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TECHNOLOGY  
PRODUCT

# AN AIR-COOLED ELECTROCHEMICAL POWER GENERATOR

2008



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## **RAMLI SITANGGANG**

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# **KARYA MONUMENTAL KEILMUAN ENERGI BARU TERBARUKAN BIDANG TEKNOLOGI FUEL CELL**

**TECHNOLOGY PRODUCT YANG TIDAK  
DIPATENKAN**

Petunjuk

Membuat rancangan dan karya teknologi yang tidak dipatenkan; rancangan dan karya seni monumental/seni pertunjukan; karya sastra:

Berdasarkan "Pedoman operasional penilaian angka kredit kenaikan pangkat/jabatan akademik dosen"  
Direktorat jenderal pendidikan tinggi kementerian pendidikan dan kebudayaan tahun 2014

**2001-2017**

Certificate of award

**ASEAN Energy Awards 2007**  
**23<sup>rd</sup> August 2007**  
**Shangri-la Hotel Singapura**



The ASEAN energy awards 2007 were awarded to energy projects in the ASEAN region that adopt best practices in energy efficiency and conservation, energy efficient buildings, renewable energy project, energy management in building and industry and excellence in energy management. The Fuel Cell Design and Prototyping Group within the Process System Engineering of Fuel Cells Research Group in the Institut Sel Fuel (The Institute of Fuel Cell), Universiti Kebangsaan Malaysia, lead by Prof. Ir. Dr. Hj. Wan Ramli Wan Daud, the Founder Director of the Institute was awarded the Winner in the Special Submission Category in The 8<sup>th</sup> ASEAN Best Practices for Energy Efficient Buildings Competition for their entry, Small-Scale Portable Fuel Cell Power at Universiti Kebangsaan Malaysia during the ASEAN Energy Awards Night gala dinner on the 23<sup>rd</sup> of August 2007 at the Shangri-La Hotel Singapore. The special submission category refers to special projects which study, apply and/or develop innovative use of technologies (including R&D projects) which could be applied to reduce energy consumption in buildings. The aim is to promote the development of innovative energy efficiency-related solutions together with ASEAN wisdom. The award consists of a plaque and a certificate. Members of the Winning Fuel Cell Design and Prototyping Group are: Prof. Ir. Dr. Hj. Wan Ramli Wan Daud, Prof. Dr. Hj. Jaafar Sahari, Prof. Dr. Hj. Abu Bakar Mohammad, Prof. Dr. Kamaruzzaman Sopian, Prof. Dr. Abdul Amir Hassan Kadhum, Prof. Dr. Che Hassan Che Haron, En. Masli Irwan Rosli, En. Shahbudin Mastor, Dr. Edy Herianto, Dr. Ramli Sitanggang and En. T. Husaini. The awards could not have been won without the great help and support of the supporting staff of the Institut Sel Fuel, Cik Norly Ishak and En. Arrif Fadzillah Haron and other research groups at the Institute.

# An Air-Cooled Electrochemical Power Generator

## Abstract

The present invention relates to an electrochemical power generator, comprising: a) a casing (51); b) a plurality of fuel cell stacks (52) each having a plurality of anodes (57) and cathodes (58), assembled within the casing (51); c) a ventilating means (53) coupled with each of the fuel cell stacks (52) for supplying air to the cathodes (58) as well as for cooling the fuel cell stacks (52); d) a hydrogen feed (54) for conveying hydrogen gas to the anodes (57) to react with the air and generating electrochemical energy at the fuel cell stacks (52); and e) a current converter (55) for converting direct current (DC) to alternating current (AC) to supply energy to an electrical load (56).

*The most illustrative drawing:*

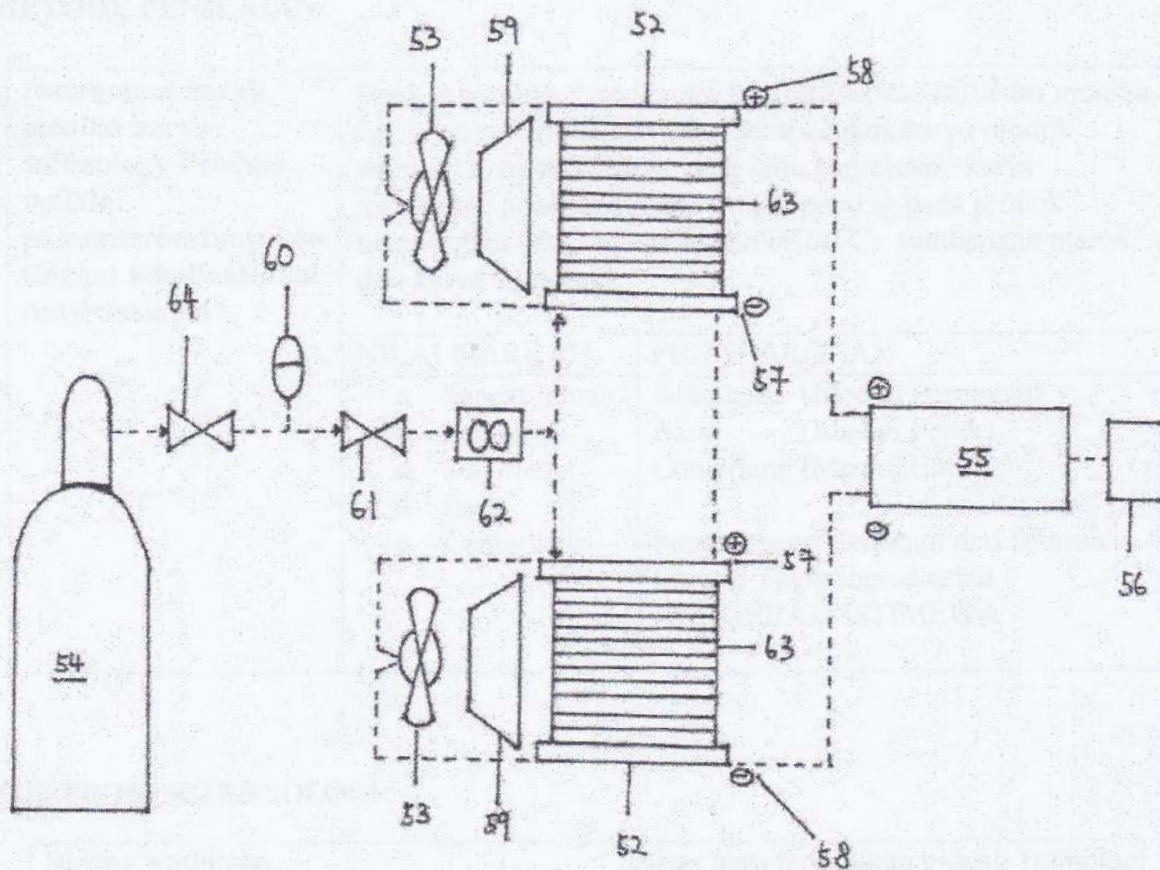


Figure 1.

## DASAR USULAN PENILAIAN

Dasar:  
Pedoman operasional penilaian angka kredit kenaikan pangkat/jabatan akademik dosen  
Direktorat Jenderal pendidikan tinggi kementerian pendidikan dan kebudayaan tahun 2011

Tabel 6

Jenis Kegiatan dan Angka Kredit paling Tinggi Kegiatan Melaksanakan Penelitian

No	Jenis Kegiatan	Kode	Bukti Kegiatan	Kredit Paling Tinggi	Batas Pengajuan
7	Membuat rancangan dan karya teknologi yang tidak dipatenkan; rancangan dan karya seni monumental/seni pertunjukan; karya sastra				
a.	Tingkat Internasional	I.E.1	Pindai buktikerja, peer review sesuai bidang ilmu	20	20
b.	Tingkat Nasional	I.E.2	Pindai buktikerja, peer review sesuai bidang ilmu	15	15
c.	Tingkat Lokal	I.E.3	Pindai buktikerja	10	10

## METODE PENILAIAN

Instrument untuk menilai karya technology Product melalui pameran/pertunjukan tingkat lokal/nasional/internasional

Pada umumnya Tim Penilai pameran/pertunjukan menilai karya teknologi dengan cara membedakan karya produk teknologi dengan karya yang lain, penjelasan karya teknologi, penemuan yang sangat penting pada produk teknologi untuk pengembangan PEMFC, sumbangan utama dari karya teknologi.

### NILAI MARKAH

- Sangat lemah
- Lemah
- Sederhana
- Baik
- Cemerlang

### PENGHARGAAN


Sederhana (Medali Perunggu)  
Baik (Medali Perak)  
Cemerlang (Medali Emas)  
Penghargaan Tertinggi dari seluruh Inovasi Teknologi disebut ANUGERAH ISTIMEWA

## TOR PRODUK TEKNOLOGI

Bidang Keilmuan		Energi baru terbarukan bidang Teknologi Fuel Cell
Program		Membuat rancangan dan karya teknologi yang tidak dipatenkan; rancangan dan karya seni monumental/seni pertunjukan; karya sastra Aplikasi Sain Fuel Cell
Output Program		PROTOTYPE PORTABLE POWER GENERATOR DIRECT METHANOL

	FUEL CELL (MDFC)
KEGIATAN MENILAIKAN PRODUK TEKNOLOGI MELALUI PAMERAN/PERTUNJUKAN LOKAL/NASIONAL /INTERNASIONAL	
Materi Pameran	Design Advisor tool for Direct Methanol Fuel Cell (MDFC), Portable Fuel Cell Power Generator Direct Methanol Fuel Cell
Acknowledgement	The financial support from the Malaysian Ministry of Science, Technology and Environment, through IRPA Project 08-02-02-0020 is much appreciated.
Tingkat Pameran	INTERNATIONAL MTE, Event organizer (2008)
Output Pameran (Penilaian) <sup>2</sup>	SILVER MEDAL
Indikator Kinerja Kegiatan	Jumlah Pameran /pertunjukan demonstrasi Produk Teknologi
Jumlah Pameran (Output)	1
Kode Penilaian	I.I.E.1
Bukti Kinerja	1 SERTIFIKAT Review
<b>Kredit Paling Tinggi</b>	20
Usulan Nilai PORTABLE POWER GENERATOR DIRECT METHANOL FUEL CELL (MDFC)	20
Alamat teknologi	Institut Fuel Cell UKM
Reviwer Curriculum Vite terlampir	<ul style="list-style-type: none"> <li>• PROF. IR. DR. HJ. WAN RAMLI WAN DAUD</li> <li>• Department of chemical &amp; process engineering, Faculty of Engineering, Universiti Kebangsaan Malaysia, 43600UKM Bangi, Selangor Darul Ehsan, Tel: 03-8921 6412 fax: 03-8921 6148</li> </ul>

## Peer Review Summary

Date	Signature
	
Reviewer	<ul style="list-style-type: none"><li>• PROF. IR. DR. HJ. WAN RAMLI WAN DAUD</li><li>• Department of chemical &amp; process engineering, Faculty of Engineering, Universiti Kebangsaan Malaysia, 43600UKM Bangi, Selangor Darul Ehsan,</li><li>• Tel: 03-8921 6412 fax: 03-8921 6148</li></ul>

## Title:

# PROTOTYPE AN AIR-COOLED ELECTROCHEMICAL POWER GENERATOR

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## FIELD OF TECHNOLOGY

The present invention relates to an electrochemical power generator. In more particular, the present invention relates to a portable air-cooled system of polymer electrolyte membrane fuel cell (PEMFC) capable of generating an electrical energy which is applicable for the use of power generation in various applications.

## BACKGROUND OF THE TECHNOLOGY

As fossil fuel is depleted in the near future, hydrogen will be the most viable alternative fuel because it is clean and renewable. Fuelled by pure hydrogen, fuel cells produce only pure water as exhaust. Even when powered by fossil fuels, they produce far less pollution than conventional technologies. Releasing the energy in a fuel through high-temperature combustion, as in an internal combustion engine, results in the creation of polluting nitrogenous and sulphurous oxides.

Fuel cells are electrochemical devices that produce electricity at high efficiency without combustion. They extract more energy from a fuel due to the increase in the efficiency of electrochemical conversion over combustion. Since there are no moving parts in a fuel cell stack, there are no mechanical inefficiencies encountered. Without moving parts, fuel cell stacks are therefore silent and vibration-free. The PEMFC is the preferred hydrogen fuel power plant for portable and stationary generator. It is also the most viable and sustainable alternative to the internal combustion engine as the power generating system for the future. PEMFC can be used in many applications, including road vehicles, small-scale power stations and possibly even portable electronics.

There are some inventions disclosed in the prior arts pertaining a power generating system of a fuel cells. The different types of configuration in a fuel cell system including the designs of multi layer membrane electrode assembly (MEA) stacks, the materials used to fabricate the bipolar plates, flow fields and membranes in a PEMFC have resulted in the difference of the fuel cells' efficiencies in generating electrical energy.

Of interest in connection with a self-inerting fuel cell system is U. S. Patent No. US6127057. This fuel cell system comprises a first fine pore plate positioned at an anode side of an MEA, a second fine pore plate positioned at a cathode side of an MEA, means for driving fuel reactant flow, oxidant reactant flow and coolant flow, respectively, and a controller for activating or deactivating the flows during fuel cell operation. This system requires a coolant to manage the heat produced by the fuel cell stack.

Another invention disclosed in U. S. Patent No. US2005042493 also relates to a fuel cell device. This simple fuel cell device includes a plurality of cells which are vertically stacked, a first manifold for fuel feeding, a second manifold for fuel discharging and an outlet for the fuel provided in the upper part of the second manifold. The fuel employed in this invention is preferably methanol and not hydrogen. There is also another invention relating to a fuel cell and fuel cell system disclosed in U. S. Patent No. US2007072051. This system contains a MEA stack which is coupled with a fan for supplying oxygen into the MEA stack. However, this invention applies direct methanol fuel cell (DMFC) system instead of PEMFC system.

