

Photooxidation study of acetaldehyde using TiO₂ photocatalyst

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VOCs are known to be toxic, mutagenic, carcinogenic, and teratogenic, and many countries designate them as major indicators of air pollution. As interest in indoor air quality increases, research is being conducted to remove acetaldehyde, one of the volatile organic compounds, acetaldehyde irritates the mucous membranes, causes anesthesia on the central nervous system, and even at low concentrations causes irritation of the eyes, nose, and upper respiratory tract as well as bronchial inflammation. To reduce these toxic substances, recent weather photocatalytic oxidation has become an interesting and active research area in the catalytic field. TiO₂ is the most widely studied photocatalyst due to its excellent activity, chemical stability, commercial usefulness, and affordability. In this study, photocatalytic P25 and T805 commercially available photocatalysts were dip-coated on alumina substrates and photodegradation experiments of meteorological acetaldehyde were performed using light sources UV-A and UV-C. Experiments showed that the photodegradation rate of the hydrophilic P25 was higher, and the higher the photon flux of the light source, the higher the degradation rate of VOCs