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## **Anatase/Rutile composite thin films prepared via dip coating technique and their hydrophilicity, stability and photocatalytic activity**

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In this work, Titanium dioxide (TiO<sub>2</sub>) mix phase powders with specific mixing ratio were prepared by sonochemical process in combination with calcination at different temperature in range of 400oC to 1000oC. The as-prepared powders were dispersed with tetraethyl orthosilicate (TEOS) as supported matrix of TiO<sub>2</sub> for homogeneous colloid and used as starting precursor for thin film coating. The designated thin films were deposited onto glass substrates by dip coating process. X-ray diffraction technique was employed to evaluate TiO<sub>2</sub> phase ratio meanwhile the film morphologies and hydrophilicity were investigated using scanning electron microscope and water contact angle, respectively. UV-Vis spectrophotometer was used to analyse the optical properties of the film. Photocatalytic activity of the prepared film was performed by mean of the decolorization of Rhodamine B dye solution under solar irradiation. The photocatalytic performance of assigned films were investigated and correlated mechanisms responsible for the activity are discussed.

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