

Internal Seminar

Single Molecule Magnets Based on 3d-4f Heterometallic Systems

Atanu Dey

IACS, Kolkata

Polymetallic assemblies based on 3d, 4f or 3d-4f mixed metal ions are receiving a great deal of attention in the last few years due to their potential applications as magnetic materials particularly as single-molecule (SMM) and single-chain magnets (SCM). Molecule-based magnets could be used for new and exciting applications such as data storage, information processing, quantum computing, spintronics and low temperature magnetic refrigerants etc. The first 3d-4f based SMM, a [Cu₂Tb₂] complex, was reported in 2004 by Osa and coworkers. However, accommodating both the 3d and 4f metal ions in the same molecule is still a challenging synthetic task. In particular, this requires the choice of an appropriate ligand system that can accommodate both 3d and 4f metal ions by utilizing specific coordinating sites. Over the years, serendipity appears to be the most common and successful route to construct polynuclear architectures containing 3d and 4f metal ions. In this synthetic approach, the ligand and the metal ions of varying ratio are mixed and left to self-assemble. An alternative strategy is to choose a compartmental ligand that has the ability to accommodate both 3d and 4f metal ions in its different coordination pockets. Synthetic strategies, characterization and detailed magnetic studies of various heterometallic complexes containing 3d and 4f metal ions will be discussed in this presentation.

Wednesday, Sep 13th 2017

02:00 PM (Tea/Coffee at 01:45 PM)

Auditorium, TIFR-H (FReT-B)