

Photocatalysis of ZnO nanoparticles synthesized by spray-pyrolysis method

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Among the semiconducting materials, ZnO has considerably attracted attention over the past few years due to the high activities in removing organic contaminants created from industry. In this work, ZnO nanoparticles were synthesized by spray pyrolysis method using the zinc acetate dihydrate as starting material at various synthesis temperatures. The structures of the synthesized ZnO were characterized by X-ray Diffraction (XRD), Scanning Electron Microscopy (SEM), Brunauer, Emmett & Teller (BET), Fourier Transformation Infrared (FT-IR), and UV-vis spectroscopy. The Miller indices of XRD patterns indicate that the synthesized ZnO nanoparticles showed a hexagonal wurtzite structure. With increasing synthesis temperature, the mean diameter of ZnO nanoparticles increased, and their crystallinity was improved. Also, the photocatalytic activity of ZnO was studied by the photocatalytic degradation of methyleneblue (MB) under UV irradiation (365 nm) at room temperature. The results show that the photocatalytic efficiency of ZnO nanoparticles was enhanced by increasing synthesis temperature.