World Academy of Science, Engineering and Technology
International Journal of Materials and Metallurgical Engineering
Vol:9, No:02, 2015

The Effect of the Calcination Temperature and SiO2 Addition on the Physical Properties' of Sol Gel TiO2 Thin Films

Authors : Nour El Houda Arabi, Aicha Iratni, Talaighil Razika, Bruno Capoen, Mohamed Bouazaoui

Abstract : In this paper, we report the effect of the calcination temperature and SiO2 addition on structural, optical and hydrophilicity of TiO2 films deposited by deep-coating sol-gel process. XRD investigation of the structural TiO2 films with increasing the temperature calcination, reveals that rutile phase will appear for the high temperature (>1000°C). However, the addition of SiO2 relate the densification of TiO2 films. Ellipsometric and UV-visible measure show that the refractive index grow with increasing temperature, against the film thickness decreases. On the other hand, the addition of SiO2 decreases the refractive index and increases the TiO2 film thickness. Finally, the hydrophilicity is assisted by contact angle measurement. It is found that addition of 50% of SiO2 to TiO2 is most effective for reducing the contact angle of water.

Keywords : physical properties, sol, gel, TiO2/SiO2 composite films
Conference Title : ICMET 2015 : International Conference on Materials Engineering and Technology
Conference Location : London, United Kingdom
Conference Dates : February 16-17, 2015