THE UNIVERSITY of ADELAIDE

PHOTOCATALYTIC CONVERSION OF CO2

A solar-induced system for photocatalytic conversion of CO2 and water into fuel

Benefits

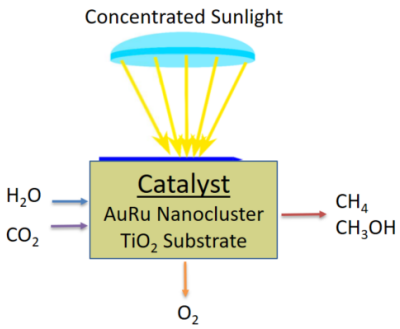
- Our co-catalysts perform up to 60 times more efficiently than the same quantity of platinum catalysts.
- Produces a mixture of methane and longer chain hydrocarbons at 200°C. Current commercial catalysts for methane synthesis need operating temperatures of 300-400°C.
- Recycles CO2, reduces emissions.
- Zero-carbon solar energy harvesting.
- Provide alternate source of fuel.

Background

Global warming due to greenhouse gasses is an environmental disaster. Of the 6,677m metric tonnes of CO2 emitted in the US (2018), 16% are direct emissions from industrial applications, 12% construction and 27% electricity generation. Conversion of CO2 to methane for fuel use can save US$1-$139t in purchasing carbon credits (global average US$24t), whilst providing a low cost fuel supply.

Technology overview

Our process uses novel catalysts of sub-nanometer metal particles (metal clusters), incorporated into a photo-active substrate. The process combines zero-carbon solar energy harvesting, energy storage, and CO2 emission reduction.



Applications

The low temperature, low-pressure route transforms CO2 and H2O into fuels using low cost catalysts and sunlight. The efficient production of fuels such as methane directly from CO2 produced from industrial processes (e.g. electricity production, manufacturing, mineral processing, transport fuel use etc.) is revolutionary in reducing CO2 emissions and creating new "green" industries.

Opportunity

We are seeking development and commercial partners and licensing opportunities.

IP Status

US Patent No 10,647,621.
Pending EU & AU Patent Applications.

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FURTHER ENQUIRIES

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