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Study on the superhydrophilicity of TiO2 films on glasses by thermal CVD

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Hydrophilic TiO_2 films were deposited on slide glasses using titanium tetraisopropoxide (TTIP) as a precursor by metal-organic chemical vapor deposition (MOCVD). The temperature of substrate was 400 ℃and the temperatures of precursor were kept at 75 ℃ (sample A) and 60 ℃ (sample B) during the TiO_2 film growth. The deposited TiO_2 films were characterized by contact angle measurement and uv/vis spectroscopy. The result show that sample B has very low contact angle of almost zero due to superhydrophilic TiO_2 surface and transmittance is 76.85% ± 1.47 % at the range of 400 - 700 nm. So, this condition is very optimal for hydrophilic TiO_2 film deposition. However, when the temperature of precursor is lower is lower than 50 ℃ or higher than 75 ℃, TiO_2 could not be deposited on the substrate and cloudy TiO_2 film was formed due to low precursor temperature and the increase of surface roughness, respectively.