

Morphologies of Nanostructured ZnO prepared by matrix-assisted method and its effects on photocatalytic activity

ABSTRACT

Zinc oxide nanoparticles have been successfully synthesized by matrix-assisted method using activated carbon as a matrix and zinc nitrate and zinc acetate as ZnO precursors. Different weight percentages (10-40 wt %) of Zn precursor were loaded onto activated carbon and calcined in air at 500 and 600 °C, producing highly crystallized ZnO particles with a wurtzite structure. Nanospherical ZnO and a mixture of nanosphere and nanorod ZnO were produced from zinc nitrate and zinc acetate, respectively. The efficiency study of the synthesized ZnO in the photodegradation of rhodamine 6G indicated that ZnO produced from zinc acetate is more effective than that from zinc nitrate, possibly due to the differences in the morphology of the synthesized ZnO.

Keyword: Activated carbon; Dyes; Photodegradation; Zinc oxide.