

Seminar

Monday 14 February 2011

11.00 am - Room 531

Dr James Crowley

Senior Lecturer, Department of Chemistry, University of Otago

Supramolecular Synthesis: Macrocycles, Cages, and Materials

The past two decades have seen rapid development in the field of metallocupramolecular chemistry.^[1] The underlying principles for the generation of well-defined multimetallic coordination architectures are now well understood and these have been exploited to generate a wide range of complex metallocupramolecular architectures. With this diverse range of structures readily available, the focus of research has shifted away from simply making new architectures to generating functional systems and exploiting their properties. Indeed, metallocupramolecular architectures are beginning to show promise in a wide range of areas including molecular recognition, encapsulation, drug delivery, catalysis, molecular electronics, and sensing.^[2]

In the first part of the presentation we describe our recent efforts in the development of functional metallo-macrocycles and cages using CuAAC “click” chemistry.

The second part of the presentation describes our work towards the exploitation of metal-metal interactions in the self-assembly of novel supramolecular materials.

1. Dalgarno, N. P. Power and J. L. Atwood, *Coord. Chem. Rev.*, 2008, 252, 825–841; C. R. K. Glasson, L. F. Lindoy and G. V. Meehan, *Coord. Chem. Rev.*, 2008, 252, 940–963; M. Fujita, M. Tominaga, A. Hori and B. Therrien, *Acc. Chem. Res.*, 2005, 38, 369–378; S. Leininger, B. Olenyuk and P. J. Stang, *Chem. Rev.*, 2000, 100, 853–907.

2. M. Yoshizawa, J. K. Klosterman and M. Fujita, *Angew. Chem., Int. Ed.*, 2009, 48, 3418–3438; A. Kumar, S.-S. Sun and A. J. Lees, *Coord. Chem. Rev.*, 2008, 252, 922–939; B. Therrien, *Eur. J. Inorg. Chem.*, 2009, 2445–2453; B. Therrien, G. Suess-Fink, P. Govindaswamy, A. K. Renfrew and P. J. Dyson, *Angew. Chem., Int. Ed.*, 2008, 47, 3773–3776; M. D. Pluth, R. G. Bergman and K. N. Raymond, *Acc. Chem. Res.*, 2009, 42, 1650–1659; N. C. Gianneschi, M. S. Masar, III and C. A. Mirkin, *Acc. Chem. Res.*, 2005, 38, 825–837.