

PhD Open Seminar

Department of Chemistry, IISER Bhopal

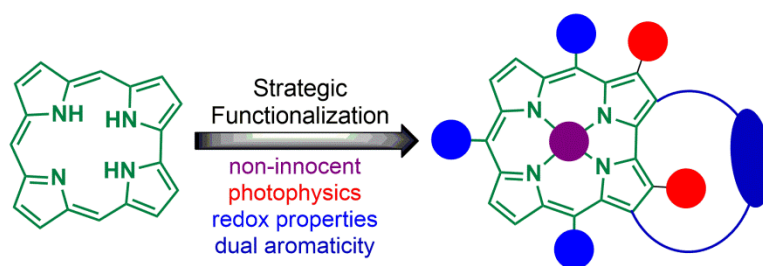
Speaker: Mr. Biju Basumatary (Thesis supervisor: Dr. J. Sankar) Roll No-1120202

Date: 13th September-2017, Wednesday Time: 3.00 PM Venue: AB II-401

Title: Functionalization and π -Expansion of Corrole Macrocycle: The Structure, Photophysical and Electrochemical Investigations.

Abstract

Corrole is a ring-contracted member of tetrapyrrolic ligands, structurally resembling Co(II)-coordinated corrin ring of Vitamin B₁₂.^[1] The chemistry of corrole remained largely dormant until the beginning of 21st century even after the first synthetic attempt in the year 1965.^[2] It exhibits many intriguing properties^[3,4] such as non-innocent character, ability to stabilize metal in higher oxidation states (+3, +4 and +5), high fluorescence quantum yields and easy functionalization.



As part of my doctoral studies, we mainly focused on the modulation of corrole's inherent properties *via* strategic functionalization. Eventually, we were able to understand new electronic insights into the non-innocent nature, photophysical and redox behaviours and the Hückel aromaticity. In this direction, we have examined the existence of a full-fledged non-innocent [17] π -electron corrole radical with a main group element, which was non-existent and believed to be unstable.^[5] Furthermore, a finely modulated electronic structure of corrole has been investigated by the incorporation of BODIPYs.^[6,7] In addition, a dual Hückel aromatic system was perceived, synthesized and investigated with the help of various indices.^[8]

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- [7] **B. Basumatary**, R. V. R. Reddy, S. Bhandary, J. Sankar, *Dalton Trans.* **2015**, 44, 20817-20821.
- [8] **B. Basumatary**, J. Sankar, *Manuscript under preparation*.