

## Sol-Gel Synthesis and Optical Characterisation of TiO<sub>2</sub> Thin Films for Photovoltaic Application

**Authors :** Arabi Nour El Houda, Iratni Aicha, Talaighil Razika, Bruno Capoen, Mohamed Bouazaoui

**Abstract :** TiO<sub>2</sub> thin films have been prepared by the sol-gel dip-coating technique in order to elaborate antireflective thin films for monocrystalline silicon (mono-Si). The titanium isopropoxyde was chosen as a precursor with hydrochloric acid as a catalyser for preparing a stable solution. The optical properties have been tailored with varying the solution concentration, the withdrawn speed, and the heat-treatment. We showed that using a TiO<sub>2</sub> single layer with 64.5 nm in thickness, heat-treated at 450°C or 300°C reduces the mono-Si reflection at a level lower than 3% over the broadband spectral do mains [669-834] nm and [786-1006] nm respectively. Those latter performances are similar to the ones obtained with double layers of low and high refractive index glasses respectively.

**Keywords :** thin film, dip-coating, mono-crystalline silicon, titanium oxide

**Conference Title :** ICPAM 2014 : International Conference on Physics of Advanced Materials

**Conference Location :** Paris, France

**Conference Dates :** November 21-22, 2014