

Preparation of N-doped TiO₂ Thin Film Deposited by PECVD and Evaluation of Its Photocatalytic Characteristics

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Titanium Dioxide is now being used in practical applications such as self-cleaning, sterilization, deodorizing and air-cleaning. Unfortunately, the relatively large bandgap of TiO₂ (3.2eV for the anatase phase) requires ultraviolet (UV) light for electron-hole separation, which is only 5% of the natural solar light. It is conceived from the literature knowledge that the modification of the band structure is essential to alter the light absorption characteristics of the TiO₂. In this study, N-doped TiO₂ thin film was deposited onto slide glass by PECVD process with TTIP as a precursor, N₂ and O₂ gas as a reactive gas for 4hr at 400°C. The optimal condition of fabricating N-doped TiO₂ thin film was investigated at various Rf discharge power, flow rate.

The chemical state and crystallinity of N-doped TiO₂ thin film were examined by XRD and ESCA. Photocatalyst activity of N-doped TiO₂ thin film was investigated by decomposition of acetaldehyde and methylene blue.