Title:	HIERARCHICALLY POROUS AND HYDROPHILIC Zr-BASED METAL-ORGANIC XEROGELS FOR PACKED BED OIL-WATER SEPARATION
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Keywords:	Zr-based Metal-Organic Gels Zr6-oxo cluster Flexible tetra-topic organic linker H4L Metal-Organic Framework Particles
Issue Date:	28-Jul-2021
Publisher:	IISERM
Abstract:	A series of Zr-based Metal-Organic Gels (MOGs), convertible into xerogels have been fabricated by combining the Zr6-oxo cluster inorganic core with a flexible tetra-topic organic linker H4L [(5,5'-((6-methoxy-1,3,5-triazine-2,4-diyl)bis(azanediyl))diisophthalic acid)]. The Metal-Organic Framework Particles (MOFPs) constituting these xerogels possess inherently intact hard acid-hard base Zr-carboxylate bonds, providing the stability. Different modulators have been utilized to control the formation, porosity and molecular arrangement of particles constituting the xerogels, formed upon evacuation of solvent molecules from the MOGs. Presence of flexible and hydrophilic sites on the linker imparts the hydrophilic nature to the pores. Depending upon the molecular arrangement, these xerogels depict an amorphous nature in bulk state while possessing a micro-structural orderness in Metal-Organic Framework Particles (MOFPs) constituting these hydrophilic and hierarchically porous xerogels. The xerogels were synthesized with [Zr6(μ3-O)4(μ3- OH)4(OH)4(OH2)4(L)2]ncore. The ones produced in higher yield have been further characterized using different analytical techniques for establishing the hydrophilic and hierarchically porous nature of the xerogels. These properties have been utilized for packed-bed oil-water separation. Analytical probing of xerogels provides correlation between the surface area of xerogels and their comparative oil-water separation performance. Investigation of structure-process-property interdepencies in selected xerogels provides a pathway for development of advanced materials for packed-bed oilwater separation.
URI:	http://hdl.handle.net/123456789/3963
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