

Controlled Nanostructures for Highly Efficient Solar  
Water Oxidation  
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The development of new types of energy generation devices is promoted by increasing public awareness that the Earth's oil reserves could run out during this century. As the energy needs of the planet are likely to double within the next 50 years, the stage is set for a major energy shortage, unless renewable energy can cover the substantial deficit left by fossil fuels. Our group has developed new methods to increase light harvesting efficiency to produce hydrogen from solar light by applying nano-concepts to materials and/or devices. I will discuss about several  $\text{WO}_3$  and hematite based nanostructural materials and their applications to the photoelectrochemical cells.