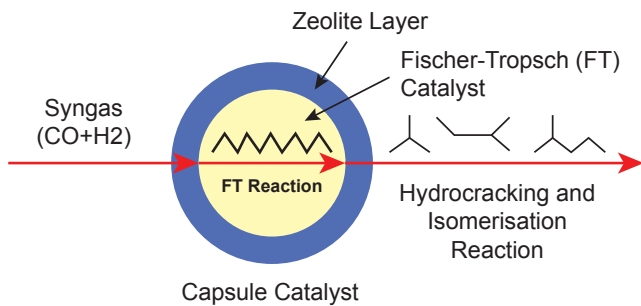


NEW CATALYSTS FOR SUSTAINABLE LIQUID BIOFUELS

TECHNOLOGY OVERVIEW

Novel Fischer Tropsch (FT) capsule catalysts with dual functionalities that enable both FT condensation and catalytic cracking to occur have been successfully created by Republic Polytechnic. These catalysts with an average particle size of 700-1000 nm were formulated and developed by encapsulating core FT catalytically-active species into a selective penetrable shell of zeolite materials. Using these catalysts, direct conversion of syngas to liquid fuels with high octane number with the use of a single-step reactor instead of the existing two-step reactor for the FT process can now be achieved. This reduces the overall operational cost of the gas-to-liquid process.

To date, the team has achieved about 99% of encapsulation efficiency with defect-free, smooth surface and uniform capsule shapes.



Schematic Diagram of Capsule Catalyst

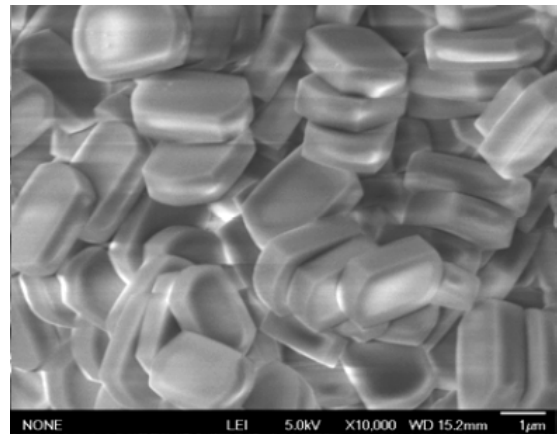
POTENTIAL APPLICATIONS

These catalysts can be used for gas-to-liquid (GTL) conversion of syngas (e.g. from wood waste) to light-chain liquid hydrocarbons for liquid fuels.

MARKET OPPORTUNITIES

The global demand for GTL catalysts is estimated to reach US\$1.3 billion in 2015, driven by increased

investment in GTL technology. With their unique properties and high efficiencies, our catalysts have the potential to disrupt the existing market for GTL catalytic materials.



Morphology of Capsule Catalysts Viewed under Scanning Electron Microscope (SEM)

COMMERCIALISATION

This technology is available for licensing. The team is also open to explore collaborative projects for customised catalyst development.

CONTACT DETAILS

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Looking for an open innovation partner? Contact Republic Polytechnic today!

Whether you are looking for new ideas to improve your current business flow, need access to research and technology expertise, or require facilities to bring your innovative ideas to life, we may be the partner for you.

At Republic Polytechnic (RP), we bridge the gap between knowledge and application by facilitating information and technology transfer to industry partners. Taking a holistic approach, our team of experts can assess your business needs, provide consultancy, conduct feasibility studies, and render support to help increase your company's competitiveness.

Facilities and Equipment

RP is home to state-of-the-art facilities and the latest technology, which are on par with industry standards. You can access these facilities by collaborating with RP on joint projects or through facility and equipment rentals.

Research and Development

Transform your ideas into reality. RP's multi-disciplinary applied R&D centres can work with you in many different ways, including exploiting new technologies, developing new products and streamlining processes.

Current Opportunities for Collaboration and Commercialisation

- Augmented Reality in Mainstream Sports Medicine – Diagnosis and Treatment of Lower Limb Injuries
- Brain Controlled Communicating Device for the Physically Handicapped
- Innovative Single-tube Multiplex Diagnostic Platform for Dengue and Chikungunya Viruses
- Low Cost Wireless Patient Weight Measurement System for the Physically Impaired and Bedridden
- New Catalysts for Sustainable Liquid Biofuels
- New Chemical Entities with Potential Applications in Photodynamic Therapy
- Regenerative Energy Wireless Sensor Network for Data Centre
- Thermoelectric Micro-coolers for Electronic and Optoelectronic Applications
- Visual Sentiment Analytics for Social Media Analysis
- Wireless Proximity Sensing for Safety and Security Applications

For more details, visit <http://www.rp.edu.sg/Industry.aspx>, or email us at help-otd@rp.edu.sg.