

Vertically Grown P-Type ZnO Nanorod on Ag Thin Film

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Abstract : A Silver (Ag) thin film is introduced as a template and doping source for vertically aligned p-type ZnO nanorods. ZnO nanorods were grown using a ammonium hydroxide based hydrothermal process. During the hydrothermal process, the Ag thin film was dissolved to generate Ag ions in the solution. The Ag ions can contribute to doping in the wurzite structure of ZnO and the (111) grain of Ag thin film can be the epitaxial template for the (0001) plane of ZnO. Hence, Ag-doped p-type ZnO nanorods were successfully grown on the substrate, which can be an electrode or semiconductor for the device application. To demonstrate the potentials of this idea, p-n diode was fabricated and its electrical characteristics were demonstrated.

Keywords : hydrothermal process, Ag-doped ZnO nanorods, p-type ZnO

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