A forced air fuel cell power system is disclosed in U. S. Patent No. US7241523. This fuel cell system includes a fuel cell stack, fuel storage container as well as an air moving device configured to direct atmospheric air towards the fuel cell stack. However, this small device is merely suitable to be used for replacing batteries in electrical appliances such as video cameras, laptop computers and cell phones. A wide variation of fuel cell power generators has been described by the prior arts, however the efficiencies of their electrical energy generating system are yet to be

improved. As the heat generated by the PEMFC fuel cell during fuel cell operation affects the efficiency of the system, it is preferable for the present invention to develop a fuel cell system which is facilitated with a better stack cooling or heat management system. Besides, it is also desirable for the present invention to develop a highly efficient electrochemical power generator which is also clean, silent and environmentally friendly by using only pure hydrogen as fuel. Meanwhile, the electrochemical power generator is preferably low in production cost, having a quick start-up property as well as having easy maintenance.

## SUMMARY OF TECHNOLOGY /PRINCIPLES OF TECHNOLOGY

The primary object of the present invention is to develop a portable and compact power generator of PEMFC as electrical power source for various applications, which integrates the fuel cell stacks with stack cooling system and control system in order to achieve higher efficiencies of the PEMFC configured therein. Another object of the present invention is to develop a power generator which possesses innovative MEA design, incorporated with a dual-functioning air handling concept wherein air is directed to the fuel cell stacks to react with the fuel for energy generation as well as to cool the fuel cell stack. Yet another object of the present invention is to provide a portable 1000W fuel cell system back-up generator designed for indoor as well as outdoor application.

Still another object of the present invention is to provide a power generator which produces clean electrical power without emitting air pollutants and green house gases to meet the global challenge in research and development for environmentally friendly power sources.

Further object of the present invention is to provide an electrical power generating system which is capable of generating pure, high-quality electrical power continuously without having to stop for recharging.

At least one of the preceding objects is met, in whole or in part, by the present invention, in which the first embodiment of the present invention describes an electrochemical power generator, comprising: a) a casing (51); b) a plurality of fuel cell stacks (52) each having a plurality of anodes (57) and cathodes (58), assembled within the casing (51); c) a ventilating means (53) coupled with each of the fuel cell stacks (52) for supplying air to the cathodes (58) as well as for cooling the fuel cell stacks (52); d) a hydrogen feed (54) for conveying hydrogen gas to the anodes (57) to react with the air and generating electrochemical energy at the fuel cell stacks (52); and e) a current converter (55) for converting direct current (DC) to alternating current (AC) to supply energy to an electrical load (56).

The second embodiment of the present invention is an electrochemical power generator disclosed by the first embodiment which further comprises a filtering means (59) in between each ventilating means (53) and each fuel cell stack (52) for filtering the air before it is supplied to the cathodes (58). Another embodiment of the present invention is an electrochemical power generator disclosed by the first and the second embodiment which further comprises a pressure regulating means (60, 64) and a flowrate controlling means (61, 62) connected to the fuel cell stacks (52).

In another preferred embodiment of the present invention, each of the fuel cell stacks (52) of the electrochemical power generator comprises a plurality of membrane electrode assemblies (MEA) (63) that are sandwiched between a plurality of bipolar plates and sealed by a plurality of gaskets. Preferably, the membrane electrode assemblies (MEA) (63) comprises a sandwich including a polymer membrane between two catalytic electrodes which is itself sandwiched between two gas diffusion layers.

Still another preferred embodiment of the present invention discloses an electrochemical power generator, wherein the ventilating means (53) is a fan. The 1000kW power generator disclosed is a portable fuel cell back-up generator designed for indoor or outdoor operations. It can be used for commercial, industrial or residential applications and especially suitable for outdoor applications. It is environmentally friendly, simple to use, quiet and compact. One skilled in the art will readily appreciate that the present invention is well adapted to carry out the objects and obtain the ends and advantages mentioned, as well as those inherent therein. The embodiments described herein are not intended as limitations on the scope of the invention.

### BRIEF DESCRIPTION OF THE DRAWINGS/SPECIFICATION

For the purpose of facilitating an understanding of the invention, there is illustrated in the accompanying drawing the preferred embodiments from an inspection of which when considered in connection with the following description, the invention, its construction and operation and many of its advantages would be readily understood and appreciated.

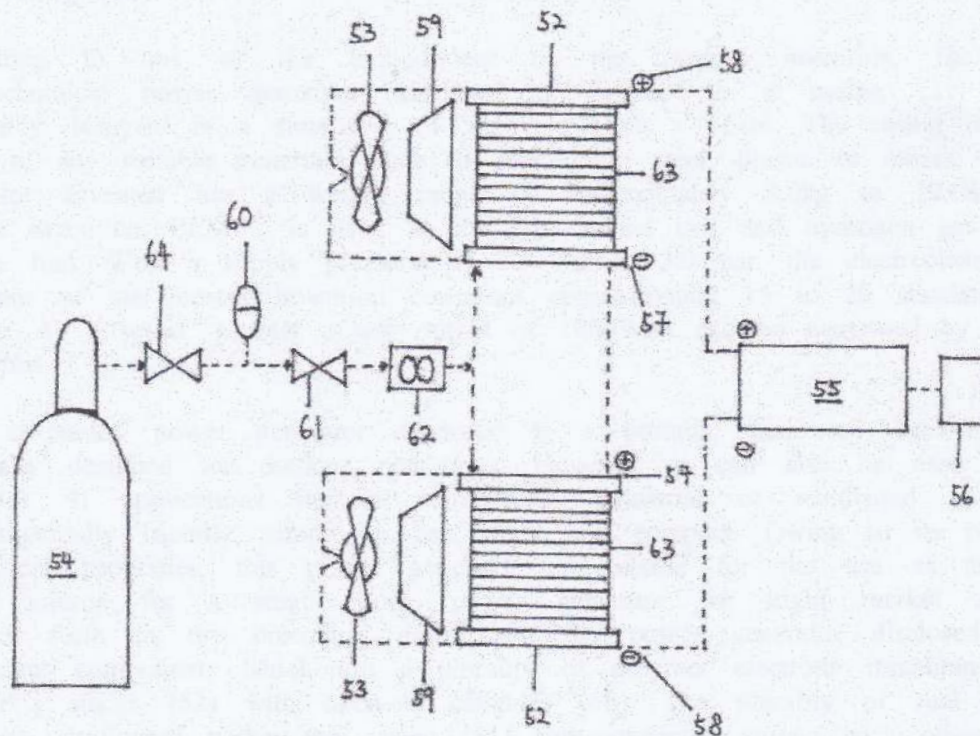


Figure 1 is a schematic diagram of the air-cooled electrochemical power generator embodied by the present invention.

## DETAILED DESCRIPTION OF THE TECHNOLOGY

The present invention relates to an electrochemical power generator. In more particular, the present invention relates to a portable air-cooled system of polymer electrolyte membrane fuel cell (PEMFC) capable of generating an electrical energy which is applicable for the use of power generation in various applications. Hereinafter, the invention shall be described according to the preferred embodiments of the present invention and by referring to the accompanying description and drawings. However, it is to be understood that limiting the description to the preferred embodiments of the invention and to the drawings is merely to facilitate discussion of the present invention and it is envisioned that those skilled in the art may devise various modifications without departing from the scope of the appended claim.

The present invention discloses an electrochemical power generator, comprising: a) a casing (51); b) a plurality of fuel cell stacks (52) each having a plurality of anodes (57) and cathodes (58), assembled within the casing (51); c) a ventilating means (53) coupled with each of the fuel cell stacks (52) for supplying air to the cathodes (58) as well as for cooling the fuel cell stacks (52); d) a hydrogen feed (54) for conveying hydrogen gas to the anodes (57) to react with the air and generating electrochemical energy at the fuel cell stacks (52); and e) a current converter (55) for converting direct current (DC) to alternating current (AC) to supply energy to an electrical load (56). As illustrated in Figure 1, the electrochemical power generator invented integrates the innovation of a high-performance fuel cell stacks (52) with a dual-functioning air handling concept for directing air to the fuel cell stacks (52) to react with fuel for energy generation, as well as distributing air throughout the fuel cell stacks (52) for stack cooling effect.

According to one of the embodiment of the present invention, the air-cooled electrochemical power generator disclosed is housed in a casing (51) which is preferably designed in a dimension of 53cm x 22cm x 56cm. The casing (51) can be made of any suitable materials, such as aluminium, steel, plastic or others. The power generator invented has a weight range of approximately 8.0kg to 10.0kg. In the present invention, PEMFC is used as the type of fuel cell and hydrogen gas is applied as the fuel. With a supply pressure of 1.5 bar to 3.0 bar, the electrochemical power generator of the present invention consumes approximately 15 to 20 standard liter per minute. As a result, a total power output of 1000Watt can be generated by this power generator.

This air-cooled power generator disclosed is a portable fuel cell back-up generator especially designed for outdoor operations. However, it can also be used for indoor activities. Its applications include commercial, industrial or residential usage. It is environmentally friendly, simple to use, quiet and compact. Owing to its portable and convenient properties, this power generator is suitable for the use as an electrical power source for a small room, power generator for night market and others. As set forth in the preceding description, the power generator disclosed comprises significant components which are a plurality of polymer electrode membrane fuel cell (PEMFC) stacks (52) with open-air cathodes (58). The plurality of fuel cell stacks (52) are configured within the casing (51) and connected among each others. Each of the fuel cell stacks (52) has a plurality of cathodes (58) and anodes (57) for generating electrochemical energy. According to the preferred embodiment of the present invention, there are two fuel cell stacks (52) configured in this air-cooled power

generator, as shown in Figure 1. Each fuel cell stack (52) provides 500Watt of power output. As a result, a total power output of 1000Watt can be generated by this power generator as described in the foregoing description.

In accordance with the preferred embodiment of the present invention, the electrochemical power generator is characterized by a ventilating means (53) which is coupled with each of the fuel cell stacks (52) for supplying air to the cathodes (58) as well as for cooling the fuel cell stacks (52). This characteristic is named the dualfunctioning air handling concept. Preferably, the ventilating means (53) is a fan. As set forth in the preceding description, the air-cooled power generator disclosed comprises two open-air PEMFC stacks (52). The open cathode (58) channel is designed to supply air directly from the atmosphere so as to supply the oxygen to the fuel cell stack (52) without using a pump, which indirectly reduces peripheral equipment cost. This air-cooling system also cools the PEMFC stacks (52) thus removing the need for a water-cooling system.

During the generation of electrochemical energy, the fuel cell stacks (52) tend to be heated up. The dual-functioning air handling concept is capable of maintaining the oxygen supplied to cool the stack (52) as well as to remove the water produced by the electrochemical reaction occurred therein.

In one of the preferred embodiment of the present invention, the power generator further comprises a filtering means (59) in between each ventilating means (53) and each fuel cell stack (52) for filtering the air before it is supplied to the anodes (57), as illustrated in Figure 1. As the power generator is used in tropical regions, air from the atmosphere is humidified. Therefore, the polymer electrolyte membrane in the fuel cell stack (52) can be kept moist in order to ensure high proton flux across the membrane electrode assemblies (MEA) (63) which will keep the PEMFC current and power high.

This air-cooled power generator is fueled by hydrogen gas. According to the preferred embodiment of the present invention, the power generator comprises a hydrogen feed (54) which conveys hydrogen gas to the anodes (57) of the fuel cell stacks (52). The hydrogen can be supplied externally through stand-alone industrial cylinders when the power generator is designed for commercial and industrial use, or internally within the casing (51), through easy-to-use mini cylinder when the power generator is customized for commercial and residential use. As set forth in the foregoing description, electrical energy will be generated by the electrochemical power generator as the cathodes (58) of the fuel cell stacks (52) receiving the humidified air from atmosphere while the anodes (57) of the fuel cell stacks (52) receiving hydrogen from a hydrogen feed (54). The hydrogen is catalytically oxidized in the MEA (63) and split into protons and electrons. While the protons are allowed to permeate through the polymer membrane of MEA (63) from anodes (57) to the cathodes (58), electrons travel along an external circuit to the cathode (58), generating a flow of electrons producing electrical current for powering an external circuit. In the meantime, humidified air (oxygen) passes through the gas diffusion layer of the MEA into the cathodes (58) and reacts with the protons from the polymer membrane and the electrons from the external circuit to form water molecules. The direct current (DC) created is converted to alternating current (AC) by an current converter (55) and the electrical energy is supplied to an electrical load (56) for the use of suitable electrical appliances. As described in the preceding description, the power generated is up to 1000Watt (1kW) when two fuel cell stacks (52) are installed.

Further embodiment is an electrochemical power generator which further comprises a pressure regulating means (60, 64) and a flowrate controlling means (61, 62)

connected to the fuel cell stacks (52). As illustrated in Figure 1, the pressure regulating means (60, 64) can be a combination of a pressure regulator (64) and a pressure gauge (60) which is used for controlling the pressure in the hydrogen feed (54). According to the preferred embodiment, hydrogen gas is maintained at a high pressure hydrogen feed in a pressure range of 100MPa to 360MPa. It is fed to the PEMFC stack at 150 kPa to 250 kPa for better hydrogen utilization. The flowrate controlling means (61, 62) which preferably comprises a metering valve (61) and a flowmeter (62) can be used for controlling flowrate of the hydrogen gas supply.

