

2016 SATU Joint Research Scheme Program

Host Application Form

Date: 26 / 04 / 2016 (year /month/day)

1. Host University

University of Malaya

2. Host Unit

Nanotechnology and Catalysis Research Centre (NANOCAT)

3. Joint Research Project Title

Nanomagnetic Heterogeneous Catalyst for Production of Biodiesel via
Eserification-Transesterification Route

4. Principal Investigator

Passport Name	Lee Hwei Voon		
Nationality	Malaysian	Gender	<input type="checkbox"/> M <input checked="" type="checkbox"/> F
Address	Nanotechnology and Catalysis Research Centre (NANOCAT), Level 3, Block A, Institute of Postgraduate Studies, University of Malaya, 50603, Kuala Lumpur		
Telephone	(Office) 03-79676954	(Home / Mobile) 012-6343538	
Fax Number		E-mail	leehweivoon@um.edu.my

5. Co- PI from the same unit – If any

Passport Name	Assoc. Prof. Dr Juan Joon Ching		
Nationality	Malaysian	Gender	<input checked="" type="checkbox"/> M <input type="checkbox"/> F
Address	Nanotechnology and Catalysis Research Centre (NANOCAT), Level 3, Block A, Institute of Postgraduate Studies, University of Malaya, 50603, Kuala Lumpur		
Telephone	(Office) 03-79676954	(Home / Mobile) 0173258288	
Fax Number		E-mail	jcjuan@um.edu.my

6. Project Details

Project Description

The present project describes the use of heterogeneous catalytic route for the conversion of low cost non-edible oils/waste cooking oil into biodiesel via one step esterification-transesterification reaction. The nanometer heterogeneous catalytic system: paramagnetic mixed metal oxides nano-catalysts (MIO-MIIO-Fe₃O₄) will be design to replace conventional homogeneous catalyst (NaOH or KOH) and recent solid base catalyst (such as unstable alkaline-earth metal oxide) for a more effective, selective and simple mass production of biodiesel. The introduction of paramagnetic component (Fe₃O₄) into the nanoparticle catalyst will enhance the catalyst separation and recovery, as separation factors can be influenced by external magnetic field. Furthermore, Fe₃O₄ capable to render acidity to catalyst by acting as promoter for esterification free fatty acid (FFA) that present in low cost biodiesel feedstock. In this project, MIO-MIIO-Fe₃O₄ nanocatalyst will be synthesize via sol-gel precipitation technique. Investigation on catalyst's textural properties, geometric structure, magnetization power and surface reactivity (degree of triglyceride conversion and biodiesel selectivity) be carry out in this study. The capability to use non-edible oil or waste cooking oil to produce biodiesel will makes this nano-catalyst more competitive and flexible than its other conventional catalyst available in the market. Additional to the durability and flexibility of the catalyst, low quality non-edible oil is commercially available at lower price compared to its edible counterparts which at the same time could help to avoid Fuel vs. Food issues.

SATU Presidents' Forum

of Southeast and South Asia and Taiwan Universities
台灣與東南亞暨南亞大學校長論壇

✉ : National Cheng Kung University
No. 1, University Road,
701 Tainan City, Taiwan
☎ : +886-6-2099250
☎ : +886-6-2373551
✉ : satu@email.ncku.edu.tw
🌐 : http://conf.ncku.edu.tw/satu

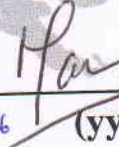
7. Acknowledgement (Signed by the President or SATU representative to show recognition)

Name
title

PROFESSOR DR. NOORSAADAH ABD. RAHMAN
Deputy Vice-Chancellor
(Research & Innovation)
University of Malaya
50603 Kuala Lumpur

Date:

26 / 04 / 2016

 (signature)
(yyyy/mm/dd)

Please email satu@email.ncku.edu.tw before 2016.4. 29(Fri.) for application with the subject line: <2016 SATU JRS host application –School Name>. Thank you.