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Synthesis, structural and optical properties of ZnO thin films

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Abstract : In this study we have investigated an economical route for the synthesis of ZnO thin films by sol-gel technique associated with spin-coating deposited onto silicon substrates post annealed at 550°C. Characterizations of the samples were performed by X-ray diffraction (XRD), Atomic Force Microscopy (AFM) and the diffuse reflectance of the films was measured using UV-VIS-NIR spectrophotometer. X-ray diffraction (XRD) of the films showed a hexagonal wurtzite-type structure with a preferential orientation according to the direction . Scherrer's formula was used to calculate crystallite size. AFM study revealed spherical uniform morphology of ZnO films. Finally, the various optical constants and the optical conductivity were measured.

Keywords : Oxidize zinc (ZnO), Thin films, sol-gel, spin coating, Force atomic microscopy, optical properties