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Synthesis and Structural characterization of ZnO and CuO nanoparticles supported mesoporous silica SBA-15

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Keywords: mesoporous SBA-15; CuO & ZnO supported SBA-15; anisotropic metal oxides; Supported catalysts; Impregnated and condensed CuO & ZnO-SBA-15.

Abstract:

Zinc oxide (ZnO) and copper oxide (CuO) nanoparticles were loaded into mesoporous silica SBA-15 by post-synthesis and direct methods. The structural properties were characterized using wide and small angle X-ray diffraction (WXR & SXRD), X-ray photoelectron spectroscopy (XPS) and N₂-adsorption desorption (BET). The WXR showed that, the loaded zinc and copper oxides were present in crystalline forms (impregnation). The mesoporosity properties of SBA-15 silica were well maintained even after the introduction of metal oxide nanoparticles. BET analysis indicate that the impregnated and condensed ZnO and CuO supported SBA-15 nanocomposites have a lower surface area than that of its parent SBA-15.

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