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Electrolysis of CO₂ into Fuels and Chemicals

Developing electrochemical processes for conversion of the greenhouse gas, CO₂, into value-added chemicals and fuels, is an attractive solution to realise a carbon-neutral energy circulation while simultaneously storing electricity generated from intermittent renewable sources.

Competitive advantage

- Expertise in electrocatalyst design and synthesis
- Prototype flow cell for scaling-up CO₂ reduction
- Understanding of the reaction mechanism for electrochemical CO₂ reduction

Impact

- A sustainable electrochemistry approach to producing valuable fuels that mitigates the energy issues
- Alleviating global warming by converting CO₂ into valuable products

Successful outcomes

- State-of-the-art nanoporous alloy catalysts for bifunctional CO₂ reduction to CO and formate
- Single-atom catalysts with an ultrahigh Faradic efficiency (>98%) for CO₂-to-CO

Capabilities and facilities

- Extensive lab facilities for electrocatalyst fabrication, characterisation and testing
- Access to comprehensive analytical techniques such as diffractions, surface analysis, and electron microscopy
- Expertise and access to NMR and solid-state NMR facilities

More Information

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