**Recent Progress, Development, and Innovation of Photocatalysis**

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The tremendous amount of research that has been carried out in the two closely related fields of semiconductor photoelectrochemistry and photocatalysis during the past three decades continues to provide fundamental insights and practical applications. The principles and measurements obtained TiO2 with photoelectrochemical studies have led to the research activity on heterogeneous photocatalysis, where the strong photooxidative activity of TiO2 has been applied to environmental cleanup. This resulted in the concept of “light cleaning”, i.e., deodorizing, disinfection, and decontamination of air, water and surface with TiO2 thin films and light. Also we reported the novel photo-induced superhydrophilicity of TiO2 and proposed the concept of self-cleaning superhydrophilic properties of TiO2.

Now in the world, there are potential applications of photocatalysts in various fields. Our research focuses on developing transparent anti-fogging coatings for the walls of buildings and glass for the purpose of self-cleaning and to develop efficient photocatalytic materials to purify environmental air and water. We believe that the purification of water and air is an extremely important area in the research.

I will report present situation of phototcatalysis field.