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Low-temperature Rapid Syntheses of High-Quality ZnO Nanostructure Arrays Induced by Ammonium Salt

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Abstract

We have developed a simple ammonium ion-assisted hydrothermal method for the fast preparation of high quality ZnO nanorod arrays. Ammonium salts were introduced into typically hydrothermal growth solutions formed from Zinc acetate (ZnAc_2) and hexamethylenetetramine (HMTA). Scanning electron microscope (SEM), X-ray diffractometer (XRD), High resolution transmission electron microscopic (HRTEM) and photoluminescence (PL) measurements revealed that the growth rate of ZnO nanorods was promoted by adding ammonium salts and the as-grown ZnO nanostructure arrays showed remarkably low defect density. Upon addition of ammonium salt to the hydrothermal reaction solution, complex

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