

*The Chinese University of Hong Kong*  
*Department of Chemistry*  
*Research Seminar Series*

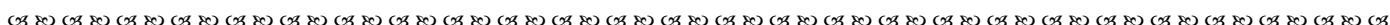
**Speaker:** Professor Pierre Braunstein  
University of Strasbourg – CNRS  
France

**Title:** Selective Metalation of N-Heterocyclic  
Carbene-Based Pincer Ligands and Catalytic  
Applications

**Date:** December 14, 2018 (Friday)

**Time:** 4:30 p.m.

**Venue:** L1  
Science Centre



ALL ARE WELCOME

Contact Person:  
Prof. Michael F.Y. Kwong

# Selective Metalation of *N*-Heterocyclic Carbene-Based Pincer Ligands and Catalytic Applications

Pierre Braunstein

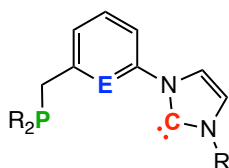
University of Strasbourg - CNRS

Institute of Chemistry, 4 rue Blaise Pascal, 67081 Strasbourg (France)

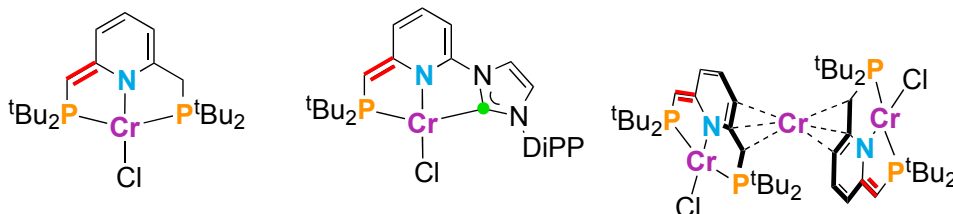
*braunstein@unistra.fr*

The growing interest for the structural, catalytic and physical properties of coordination/organometallic metal complexes is triggered by their numerous applications, the development of new multifunctional ligands, particularly with constrained geometry, that allow a better control of the metal coordination sphere.<sup>1,2</sup>

Functional *N*-heterocyclic carbene (NHC) ligands, bearing donor groups with significantly different stereoelectronic properties, are ideal candidates to study the chemoselectivity of their coordination to metal centres.<sup>3</sup> Furthermore, NHC donors can be introduced in pincer-type structures, as shown below where **E** can be **CH** or **N**, thus providing an entry into non-symmetrical pincer ligands.



With such ligands having a CH<sub>2</sub> group in  $\alpha$  position to P, their deprotonation followed by metalation can lead to de-aromatized systems and examples will be illustrated in chromium chemistry with application to the catalytic oligomerization of ethylene.<sup>4</sup> Their properties will be compared with those of complexes containing related P,N,P pincers.



1. See e.g. A. A. Danopoulos, P. Braunstein, *Oil & Gas Science and Technology – Rev. IFP Energies nouvelles* – Special Issue in Tribute to Yves Chauvin, **2016**, 71(2), article 24.
2. See e.g. C. Fliedel, A. Ghisolfi, P. Braunstein, *Chem. Rev.* **2016**, 116, 9237.
3. See e.g. S. Hameury, P. de Frémont, P. Braunstein, *Chem. Soc. Rev.* **2017**, 46, 632 ; V. Charra, P. de Frémont, P. Braunstein, *Coord. Chem. Rev.* **2017**, 341, 53.
4. T. Simler, A. A. Danopoulos, P. Braunstein, *Chem. Commun.* **2015**, 51, 10699; T. Simler, A. A. Danopoulos, P. Braunstein, *Angew. Chem. Int. Ed.* **2015**, 54, 13691.