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. In 1997, we reported the novel photo-induced superhydrophilicity of TiO₂ and proposed the concept of self-cleaning superhydrophilic properties of TiO₂.

We opened new research center in our Noda Campus of Tokyo University of Science, named “Photocatalysis International Research Center” last year. In this center, we have three research groups, Artificial photosynthesis group (Demonstration experiment using sun light), Self-cleaning group (Performance evaluation using windows and walls), and Environmental cleanup group (Environmental cleanup with composite photocatalyst). Now we have two more research projects of Plant factory PJ and Liquid light-fiber PJ. In this Conference, I will explain and introduce all participants to the recent progress and our main targets of this research center.