The ventilating means (53) or the fan coupled with each fuel cell stack (52) is equipped with a motor in order to move the atmospheric air efficiently for better oxygen distribution throughout the plurality of fuel cell stacks (52). As high temperature will affect the performance of the power generating system, the plurality of fuel cell stacks (52) must be cooled by a stack cooling system. With the dualfunctioning air-handling concept, the present invention removes the need for a pump for distributing air to achieve stack cooling effect. The configuration and design of the MEA (63) is vital in determining the effectiveness of an PEMFC. According to one of the preferred embodiment of the present invention, each of the MEAs (63) described in the preceding description comprises a sandwich having a polymer membrane between two catalytic electrodes which is itself sandwiched between two gas diffusion layers. Preferably, the high performance MEAs (63) are designed as five-layer assemblies. The catalytic electrodes attached on both sides of the polymer electrolyte membrane are made by spray coating proprietary platinum-activated carbon catalyst ink; whereas the gas diffusion layers are made from carbon cloth coated with proprietary hydrophobic layer. According to one of the preferred embodiments of the present invention, the fuel cell stack (52) comprises a plurality of MEAs (63) that are sandwiched between a plurality of polymer composite bipolar plates by the application of pressure on an external device. The bipolar plates and the MEAs (63) are then sealed by a plurality of gaskets. Preferably, the number of MEAs (63) configured for each fuel cell stack (52) of the present invention is 50 to 80. In a preferred embodiment, with each MEA (63) provides a voltage of 0.6V, a 48V of direct current (DC) and a 220V alternating current (AC) are therefore obtained by the fuel cell stacks (52) with 80 MEAs. The DC-AC inversion is performed by a commercially obtained by the current converter (55) which converts DC to AC so as to supply energy to the electrical load (56). According to the preferred embodiment of the present invention, this electrical load (56) can be the electrical circuit of outdoor or indoor electrical appliances. Preferably, the bipolar plates applied to sandwich the MEAs (63) is in a number of 51 to 81 plates and the gaskets used for sealing the MEAs is in a number of 50 to 80 layers. Preferably, the gaskets are made of silicone rubber. The bipolar plates are preferably made of a proprietary polymer composite material and are constructed by using a computer numerical control (CNC) milling machine. According to the preferred embodiment, each bipolar plate has serpentine flow fields on both sides whose shapes and dimensions are optimized for low pressure drop and uniform distribution of gas on the electrodes.

The air-cooled power generator is environmentally friendly, simple to use, quiet and compact. It is low in production cost, having a quick start-up property as well as having easy maintenance. The overall efficiency of the system can reach up to 75%. The present disclosure includes as contained in the appended claims, as well as that of the foregoing description. Although this invention has been described in its preferred form with a degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangements of parts may be resorted to without departing from the scope of the invention.

# Reviewer

## BIODATA



**Name:** PROF. DATO' IR. DR. WAN RAMLI BIN WAN DAUD

**Date of Birth:** 27<sup>TH</sup>December 1955

**Designation:** Founding Director, Fuel Cell Institute UKM (2007-2013)  
Professor of Chemical Engineering (since 1996)

**Address 1:** Fuel Cell Institute  
Universiti Kebangsaan Malaysia  
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Faculty of Engineering & Built Environment  
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**Tel.:** 03-89118418

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### **Order of Chivalry:**

- Darjah Setia Pangkuan Negeri (D.S.P.N.) which carries the title Dato' from the Pulau Pinang State Government, Malaysia conferred on 28 August 2013.

### **Fellowship of Academy of Science:**

- Elected Fellow of Academy of Science, Malaysia on 27 April 2012..

### **Academic & Professional Qualification:**

- BEng (First Class Honours), Monash University, Victoria, Australia in Chemical Engineering 1978
- PhD, University of Cambridge, United Kingdom in Chemical Engineering 1984
- Professional Engineer (Chemical Engineering), Board of Engineers Malaysia (Registration No.: 8561) (1996-now)
- Chartered Chemical Engineer, Institution of Chemical Engineers, United Kingdom and The Engineering Council, United Kingdom (Registration No: 564829) (2007-now)

### **Academic Career:**

- Tutor, Department of Chemical Technology, Faculty of Physical and Applied Sciences, Universiti Kebangsaan Malaysia (1979-1984)
- Lecturer, Department of Chemical & Process Engineering, Faculty of Engineering, Universiti Kebangsaan Malaysia (1984-1989)
- Head, Department of Chemical & Process Engineering, Universiti Kebangsaan Malaysia (1984-1988)
- Associate Professor, Department of Chemical & Process Engineering, Faculty of Engineering, Universiti Kebangsaan Malaysia (1989-1996)

- Deputy Dean, Faculty of Engineering, Universiti Kebangsaan Malaysia (1990–1993), (1995–1998)
- Professor of Chemical Engineering, Department of Chemical & Process Engineering, Faculty of Engineering, Universiti Kebangsaan Malaysia (1996-)
- Member of Senate, Universiti Kebangsaan Malaysia (1998–2004, 2014-2017).
- Chief Editor, Jurnal Kejuruteraan, The Journal of the Faculty of Engineering, UKM (1999–2004).
- Coordinator, MEng (Chemical Engineering) by course work, Department of Chemical & Process Engineering, Faculty of Engineering, Universiti Kebangsaan Malaysia (2000-2006).
- Founding Director, Fuel Cell Institute, Universiti Kebangsaan Malaysia (2007-2013)

## 1. Awards and Recognition:

### a. International Awards

- One out of 3 Malaysians Listed in the World's Most Influential Scientific Mind 2015 by Thomson Reuters.
- Won Award for Excellence in Research in Drying of Agricultural Products and Outstanding Contribution to the Development of Drying Technology 2011
- Won Outstanding Contribution to the Drying Community Award 2009
- Won IChemE Highly Commended Shell Energy Award 2008
- Won 2 gold medals in Brussels 2007 and 2 gold medals in Geneva 2001 and 2005 respectively
- Won ASEAN Energy Awards in Singapore 2007 and in Phnom Penh 2005 respectively
- Won 2 silver medals in Brussels 2007 and 2 silver medals in Geneva 2001 and 2005
- Won 2 bronze medals in Brussels 2007
- Won special award of Environmental Protection Society of Switzerland in 2001 and special award of the Union of Innovators Croatia 2005.

### List of International Awards

1. One of The World's Most Influential Scientific Mind 2015 by Thomson Reuters for publishing the most number of highly cited papers during 11 year period 2003-2013.
2. Award for Excellence in Research in Drying of Agricultural Products and Outstanding Contribution to the Development of Drying Technology 2011 at The International Symposium of Processing and Drying of Foods, Vegetables and Fruits 11-12 April 2011
3. Outstanding Contribution to the Drying Community Award 2009 at the 6<sup>th</sup> Asia-Pacific Drying Conference (ADC 2009), 19-21 October 2009, Bangkok, Thailand
4. IChemE Highly Commended Shell Energy Award 2008 for LESTARI 5000 Innovative Fuel Cell Portable Power Generator. 29 October 2008, Hilton Metropole Hotel, NEC, Birmingham, UK.
5. Gold medal for inventing LESTARI 5000™ Fuel Cell Power Generator, World Exhibition Of Innovation, Research And New Technologies, Brussels, Belgium, 2007.

6. Gold medal for inventing Solar Wind Hybrid Hydrogen Energy Production System For Remote Islands, World Exhibition Of Innovation, Research And New Technologies, Brussels, Belgium, 2007.
7. Silver medal for inventing Solar Hydrogen Eco House, World Exhibition Of Innovation, Research And New Technologies, Brussels, Belgium, 2007
8. Silver medal for inventing Compact Pressure Swing Adsorption System for Hydrogen Purification di PEMFC System, World Exhibition Of Innovation, Research And New Technologies, Brussels, Belgium, 2007
9. Bronze medal for inventing Continuous Solar Assisted Drying System For Herbs, World Exhibition Of Innovation, Research And New Technologies, Brussels, Belgium, 2007
10. Bronze medal for inventing Multi-Functional Cu-Zn-Al/ZSM-5 Catalyst for Hydrogen Production, World Exhibition Of Innovation, Research And New Technologies, Brussels, Belgium, 2007
11. ASEAN Energy Awards for inventing Small Scale Portable Power Fuel Cell Suitable for Building, Special Submission Category of the Energy Efficiency and Conservation Best Practices Competition, for Energy Efficient Building 2007.
12. Silver medal for inventing SERINDIT II: Zero Emission Vehicle, 34th Salon International Des Inventions Geneve, 2006
13. Special Award Union des Innovateurs de la Croatie for inventing SERINDIT II: Zero Emission Vehicle, 34th Salon International Des Inventions Geneve, 2006
14. Gold medal for inventing a solar dehumidification system for drying of medicinal herbs, 33rd Salon International Des Inventions Geneve, 2005
15. Silver medal for inventing catalysts for hydrogen production from methanol, 33rd Salon International Des Inventions Geneve, 2005
16. ASEAN energy award for inventing Solar Hydrogen Eco-House in Phnom Phen, Cambodia, 2005.
17. Gold medal for inventing a very efficient solar dryer, 29<sup>th</sup> Salon International Des Inventions Geneve, 2001.
18. Jury award for inventing a very efficient solar dryer, 29<sup>th</sup> Salon International Des Inventions Geneve, 2001.
19. Environmental award Swiss Society for the Protection of the Environment for inventing a very efficient solar dryer, Salon International Des Inventions Geneve 2001.
20. Best Design Prize for Universities in Victoria, Australia, Institution of Chemical Engineers, UK, Victoria Branch, 1978.
21. Shell award for best student, Monash University, 1976
22. Aluminium Council award for best student, Monash University, 1976
23. Best Student Award dalam Leaving and Matriculation Examinations 1974, Leederville Technical College, Leederville, Western Australia

**b. National Awards**

- Won the Merdeka Award 2016 for Outstanding Scholastic Achievement in Research and Development of Fuel Cells and Hydrogen Energy in Malaysia and the region.
- Elected Fellow of Academy of Science Malaysia 2012

- Won 1 gold medal and Best of the Best Award at PENCIPTA2013, 1 gold medal at ITEX 2010, 2 gold medals at ITEX 2009, 1 gold medal at MTE 2007, 1 gold medal at ITEX 2006, 1 gold medal at ITEX 2005, 2 gold medals at IPTA 2005 and 1 gold medal at ITEX 2000.
- Won 1 silver medal at MTE2009, 2 silver medals at MTE 2007, 1 silver medal at MTE 2006, 5 silver medals at ITEX 2005, 2 silver medals at IPTA 2005 and 1 silver medal at EXPO S&T 2004
- Won 2 bronze medals at MTE 2009, 3 bronze medals at MTE 2006, 3 bronze medals at ITEX 2005, 1 bronze medal at PENCIPTA 2005, 7 bronze medals at EXPO S&T 2004 and 1 bronze medal at ITEX 2003
- Won Anugerah Saintis Cemerlang 2005, The Henry Goh award at ITEX 2000 and the MBf-Persatuan Penterjemah Malaysia Best Translated Book Award in Science & Technology for 1994 for translation of Chemical Engineering: Introduction to Design by R. K. Sinnott in 1994.

### List of National Awards

1. The Merdeka Award 2016 for Outstanding Scholastic Achievement in Research and Development of Fuel Cells and Hydrogen Energy in Malaysia and the region.
2. Gold Medal and the Best of the Best Award at the PENCIPTA 2013 exhibition for inventing the Fuel Cell Hydrogen Car on 7-9 November 2013
3. Fellow of Academy of Science Malaysia on 27<sup>th</sup> April 2012
4. Gold medal for inventing Direct Methanol Fuel Cell As Hybrid Mobile Phone Charger, 21<sup>st</sup> ITEX 2010, 14-16 May 2010.
5. Silver medal for inventing Direct Methanol Fuel Cell As Renewable Energy Power Resources For Small Portable Application, 9<sup>th</sup> Malaysia Technology Expo 2010, 4-6 February 2010.
6. Silver medal for inventing Electrocoagulation System For Hydrogen Production And Palm Oil Mill Effluent Treatment, 9<sup>th</sup> MTE 2010, 4-6 February 2010
7. Silver medal for inventing MEA Fabrication For Fuel Cell Using Casting Technique, 9<sup>th</sup> MTE 2010, 4-6 February 2010
8. Gold medal for inventing DMFC for hybrid handphone charger, 21<sup>st</sup> ITEX 2010, 14-16 May 2010
9. Gold medal for inventing Industrial Wastewater As A Fuel For Power Generation Using A Biological Fuel Cell, ITEX 2009.
10. Gold medal for inventing Renewable Hydrogen Production Using Waste Aluminium, ITEX 2009.
11. Silver medal for inventing  $\mu$ DMFC: An Alternative Power Source for Hand Phone, MTE 2009.
12. Bronze medal for inventing Prototype Microbial Fuel Cell For Power Generation, MTE 2009.
13. Bronze medal for inventing Hybrid Heat Pump Dryer, MTE 2009.
14. Gold medal for inventing Direct Methanol Fuel Cell for Portable Application, ITEX 2008.
15. Pinat gangsa for inventing Integrated Photoelectrochemical Cell For Hydrogen Production From Direct Water Splitting From Light, MTE 2008
16. Gold medal for inventing LESTARI 5000TM – 5 kW Portable Fuel Cell Generator, MTE 2007.
17. Silver medal for inventing New Photocatalyst for Hydrogen Production, MTE 2007.
18. Silver medal for inventing Novel-Multi-Function Cu-Zn-Al/ZSM-5 Catalyst for Hydrogen Production, MTE 2007.

