MS33-P07 | LARGE PORE MOFS AS CATALYTIC NANOREACTORS

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The development of innovative environmentally friendly catalysts is of crucial importance for the establishment of a new sustainable chemical industry. The immobilization of the catalysts on a support can solve problems of selectivity and activity. We propose a scaffold based on Metal Organic Frameworks (MOFs). Under appropriate conditions they can be assembled into a porous material on which we can immobilize catalyst, making possible its recovery/reuse at the end of the process. The advantages of MOFs as scaffolds are clear: uniform, reproducible and controllable manufacture and the possibility of engineering the linkers, in order to control and personalize the whole network structure. These proposed nanoreactors will be designed and synthesized according to modular principles (based on isoreticular synthesis [1]). The desired MOFs will have specific characteristics to be used as scaffold for catalyst: pore size in the mesopores range (≥ 6nm), 1-D hexagonal channel structures to help the diffusion of reactants/products[2] and easy/fast/cheap to synthesize organic linkers. (Figure 1). The library of long star-shaped linkers will be used for Zr-, La-, In- and Ga-based MOFs in order to obtain the desired 1-D channel topology.

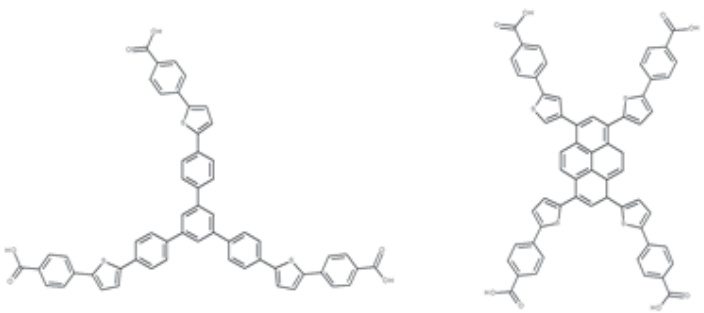

Figure 1. Novel and long linkers for mesoporous 1-D hexagonal MOFs.

[1] Deng, H.; et al. Science 2012, 336 (6084), 1018-1023
[2] Čejka, Morris, Nachtigall; RSC Catalysis Series No. 28 (2017)
[3] Yabo Li et al. J. Org. Chem. 2014, 79, 2890−2897