Poster Presentation

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Tetracyclic macrocycles of M5L4 and M6L4

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The design and syntheses of coordination cages or discrete metallic macrocyles/clusters is one of the most fascinating areas of research in the last two decades given their resemblances with biological assemblies such as viruses, intriguing architectures, compositional diversity and interesting properties such as recognition, catalysis, separation, drug delivery, molecular flasks and gas storage. Metal coordination directed cages of multiple pyridine containing ligands resulted in various fascinating architectures such as molecular squares, polyhedral cages, tubes, bowls, rotaxanes and catenanes. The right choices of ligand and metal atom are important to achieve the targeted self-assembly. The molecular panelling approach with cis-protected Pden is very successful approach to produce several targeted metallo cages and polyhedrons, in particular using tridentate ligands with compositions of M6L4, M4L6 and M3L2. In several of the assemblies of Pd(II), the ligands are symmetric in nature and contain 3-fold, 4-fold or 6-fold symmetries. There exists limited number of studies on tridentate ligands with arc like geometries. One such example was shown to form nanotubes with M6L4 composition only in the presence of rod like dianion. It is interesting to note that, often metallocages were shown to be templated by anions but very few examples exist in the literature in which guest molecules play a role of templation. The use of Ag(I) ions in assembling process is limited compared other metal ions such as Cu(I), Cu(II), Ni(II), Pd(II) and Pt(II) etc. The prototypal examples of Ag(I) with poly-2,2'-bipyridine ligands are molecular racks and grids reported by Lehn et al. Here we would like to present one such example with a tridentate ligand and its self-assembly with metal salts that are influenced by the presence of solvent molecules as well as anions. The construction of highly ordered organized discrete metallocages, namely M5L4 and M6L4, which are includes guest/solvent molecules such as benzene, benzonitrile, nitrobenzene, toluene and p-xylene.

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