AG DOPING COUPLED WITH CALCINATIONS INFLUENCE ON ANATASE TO RUTILE TRANSITION OF TITANIA MADE BY SOL-GEL SONICATION

[1]HILARY I.EZURUIKE, [2]RUI W. KRAUSE

[1,2] Department of Chemistry, Rhodes University, Cnr of University and Artillery Road, Graham's Town, 6140, South Africa.
E-mail: laryek3@gmail.com

Abstract - TiO_2 has wide band gap (3.2 eV) limitations that are ultraviolet radiation sensitive. Though, they are stable under both acidic and alkaline conditions. The challenge is to increase the photo response to make their nanoconjugates excited by visible light. And many processes have been broadly adopted. Most promising modification attempts reported so far are the substitution doping of metals or non metals. Sol-gel provides low processing temperature, high homogeneity, and stability. Pecchi *et al.* reported on synthesis of TiO_2 under different gelation pH and calcination temperatures. In this work, we report on the novelty of combining two previously reported techniques, sonication and sol-gel methods to synthesis (Ag doped TiO_2) nanosize that has two coexisting phases (anatase and rutile). The characterisations were carried out using TEM, SEM, UV-vis and BET techniques.

Keywords - Titania, nanoparticles, sol-gel, sonication, calcination, band gap