

Continuous – Flow Microwave Synthesis Of H₂N- UiO-66 And Its Application For Toluene Adsorption: Effects Of Experimental Conditons And Linker Ratios

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In this study, large quantities of H₂N- UiO-66 were sucessfully prepared by continuous – flow processing under microwave irradiation. The precursor solutions were continously transfered by a pump system into the microwave oven, which had set up at a desired temperature (80~120°C) and irradiation frequency (500 W). The results show that H₂N- UiO-66 crystals with nanosacale particles (~ 20 nm) were obtained within a very short residence time of 5 ~ 10min. Opperating conditions as temperature, reaction time, HCl concentration, and linker ration (Amino terephtalic acid/Terephtalic acid) were strongly influenced on the yield as well as porosity of H₂N-UiO-66 product. For toluene adsorption experiment, the obtained results show that the adsorption capacity increased with increase of amino group concentration of linker mixture. The maximum toluene adsorption capacity of 180 mg.g⁻¹ was obtained on H₂N-UiO-66 (100%) at 298 K, which was comparable to those of H₂N-UiO -66 synthesized by conventional sovothermal approach.