19. Silver medal for inventing Compact Pressure Swing Adsorption System for Hydrogen Purification, MTE 2006.
20. Bronze medal for inventing LESTARI™ – Portable Fuel Cell Generator, MTE 2006.
21. Bronze medal for inventing Novel Multi-function Cu-Zn-Al-Zeolite Catalyst for Hydrogen Production from Methanol, MTE 2006.
22. Bronze medal for inventing Low Temperature Sn Promoted Catalyst for Hydrogen Production, MTE 2006.
23. Gold medal for inventing LESTARI™ – 1 kW Portable Fuel Cell Generator, ITEX 2006.
24. Gold medal for inventing A Two Stage Cross-Flow Fluidised Bed Dryer, ITEX 2005.
25. Silver medal for inventing Serindit A Fuel Cell Powered Scooter, ITEX 2005.
26. Silver medal for inventing A Method For Producing MEA for PEM Fuel Cell, ITEX 2005.
27. Silver medal for inventing Catalysts For Hydrogen Production From Methanol, ITEX 2005.
28. Silver medal for inventing Polymer Composite Bipolar Plate for PEM Fuel Cell, ITEX 2005.
29. Silver medal for inventing Compact Pressure Swing Adsorber For Hydrogen Purification, ITEX 2005.
30. Bronze medals for inventing Membrane Reactor For Pure Hydrogen Production, ITEX 2005.
31. Bronze medals for inventing Photocatalyst For Solar Hydrogen Production, ITEX 2005.
32. Bronze medals for inventing System Design For 5 Kw PEMFC System, the ITEX 2005.
33. Gold medal for inventing Serindit II – Fuel Cell Vehicle, Pameran Penyelidikan and Pembangunan (R&D) IPTA 2005.
34. Gold medal for inventing Solar Hydrogen Eco House, Pameran Penyelidikan and Pembangunan (R&D) IPTA 2005.
35. Silver medal for inventing Low Temperature Catalyst Mo-Ni-Cu for Hydrogen Production From Methanol, Pameran Penyelidikan and Pembangunan (R&D) IPTA 2005.
36. Silver medal for inventing Novel Multi-Function Cu-Zn-Al-Zeolite Catalyst For Hydrogen Production From Methanol, Pameran Penyelidikan and Pembangunan (R&D) IPTA 2005.
37. Bronze medal for inventing Membrane Electrode Assembly Design, Pameran Penyelidikan and Pembangunan (R&D) IPTA 2005.
38. Anugerah Saintis Cemerlang (Excellent Scientist Award) 2005 oleh Menteri Pengajian Tinggi.
39. Silver medal for 1 kW Polymer Electrolyte Membrane Fuel Cell Prototype, Expo Science & Technology 2004.
40. Bronze medal for Compact Pressure Swing Adsorption System For Hydrogen Purification Dalam Polymer Membrane Fuel Cell System Cell, Expo Science & Technology 2004.
41. Bronze medal for Polymer Electrode Membrane (Pem) Electrolyzer For The Production Of Hydrogen From Solar Energy Cell, Expo Science & Technology 2004..
42. Bronze medal for Low Temperature Catalyst For Autothermal Methanol Steam Reforming To Produce Hydrogen Cell, Expo Science & Technology 2004..
43. Bronze medal for Heterogeneous Photocatalyst Precursor For Hydrogen Production Cell, Expo Science & Technology 2004.
44. Bronze medal for inventing Inovative Spraying Technique For Fabrication Of Gas, Fusion Electrode Dalam Fuel Cell Cell, Expo Science & Technology 2004.

45. Bronze medal for Titanium Foam Bipolar Plate For Polymer Electrolyte Membrane Fuel Cell, Expo Science & Technology 2004.
46. Bronze medal for Inter-Digitated Flow Field Pem Fuel Cell, Expo Science & Technology 2004.
47. Silver medal for inventing Solar Assisted Dehumidification System, ITEX 2003
48. Bronze medal for inventing A Baffled Plate Fluidised Bed Dryer, ITEX 2003.
49. Gold medal for inventing a Very Efficient Solar Dryer, ITEX 2000
50. The Henry Goh award for inventing A Very Efficient Solar Dryer, the ITEX 2000
51. MBF-Persatuan Penterjemah Malaysia Anugerha Buku Terjemahan Terbaik dalam Sains and Teknologi for 1994 for translation of Chemical Engineering: Introduction to Design by R. K. Sinnott in 1994
52. Gold medal, Institut Kimia Malaysia, for best student in Chemistry paper, Malaysian Certificate of Education Examination 1973.

**c. UKM Awards**

1. Individual Researcher Award UKM 2009 at Majlis Anugerah Bestari UKM 2010.
2. Individual Researcher Award UKM 2005 at Majlis Anugerah Bestari UKM 2006.
3. Gold medal and Special Award for inventing Membrane Electrode Assembly Design di Ekspo Penyelidikan dan Inovasi UKM 2005.
4. Gold medal for inventing SERINDIT II– Fuel Cell Vehicle di Ekspo Penyelidikan dan Inovasi UKM 2005
5. Gold medal for inventing Reaction Kinetics of Hydrogen Production from Autothermal Steam Reforming of Methanol Using Mo-Ni-Co Catalyst di Ekspo Penyelidikan dan Inovasi UKM 2005
6. Silver medal for inventing Novel Multi-function Cu-Zn-Al-Zeolite Catalyst for Hydrogen Production from Methanol di Ekspo Penyelidikan dan Inovasi UKM 2005
7. Bronze medal for inventing Production of Membrane Electrode Assembly (MEA) for Proton Exchange Membrane Fuel Cell By Using Sol-Gel Casting di Ekspo Penyelidikan dan Inovasi UKM 2005
8. Bronze medal for inventing Electrically Conducting Composite Bipolar Plates di Ekspo Penyelidikan dan Inovasi UKM 2005
9. Bronze medal for inventing Spouted Bed Dryer with Draft Tube di Ekspo Penyelidikan dan Inovasi UKM 2005
10. Publication Award UKM for articles published in 2004 at Hari Kualiti Tahunan UKM 2005.
11. Excellent Service Award UKM for 2004 at Hari Kualiti Tahunan, UKM 2005.
12. Publication Award UKM – Buku dalam Sains, Teknologi dan Perubatan, 2004 for the book Prinsip Reka Bentuk Proses Kimia published by the Institution of Chemical Engineers, Malaysia, 2002 at Hari Kualiti Tahunan, UKM 2004.
13. Gold medal for 1 kW polymer electrolyte membrane fuel cell prototype at the Ekspo Penyelidikan UKM 2004
14. Gold medal for compact pressure swing adsorption system for CO removal at the Ekspo Penyelidikan UKM 2004
15. Silver medal for solar hydrogen eco-house at the Ekspo Penyelidikan UKM 2004
16. Silver medal for Mangkin untuk penghasilan hidrogen daripada pembentukan semula metanol di the Ekspo Penyelidikan UKM 2004

17. Bronze medal for Sintesis dan pencirian fotomangkin tris- [1-(4- methoxyphenyl)-2-(4- carboxylphenyl)-1, 2-ethylenedithiolenic-s, s']tungsten untuk penghasilan hidrogen daripada air- di the Ekspo Penyelidikan UKM 2004
18. Bronze medal for Reaktor membran seramik –ptfe untuk penghasilan hidrogen di the Ekspo Penyelidikan UKM 2004
19. Bronze medal for PEM electrolyzer for the production of hydrogen from solar energy di the Ekspo Penyelidikan UKM 2004
20. Bronze medal for Prekursor fotomangkinheterogen untuk penghasilan hidrogen di the Ekspo Penyelidikan UKM 2004
21. Gold medal for inventing Solar Photovoltaic Hydrogen Production System Emas di Ekspo Penyelidikan Dan Inovasi UKM 2003
22. Excellent Service Award UKM for 1995 di Hari Kualiti Yearan UKM 1996.

## 2. RECOGNITION

### 2.1 Keynote and Invited Lectures

- Presented 23 international keynote lectures in China, India, Indonesia, Iran, Malaysia, Philippines, Singapore and Thailand
- Presented 10 international invited lectures Iceland, Indonesia, Japan, Malaysia, Netherlands, Philippines & Russia
- Presented 10 national keynote lectures

#### a. International Keynote Lectures

##### Year 2017:

1. Wan Ramli Wan Daud. Microbial electrolysis cells, novel hydrogen production technology: issues and challenges, the 13th International Conference on Global Sustainability and Chemical Engineering (ICGSCE), 15–16 February 2017, Putrajaya, Malaysia
2. Wan Ramli Wan Daud. The blueprint of fuel cell industries in Malaysia, the 6th International Conference on Fuel Cells and Hydrogen Technology (ICFCHT2017) 12 –13 April 2017, Putrajaya, Malaysia.

##### Year 2015:

3. Wan Ramli Wan Daud. Microbial Fuel Cells: A Sustainable Emerging Fuel Cell Technology, The 5th International Conference on Fuel Cell & Hydrogen Technology (ICFCHT2015), 1-3 September 2015, Kuala Lumpur, Malaysia.
4. Wan Ramli Wan Daud. Carbon-Neutral Chemical Engineering. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015), 21 – 22 October 2015. Kuala Lumpur, Malaysia

##### Year 2014:

5. Wan Ramli Wan Daud. New non-pt nanostructured electrodes & nanocomposite nafion & non-nafion proton exchange membranes for fuel cells application, The 27th Symposium of Malaysian Chemical Engineers & the 21st Regional Symposium of Chemical Engineerin, 29 – 30 October 2014. Taylor's University, Kuala Lumpur, Malaysia
6. Wan Ramli Wan Daud. Fuel cell vehicle: the future of zero emission transportation. The 3rd IET International Conference on Clean Energy & Technology CEAT2014, 24-26 November 2014, Merdeka

Palace Hotel & Suites, Kuching, Sarawak, Malaysia

**Year2013:**

7. Wan Ramli Wan Daud Nanotechnology Applications In Hydrogen Energy & Fuel Cells, The 4th International Conference on Fuel Cell & Hydrogen Technology (ICFCHT2013), 10 October 2013, Jogjakarta, Indonesia

**Year2012:**

8. Wan Ramli Wan Daud Bioenergy and Sustainability. The 2<sup>nd</sup> Malaysian International Conference on Trends in Biotechnology (MICTriBE 2012) 3 -4Julai 2012, Langkawi, Kedah, Malaysia

**Year 2011:**

9. Wan Ramli Wan Daud Drying of Foods. International Conference of Chemical Engineering and Industrial Biotechnology (ICCEIB 2011) In conjunction with The 25th Symposium of Malaysian Chemical Engineers(SOMCHE2011) 30 November 2011, Kuantan, Pahang, Malaysia
10. Wan Ramli Wan Daud 2011. Clean Energy: Towards a Zero Emission and Carbon Free Future. Presented at the International Conference on Fuel Cell and Hydrogen Technology 2011 (ICFCHT2011), 22-23 November 2011, Kuala Lumpur, Malaysia.
11. Daud, W.R.W. 2010. Clean Energy for Tomorrow: Towards a Zero Emission and Carbon Free Future. Presented at International Workshop on Clean Energy, Faculty of Chemical Engineering, Babol Noshirvani University of Technology (BUT), Babol, Iran 2 May 2011.

**Year2010:**

12. Daud, W.R.W. 2010. Hydrogen fuel cells:the ultimate clean energy technology. Presented at the 17th Regional Symposium on Chemical Engineering (RSCE2010), Queen Sirikit National Convention Center, Bangkok, Thailand, 22nd -23rd November 2010.

**Year 2009:**

13. Daud, W.R.W. 2009. Fuel cell research trends: towards zero emission energy technology. Presented at the 16th Regional Symposium of Chemical Engineering (RSCE 2009), Manila Hotel, Manila, The Philippines, December 1st - 2nd 2009.
14. Daud, W.R.W. 2009. Recent Fuel Cells R&D in Malaysia. The 2nd International Conference on Fuel Cell & Hydrogen Technology, 28 -29 October 2009, Center of Material Technology, Agency for the Assessment and Application of Technology, Jakarta, Indonesia
15. Daud, W.R.W. 2009. Palm oil mill effluent, waste or resource? waste to energy: biohydrogen & microbial fuel cells, International Conference on the Future of the Palm Oil Business, ICPOB 2009, Hilton Phuket Arcadia, Phuket, Thailand, 19-20 February 2009.

**Year 2007:**

16. Daud, W.R.W. 2007. Technology policy and research progress of fuel cell in malaysia, The 2007 Conference on Fuel Cell Technology, 7<sup>th</sup> September 2007, Center of Material Technology, Agency for the Assessment and Application of Technology, Jakarta, Indonesia.
17. Daud, W.R.W. 2007. Fluidized bed dryers – recent advances, The Third Asian Particle Technology Symposium, 3<sup>rd</sup> – 5<sup>th</sup> September 2007, Beijing, China.
18. Daud, W.R.W. 2007. National hydrogen & fuel cell development in Malaysia, Battery/Fuel Cell: Asia Market 2007, 29 - 30 May 2007, Swissôtel Merchant Court, Singapore.

**Year2006:**

19. Daud, W.R.W. 2006. Fuel cell as energy conversion device of the future. Presented at Malaysian Scientific Society (MSA) Golden Jubilee International Symposium on Public Understanding of Science and Technology (PUSAT) 2006, June 15-17, 2006, Corus Hotel, Kuala Lumpur, Malaysia
20. Daud, W.R.W. 2006. Development of indigenous fuel cell technology: the case for Malaysia, the 2nd PETRONAS International R&D Forum, 6-7th December 2006, Kuala Lumpur, Malaysia.

