

Abstract

Ni, Mg co-doped CeO₂ and its composite with activate carbon were synthesized by solution combustion method. Using X-ray diffraction (XRD), Fourier-transform infrared spectroscopy (FTIR), scanning electron microscopy, and UV-Vis DRS spectroscopy, respectively, performed for the crystal structure confirmation, functional group identification, surface morphology, and optical properties of the synthesized composite material. The existence of the crystalline nature of Ni, Mg@CeO₂ as FCC cubic structure was confirmed by XRD after sintering at 450 °C. Functional groups like Ce-O and C-O were confirmed by FTIR in the produced samples. Spherical morphology is seen in all samples ranging size below 100 nm.