



2016-2017 POCC Lecture Series

October 27, 2016, 8:00 PM

The BMS lecture at POCC

Prof. Fraser F. Fleming

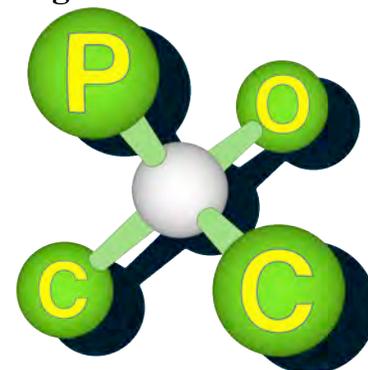
Drexel University

Strategic Alkylations of Nitriles and Isonitriles

Carolyn Hoff Lynch Lecture Hall

Chemistry Building, University of Pennsylvania

The Philadelphia
Organic Chemist's Club



POCClub.org

To join us for dinner before the lecture please contact POCC's secretary Thomas Razler (thomas.razler@bms.com) at least one week ahead of time.

Fraser Fleming completed his B. Sc. (Hons.) at Massey University, New Zealand, in 1986 and then pursued a Ph. D. under the direction of Edward Piers at the University of British Columbia, Canada. After postdoctoral research with James D. White at Oregon State University he joined the faculty at Duquesne University, Pittsburgh. From 2013 until 2015 he served as a rotating Program Officer at the National Science Foundation before moving to become Head of the Chemistry Department at Drexel University. His research interests focus on stereoselectivity, particularly as applied to reactions of nitriles and "isonitriles".

Abstract: Metalated nitriles are nucleophilic chameleons whose structure is intimately tied to the nature of the metal counter ion, temperature, and solvent. Varying the environmental conditions provides selective access to an array of N-metalated nitriles, nitrile-stabilized carbanions, and C-metalated nitriles which have distinctly different properties (Figure 1). After an introductory tutorial to metalated nitriles, the focus will move to show how these can be used to address difficult synthetic challenges: ring closing reactions, stereoselective formation of quaternary centers, and chemoselective alkylations.

The reactions of "isonitriles," or isocyanides, are significantly underdeveloped; classical alkylation and conjugate addition reactions are rare. Much of the difficulty lies in the instability of metalated isocyanides which are prone to self-condensation. An overview of the approaches to these two processes will be presented with an emphasis on reactions that preserve the isonitrile functionality for applications such as multi-component reactions.

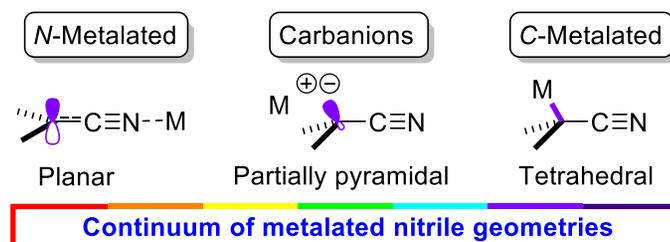


Figure 1.