

Poster Presentation

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Supramolecular architectures of 4-hydroxytetraphenylporphyrin with aza-donors

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Molecular adducts of 5,10,15,20-tetrakis(4-hydroxyphenyl)porphyrin (1) with aza-donors like 4,4'-bipyridine (a), 1,2-bis(4-pyridyl)ethane (b), trans-1,2-bis(4-pyridyl)ethylene (c), 4,4'-trimethylene-dipyridine (d), phenazine (e), 1,10-phenanthroline (f), 1,7-phenanthroline (g) and 4,7-phenanthroline (h) have been prepared. All the molecular complexes are crystallized along with the solvent of crystallization, except in the complex with the aza-donor b. Detailed structural analysis of the obtained complexes has been carried out by single crystal X-ray diffraction. The three dimensional structures of the molecular adducts are facilitated by directional hydrogen bonding features of hydroxyl groups with aza donors as well as solvent molecules, leading to the formation of different types of supramolecular architectures like sheets, tapes, host-guest assembly etc. For example, in the complex of 1 and aza donor a, which crystallizes as a hydrate, the porphyrin molecules interact with water and 4,4'-bipyridine through O-H...O and O-H...N hydrogen bonds, which leads to the formation of molecular sheets in two dimensional arrangement. An important noteworthy observation is that the molecular complexes are crystalline even after removal of the solvents by heating, as characterized by thermogravimetric analysis (TGA) and powder X-ray diffraction (PXRD). Further, all the complexes are found to be fluorescence sensitive, perhaps due to the porphyrin molecules.

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