

**02-018**

**Comparison of crystallite size measurement methods from XRD data of titania powders synthesized by precipitation**

Garcia, R.H.L.(1); Lazar, D.R.R.(1); Ussui, V.(1); Oliveira, V.A.(1);  
(1) IPEN;

The average crystallite size of titania powders have considerable impact on its surface properties, as energy-rich sites determines physicochemical interaction with gaseous or liquid media, comprising its applications such as gas sensors, solar cells and photocatalysts. However, the most used method to evaluate crystallite size from XRD data, using the Scherrer equation, may lead to inaccurate results. In order to compare and discuss the different methods, in this work titania powders synthesized by precipitation from titanium chloride were characterized. Crystallite size was measured from XRD data using the Scherrer equation (IB and FWHM), double-voigt, Williamson-Hall and Warren-Averbach methods. The results show that data obtained by the Scherrer equation using FWHM are the most un-accurate between the tested methods, even though is the easier and faster procedure.