



Hydrogen Production

<Goal>

Production of H_2 without forming CO_2 based on **photosynthesis type catalysis process** and **new H_2O electrolysis photoreactor**

<Roadblock>

H_2 formation by complete photocatalytic water splitting proceeds at slow rate and low efficiency, due to **short lifetime of separated charge**

<Approach>

- Control of **interfacial structure** of semiconductor
- Characterization and control of **soft interfaces** in device components
- Understand **charge transfer** between semiconductors
- Determination of **photo-excited state life**
- Development of an efficient catalyst and electrolyzer
- Design and synthesis of organic semiconductors

