ENHANCED PHOTOCATALYTIC OF ZnO NANOSTRUCTURES VIA SHAPE CONTROLLED PLATINUM THIN FILM

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Abstract:

Various nanostructures of zinc oxide (ZnO) were prepared on bare and functioned silicon substrates by developed thermal evaporation method. The nanostructures have been controlled by the functionalization of the substrate surface, where polished silicon was functionalized with Pt-template and Pt-film on its surface. The samples were characterized by field emission scanning electron microscopy, X-ray diffractometer, and UV-vis absorbance spectra. As a variation of the substrate surface, the ZnO product showed different surface morphologies of nanostructures. X-ray data has confirmed the purity of ZnO and the impurities of Pt in the samples deposited on functionalized substrates. The photocatalytic activity of ZnO nanostructures in a wastewater was investigated by the degradation of methylene blue. Photocatalytic activity was enhanced by using Pt functionalization, and the best photocatalytic performance was recorded for the ZnO/Pt-film/Si sample.

Keywords:

Nanostructures, oxides, electron microscopy, optical properties

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