

Molecular tectonics : design of molecular networks based on porphyrins

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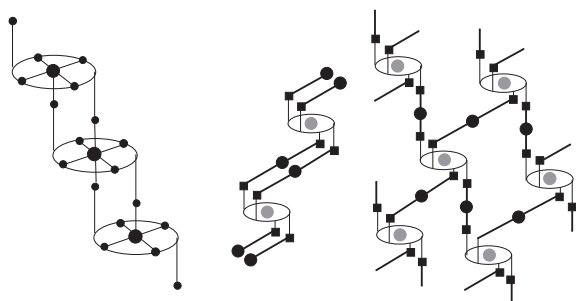
Strasbourg

B. Zimmer, M. Hutin, V. Bulach, M. W. Hosseini, A. De Cian, N. Kyritsakas, *New J. Chem.*, 2002, 26, 1532.

Coordination networks are sequenced molecular assemblies composed of organic ligands and metallic centres acting as building blocks or tectons. These infinite structures are obtained upon mutual interconnection of organic tectons bearing coordination sites and metal centres.

The porphyrin core is the candidate of choice for the design of coordination networks because of its binding ability towards a variety of metal cations and the possibility that such a system offers to control redox and/or photochemical properties of the corresponding metal complexes. Another interesting feature associated with porphyrin backbone is the possibility of functionalising the central core at β -pyrrolic and/or *meso* positions. Thus, based on this preorganised tetradentate unit, one may design a variety of tectons by anchoring additional coordination sites such as pyridine, nitrile, carboxylate, catecholate etc. Furthermore, in terms of design principle, one may take advantage of atropisomerism that substituted porphyrins offer. Indeed, using the same units, one may generate four different tectons based on four different atropoisomers. In principle, each atropoisomer should allow to generate specific coordination networks when associated with appropriate metal centres.

Examples demonstrating the above mentioned features will be presented and further perspectives using porphyrin derivatives will be discussed



Two examples of coordination networks formed upon interconnection of porphyrin based tectons by metallic centres.

References (dealing with porphyrin based tectons):

C. Drexler, M. W. Hosseini, A. De Cian, J. Fischer, *Tetrahedron Lett.* 1997, 38, 2993; C. Drexler, M.W. Hosseini, J.-M. Planeix, G. Stupka, A. De Cian, J. Fischer, *Chem.Comm.*, 1998, 689; B.