

RESEARCH DIRECTIONS

Transformation of biofuels' by-product

Associate Professor Kamali Kannangara and Associate Professor Gary Dennis of the School of Science and Health have partnered with Ausbiodiesel Pty Ltd and the Indian Institute of Technology – Madras to lead a research team* to investigate the conversion of glycerol into a more usable industrial chemical.

'The production of fuels from animal fat and most plant material yields glycerol as a by-product which has very little uses', says Associate Professor Kannangara. 'Glycerol is consumed on a worldwide basis at around 0.5 million tons, which includes the food industry and personal care products. At present, its production supersedes its demand with the production of glycerol from biodiesel already more than double the market requirement. Glycerol can be turned into 1,3-propanediol, a versatile chemical with a variety of uses in cosmetics, plastics, textile, pharmaceutical, adhesives, detergents and insect repellents. However, low yields in the production and the cost associated with the materials required make this process less than favourable.' This project aims to optimise the conversion process by increasing the yield of the reaction and developing new low cost materials.

The research will involve developing a new heterogeneous catalyst for the production of 1,3-propanediol from glycerol. This will be a multi-stage development process in which a unique catalyst will be identified/produced at first, followed by testing of its effectiveness for the chosen reaction. Finally, a series of analysis techniques will be used to provide detailed characterisation of the structural chemical property of the new catalyst.

Mr William Horton from Ausbiodiesel said, 'We are excited about actively partnering with UWS & IIT to make this technology commercial. With this type of initiative, we will be at the forefront international of biomaterial processing that is set to make sustainability part of our way of life.'



Glycerol is not useful as fuel and will stockpile unless a use can be found for it. Therefore, this research aims to transform glycerol into a more valuable product with a variety of uses across a range of industries.

Project Title: Low-cost, scalable approach for conversion of glycerol to 1,3-propanediol

Funding has been set at: \$66,700

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