Sone & Chang Lab

Green, Renewable Energy for Environment and Nature

Materials and Structures Laboratory

http://www.ames.pi.titech.ac.jp/

- Design of Advanced Nanostructures
- Investigation of Interfacial Charge Dynamics
- Development of Renewable Energy Technology

Our current research interests include the design of advanced semiconductor nanostructures, investigation of interfacial charge carrier dynamics and development of green energy technology. Especially, we are devoted to the advancement of renewable energy for achieving a pollution-free, zero-carbon society. Inspired by the nature, photosynthetic systems capable of harvesting solar energy have represented an answer to address ever-increasing energy and environmental challenges. Photocatalytic processes using semiconductor nanostructures can mimic natural photosynthesis to convert light energy into chemical energy, providing an attractive strategy for renewable energy generation and environmental remediation. The development of efficient, practical photocatalysts relies on the rational design of sophisticated nanostructures and on the capability of manipulating charge carrier transfer. The search for an essentially robust yet practically efficient photocatalysis platform is however a challenging research topic and needs continuous efforts.