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Synthesis and Evaluation of Heterogeneous Nano-Catalyst: Cr Loaded in to MCM-41

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Abstract : In this study a nano-composite catalyst was synthesized by incorporation of chromium into the framework of MCM-41 as a base catalyst. Mesoporous silica molecular sieves MCM-41 were synthesized under Hydrothermal Continues pH Adjusting Path Way. Then, MCM-41 was impregnated by chromium nitrate aqueous solution for several times under water aspiration. Raw powder was cured by heat treatment in vacuum furnace at 500°C. Phase formation, morphology and gas absorption properties of resulted materials were characterized by XRD, TEM and BET analysis, respectively. The results showed that high quality hexagonal meso structure as a matrix and Cr as a second phase has been formed with a narrow size pore diameter distribution and high surface area in Cr/MCM-41 nano-composite structure. The specific surface and total volume of porosity of the synthesized nanocomposite are obtained 931m^2/gr and 1.12 cm^3/gr, respectively.

Keywords : nano-catalyst, MCM-41, Cr/MCM-41, Marine Science and Engineering
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