Short Communication

Ag-doped ZnO nanorods synthesized on Porous Si electrode using a facile electrochemical approach for Removal of Methylene Blue from wastewater

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The enhanced photocatalytic features of the synthesized materials indicates their potentiality in wastewater treatment. In this work, vertically aligned silver (Ag) doped-ZnO nanorods (NRs) were successfully synthesized on seed-layer-free PSi structures using an electrochemical technique and FESEM results indicated that c-axis orientation was the preferential growth direction of the single-crystalline Ag doped-ZnO NRs, consistent with XRD results. Electrochemical impedance spectroscopy (EIS) was applied to analyze the interface properties and charge transfer efficiency of samples. The removal of methylene blue as an organic compound in wastewater using the Ag doped-ZnO/PSi photoanodes was studied by the photoelectrocatalytic technique. The EIS results showed that Ag doped-ZnO/PSi nanostructures have higher free-electron carriers which accelerate charge transfer and decrease the resistance. The enhanced photocatalytic activity of the Ag doped-ZnO/PSi can be attributed to the enhancement of photogenerated electron-hole pairs as a result of varied potential energy between ZnO and Ag.

Keywords: Ag doped-ZnO/PSi nanostructures; Electrochemical technique; Photoelectrocatalytic; Wastewater; Methylene blue

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