

Tuning the dimensionality of hybrid inorganic-organic materials based on polyoxometalates

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Owing to potential applications in catalysis, photochemistry, magnetism, ion exchange, biological chemistry and medicine, much effort has been dedicated to exploring polyoxometalate (POM) chemistry.¹⁻³ In recent years, the design and assembly of hybrid inorganic-organic materials based on polyoxometalates has become an area of rapid growth due to the following developments: (i) advances in cluster chemistry, (ii) growth of organic synthesis pertinent to ligand preparation and post-synthetic modification, (iii) improvement in structure determination, particularly through X-ray crystallography. Up to now, the control of the dimensionality of the resulting hybrid compounds is still a great challenge, as the final structures are frequently modulated by various factors such as pH, reaction temperature, molar ratios of starting materials, the selection of POM anions and ligand molecules, among others.⁴⁻⁷ In this review, we investigated the role of ligands in the synthesis of the hybrid inorganic-organic compounds with attractive topologies and different dimensionality such as entangled structures and related systems in terms of crystal engineering.

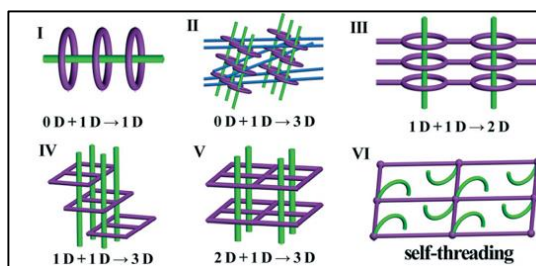


Fig. 1. Schematic representations of the reported POM-based polypseudorotaxanes.

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