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Synthesis and characterization of MgO by microwave-assisted thermal oxidation for photocatalytic applications

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The magnesium oxide (MgO) nanoparticles were synthesized by microwave-assisted thermal oxidation. The crystal structural, morphology, optical property were characterized by X-ray diffraction (XRD), Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), UV-Vis Spectrophotometry, Photoluminescence (PL) spectra, respectively. It was observed that, the synthesized nanoparticles were well-dispersed nanocube shape. The XRD confirmed the formation of single phase MgO exhibiting face cubic centred structure. Furthermore, the efficiency of MgO nanocube as a photocatalyst for degradation of Eosin-Y under ultraviolet light irradiation were evaluated. It was found that, MgO can used as a sensitizer in photocatalytic application and its photocatalytic activity more than MgO commercial grade. The degradation rate constant increase from 0.0011 per minute to 0.0582 per minute. The results demonstrated that the origin of photocatalytic activity in MgO arises due to the existence of high defects on the surface of MgO.

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