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Optoelectronic properties of TiO₂ thin films elaborated by pneumatic spray

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Abstract

Titanium oxide is a widely used material in several electronic and optical application domains. The purpose of this study is to produce uniform TiO₂ thin films using Titanium (III) Chloride (TiCl₃) as an inorganic precursor and Titanium (IV) isopropoxide Ti(OCH(CH₃)₂)₄ (TTIP) as an organometallic precursor by a home-made spray pyrolysis system. The concentration of the solutions was varied during TiO₂ thin films elaboration to optimize its electrical, morphological and optical properties for photovoltaic and catalytic applications purposes. The TiO₂ thin films were characterized by several techniques such as SEM, EDS, DRX, UV-Visible transmission and four-probe point measurements. The relation between the properties to the elaborated TiO₂ thin films structures will be discussed in detail in this work.

Keywords

thin film

TiO₂

pneumatic spray

molarity

properties