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## Room temperature and seed layer free electrochemicalo elaboration of ZnO-nanowires and thin films highly c-axis oriented

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**Abstract :** In this present work we report the electrodeposition at room-temperature and without seed-layer of well-aligned and highly c-axis oriented ZnO nanowires and ZnO thin films. The electrodeposition was performed in a classical three electrodes electrochemical cell, under potentiostatic mode and without stiring. The substrates used were molybdenum foil, ITO-glass and aluminium foil. The electrolytic bath was initially composed of 5mM ZnCl2, 5mM H2O2 and 100 mM KCl as supporting electrolyte, the pH value being about 6.8. The ZnCl2 concentration was progressively modified, and this gives morphological modification of the deposits. Samples were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), and Raman spectroscopy to give information about microstructure, morpholohy and crystalline phases. The morphology observed by SEM showed that the increasing of ZnCl2concentration will increase the average diameter of the ZnO-nanowires, until obtaining thin films. DRX spectra confirm the elaboration of ZnO-deposits with highly c-axis orientation. These important result will promote the facile use of electrodeposition to elaborate ZnO nanostructures and thin films for several technological applications as nanogenerators, SAW devices, DSSC, ETA solar-cells, water-splitting, sensing, etc.

Keywords : ZnO, nanowires, thin film, electrodeposition