



UNIVERSITI PUTRA MALAYSIA

***MICROWAVE-ASSISTED BIODIESEL PRODUCTION FROM DOMESTIC
GREASE WASTE USING SULPHATED-FERRIC OXIDE AND
POTASSIUM OXIDE-SUPPORTED CATALYSTS***

NOR SHAFIZAH BINTI ISHAK

FK 2016 118



**MICROWAVE-ASSISTED BIODIESEL PRODUCTION FROM DOMESTIC
GREASE WASTE USING SULPHATED-FERRIC OXIDE AND POTASSIUM
OXIDE-SUPPORTED CATALYSTS**

By

NOR SHAFIZAH BINTI ISHAK

**Thesis Submitted to the School Graduate Studies, Universiti Putra
Malaysia, in Fulfilment of the Requirements for the Degree of Doctor
of Philosophy**

September 2016

All material contained within the thesis, including without limitation text, logos, icons, photographs and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia





UNIVERSITI PUTRA MALAYSIA

STATUS CONFIRMATION FOR THESIS / PROJECT REPORT AND COPYRIGHT

ACADEMIC SESSION : _____

TITLE OF THESIS / PROJECT REPORT :

MICROWAVE-ASSISTED BIODIESEL PRODUCTION FROM DOMESTIC GREASE WASTE USING SULPHATED-FERRIC OXIDE AND POTASSIUM OXIDE-SUPPORTED CATALYSTS

NAME OF STUDENT: NOR SHAFIZAH BINTI ISHAK

I acknowledge that the copyright and other intellectual property in the thesis/project report belonged to Universiti Putra Malaysia and I agree to allow this thesis/project report to be placed at the library under the following terms:

- 1. This thesis/project report is the property of Universiti Putra Malaysia.
2. The library of Universiti Putra Malaysia has the right to make copies for educational purposes only.
3. The library of Universiti Putra Malaysia is allowed to make copies of this thesis for academic exchange.

I declare that this thesis is classified as :

*Please tick (v)

[Empty box for CONFIDENTIAL classification]

CONFIDENTIAL

(Contain confidential information under Official Secret Act 1972).

[Empty box for RESTRICTED classification]

RESTRICTED

(Contains restricted information as specified by the organization/institution where research was done).

[Empty box for OPEN ACCESS classification]

OPEN ACCESS

I agree that my thesis/project report to be published as hard copy or online open access.

This thesis is submitted for :

[Empty box for PATENT classification]

PATENT

Embargo from 2016 until 2018 (date) (date)

Approved by:

(Signature of Student)
New IC No/ Passport No.:

Date :

(Signature of Chairman of Supervisory Committee)
Name:

Date :

[Note : If the thesis is CONFIDENTIAL or RESTRICTED, please attach with the letter from the organization/institution with period and reasons for confidentially or restricted.]