

## Preparation of the Super-hydrophilic TiO<sub>2</sub> coated Film using a Diffusion Flame Reactor

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A super-hydrophilic TiO<sub>2</sub> coated film on a slide glass have a high potential for practical applications such as self-cleaning paint, florescent light bulb, tiles, automobile side mirrors, home applications, etc. In this study, nano-sized TiO<sub>2</sub> film was generated by a diffusion flame reactor, and the effects of process variables on the properties of TiO<sub>2</sub> films were investigated. TiO<sub>2</sub> films were characterized by RS(Raman Spectroscopy), SEM(Scanning Electron Microscope), and XRD(X-ray Diffraction). As the inlet fuel/O<sub>2</sub> ratio and TTIP concentration increased, the TiO<sub>2</sub> particle size increased. Meanwhile, the particle size decreased as the total gas flow rate increased due to the decreased residence time. As the TiO<sub>2</sub> particle size decreased, a specific surface area increased. Consequently, the contact angle of the TiO<sub>2</sub> film decreased. The contact angles of coated films were measured to be less than 5 degrees indicating that TiO<sub>2</sub> films were super-hydrophilic.