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Synthesis, characterization and charge transport mechanism of CdZnO nanorods

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Abstract

ZnO and Cd-doped ZnO nanostructures were prepared by new facile method at 80 °C. XRD measurement indicated that both samples had typical hexagonal wurtzite structures. Transmission electron microscopy (TEM) measurement shows that rod-like crystals have been formed. EDX measurement confirms the incorporation of the cadmium ion into the crystalline lattice of ZnO and indicated that cadmium ions uniformly distributed on the surface of the rods. The doping with cadmium ions has a great influence on the optical properties of the ZnO. The electrical measurements of Cd-doped ZnO nanorod were measured. The current-voltage (I-V) characteristic curve revealed that the charge transport above 4 V is mainly non-linear due to grain boundary contribution. The complex impedance spectroscopy was confirmed that the grain boundary effect controls the charge transport mechanism through CdZnO ceramic material. © 2009 Elsevier B.V. All rights reserved.

Author Keywords

Charge transport mechanism; Nanorod; Optical; Structure

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