**Year 2005:**

21. Daud, W.R.W. 2005. Fluidised bed dryers : recent advances, Presented at 4th Asia-Pacific Drying Conference, ADC 2005, 13 – 16 December 2005, Kolkata, India
22. Daud, W.R.W. 2005. Fuel cell development in Malaysia Prospects for the future, Presented at The International Science Congress, ISC 2005, 4 - 6 August 2005, Kuala Lumpur Malaysia.

**Year2003:**

23. Daud, W.R.W. 2003. Novel fluidized bed technology, Presented at 3rdAsia-Pacific Drying Conference, ADC 2003, 1-3 Sep 2003, Bangkok, Thailand.

**b. International Invited Lectures****Tahun 2011**

1. Daud, W.R.W. 2011. Food Properties. The International Symposium of Processing and Drying of Foods, Vegetables and Fruits 2011 (ISPDFVF2011) on 11 April 2011 at the Kuala Lumpur Teaching Centre, The University of Nottingham, Malaysia Campus, Chulan Tower, Jalan Conlay, Kuala Lumpur, Malaysia

**Year2010:**

2. Daud, W.R.W. 2010. Fuel Cell & Hydrogen Energy R&D in Malaysia. The International Hydrogen Energy Development Forum 2010, February 3rd-4th, 2010, Kyushu University Ito Campus, Fukuoka, Japan.

**Year 2009:**

3. Daud, W.R.W. 2009. Country report on new energy related technology and policy in Malaysia. International Symposium on Sustainable Energy and Environmental Protection 2009 (ISSEEP 2009) & 6th Sustainable Energy and Environment Forum (6th SEE Forum), 23 – 26 November, 2009, Universitas Gadjah Mada, Yogyakarta, Indonesia

**Year 2008:**

4. Daud, W.R.W. 2008. Renewable energy research in Malaysia, UKM-Sri Wijaya Joint Colloquim on Chemical Engineering, 26-28<sup>th</sup> June 2008, Universitas Sri Wijaya, Palembang, Indonesia
5. Daud, W.R.W. 2008. Biofuel cells, Presented at ASEAN COST+3: New Energy Forum for Sustainable Environment (NEFSE), Clock Tower Centennial Hall, University of Kyoto, Japan, 26-27 May 2008.
6. Daud, W.R.W. 2008. Hydrogen energy R&D and roadmap for Malaysia, Presented at the II International Forum on Hydrogen Technologies for the Developing World, in conjunction with the 9<sup>th</sup> Steering Committee Meeting of the International Partnership for Hydrogen Economy (IPHE), 22 – 23 April 2008, President Hotel, Moscow, Russia organised by the Federal Agency of Science, The Russian Federation.

**Year 2006:**

7. Daud, W.R.W. 2006. Fuel cells : green power system, Presented at International Conference on Green Chemistry: Malaysian Chemical Congress (MCC 2006), 19 – 21 September 2006, Sunway Pyramid Convention Centre, Petaling Jaya, Selangor, Malaysia.
8. Daud, W.R.W. 2006. Hydrogen economy: Perspectives from Malaysia which was presented at the International Seminar on the Hydrogen Economy for Sustainable Development, 28-29 September 2006, Reykjavik, Iceland organised by the Government of Iceland and the United Nations Department of Economic and Social Affairs. Hydrogen Economy: Perspective from Malaysia presented at the International Seminar on the Hydrogen Economy for Sustainable Development, 28 -29 September 2006, Reykjavik, Iceland.

**Year 2005:**

9. Daud, W.R.W. 2005. Hydrogen fuel cells and alternatives in the transport sector: The case for Malaysia which was presented at the United Nations University (UNU) Conference on Hydrogen Fuel Cells and Alternatives in the Transport Sector: Issues for Developing Countries, UNU-INTECH, Maastricht,

Netherlands, 7-9 November 2005

**Year 2004:**

10. Daud, W.R.W. 2004. The status of renewable hydrogen economy in Malaysia which was presented at the International Conference on Renewable Hydrogen Economy 2004, in conjunction with 2004 Philippine National Energy Week jointly organised by USAID and the Government of the Philippines, 7 – 9th August 2004, Makati, Manila, Philippines

**c. National Keynote Lectures**

**Year 2016:**

1. Wan Ramli Wan Daud. Carbon-Neutral Chemical Engineering. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015), 21 – 22 October 2015. Kuala Lumpur, Malaysia

**Year 2008:**

2. Daud, W.R.W. 2008. Renewable energy research in Malaysia, Technology Business Innovation Forum, Technology Park Malaysia, Bukit Jalil, Kuala Lumpur, 9<sup>th</sup> July 2008.
3. Daud, W.R.W. 2008. Energy scenario for Malaysia, IChemE Technical Roadmap for 21<sup>st</sup> Century Chemical Engineering, Sime Derby Convention Centre, Kuala Lumpur, 12<sup>th</sup> May 2008.
4. Daud, W.R.W. 2008. Fuel Cell R&D and Roadmap in Malaysia. Malaysian Chemistry Festival (MCF) 2008. PETROSAINS, Kuala Lumpur City Centre, Kuala Lumpur, Malaysia. 18 August 2008
5. Daud, W.R.W. 2008. Renewable Energy: Challenges in Malaysia. Energy Roundtable Discussion on New World Energy Order – An Inevitable Change? The 5th National Utilities Summit 2008: Plowing Through the New World Order - Towards Greener Developments, Greater Efficiency & Synergy. Nikko Hotel, Kuala Lumpur. 14 & 15 October 2008

**Year 2007:**

6. Daud, W.R.W. 2007. Of dyes and crystals: Applications of advanced materials and nanotechnology in chemical engineering, 21st Symposium of Chemical Engineer (SOMCHE2007), 12-13 December 2007, Universiti Putra Malaysia

**Year 2006:**

7. Daud, W.R.W. 2006. Fuel cells : green power system which was presented at Malaysian Chemical Congress 2006, 19 – 21 September 2006, Sunway Pyramid Convention Centre, Petaling Jaya.
8. Daud, W.R.W. 2006. Innovation and technology advancement breakthrough in fuel cell. Presented at the 20<sup>th</sup> Symposium of Chemical Engineer (SOMCHE2006), 19-21 December 2006, Universiti Teknologi MARA, Shah Alam.

**Year 2004:**

9. Daud, W.R.W. 2004. Fuel cell development in Malaysia Prospects for the future, Presented at 18<sup>th</sup> Symposium of Malaysian Chemical Engineers, SOMCHE 2004, 13 – 14 December 2004, Universiti Teknologi PETRONAS (UTP), Bandar Seri Iskandar, Ipoh, Perak.

**Year 2000:**

10. Daud, W.R.W. 2000. Advances in chemical process design and optimization presented at the 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October 2000, Putra Jaya, Selangor

**2.2 Membership of International Committees**

- Chairman, Institution of Chemical Engineers UK, Malaysia Board 2009.

- Committee Member (as Malaysian Board Chairman), International Council, Institution of Chemical Engineers UK 2009.
- Deputy Chairman, Institution of Chemical Engineers UK, Malaysia Board 2008.
- Chairman, International Advisory Committee, 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia.
- Committee Member, Institution of Chemical Engineers UK, Malaysia Board 2007.
- Member, the International Advisory Committee of the Regional Symposium on Membrane Science & Technology (2004-kini).
- Member, the International Advisory Committee of the International Workshop & Symposium on Industrial Drying (2004).
- Member, the International Organising Committee the Asian Particle Technology Symposium (2003-kini).
- Chairman, International Organising Committee, 2nd Asian Particle Technology Symposium (APT 2003) held on 17- 19 December 2003, Penang, Malaysia.
- Member, the International Advisory Committee of the World Congress of Particle Technology (2002-2006).
- Member, the International Advisory Committee of the Regional Symposium of Chemical Engineering (2002-kini)
- Member, the International Advisory Committee the Asia-Pacific Drying Conference (2001-kini)
- Chairman, International Advisory Committee, 2nd Asia-Oceania Drying Conference (ADC'2001) 20 – 22 August 2001 in Penang, Malaysia

### 2.3 Member of Editorial Board/Referee/Reviewer of International Journals

- Guest Editor Special Issue of International Journal of Hydrogen Energy (SCOPUS/ISI) for the 3rd International Conference on Fuel Cell and Hydrogen Technology (ICFCHT2011), 22-24 November 2011, Malaysia
- Member of Editorial Board of Journal of Sustainable Energy and Environment published by the Joint Graduate School on Energy and Environment (JGSEE), King Mongkut's University of Technology Thonburi, Thailand
- Referee/Reviewer for the following journals:
  - Drying Technology (SCOPUS/ISI)
  - Solar Energy (SCOPUS/ISI)
  - International Journal of Hydrogen Energy (SCOPUS/ISI)
  - Chemical Engineering Science (SCOPUS/ISI)
  - International Journal of Food Engineering (SCOPUS/ISI)
  - Powder Technology (SCOPUS/ISI)
  - Chemical Engineering Research & Design (SCOPUS/ISI)
  - Separation Science & Technology (SCOPUS/ISI)
  - Sains Malaysia (SCOPUS/ISI)
  - World Applied Science Journal

### 2.4 External Examiner of Program/Department/Faculty, Assessor for accreditation Bodies & External Advisor of Phd & MSc Thesis

#### a. External Examiner of Academic Program

University	Program	Year
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Universiti Sain Malaysia	BSc (Environmental Technology)	2011
Universiti Tun Hussein Onn Malaysia	BEng (Plant Engineering)	2010
Universiti Teknologi MARA	BEng (Chemical Engineering)	2005-2007
Universiti Teknologi Malaysia	BEng (Chemical Engineering)	2001
Universiti Teknologi MARA	BEng (Chemical Engineering)	1989-1991
Universiti Teknologi Malaysia	BEng (Chemical Engineering)	1988

**b. Memberof Evaluation Panel for Board of Engineers Malaysia**

University	Program	Year
Universiti Teknologi Petronas	SMKej (Kejuruteraan Kimia)	1998
Universiti Malaya	SMKej (Kejuruteraan Kimia)	1995

**c. MemberEvaluation Panel for National Accreditation Board**

University	Program	Year
Taylor's College	MEng (Chemical Engineering)	2004
Prime College	Diploma (Chemical Engineering)	2003

**d. MemberEvaluation Panel for Engineering Accreditation Council**

University	Program	Year
Universiti Teknologi Malaysia	BEng (Gas Engineering)	2013
Taylor University Malaysia	BEng (Chemical Engineering)	2012
Universiti Teknologi Petronas	BEng (Chemical Engineering)	2011
Monash University Sunway Campus	BEng (Chemical Engineering)	2010
Universiti Malaysia Perlis	BEng (Bioprocess Engineering)	2010
Universiti Sains Malaysia	BEng (Chemical Engineering)	2010

**e. External Examiner of Thesis**

University	Doctor of Philosophy	Master of Science	Total
Universiti Malaya	0	1	1
Universiti Sains Malaysia	1	6	7
Universiti Teknologi Malaysia	3	3	6
Univertsiti Putra Malaysia	0	5	5
Universiti Teknologi Petronas	1	0	1
University of Nottingham in Malaysia	1	0	1
International Islamic University Malaysia	1	0	1
Universiti Teknologi MARA	1	0	1
Universiti Malaysia Kelantan	0	1	1
Total	8	16	24

**i List of PhD Thesis Examined as External Examiner**

No.	Year	University	Student	Title
1.	2012	Universiti Teknologi MARA	Wan Ahmad Najmi Wan Mohamed	Solid-state Thermal Analysis of Air-cooled PEMFC with Predictive

				Empirical Profiling
2.	2011	International Islamic University Malaysia	Rashmi G. Walkevar	Experimental Studies and CFD Simulation on Convective Heat Transfer of CNT Nanofluids for Thermal Management
3.	2010	Universiti Teknologi Petronas	Umesh Basanaguuda Deshanavar	Studies on Hydrocarbon Fouling on Heat Transfer Surfaces
4.	2011	University of Nottingham in Malaysia	Ong Sze Pheng	Investigation of Engineering and Quality Properties of Salak Fruit in Heat Pump Assisted Intermittent Drying
5.	2010	Universiti Teknologi Malaysia	Inayati	Dynamic behaviour of Fuel Cell Powertrain
6.	2007	Universiti Teknologi Malaysia	Siva Kumar a/l Kumaresan	A Process Engineering Approach to the Standardization of Eurocomanone in Eurycoma Longifolia Water Extract
7.	2005	Universiti Teknologi Malaysia	Chua Lee Suan	Chiral resolution of (R,S)-1-phenylethanol using immobilised lipases in batch stirred tank and recirculated packed bed reactors
8.	2002	Universiti Sains Malaysia	Mohd. Roslee bin Othman	Modification of commercial inorganic membrane with a thin layer that have finer and more uniform pores

**i. List of MSc Thesis Examined as External Examiner**

No.	Year	University	Student	Title
1.	2012	Universiti Sains Malaysia	Anis Suriani Binti Ibrahim	Application of the Monin-Obukhov Similarity Theory on Diurnal Wind Turbulence Statistics in the Urban Roughness Sublayer Using Local Scales
2.	2012	Universiti Malaysia Kelantan	Rizki Wannahhari	The Recovery of Used Palm Cooking Oil Using Bagasse as Adsorbent
3.	2012	Universiti Putra Malaysia	Wan Mohd.Fadli Wan Mokhtar	Empirical Modelling, Simulation and Control of Pasteurization Process with Fouling as Disturbance
4.	2009	Universiti Putra Malaysia	Keshani, S.	Mathematical Models For Prediction Of Rheological Parameters Of Pomelo Juice
5.	2008	Universiti Putra Malaysia	Nurul Faezawaty Jamaludin	Comparative Study on the Nutrient Retentivity and Thermal Process Capability of Ohmic Heated Pasteurizer
6.	2007	Universiti Putra Malaysia	Rozaihan binti Razali	A study of the effect of fermentation, drying technique and added carotene oil on nutritional value of cassava
7.	2005	Universiti Putra Malaysia	Soo Ching Yee	Dynamics and Convergence Acceleration of Rapid Pressure Swing Adsorption (RPSA)
8.	2005	Universiti Sains Malaysia	Chieng Hui Yap	Penggunaan Sel Galvanik Yang Mempunyai Berbagai Konfigurasi Untuk Menurunkan Kromium Heksavalen Dalam Air Buangan Elektrosaduran

