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Molecular Tectonics: From Simple Tectons to Complex Molecular Networks. Mir Wais Hosseini, Chemistry, Univ. Louis Pasteur, 4, rue Blaise Pascal, Strasbourg, 67000 FRANCE.

The development of concepts and strategies allowing the design of molecular networks is a topic of active investigations.

Molecular networks are supramolecular structures possessing translational symmetry. Whereas molecules are described as assemblies of atoms interconnected by covalent bonds, molecular networks are hypermolecules for which the connectivity between the elementary molecular components (tectons) is ensured by non-covalent interactions. The formation of large molecular networks (10^{-6} - 10^{-3} m scale), may hardly be envisaged through a step-by-step type strategy. The only available alternative is iterative self-assembly. Thus, by programming (storage of both recognition and iteration information) specific interaction patterns between tectons in the crystalline phase, a variety of molecular (hydrogen bonded-, inclusion-, coordination-) networks with various dimensionality may be designed.

The approaches employed currently are mainly concerned with structural control of the formation of molecular networks. Obviously, a further step, which remains to be achieved, will be to use the structural knowledge gathered over the last decade for the design of functional networks. One may foresee that the majority of molecular materials for the next century will be based on functional molecular networks.