Photocatalysis of CFC degradation by titanium dioxide

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Abstract

CFC is photodegraded by only hard UV radiation (UV-C) in the upper atmosphere. We have found that fine crystallites of TiO_2 catalyse photodecomposition of dichlorodifluoromethane at much longer wavelengths (365–366 nm), which is band gap absorption region of the TiO_2 crystallites. Oxidation products detected are fluoride and chloride ions, and chlorine. Experiments are conducted in the gaseous phase, using TiO_2 supported on glass plates. Implication of the findings on atmospheric CFC degradation are discussed.

Keywords: Chlorofluorocarbons; Photocatalysis CFC photocatalytic degradation; Titanium dioxide