

PhD Open Seminar

Title: **Multi-metallic Modular Porphyrinoid Assemblies: Synthesis, Structure and Properties**

Speaker: **M. Murugavel**

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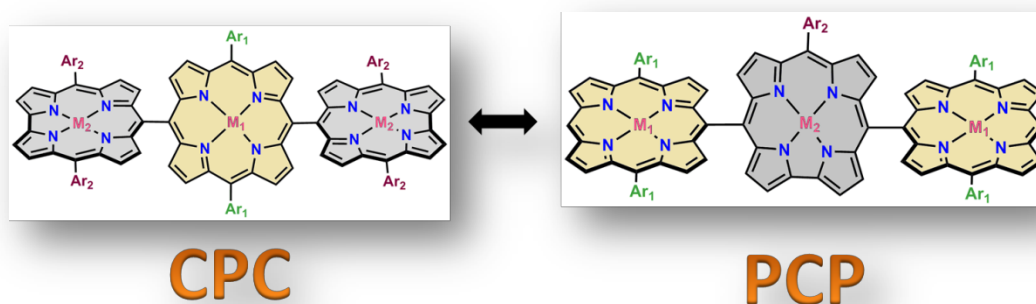
Time: **5.00 p.m.**

Venue: **AB-II-401**

Abstract

Covalently-linked multiporphyrin arrays play a vital role in the field of photovoltaics, NLO materials, photodynamic therapy and photosynthetic mimics.¹ Photophysical properties of the arrays can be fine-tuned by varying metal ions, substituents on the periphery and type of linkers.² *meso-meso* directly linked multiporphyrin array is a unique candidate favouring energy and electron transfer processes. Multiporphyrin arrays can stabilize only bivalent metal ions. In contrast, corrole, a ring contracted tetrapyrrolic trianionic ligand can stabilize metal ions in trivalency.

Multicorrole arrays and incorporation of corroles into porphyrins leading to multi-hetero arrays could be promising candidates for multi-site catalysis, molecular magnets and spin transport materials. To envision the stability of metal ions in multiple oxidation states, we have designed and synthesized two discrete modular porphyrinoid assemblies, Corrole-Porphyrin-Corrole³ ($C_{[10]} \bullet P_{[5,15]} \bullet C_{[10]}$) and Porphyrin-Corrole-Porphyrin⁴ ($P_{[5]} \bullet C_{[5,15]} \bullet P_{[5]}$) hybrids.



In this presentation, the rationale of design, structure and properties of $C_{[10]} \bullet P_{[5,15]} \bullet C_{[10]}$ and $P_{[5]} \bullet C_{[5,15]} \bullet P_{[5]}$ hybrids will be discussed.

References:

1. I. Beletskaya, V. S. Tyurin, A. Y. Tsivadze, R. Guillard and C. Stern, *Chem. Rev.*, 2009, **109**, 1659.
2. Tanaka, T.; Osuka, A. *Chem. Soc. Rev.* 2015, **44**, 943.
3. Murugavel, M.; Ramana Reddy, R. V.; Sankar, J. *R.S.C. Adv.* **2014**, *4*, 13669.
4. Murugavel, M.; Ramana Reddy, R. V.; Dey, D.; Sankar, J. *Chem. Eur. J.* **2015**, *21*, 14280.