

*Interpenetrated metal-organic frameworks (MOFs) and their applications*

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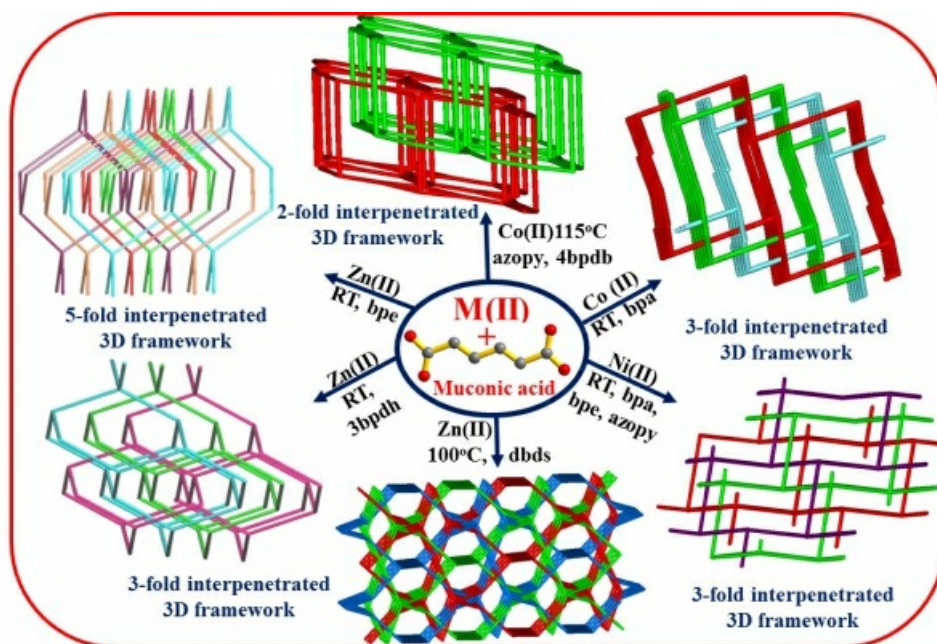
Metal-organic frameworks (MOFs) or coordination polymers are highly porous and crystalline inorganic-organic hybrid materials generally consisting of two building elements: inorganic coupling units or metal containing clusters (SBUs) and organic ligands or linkers [1]. These frameworks offer an enormous porosity, which can be used to store large amounts of gases and also the possibility of tailoring the pore size and functionality of MOFs makes them useful materials for carrying out heterogeneous catalytic reactions. The huge sizes of the pores inside MOFs, however, also give rise to a fundamental complication, namely the formation of sublattices occupying the same space.[2] Interpenetration in metal-organic frameworks (MOFs) is an intriguing phenomenon with significant impacts on the structure, porous nature, and functional applications of MOFs which reduces the pore size and the available space within the MOF structure for selective catalytic applications.[3]

In our efforts to construct MOFs for heterogeneous catalytic applications and selective gas adsorption, we have synthesized several new interpenetrated porous metal-organic frameworks which have shown interesting catalytic properties and selective CO<sub>2</sub> adsorption. The synthesis, structure and catalytic properties of these MOFs will be presented.

[1] Virtual Issue: Emerging Applications of Metal-Organic Frameworks and Covalent Organic Frameworks, (2016) Chem. Mater. 28, 8079–8081.

[2] Ferguson, A. et al. (2016) Nature Chem. 8, 250-257.

[3] Jiang, H. L. et al. (2013) Coord. Chem. Rev. 257, 2232–2249.



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