

## Nanoscaled TiO<sub>2</sub>/Ag Catalysts and Their Photodecomposition Characteristics

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The concentration of AgNO<sub>3</sub> plays a significant role in the formation and growth of silver nanoparticles in the preparation of catalysts. When the concentration of AgNO<sub>3</sub> was decreased to 0.2 wt%, flakelike Ag was observed. The corresponding zeta potentials of the TiO<sub>2</sub> solution at pHs of 11, 6.2, and 3 suggest that the electric repulsion between the TiO<sub>2</sub> nanoparticles was very strong in both alkaline and acidic solutions, causing their “effective dispersion.” Therefore, a highly dispersed nanostructured TiO<sub>2</sub>/Ag catalyst can be synthesized at a pH of 11 in alkaline solution. Nearly all the dimethyl-blue target pollutant present at high concentrations was removed when the photoreaction was performed over a short period of time. This novel nano-TiO<sub>2</sub> photocatalyst exhibits excellent photocatalytic activity because it is well-dispersed. In addition, no dispersant or organic binder was used for this synthetic process.

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