Detection and Characterization of ZnO on a Passive Film of Pure Zinc

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Zinc oxide (ZnO) thin films were grown by potentiodynamic polarization of a pure zinc surface in a chloride medium with different potential scan rates. It was found that the size of the ZnO films mainly depended on the scan rate. Using oxygen as the precursor of the conversion reaction of the product formed during the scan potential, different morphologies of the films were obtained. The X-ray diffraction pattern and Raman spectra of the samples at different scan rates show the characteristic peaks of the ZnO wurtzite structure. At room temperature, photoluminescence tests showed a UV emission at approximately 390 nm, a visible emission at 442 and a deep-level emission in the green region at 523 nm, which are typical of ZnO.

Keywords: Polarization, Zinc oxide, Electrodeposition, potentiodynamic polarization, Photoluminescence, Wurtzite.

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