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Research paper

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

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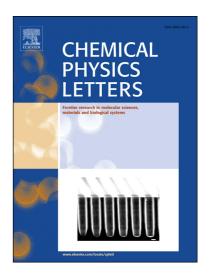
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## **ACCEPTED MANUSCRIPT**

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 Znin Oxide (ZnO) nanorod arrays. Ammonium salts were introduced into typically hydrothermal growth solutions formed from Zinc acetate (ZnAc<sub>2</sub>) 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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