

THE INFLUENCE OF ZnCl_2 CONCENTRATION ON THE MORPHOLOGY OF THE ZnO DEPOSIT OBTAINED BY ELECTRODEPOSITION

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Abstract : Zinc oxide (ZnO) thin film and nanostructures have great potential for applications in the fields of optoelectronic, sensor devices and solar cells (photovoltaic). In this work, zinc oxide nanowires and thin films were electrodeposited on molybdenum substrates. Electrochemical deposition was performed with hydrogen peroxide as hydroxide ions source, the applied potential was -1.03 V versus silver-silver chloride electrode (Ag/AgCl), during 45 minutes at room temperature. The morphology and structure characterizations of nanowires and thin films of ZnO were carried out by scanning electron microscopy and X-ray diffraction. The resulting thin films and nanowires have a good crystallinity and had a high c-axis orientation. As the electrodeposition parameters have significant influence on the morphology the deposits, the concentration of ZnCl_2 played a key role in this process. More researches can be performed by electrochemical deposition of ZnO on other substrates (copper, silicon, etc.) under ambient conditions and with different ZnCl_2 concentration.

Keywords : ZnO , Thin films, nano-wires, electrochemical deposition