

## Surface and porosity modification of UIO-66 nanostructures using calixarenes

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MOFs are commonly hydrophilic because of their formation which positive charged metal ion combined with negative charged organic linkers. UIO-66 is zirconium based MOF consisting of zirconium metal ion with terephthalic acid as a linker. Due to the Zr-O and OH bonds, UIO-66 has high affinity with polar solvent groups. Most recently, much have been attempted to obtain hydrophobically stabilized MOFs in order to mix with non-polar polymers. The common approaches are functionalizing of MOF surface using by hydrophobic ligands or mixing with hydrophobic compounds such as carbon, polydimethylsiloxane, and silica. Here we report a surface modification route for MOFs to disperse in the non-polar solvent and separate the small particles from the mixture. As synthesized UIO-66 with different amount of calix[n]arene conditions (0 to 30 wt%) were investigated in toluene. We show that supramolecular amphiphilic structures can effectively form stable colloidal dispersions of MOFs provided that their sites are larger than the pore openings. Our findings could lead to universal methodology to form non-polar stable dispersion of MOFs, to be used particularly in mixed matrix membranes.