

Structural and electrical properties of titania thin films

Abstract

This research studies the properties of titanium dioxide (TiO₂) nanoparticles synthesized by two different stabilizers via sol-gel method. Acetic and hydrochloric acids have been used as stabilizers to form two different TiO₂ thin films. 100 μm gap of Al IDEs have been fabricated on each annealed TiO₂ films. Finally the samples were physically and electrically characterized. Average crystallite sizes of the nanoparticles are 20 and 25 nm for acetic and hydrochloric acid respectively. The average current flow through the devices was extremely small which are around micro-to-nanoampere. It was found that the electrical conductivity increased significantly when particle sizes decreases.

Keywords; Electrical Properties, Interdigitated Electrodes, Nanostructural Features, Sol-Gel, Titanium Dioxide