

## The Effect of the Calcination Temperature and SiO<sub>2</sub> Addition on the Physical Properties' of Sol Gel TiO<sub>2</sub> Thin Films

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**Abstract :** In this paper, we report the effect of the calcination temperature and SiO<sub>2</sub> addition on structural, optical and hydrophilicity of TiO<sub>2</sub> films deposited by deep-coating sol-gel process. XRD investigation of the structural TiO<sub>2</sub> films with increasing the temperature calcination, reveals that rutile phase will appear for the high temperature (>1000°C). However, the addition of SiO<sub>2</sub> relate the densification of TiO<sub>2</sub> 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 SiO<sub>2</sub> decreases the refractive index and increases the TiO<sub>2</sub> film thickness. Finally, the hydrophilicity is assisted by contact angle measurement. It is found that addition of 50% of SiO<sub>2</sub> to TiO<sub>2</sub> is most effective for reducing the contact angle of water.

**Keywords :** physical properties, sol, gel, TiO<sub>2</sub>/SiO<sub>2</sub> composite films

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