Structural Characterization of TiO_2 Thin Films on Aluminum Substrates Obtained by Sol-Gel Process

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Abstract : In this work, TiO_2 thin films were prepared by dip-coating Sol-Gel process on aluminum substrates. The deposition process allows having layers of good quality (homogeneity, adhesion). The layers thus prepared have undergone annealing at 550 °C for 1\2h and 2h and characterized by different techniques: Differential scanning calorimetric (DSC), X-ray diffraction (XRD), Raman spectroscopy and scanning electronic microscopy (SEM). The DSC curve shows an exothermic peak corresponding to the crystallization of TiO_2. XRD and Raman results indicate that TiO_2 layers deposited on aluminum crystallize in tetragonal anatase phases of TiO_2 by annealing at 550 °C, the grain size depend on the annealing time. Then observing the cavities of TiO_2 randomly formed on aluminum by SEM.

Keywords : Aluminum substrate, TiO2Thin films, anatase