**Synthesis of ZnGlu MOF/Mesoporous Silica SBA-16: as an Eco-Friendly Highly Efficient Nanocomposite for Solvent-Free Chemical Fixation of Carbon Dioxide with Epoxides**

Hossein Torabi,[a] Hossein Eshghi,\*[a] Sara. S. E. Ghodsinia,[a] and Parvin Sanati Tirgan [a]

*Department of Chemistry Faculty of Science, Ferdowsi University of Mashhad, Mashhad 9177948974, Iran.*

**Abstract:** In this study, ZnGlu metal-organic framework/ordered mesoporous silica SBA-16 (ZnGlu MOF/SBA-16) has been successfully introduced as a novel efficient, and eco-friendly nanocomposite with excellent chemical stability for the solvent-free chemical fixation of carbon dioxide under 4bar CO2 pressure.  The structure of the as-prepared nanocomposite was characterized by a series of measurement techniques, including FT-IR, XRD, BET, TEM, FE-SEM, EDX, EDX-mapping, and ICP-OES. From the standpoint of green chemistry, ZnGlu MOF/SBA-16 nanocomposite demonstrated superior catalytic activity for the conversion of CO2 and various epoxides towards the preparation of cyclic carbonates 1,2 without using any toxic metal and reagents. This novel efficient catalytic system can be expediently recovered using simple filtration, and its satisfying catalytic activity was kept after five recycle runs under the same reaction. It's notable that ZnGlu MOF/SBA-16 with exemplary potential can be applied for industrial purposes as a green nanocatalyst.



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