

RESEARCH DIRECTIONS

Renewable fuel from water

Dr Leigh Sheppard from the School of Natural Sciences has been awarded a five-year Australian Research Fellowship under the Australian Research Council Discovery Projects program to continue his research program on the development of Solar-Hydrogen technology. Dr Sheppard will be working in collaboration with Professor Eric Wachsman, Director of the Florida Institute for Sustainable Energy and the US Department of Energy High Temperature Electrochemistry Center.

'The modern standard of living enjoyed by Australians and people of the developed world results from convenient access to energy', says Dr Sheppard. 'Unfortunately, this energy is predominantly supplied from fossil fuels – with all the now well established consequences for climate change. Alternative forms of energy are needed, such as solar-hydrogen technology. Solar-hydrogen based energy would deliver sustainable and environmentally-friendly fuel in the form of hydrogen, reducing our present dependence on fossil fuels.'

The concept of solar-hydrogen energy generation is based on the use of photocatalytic materials that are stimulated by sunlight and react with water to split it into its component gases: hydrogen and oxygen. With its abundant sunlight, Australia is well positioned to benefit from a developed solar-hydrogen technology that would enable a route to clean and renewable fuel in the form of hydrogen. By applying a unique multivariant approach, this project is focussed on developing novel materials with controlled properties that are specifically tuned for efficient solar energy harvesting.



This project will make a major step towards the development of solar-hydrogen technology. This technology would assist Australia to reduce its dependence on imported energy, in addition to significantly reducing Australia's contribution to carbon emissions and climate change. When commercialised, solar-hydrogen technology may also enable Australia to become a global leader in the export of clean fuel, which will have positive and far-reaching consequences for the economy.

Project Title: An Innovative Solid-State Approach to Enhanced Solar-Hydrogen Production
Funding has been set at: \$561,000 over 5 years
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