9.	2005	Universiti Teknologi Malaysia	Mak Weng Yee	Fault Detection and Diagnosis (FDD) Using Multivariate Statistical Process Control via Correlation Coefficients
10.	2005	Universiti Sains Malaysia	Chua Joo Hann	Adsorption of Fatty Acids using Metal Silica Complexes from Rice Husks
11.	2005	Universiti Teknologi Malaysia	Rosiah Rohani	Preparation of proton exchange membrane by radiation-induced grafting method : Grafting of styrene onto poly(ethylene tetrafluoroethylene) copolymer films
12.	2000	Universiti Sains Malaysia	Yiu Pang Hung	Studies using the galvanic reduction process for hexavalent chromium in wastewater
13.	1999	Universiti Teknologi Malaysia	Lee Ting Hui	Hasil buangan nenas sebagai sumber karbon untuk penghasilan asid sitrik oleh Aspergillus sp
14	1999	Universiti Malaya	Abdul Basir Aziz Khan	An Epistemological Study of Malaysia's Science and Tehcnology Policy
15	1995	Universiti Sains Malaysia	Gurdeep Kaur a/p Bakjisis Singh	Pengembalian Hidrometalurgi Niobium dari satu Larutan Pemelarutresapan HF:HCl Kolumbit
16.	1999	Universiti Malaya	Abdul Basir Aziz Khan	National Science Policy

## 2.5 Appointment of Adjunct/Visiting Professor and Academic Assessor/Advisor

### Appointment of Adjunct Professor

Period	Faculty/Department	University
2011-2012	Faculty of Mechanical Engineering	Universiti Tun Hussein Malaysia

### Appointment of Visiting Professor

Period	Faculty/Department	University
27/07/ 2011	Faculty of Mechanical Engineering	Universiti Tun Hussein Malaysia

### Appointment of Academic Assessor/Advisor

Period	Departmenty	University
2010-2012	Centre for Graduate Studies	Universiti Industri Selangor

### Appointment of Company Associate

Date	Associate/Advisor	Company
09/2011	Senior Associate	Malaysia Industry Group For High Technology (MIGHT)

## 3. RESEARCH

### 3.1 Fields of Research:

- Fuel cell technology: composite and inorganic electrolyte membranes, nanocatalyst electrodes, membrane electrode assemblies, stack and cell design and prototyping, fuel cell system design, solid oxide fuel cell, direct methanol fuel cell, microbial fuel cell
- Hydrogen energy: Nano-catalyst for autothermal steam reforming of alcohols, biohydrogen, solar hydrogen, photoelectrochemical cell
- Drying engineering: drum drying of starch slurries, fluidised bed and spouted bed drying of particulate materials, superheated steam drying of fibres, selective drying of multi-component solvents, drying kinetics and solar drying of agricultural crops and medicinal herbs
- Extraction: solvent extraction of antioxidants from spices and herbs, supercritical fluid extraction: thermodynamics and mass transfer of supercritical fluids and supercritical fluid extractions of anti-oxidants and essential oils from herbs
- Food properties: rheology of food material
- Design of membrane separation modules and adsorbers
- Process system engineering: process synthesis and optimization of chemical and biochemical processes including proton exchange membrane fuel cell systems
- Particle technology: flow properties of powders and fluidisation;
- History and philosophy of science and technology: Malay technology

### 3.2 List of Research Projects:

No	Project Code	Project Titke	Role	Total grant (MYR)	Project period	Source of fund
1.	03-01-02-SF0985	Enhanced Hydrogen Production From Agro-Industrial Waste Using Bio-Electrochemical System And Thermophilic Fermentation	Project Leader	160,500	1/9/2013-29/2/2016	Sciencefund MOSTI
2.	LRGS/2013/UKM/TK	Zero Emission Fuel Cell Vehicle Powered by Hydrogen	Program Leader & Project Leader	7,000,000	1/7/2013-30/6/2016	LRGS, MOE
3.	FRGS/1/2013/TK05/UKM/01/1	Functional Spray Dried Amino Acid Powders With Controlled Polymorphs And Crystallinity	Project Leader	106,000	01/4/2013-31/3/2016	FRGS, KPT
4..	DIP-2012-27	Sustainable Hydrogen Production Using Microbial Electrolytic Fuel Cell and Photoelectrochemical Cell	Project Leader	250,000	1/6/2012 – 30/5/2014	Dana Impak Perdana, UKM
5.	ERGS/1/2012/TK05/UKM/01/2	Combined Wastewater Treatment and Power (CWTP) Using High Power Density Microbial Fuel Cell	Project Leader	64,000	1/6/2012 – 1/6/2015	FRGS, KPT
6.	UKM-GUP-2011-368	Fluid Dynamic and Product Deposition in spray dryers	Project Leader	30,000	1/10/2011 – 30/09/2012	Geran Univer siti Penyelidikan, UKM

7.	UKM-AP-2011-02	Clean Energy for Tomorrow: Towards Zero Emission and Carbon Free Future	Project Leader	100,000	01/08/2011 - 31/07/2013	Projek Arus Perdana, UKM
8.	UKM-AP-TK-05-2009	New Materials for Fuel Cells and Hydrogen	Project Leader	730,000	01/07/2009 - 30/06/2011	Projek Arus Perdana
9.	UKM-GUP-TK-08-17-323	PEM Fuel Cell Stack with Sided Fuel Inlet and Integrated Stacking Device	Project Leader	300,000	01/05/2008 - 31/10/2010	Geran Univer siti Penyelidikan
10	03-01-02-SF0046	Computational fluid dynamics modelling of spray dryer with wall deposition	Project Leader	295,000	01/07/2007 - 01/07/2009	ScienceFund
11	03-01-02-SF0396	Development of novel depositless spray dryer	Project Leader	211,000	01/08/2007 - 01/08/2009	ScienceFund
12	03-01-02-SF0405	Development of low temperature solid oxide fuel cell electrolytes and electrodes	Project Leader	308,720	01/08/2007 - 01/08/2009	ScienceFund
13	UKM-KK-02-FRGS0007-2006	Crystallization process of pharmaceuticals and macromolecules (proteins): Understanding polymorphism and chiral separation via molecular recognition and self assembly	Project Leader	90,000	01/11/2006 - 31/10/2009	Fundamental Research Grant Scheme (FRGS)
14	UKM-MTSF-SELFUEL-2009	Optimization of Electricity Generation Using Microbial Fuel Cells for Wastewater Treatment	Project Leader	20,000	12/10/2009 - 31/12/2010	Malaysian Toray Science Foundation (MTSF)
15	020202000P R0023/11	Development of Commercially Competitive Compact 5 kW Proton Exchange Membrane Fuel Cell System	Project Leader	30,054,764	2002-2007	IRPA
16	0202020001 PR0023/11-06	Design, simulation, fabrication and long term performance testing of a compact 5 kW proton exchange membrane fuel cell system	Project Leader	6,455,992	2002-2007	IRPA
17	0202020006 PR0023/11-11	Development of a dye-sensitised photoelectrochemical cell for the production of hydrogen by unassisted photolysis of water	Project Leader	2,038,332	2002-2007	IRPA
18	0802020020	Volatile organic compounds removal technology based on	Project Leader	1,600,000	1997-2000	IRPA

		thermal swing adsorption				
19	0202020011	Development of photoelectrochemical cells for hydrogen production for fuel cell use	Project Leader	214,000	1999 – 2001	IRPA
20	0302020028	Novel drying technologies	Project Leader	880,000	1998 – 2002	IRPA
21	010703014	Drying of agricultural products	Project Leader	600,000	1988 – 1995	IRPA
22	03-01-02-SF0253	Superheated Steam Drying of Oil Palm Frond Chips in a Vibrating Fluidized Bed Dryer	Co-Researcher	283,000	2007-2009	ScienceFund
23	0902020127	Fluidized bed for dedusting and drying of padi	Co-Researcher	901,000	1997 – 2000	IRPA
24	02-02-02-0001-PR-23/11- 09	Development of an Onboard Low Temperature Autothermal Fuel Processor from Liquid Fuel	Co-Researcher	1,606,928	2000 – 2007	IRPA
25	0202020002 PR0023/11-07	Development and long term performance testing of bipolar plates	Co-Researcher		2000 – 2007	IRPA
26	0902020091 EA234	Enhancing product purity and yield in the extraction of herbal oils using supercritical carbon dioxide	Co-Researcher	-	2003 – 2006	IRPA
27	02-02-02-0003-PR0023/11-08	Development And Long Term Performance Testing Of Membrane Electrode Assemblies (MEA) For Proton Exchange Membrane Fuel Cell	Co-Researcher	1,600,200	2000 – 2007	IRPA
28	02-02-02-0005-PR0023/11-10	Development Of A Solar Photovoltaic-Electrolyser Hydrogen Production System	Co-Researcher		2000 – 2007	IRPA
29	0902020011 EA066	Novel extraction of aqueous two-phase systems for recovery of bioproducts from fermentation broth	Co-Researcher	-	2001 – 2005	IRPA
30	0202020002	Development of a commercially competitive proton exchange membrane fuel cell	Co-Researcher	-	1996 - 1999	IRPA
31	0402020039	Development of computational fluid dynamics (CFD) analysis for flow in stirred tank reactor	Co-Researcher	-	2000 – 2002	IRPA

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### 3.3 Research Collaboration

### a. International Research Collaboration

No.	Researcher	Institution	Field of Research	Year
1.	Prof. Vijay Raghavan	Department of Bioresource Engineering, Faculty of Agricultural and Environmental Sciences, McGill University, Canada	Microwave-vacuum drying	2008-
2.	Prof. Nigel Brandon	Department of Earth Science & Engineering, Imperial College London, United Kingdom	Intermediate and low temperature anode, electrolyte and cathode for solid oxide fuel cells	2007-
3.	Prof. Nobuyoshi Nakagawa	Graduate Department of Chemical Engineering, Gunma University, Kiryu, Japan	Direct alcohol fuel cells	2007-
4.	Prof. Roberts, K.J.	Institute of Particle Science and Engineering, Leeds University, United Kingdom	Control of batch crystallisation of L-Isoleucine through on-line monitoring system	2005 – 2010
5.	Dr. Robert Driscoll	School of Chemical Engineering and Industrial Chemistry, University of New South Wales, Sydney, Australia	Fluidized bed drying of paddy	2005
6.	Prof. Dr. Ir. Tun Teja Irawadi, Dr. Ir. Irawadi Jamaran dan Prof. Ir. Maarimi	Bogor Agricultural University, Bogor, Indonesia	Supercritical Fluid Extraction (SFE) of Sea Cucumber	2006 - 2009
7.	Prof. Arun S. Mujumdar	Department of Mechanical and Production Engineering National University of Singapore	Industrial Drying Technology and Computational Fluid Dynamic in Dryers and in Fuel Cells	2004 -
8.	Assoc. Prof. Dr. Eric Bigerson	Department of Chemical and Biomolecular Engineering, National University of Singapore	Computational Fluid Dynamic in Fuel Cell	2004 -

### b. National Research Collaboration

No.	Researcher	Institution	Field of Research	Year
1.	Pn. Nurul Fitriah Nasir	Faculty of Mechanical Engineering, Unoiversiti Tun Husseion Onn Malaysia	Modeling and optimization of continuous and batch biodisel processes using homogenous and heterogeneous catalysts	2010-

2.	Assoc. Prof. Dr. Dominic Foo	Department of Chemical Engineering, Faculty of Engineering, University of Nottingham Malaysia Campus	Process system engineering of fuel cells	2009
3.	Assoc. Prof. Dr. Law Chung Lim,	Department of Chemical Engineering, Faculty of Engineering, University of Nottingham Malaysia Campus	Fluidized bed drying of padi, spray drying and two stage heat pump drying of fruits	2006 –
4.	Noornizar Anuar	Faculty of Chemical Engineering Universiti Teknologi MARA	Control of batch crystallisation of L-Isoleucine through on-line monitoring system	2005 –
5.	Dr. Ibnu Hajar Rukunudin, Ooi Ho Seng and Ten Seng Teik,	Malaysian Agricultural Research & Development Institute	Drying of kenaf fibers	2002 - 2004
6.	Dr. Mohd Zamri Ibrahim	Fakulti Sains, Universiti Malaysia Terengganu	Hybrid wind-PV solar hydrogen system	2003 – 2005
7.	Prof. Dr. Farid Ani Nasir	Faculty of Mechanical Engineering, Universiti Teknologi Malaysia	Preparation and characterization of carbon molecular sieve produced from oil palm	2004 – 2006
8.	Pro.f Dr. Hamdani Saidi, Prof. Dr. Ahmad Fauzi Ismail, Prof. Dr. Nor Aishah Saidina Amin dan Assoc. Prof. Dr. Ahmad Rahman Songip	Faculty of Chemical & Natural Resources Engineeirng, Prof. Md. Nor Musa, Faculty of Mechanical Engineering, Universiti Teknologi Malaysia	Development of polymer electrolyte membrane fuel cell for mobile and portable application	1996 -

