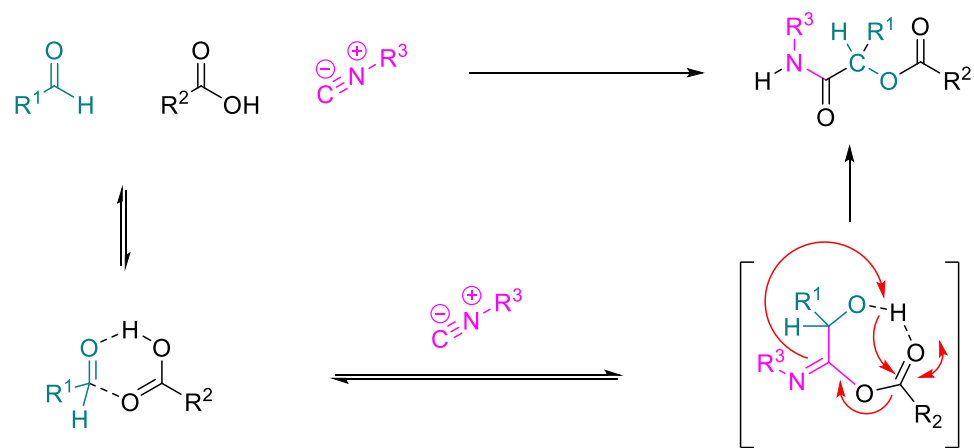
- Recent developments on transition metal catalysed-insertion reactions
  - **Pd**: efficient catalysis, widely studied
  - **Co, Ni, Cu, Fe**: less expensive, higher cat. loading, less studied
- Highly valuable for MCRs and other one-pot cascade processes
  - Ex: Ugi, Passerini reactions

