Abstract Details

Title: Preparation and Characterization of MgO Nanoparticles by Co-Precipitation Method

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Abstract: Nanocrystalline Metal oxides are interesting area for scientists due to their unique surface chemistry and high surface area. Among the metal oxide nanomaterials, magnesium oxide (MgO) is an exceptionally important material and has been extensively used in,fire retardation ,catalysis, refractory materials,toxic waste remediation, antibacterial materials, paints, and superconductor products owning to its unique photonic, optical, electronic ,magnetic, mechanical and chemical properties. In the present work MgO nanocrystals were synthesis by co-precipitation method in which ammonia is used as co-precipitating agent were subsequently calcinated at 600°C in air for 4hrs and 6hrs to transform into MgO. X-ray diffraction (XRD) pattern revealed that synthesized Mg(OH) 2 nanocrystals are polycrystalline in nature with hexagonal structure, and after annealing at 600 oC it transforms to MgO nanocrystals with cubic structure. Fourier transform infrared spectroscopy (FTIR) of the as-synthesized Mg(OH)2 showed the OH- antisymmetric stretching vibration at 3686cm-1, which on annealing disappears completely indicating the Mg(OH)2 to MgO phase transformation. Transmission electron microscopy (TEM) images of MgO nanocrystals exhibited flakes-like structure. Optical band gap energy of MgO nanocrystals was estimated using UV-Vis diffused reflectance spectroscopy (DRS), and found to be 5.92eV respectively.

Keywords: Nano metaloxides, MgO, X-ray diffraction, FTIR, TEM, Optical properties.