#### 4 Intellectual Property

- Granted 8 patents by MyPO
- Granted 5World patents
- Filed 28 patentsatMyIPO
- Filed 1 trade mark atMyIPO

##### a. List of Patents Granted

No.	Inventors	Invention	Date Granted	Certificate No.
1.	Wan Ramli Wan Daud, Mohammad Kassim, Daik, R.&Arifin, K.	A Method of Producing a Photocatalyst	31/3/ 2011	MY-142900-A
2.	Wan Ramli Wan Daud, Kamaruzzaman Sopian, Ja'afar Sahari, Che Hassan Che Haron, Abu Bakar Mohamad, Abd. Amir Hassan Kadhum, Mohd. Shahbudin Mastar @ Masdar, Masli	Water-Cooled polymer Electrolyte Membrane Fuel Cell Stack	21/12/2011	MY-145097-A

	Irwan Rosli, Nik Suhaimi Mat Hassan, Sitanggang, R., Majlan, E.H.& T. Husaini				
3.	Yaakob, Z., Mohd Adib Ibrahim, Wan Ramli Wan Daud & Abd. Amir H. Kadhum	Cu-Zn-Al Catalyst Supported on Zeolite for hydrogen production from methanol	15/3/ 2011		MY-142900-A
4.	Ja'afar Bin Sahari @ Shaari, Wan Ramli Wan Daud	A Method of Producing Bipolar Plate	15/12/2011		MY-144996-A
5.	Abu Bakar Mohamad, Wan Ramli Wan Daud, Abdul Amir Hassan Kadhum, Ramli Sitanggang, Mohd Shahbudin Masdar	Innovative Membrane Electrode Assembly (MEA) Design for Proton Exchange Membrane Fuel Cell (PEMFC)	15/8/2011		MY-144183-A
6.	Wan Ramli Wan Daud, Lorna Jefferey Minggu, Mohammad Kassim, Fadhli Hadanah	A Photocatalyst for Hydrogen Production	29/7/2011		MY-143950-A
7.	Wan Ramli Wan Daud, Abu Bakar Mohamad, Ja'afar Bin Sahari @ Shaari, Abdul Amir Hassan Kadhum, Kamaruzzaman Sopian, Che Hassan Che Harun, Masli Irwan Rosli, Mohd Shahbudin Masdar, Edy Heriantyo Majlan, T. Hussaini, Nik Suhaimi Mat Hassan, Ramli Sitanggang	An Electrochemical Power Generator	29/8/2011		MY-144241-A
8.	Mohammad bin Kassim, Wan Ramli Wan Daud, Lorna Jeffrey Minggu, Khuzaimah Ariffin, Fadhli Hadanah	Novel Photocatalysts & Preparation Method Thereof	13/1/2012		MY-145222-A

#### b. List of Filed World patents

No.	Inventors	Invention	Filing date	Published date	Reference No.
1.	Che Haron C H, Hassan Kadhum A A, Husaini T, Majlan E H, Mastar Masdar M S, Mohamad A B, Rosli M I, Sahari J, Sitanggang R, Sopian K, Wan Daud W R	Electrochemical power generator	02/01/ 2009	28/05/ 2009 & 22/10/ 2009	WO2009066 999- A2 & WO200 9066999-A3
2.	Jeffery Minggu L, Wan Daud W R, Yaakob Z	Catalyst for producing hydrogen for proton exchange membrane fuel cell	02/01/ 2009	22/05/ 2009 & 22/10/ 2009	WO2009064 170- A2 & WO2009064 170- A3
3.	Hassan Khadum A A, Majlan E H, Mohammad AB, Mohammad A W, Takriff M S, Wan Daud W R	Compact pressure swing adsorption system for purifying hydrogen gas	02/01/ 2009	22/05/ 2009 & 22/10/ 2009	WO2009064 169-A2 & WO2009064 169-A3
4.	Daik R, Kassim M, Rahman F H, Wan Daud W R	Novel metal complex used as photocatalyst for production of hydrogen in photochemical cell	02/01/ 2009	04/06/2009 & 17/09/2009	WO2009070 000-A2; & WO200907 0000-A3.
5.	Abu Bakar M H, Hassan Kadhum A A, Mohamad A B, Sitanggang R, Wan Daud W R	Impregnation of platinum on activated carbon, e.g. as catalyst	02/01/ 2009	07/05/2009 & 22/10/2009	WO2009057 992-A2 & WO200905

**c. List of Filed Patentsat MyIPO**

No.	Inventors	Invention	Filing date	Reference No.
1.	Wan Ramli Wan Daud, Kamaruzzaman Sopian, Ja'afar Sahari, Che Hassan Che Haron, Abu Bakar Mohamad, Abd. Amir Hassan Kadhum, Mohd. Shahbudin Mastar @ Masdar, Masli Irwan Rosli, Nik Suhaimi Mat Hassan, Sitanggang, R., Majlan, E.H.& T. Husaini 2009	A Fuel Cell Stack System For Vehicle Power Generation	10/07/2009	PI20092917
2.	Wan Ramli Wan Daud, Kamaruzzaman Sopian, Ja'afar Sahari, Che Hassan Che Haron, Abu Bakar Mohamad, Abd. Amir Hassan Kadhum, Mohd. Shahbudin Mastar @ Masdar, Masli Irwan Rosli, Nik Suhaimi Mat Hassan, Sitanggang, R., Majlan, E.H.& T. Husaini	Innovative 5kW Polymer Electrolyte Membrane Water-cooled Fuel Cell Stack	08/06/2009	PI20093256.
3.	Abu Bakar Mohamad, Abd. Amir Hassan Kadhum, Wan Ramli Wan Daud, Mimi Hani Abu Bakar & Sitanggang, R.	Ink Formulation Design Method	20/08/2009	PI20093454.
4.	Mohammad Kassim, Daik, R., Wan Ramli Wan Daud & Arifin, K.	Novel Photocatalyst and Preparation Method Thereof	08/09/2009	PI20093723.
5.	Kamarudin, S.K., Wan Ramli bin Wan Daud, Hasran, U.A.& Ahmad, M.M.	MesraUIKM: Passive Direct Methanol Fuel Cell for Portable Application	06/03/2009	PI20092260.
6.	Kamarudin, S.K., Wan Ramli Wan Daud, Hasran, U.A.& Basri, S.	MsfUKM: Design Advisor Tool for Direct methanol fuel Cell-DMFC	07/10/2009	PI20092910.
7.	Kamarudin, S.K., Wan Ramli bin Wan Daud, Hasran, U.A.& Hashim, N.	SFIONUKM: Passive Micro Direct Methanol Fuel Cell	22/06/2009	PI20092617.
8.	Wan Ramli Wan Daud, Abdul Wahab Mohammad, Yaakob, Z.& T. Husaini	An Integrated Membrane Reactor System for Hydrogen Gas Production	13/06/2008	PI20082106
9.	Wan Ramli Wan Daud, Mohammad Kassim, Daik, R.& Arifin, K.	A Method of Producing a Photocatalyst	14/07/2008	PI20082601
10.	Wan Ramli Wan Daud, Kamaruzzaman bin Sopian, Ja'afar Sahar, Che Hassan Che Haron, Abu Bakar Mohamad, Abd. Amir Hassan Kadhum, Mohd. Shahbudin Mastar @ Masdar, Masli Irwan Rosli, Majlan, E.H., Husaini & Sitanggang, R.	An Air-Cooled Electrochemical Power Generator (LESTARI 1000)	18/07/2008	PI20082673
11.	Wan Ramli Wan Daud, Mohammad Kassim, Daik, R.& Rahman, F.H.	A Method of Synthesizing a Photocatalyst for Hydrogen Production	18/11/2008	PI20084656
12.	Wan Ramli Wan Daud, Kamaruzzaman Sopian, Ja'afar Sahari, Che Hassan Che Haron, Abu	Polymer Electrolyte Membrane Fuel Cell	03/11/2008	PI20084371

	Bakar Mohamad, Abd. Amir Hassan Kadhum, Mohd. Shahbudin Mastar @ Masdar, Masli Irwan Rosli, Herianto Majlan, T. Husaini & Sitanggang, R. Ja'afar Sahari, Wan Ramli Wan Daud, Norhamidi Muhamad & Dedikarni Panuh	Stack with Open Cathode  A Method of Producing Bipolar Plate		PI20083067
13.	Ja'afar Sahari, Wan Ramli Wan Daud, Norhamidi Muhamad & Dedikarni Panuh	Polymer Composite Bipolar Plate		PI20085127
14.	Yaakob, Z., Wan Ramli Wan Daud M. Rosli Yosfiah & Jamalaliah Jahim	Mo-Ni-Cu Catalyst on gamma Al <sub>2</sub> O <sub>3</sub> Support for hydrogen production from methanol	4/03/2008	PI20080488
15.	Yaakob, Z., Mohd Adib Ibrahim, Wan Ramli Wan Daud & Abd. Amir H. Kadhum	Cu-Zn-Al Catalyst Supported on Zeolite for hydrogen production from methanol	4/08/2008	PI20080487
16.	Mohammad Kassim, Wan Ramli Wan Daud, Daik, R.&Rahman, F.H.	A Method of Synthesizing a Photocatalyst for Hydrogen Production	18/11/2008	PI20084656
17.	Wan Ramli Wan Daud, Abu Bakar Muhammad, Abdul Amir Hassan Kadhum, Jaafar Sahari, Kamaruzzaman Sopian, Masli Irwan Rosli & Shahbudin Mastar @ Masdar	An Electrochemical Power Generator (LESTARI)	21/12/2007	PI20072055
18.	Wan Ramli Wan Daud, Mohamad, A.B., Abdul Amir Hassan Kadhum, Yaakob, Z., Takriff, M.S.&Majlan, E.H.	Compact pressure swing adsorber for hydrogen purification (CPSA)	16/11/2007	PI20072029
19.	Wan Ramli Wan Daud, Mohammad Kassim, Mohamad, A.B., Abdul Amir Hassan Kadhum, Arifin, K. & Lorna Minggu	A photocatalyst for solar hydrogen production	28/11/2007	PI20072119.
20.	Yaakob, Z., Wan Ramli Wan Daud & Lorna Minggu	Cu-Zn-Al Catalysts Promoted With Palladium For Hydrogen Production From Methanol	16/11/2007	PI20072030.
21.	Abu Bakar Mohamad, Abdul Amir Hasan Kadhum, Wan Ramli Wan Daud, Mimi Abu Bakar & Sitanggang, R.	Process for Making Catalyst by Impregnation of Platinum of Activated Carbon	2/11/2007	PI20071902.
22.	Abu Bakar Mohamad, Abdul Amir Hasan Kadhum, Wan Ramli Wan Daud & Sitanggang, R.	Innovative Membrane Electrode Assembly (MEA) Design for Proton Exchange Membrane Fuel Cell (PEMFC)	19/12/2007	PI20072279.
23.	Yaakob, Z., Wan Ramli Wan Daud & Mohd Sabri Mahmud	Cu-Zn-Al Catalyst Promoted with Vanadium for hydrogen production from methanol		PI20072270
24.	Kamaruzzaman Sopian, Wan Ramli Wan Daud & Mohd. Zamri Ibrahim	Hydrogen Production Method (PV wind hydrogen production)	13/11/2007	PI20071969

26.	Kamaruzzaman Sopian & Wan Ramli Wan Daud	system) A method for producing hydrogen and a system for supplying same to a building and/ or the like (Solar hydrogen eco-house)	13/11/2007	PI20071970
27.	Kamaruzzaman Sopian, Wan Ramli Wan Daud & Mohd. Zamri Ibrahim	Polymer Electrolyte Membrane (PEM) electrolyzer for the production of hydrogen from solar energy	13/11/2007	PI20071971
28	Abu Bakar Mohammed (Project Leader), Wan Ramli bin Wan Daud, Abd. Amir Hassan Kadhum, Mahreni Akhmad.	Self Humidified Nanocomposite Membrane Of Nafion-Sio2-Pwa	9 August 2010.	PI 201003752

#### d. Trade Mark

1. SERINDIT (07019005)

#### 5 Publication:

ISI WOS Researcher ID: B-3635-2013

- Number of Indexed Articles WOS: 257
- H-Index ISI WOS (1995-2016) on 24May 2017: 33
- Total citations ISI WOS (1995-2017) on 24May 2017: 4117

SCOPUS Author ID: 35547717400

- Number of Indexed Articles SCOPUS: 305
- H-Index SCOPUS (1995-2016) on 24May 2017: 36
- Total citations SCOPUS (1995-2016) pada 24May 2017: 4926

GOOGLE SCHOLAR

- Number of Indexed Articles GOOGLE: 485
- H-Index GOOGLE SCHOLAR (1995-2016) on 24May 2017: 41
- Total citations GOOGLE SCHOLAR (1995-2016) on 24May 2017: 7151

Publication Summary:

Published 934articles:

- Published 342 articles in international journals,
- Published 367 articles in international conference proceedings
- Published 225 articles in national conference proceedings
- Published 2 international research books
- Published 5 chapters in international research books

- Edited 6 international conference proceedings
- Edited 8 journal issues as Chief Editor of Jurnal Kejuruteraan and Jurnal Kejuruteraan Kimia.
- Guest edited Special Issue of International Journal of Hydrogen Energy
- Published 2 national books
- Published 5 chapters in national research books
- Translated 2 books