# Application of Isoscyanides

- Ugi Reactions

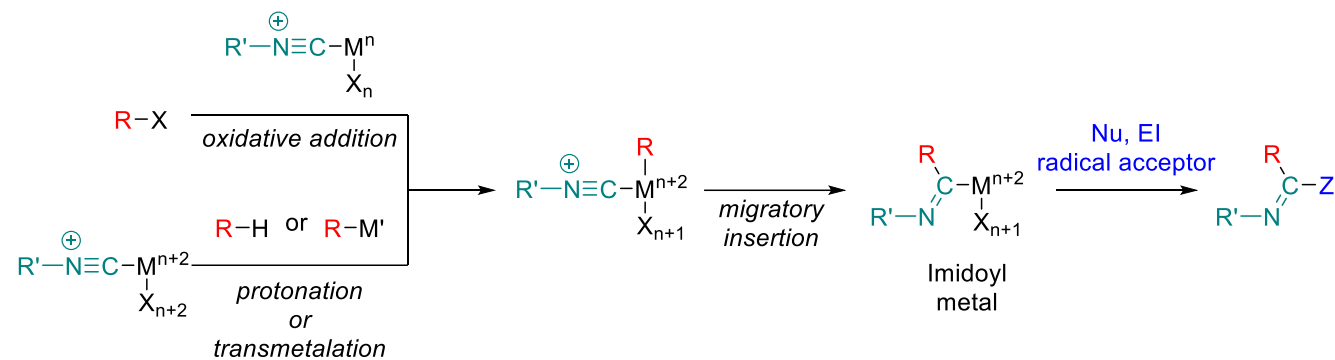


- Passerini Reactions

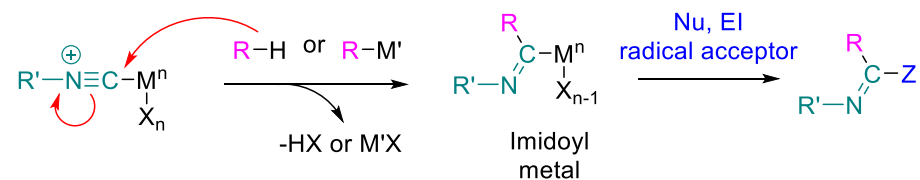


# TM-catalysed Insertion Mechanism

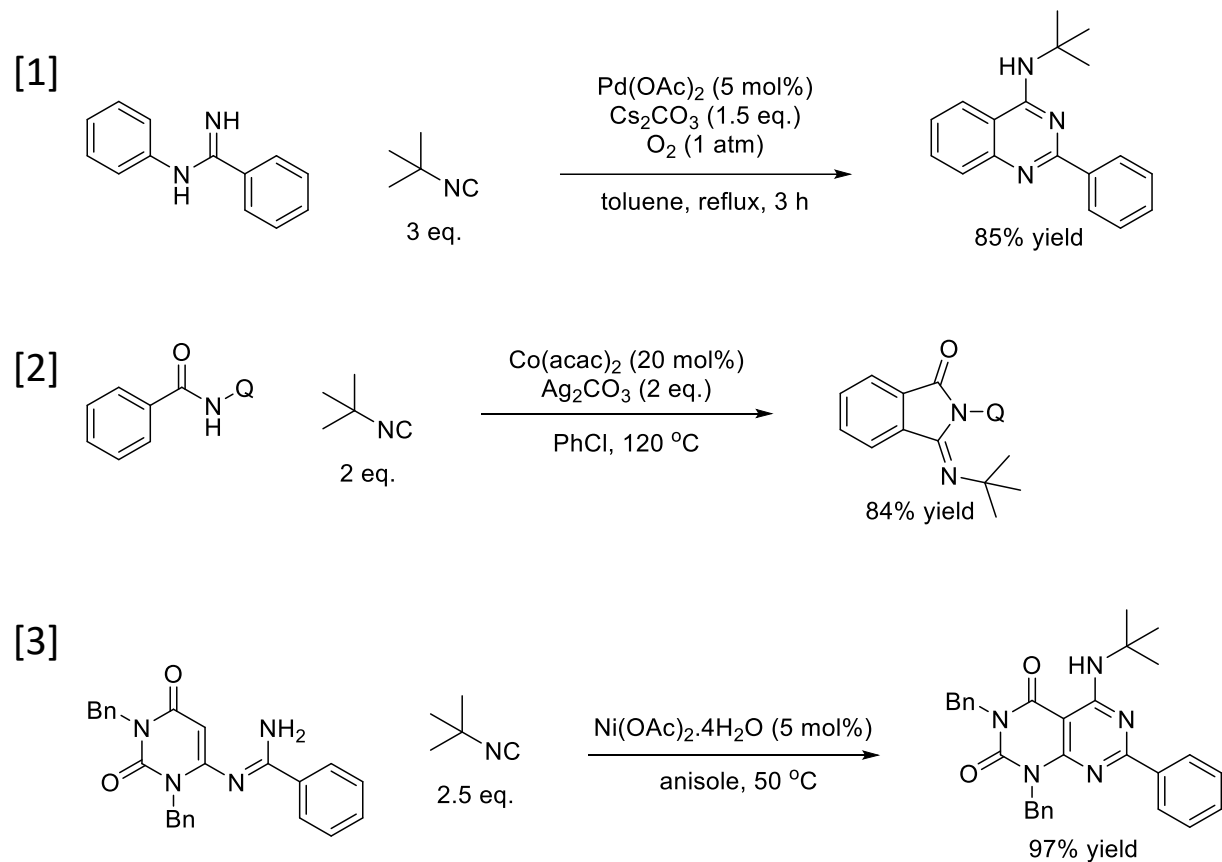
- Migratory Insertion



- Nucleophilic Addition



# Examples



[1] Y. Wang, H. Wang, J. Peng, Q. Zhu, *Org. Lett.* **2011**, *13*, 4604–4607.

[2] F. Zou, X. Chen, W. Hao, *Tetrahedron* **2017**, *73*, 758–763.

[3] J. W. Collet, B. Morel, H.-C. Lin, T. R. Roose, P. Mampuy, R. V. A. Orru, E. Ruijter, B. U. W. Maes, *Org. Lett.* **2020**, *22*, 914–919.