Short Communication

One-step Growth of Well Aligned K-doped ZnO Nanotapers Using a Facile Electrochemical Route: Photocatalyst Application

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Large-scale oriented K-doped ZnO nanotapers were successfully grown on fluorine-doped tin oxide glass substrate using a facile electrochemical route. FESEM, TEM and HRTEM results indicate well-aligned taper-like single-crystalline ZnO hexagonal structure were achieved evidenced by a strong preferential growth along [0001] c-axis direction. Room temperature photoluminescence and Raman spectra results suggest the K doping introduced defect local electronic configuration. The K-doped ZnO nanotaper arrays used as photocatalysts present good photocatalytic performance to the degradation of 1,1,1-trichloro-2,2-bis (4-chlorophenyl) ethane (DDT) under simulated sunlight attribute to the K doping. The results reveal that taper-like K-doped ZnO nanostructures have significant and high photocatalytic activity and suitable alternative to other photocatalytic materials for environmental and water detoxification.

Keywords: K-doped ZnO nanotapers; Photocatalytic activities; Electrochemical method; Organochlorine pollutants

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