IMPROVEMENT OF HYDROLYSIS METHOD BY SOL-GEL PROCESS ASSISTED BY MICROWAVE TECHNIQUE OF TiO₂ NANOPARTICLES

Felipe de Jesus Morales Olazo¹, Marco Antonio Alaniz Hernandez², Maria de la Luz Mota Gonzales²,³, Carlos Ivan Rodriguez Rodriguez¹, Amanda Carrillo Castillo⁴.


Titanium Dioxide (TiO₂), otherwise known as Titania, has being an interesting subject for study due to its various properties, such as; bio compatibility, Semiconductivity, Anty Septic, UV-Ray absorption and photocatalitic properties among others. One of the biggest problems with the study of titania is its high cost on the general market, due to the most useful crystalline phase for study being Anatase difficult to reach, and the expenses of time it takes when synthesizing. In this work we reported the synthesis of titania nanoparticles obtained by sol-gel process at low temperatures assisted by the microwave technique. We used a source of Titanium (Ti) ions, titanium isopropoxide, and as a solvent water and isopropilic alcohol. We found that the size of the nanoparticles is dependant of the Ti ions concentration, the sizes located in a range from 20 to 80 nanometers. The nanoparticles where characterized via XPS and UV-Ray spectroscopy, X-Ray Diffraction (XRD) and where also scanned via Scanning Electron Microscopy (SEM).

Keywords: TiO₂ Nanoparticles, Sol-Gel process, Microwave Technique

References:

1. TiO₂ thin films production by Cathodic Arc Technique.
4. Sintesis, Caracterizacion y actividad fotocatalitica de Oxido de Titanio modificado con Nitrogeno.

Presenting author's email: fdejmo@yahoo.com.mx