Emerging Technologies Around Hydrogen Production and Storage, Catalysis for CO2 Conversion and Integrated Power Systems

A leading photo(electro)catalysis and nanomaterials research group with expertise and focus around catalysis processes that are thermal, electrochemical, photothermal and photoelectrochemical. The group has a highly efficient and low cost Photovoltaic-Electrolysis (PVE) system to produce renewable fuels by harvesting the full spectrum of sunlight.

More Information

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Competitive advantage

- Production of renewable fuels (e.g. H2, CO, ethanol) using cost-effective and active electrolysers powered by photovoltaic cells
- Electrodes are comprised of earth abundant elements without using any expensive noble metals
- Electrolysers can use natural seawater as the electrolyte to produce chlorine on the anode and hydrogen on the cathode

Impact

- Enhanced Australian energy security by using infinite and diffusive solar energy
- Alleviate global warming by reducing the carbon footprint
- Off-grid fuel generation in remote strategic sites

Successful applications

- PVE electrolysis for Hydrogen generation

Capabilities and facilities

- Wide range of nanomaterials development techniques
- State-of-the-art instrument for particle and material characterisation
- Several electrolysers for testing catalyst performance
- In-situ studies capability

Our partners

- RayGen Resources Pty Ltd
- Shenzhen Kohodo Sunshine Renewable Energy Co. Ltd
- Beijing Zhongchao Haiqi Technology Co Ltd