

PROSENJIT CHATTOPADHYAY



Education;

- 2002.04 M.Sc. in Chemistry from Indian Institute of Technology, Delhi, India
2008.05 Ph.D. in organic chemistry from Indian Institute of Technology Delhi, India

Research area;

Synthesis and physicochemical properties of porphyrinoids and their metal complexes, supramolecular chemistry of macrocycles.

Key words; Porphyrinoids, physicochemical properties, Supramolecular chemistry

Employment experience;

- 2008.05-2008.11 Research Scientist, Jubilant Chemsys, U.P., INDIA.
2008.11- Assistant Professor (Specially Appointed), Department of Applied Chemistry, Osaka University, Suita, JAPAN

- Awards; 2005 SRF, CSIR, India
2003 JRF, CSIR, India

Selected publications;

1. Chattopadhyay, P.; Pandey, P. S.; Synthesis of a Novel Uracil-2, 6-Diaminopyridine-Lithocholic Acid Conjugate that Self-Assembles into a Cyclic Dimer, Tetrahedron Lett. 2008, 49,4640-4643.
2. Chattopadhyay, P.; Nagpal, R.; Pandey, P. S.; Recognition Properties of Flavin Analogues with Bile Acid-Based Receptor: Role of Steric Effects in Hydrogen Bond Based Molecular

Recognition, Aust. J. Chem. 2008, 61, 216-222.

3. Chattopadhyay, P.; Pandey, P. S.; Bile Acid-Based Receptors Containing 2,6-Bis(acylaminopyridine) for Recognition of Uracil Derivatives, Bioorg. Med. Chem. Lett. 2007, 17, 1553-1557.
4. Chattopadhyay, P.; Pandey, P. S.; Synthesis and Binding Ability of Bile Acid-Based Receptors for Recognition of Flavin Analogues Tetrahedron 2006, 62, 8620-8624.

Research Statement;

Porphyrins, also known as pigments of life, are aromatic heterocyclic macrocycles of which many occur in nature and in association with different metal ions and are responsible for various biological functions such as photosynthesis, metabolism, O₂-transport etc. Porphyrin-based compounds have found application as therapeutics for photo-dynamic therapy (PDT) study, molecular materials for opto-electronic applications, molecular recognition (neutral, cationic and anionic sensor), drug delivery, catalysis etc. Inspired by the importance of porphyrins, a new research area has emerged in recent years devoted to synthesis and application of porphyrin analogs, targeting at a variety of physical and chemical properties.

Porphycene is one of the candidates for such demands as different ligand symmetry would give rise to surprising and fascinating reactivities. However, unlike porphyrins, the synthesis of porphycene has not been fully developed yet and is associated with low yields. This class of compounds has attracted research groups all over the world especially because of their unique optical properties in addition to their applications in catalysis, protein mimicry and material chemistry. The principal driving force for research is to realize a variety of porphycenes or in other words porphycenes having bulky groups/electron donating groups/withdrawing groups or conjugated porphycenes. Infixing of metal atoms into the porphycenes will lead to metalloporphycenes which will serve as experimental test beds for physiochemical and chemical reactivity studies.

My goal;

The major focus of research in Hayashi Laboratory are:-

- 1) Synthesis of metalloporphyrinoids and exploration of their catalytic activity in organic reactions.
- 2) Design, synthesis and characterization of novel porphycenes having potential application as therapeutics for photodynamic therapy study.
- 3) Design and development of molecular receptors based on pyrroles (hetero-aromatic macrocycles and open chain molecules) for the selective recognition of anions.