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TiO_2 Thin Films Prepared by Chemical Bath Deposition.

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Abstract:

In this study, Titanium dioxide (TiO_2) thin films were synthesized using, a simple, less expensive chemical bath deposition (CBD) method, operating at low temperatures and convenient for large area. The by-product powder was collected through filtering, washed and dried in order to compare it with TiO_2 films.

The X-ray diffraction (XRD) technique shows the presence of the peaks characteristic of the anatase phase after annealing at 500℃, 600℃ and 700℃. Th e surface morphology of the deposited films was characterized by the FEG scanning electronic microscopy (FEGSEM) and atomic force microscopy (AFM). Energy dispersive X-ray spectroscopy (EDX) analysis was used to determine the chemical composition of the prepared films. The UV-Vis-NIR spectroscopy shows that the film exhibits a transmission around 70%. The indirect band gap of the deposited films was found to vary between 2.88 and 3.09 eV depending on the deposition parameters.

Keywords : titanium dioxide, chemical bath deposition, band gap