Seminar

Coordination-Induced Dynamic Supramolecular Architectures: Molecule-based Materials in-Solution and on-Surface

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Coordination-based functional molecular materials combine non-covalent chemistry with interesting aspects of supramolecular architectures. Such materials are currently generated by the dozens in a gold-rush-type search for exploring novel properties. These materials may exhibit unique functions derived from individual molecular building blocks and their combination(s). The formation of well-defined structures in solution and on surface is a key step for their use in practical applications and devices ranging from molecular electronics, display and sensor technologies, to drug delivery, solar cells and data storage. However, rational design and prediction of their physicochemical properties at the molecular level is still challenging. Moreover, how the molecular components and experimental conditions control properties of these coordination-based materials is barely known.

This presentation will discuss our attempts towards the rational design of non-covalent interactions based supramolecular architectures, control of their properties and the investigation of basic rules that govern their formation. Using versatile organic and metal-organic ligands that bind late-transition metals and electron deficient atoms in a defined manner, we address various challenging issues related to the mechanism underlying the formation of homogeneous metal-organic hybrids, functional architectures on surfaces, halogen-bonded supramolecular systems, nanoparticle assemblies and MRI contrast agents. This talk will attempt to signify the versatility of pyridine-based non-covalent interactions in supramolecular chemistry towards the formation of molecule-based materials in-solution and on-surface.

Tuesday, Sep 20th 2016

4:00 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TCIS