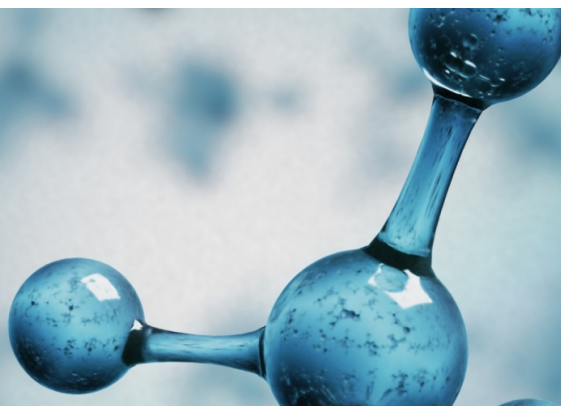




UNSW
SYDNEY



Ammonia Production from Renewable Hydrogen

Development of a high efficiency single-stage electrocatalytic ammonia synthesis reactor to produce ammonia at lower cost than via the traditional Haber-Bosch process.

Competitive advantage

- Ammonia is produced using PV electrolysed hydrogen from photovoltaic electrolysis and atmospheric nitrogen. A number of innovations are used to increase efficiency: nitrogen activity is increased by ionising the molecule; nitrogen selectivity over oxygen is achieved using tailored ionic liquids as electrolytes and the nitrogen reaction is catalysed using tailored electrodes.
- In-house expertise exists across all engineering requirements to solve problems and design and test a working prototype

Impact

- Cheaper and more energy efficient process for the production of ammonia

Successful applications

- Photovoltaic electrolysis of water to produce renewable hydrogen
- Demonstration of selective transport in ionic liquids

Capabilities and facilities

- Extensive lab facilities for PV electrolysis and characterisation
- Expertise and analysis facilities for studying the application of ionic liquids and the ability to assess the increased nitrogen activity

More Information

Professor Gavin Conibeer

School of Photovoltaic and Renewable
Energy Engineering

T: +61 (02) 9385 7858

E: g.conibeer@unsw.edu.au

Professor Chuan Zhao

School of Chemistry

T: +61 (0) 2 9385 4645

E: chuan.zhao@unsw.edu.au

UNSW Knowledge Exchange

knowledge.exchange@unsw.edu.au

www.capabilities.unsw.edu.au

+61(2) 9385 5008