

Physicochemical Characterization of Mercerized Cellulose-Supported Nickel-Oxide

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Abstract : Microwave radiation was applied to synthesize nanoparticles of nickel oxide supported on pretreated cellulose with metal acetate in the presence of NaOH. Optimization, in terms of irradiation time and metal concentration, was investigated. FT-IR spectrum of cellulose/NiO spectrum shows a band at 445 cm^{-1} that is related to the Ni-O stretching vibration of NiO6 octahedral in the cubic NiO structure. cellulose/NiO showed similar XRD pattern of cellulose I and exhibited sharpened reflection peak at $2\theta = 29.8^\circ$, corresponding to (111) plane of NiO, with two weak broad peaks at 48.5° , and 49.2° , representing (222) planes of NiO. XPS spectrum of mercerized cellulose/NiO composite showed did not show any peaks corresponding to Na ion.

Keywords : cellulose, mercerized cellulose, cellulose/zinc and nickeloxides composite, FTIR, XRD, XPS, SEM, Raman spectrum

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