

Photocatalysts attached glass fibers prepared by cross-linking method using non-aqueous suspension for VOCs decomposition

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In recent years, the development of catalysts removing pollutants is highly desired for the prevention of environmental pollution. Among the catalysts, titanium dioxide(TiO_2) has been widely used due to the strong oxidation ability to decompose volatile organic compounds (VOCs) under the UV and visible light, chemical stability, and non-toxicity. Researchers have been focusing on development of TiO_2 applications including a coating method. We had studied photocatalyst attached glass fiber by cross-linking coating method using H_2O as a dispersant. In this study, metal or non-metal doped TiO_2 powders are attached to glass fiber using non-aqueous dispersion agent because the VOC removal efficiency of the samples using H_2O were reduced. The surface morphology of the fabric samples is studied using field emission scanning electron microscopy. Decomposition activities of samples are evaluated through degrading VOC in the VOC removal test. VOC concentration degradation test is performed under UV light in a flow chamber system. Photocatalytic activities of doped TiO_2 particles attached glass fibers are compared with activity of P25 attached glass fibers.