Nano-Photocatalytic Materials for Solar Fuel Production

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Nano photocatalytic materials have shown great potentials not only in environmental remediation, but also in solar-chemical conversion by photocatalytic water-splitting as well as CO_2 reduction. Up to now, we have been involved in researching novel semiconductor photocatalyst materials for a more efficient utilization of solar energy, as well as application of these materials for degradation of hazadous organics and solar fuel production[1-16]. In this talk, recent achievements and future prospects in challenging the possibilities of the nano-structured photocatalytic materials, especially for the purpose of carbon dioxide reduction and CH_4 fuel production[11-16], will be introduced and discussed, from the view point of new materials development, design and control of surface/interface nano-structures for promotion of multi-electron reactions, as well as mechanism study from both experimental and theoretical approaches.

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