Preparation and characterization of nano-sized ZnMoO$_4$/MCM-48 composite by a facile ultrasound assisted impregnation

Fatemeh Karimi - Research Laboratory of Inorganic Materials Synthesis, Department of Chemistry, Iran University of Science and Technology, Tehran, 16846-13114, Iran
Mina Imani - Research Laboratory of Inorganic Materials Synthesis, Department of Chemistry, Iran University of Science and Technology, Tehran, 16846-13114, Iran
Azadeh Tadjarodi - Research Laboratory of Inorganic Materials Synthesis, Department of Chemistry, Iran University of Science and Technology, Tehran, 16846-13114, Iran

In this study, ZnMoO$_4$ nanostructure with a grid-like morphology were successfully synthesized using a facile and effective solid-state process followed by heat post reaction at 550 °C for 3 h. To obtain ZnMoO$_4$/MCM-48 nanocomposite, the synthesized MCM-48 mesoporous silica and ZnMoO$_4$ nanostructure were composed with to each other in ex-situ model by ultrasound impregnation. The structural and morphological evaluations of the prepared samples were discussed by Fourier transform infrared spectroscopy (FT-IR), X-ray diffraction (XRD), scanning electron microscopy (SEM) and energy dispersive X-ray (EDX). The specific surface area and pore size distribution of the prepared nanocomposite were determined by employing the Brunauer–Emmett–Teller (BET) technique and the Barrett–Joyner–Halenda (BJH) model.

Keywords: ZnMoO$_4$/MCM-48; Mesoporous; Nanostructure; MCM-48; Nanocomposite

https://www.civilica.com/Paper-NZEOLITE02-NZEOLITE02_046.html