**a. Articles in International Journals:**

**Year 2017:**

1. Mohamed, W.A.N.W., Talib, S.F.A., Zakaria, I.A., Mamat, A.M.I. & Daud, W.R.W. 2017. Effect of dynamic load on the temperature profiles and cooling response time of a proton exchange membrane fuel cell. *Journal of the Energy Institute* (In Press).
2. Daud, W.R.W., Rosli, R.E., Majlan, E.H., Hamid, S.A.A., Mohamed, R. & Husaini T. 2017. PEM fuel cell system control: A review. *Renewable Energy* 113: 620-638.
3. Lim, S.S., Yu, E.H., Daud, W.R.W., Kim, B.H. & Scott, K. 2017. Bioanode as a limiting factor to biocathode performance in microbial electrolysis cells. *Bioresource Technology* 238: 313-324.
4. Somalu, M.R., Muchtar, A., Daud, W.R.W. & Brandon, N.P. 2017. Screen-printing inks for the fabrication of solid oxide fuel cell films: a review. *Renewable and Sustainable Energy Reviews* 75, 426-439.
5. Daud, W.R.W., Kamarudin, S.K., Ahmad, A., Nasef, M.M. & Mohamad, A.B. 2017. Preface to the special issue on "Sustainable fuel cell and hydrogen technologies: The 5th International Conference on Fuel Cell and Hydrogen Technology (ICFCHT 2015), 1-3 September 2015, Kuala Lumpur, Malaysia". *International Journal of Hydrogen Energy* 42 (14), 8973-8974.
6. Masdar, M.S., Dedikarni, Zainoodin, A.M., Rosli, M.I., Kamarudin, S.K., Daud, W.R.W. 2017. Performance and stability of single and 6-cell stack passive direct methanol fuel cell (DMFC) for long-term operation. *International Journal of Hydrogen Energy* 42 (14): 9230-9242.
7. Rosli, R.E., Sulong, A.B., Daud, W.R.W., Zulkifley, M.A., Husaini, T., Rosli, M.I., Majlan, E.H. & Haque, M.A. 2017. A review of high-temperature proton exchange membrane fuel cell (HT-PEMFC) system. *International Journal of Hydrogen Energy* 42 (14): 9293-9314.
8. Satar, I., Ghasemi, M., Aljilil, A.S., Isahak, W.N.R.W., Abdalla, A.M., Alam, J., Daud, W.R.W., Yarmo, M.A., Akbarzadeh, O. 2017. Production of hydrogen by *Enterobacter aerogenes* in an immobilized cell reactor. *International Journal of Hydrogen Energy* 42 (14): 9024-9030.
9. Ghasemi, M., Ahmad, A., Jafary, T., Azad, A.K., Kakoei, S., Daud, W.R.W. & Sedighi, M. 2017. Assessment of immobilized cell reactor and microbial fuel cell for simultaneous cheese whey treatment and lactic acid/electricity production. *International Journal of Hydrogen Energy* 42 (14): 9107-9115.
10. Jafary, T., Daud, W.R.W., Ghasemi, M., Kim, B.H., Bakar, M.H.A. & Jahim, J.M. 2017. Assessment of recirculation batch mode of operation in bioelectrochemical system; a way forward for cleaner production of energy and waste treatment. *Journal of Cleaner Production* 142: 2544-2555.
11. Faisal, M.N., Mohamed, A., Hannan, M.A., Daud, W.R.W. & Majlan, E.H. 2017. An improved multidevice interleaved boost converter with novel multiplex controller for fuel cell. *Jurnal Teknologi* 79 (1): 143-151
12. Asri, N.F., Husaini, T., Sulong, A.B., Majlan, E.H. & Daud, W.R.W. 2017. Coating of stainless steel and titanium bipolar plates for anticorrosion in PEMFC: A review. *International Journal of Hydrogen Energy* 42 (14): 9135-9148.
13. Soo, L.T., Loh, K.S., Mohamad, A.B. & Daud, W.R.W. 2017. The effect of varying N/C ratios of nitrogen precursors during non-metal graphene catalyst synthesis. *International Journal of Hydrogen Energy* 42 (14): 9069-9076.

14. Ahmad, H., Kamarudin, S.K., Minggu, L.J., Hasran, U.A., Masdar, S. & Daud, W.R.W. 2017. Enhancing methanol oxidation with a TiO<sub>2</sub>-modified semiconductor as a photo-catalyst. *International Journal of Hydrogen Energy* 42 (14): 8986–8996.
  15. Lim, B.H., Majlan, E.H., Daud, W.R.W., Rosli, M.I. & Husaini, T. 2017. Numerical analysis of modified parallel flow field designs for fuel cells. *International Journal of Hydrogen Energy*. 42(14): 9210–9218.
- Year 2016:**
16. Wafi, N.I., Daud, W.R.W., Majlan, E.H., Somalu, M.R. & Ahmad, A. 2016. Application of poly (2-hydroxyethyl methacrylate) gel electrolyte in electrochemical device: An overview. *Int. J. Appl. Eng. Res* 11:10043-10047.
  17. Ch'ng, Y.Y., Loh, K.S., Daud, W.R.W. & Mohamad, A.B. 2016. Synthesis and characterization of sulfonated graphene oxide nanofiller for polymer electrolyte membrane. *IOP Conference Series: Materials Science and Engineering* 160 (1), 012035.
  18. Fadzillah, D.M., Rosli, M.I., Talib, M.Z.M., Kamarudin, S.K. & Daud, W.R.W. 2016. Review on microstructure modelling of a gas diffusion layer for proton exchange membrane fuel cells. *Renewable and Sustainable Energy Reviews* (in Press).
  19. Talib, S.F.A., Zakaria, I.A., Hamzah, W.A.W., Mamat, A.M.I., Ismail, H., Daud, W.R.W. & Mohamed, W.A.N.W. 2016. Effect of dynamic load on the temperature profiles and cooling response time of a proton exchange membrane fuel cell. *J of Fuel Science and Technology*, May 2016 (Submitted)
  20. Arifin, K., Daud, W.R.W., Kassim, M.B. 2016. Molecular and electronic structures of a new ruthenium-tungsten bimetallic complex using density functional theory calculations. *Malaysian Journal of Analytical Sciences*, 20 (4):946-954.
  21. Arifin, K., Kadir, H.A., Minggu, L.J., Daud, W.R.W., Kassim, M.B. 2016. TiO<sub>2</sub> doped with Fe<sub>2</sub>O<sub>3</sub> for photoelectrochemical water splitting electrode: Experimental and density functional theory study. *Malaysian Journal of Analytical Sciences*, 20 (4):892-900.
  22. Masdar, M.S., Ngah, N., Mohamed Aslam, N., Panuh, D., Kamarudin, S.K., Daud, W.R.W. 2016. Effects of fuel concentrations, catalyst loadings and activation on the performance of direct formic acid fuel cell (DFAFC) stack. *Malaysian Journal of Analytical Sciences*, 20 (4):877-884.
  23. Hamid, S.A.A., Rosli, R.E., Majlan, E.H., Wan Daud, W.R., Mohamed, R., Husaini, T., Sitanggang, R. 2016. Proton exchange membrane fuel cell/supercapacitor hybrid power management system for a golf cart *Malaysian Journal of Analytical Sciences* 20 (4):931-945.
  24. Hamid, S.A.A., Majlan, E.H., Rosli, R.E., Daud, W.R.W., Mohamed, R., Husaini, T., Sitanggang, R. 2016. Energy management strategy for a fuel cell/ultracapacitor/battery hybrid system for portable applications. *Malaysian Journal of Analytical Sciences* 20 (4):955-964.
  25. Rosli, R.E., Herianto Majlan, E., Abd. Hamid, S.A., Daud, W.R.W., Mohamed, R., Husaini, T., Rohendi, D. 2016. Study of hydrogen consumption by control system in proton exchange membrane fuel cell. *Malaysian Journal of Analytical Sciences* 20 (4):901-912.
  26. Yassin, B.M., Zulkifli, R., Daud, W.R.W. & Abdullah, S. 2016 Flexural behaviour of uni-directional kenaf composites using experimental and simulation methods *International Journal of Mechanical and Mechatronics Engineering*. 16 (4) 57-64.
  27. Rahman, S.N.A., Masdar, M.S., Rosli, M.I., Majlan, E.H., Husaini, T., Daud, W.R.W., Md Rejab, S.A. & Lye, C.C. 2016. Portable pem fuel cell system: Water and heat management *Journal of Engineering Science and Technology* 11:122-136.
  28. Rosli, R.E., Sulong, A.B., Daud, W.R.W., Zulkifley, M.A., Rosli, M.I., Majlan, E.H. & Haque, MA.. 2016. Reactant control system for proton exchange membrane fuel cell. *Procedia Engineering* 148: 615-620.
  29. Jaafar, S.N.H., Minggu, L.J., Ariffin, K., Kassim, M.B. & Daud, W.R.W. 2016 Effect of using pitaya peel as dye-sensitizer and dye molecules in electrolyte for photoelectrochemical reaction. *Malaysian Journal of Analytical Sciences* 20 (3):651-659
  30. Leong, J.X., Diño, W.A., Ahmad, A., Daud, W.R.W. & Kasai, H. 2016. Morphology effect on proton dynamics in Nafion® 117 and sulfonated polyether ether ketone. *Journal of the Physical Society of Japan* 85, 094803.

31. Soo, N.L.T., Loh, K.S., Mohamad, A.B., Daud W.R.W., & Wong, W.Y. 2016. Synthesis of silver/nitrogen-doped reduced graphene oxide through a one-step thermal solid-state reaction for oxygen reduction in an alkaline medium. *Journal of Power Sources* 324: 412-420.
  32. Rahman, S.N.A., Masdar, M.S., Rosli, M.I., Majlan, E.H., Husaini, T., Kamarudin, S.K. & Daud, W.R.W. 2016. Overview biohydrogen technologies and application in fuel cell technology. *Renewable and Sustainable Energy Reviews* 66:137–162
  33. Husin, M. A., Zulkifli, R., Abdullah, S., Wan Daud, W. R. 2015. Effect of NaOH Concentration on Mode II Critical Strain Energy Release, GIIC for Woven Mengkuang Fibre Reinforced Epoxy Laminated Composites. *International Journal of Mechanical and Mechatronics Engineering* 15(4): 26-31.
  34. Husin, M.A., Zulkifli, R., Abdullah, S. & Daud, W.R.W. 2016. Kelakuan Delaminasi Komposit Laminat Hibrid Anyaman Gentian Mengkuang/ Gentian Asli Sutera/ Epoksi. *Jurnal Teknologi*. 78 (6–9) 67–74.
  35. Abdullah, S., Kamarudin, S.K., Hasran, U.A., Masdar, M.S. & Daud, W.R.W. 2016. Electrochemical kinetic and mass transfer model for direct ethanol alkaline fuel cell (DEAFC). *Journal of Power Sources* 320: 111-119.
  36. Hakim, L., Yaakob, Z., Puspasari, I & Daud, W.R.W. 2016. Hydroxyapatite-supported tri-metallic catalyst for hydrogen production from steam reforming of glycerol. *Jurnal Teknologi* 78 (5):381–386.
  37. Husin, M.A., Zulkifli, R., Abdullah, S. & Daud, W.R.W. 2016. Mode II delamination of woven mengkuang fiber/woven silk laminated hybrid composites. *Materials Testing* 58 (4),: 374-380
  38. Toh, S.Y., Loh, K.S., Daud W.R.W. & Kamarudin, S.K. 2016. The impact of electrochemical reduction potentials on the electrocatalytic activity of graphene oxide toward the oxygen reduction reaction in an alkaline medium. *Electrochimica Acta* 199:194–203.
  39. Soo, N.L.T., Loh, K.S., Daud W.R.W., Mohamad, A.B. & Wong, W.Y. 2016. Effect of nitrogen precursors on the electrochemical performance of nitrogen-doped reduced graphene oxide towards oxygen reduction reaction. *Journal of Alloys and Compounds* 677:112-120.
  40. Ghasemi, M., Daud, W.R.W., Alam, J., Jafari, Sedighi, M., Aljlil, S.A. & Ilbeygi, H.. 2015 Sulfonated poly ether ether ketone with different degree of sulphonation in microbial fuel cell: Application study and economical analysis *International Journal of Hydrogen Energy* 41 (8): 4862-4871.
  41. Ghasemi, M., Daud, W.R.W., Hassan, S.H.A., Jafary, T., Rahimnejad, M., Ahmad, A. & Yazdi, M.H. 2015 Carbon nanotube/polypyrrole nanocomposite as a novel cathode catalyst and proper alternative for Pt in microbial fuel cell. *International Journal of Hydrogen Energy* 41 (8):4872-4878
  42. Lim, B.H., Majlan, E.H., Daud, W.R.W., Husaini, T. & Rosli, M.I. 2016. Effects of flow field design on water management and reactant distribution in PEMFC: a review. *Ionics* 22 (3): 301-316
  43. Ghasemi, M., Daud, W.R.W., Alam, J., Ilbeygi, H., Sedighie, M., Ismail, A.F., Yazdi, M.H., Aljlili, S.A. 2016. Treatment of two different water resources in desalination and microbial fuel cell processes by poly sulfone/Sulfonated poly ether ether ketone hybrid membrane. *Energy* 96: 303-313
- Year 2015:**
44. Mokhtar, M., Talib, M.Z.M., Majlan, E.H., Tasirin, S.M., Ramli, W.M.F.W., Daud, W.R.W. & Sahari, J. 2015. Recent developments in materials for aluminum-air batteries: a review. *Journal of Industrial and Engineering Chemistry* 32:1-20.
  45. Sulaiman, N., Hannan, M.A. Mohamed, A., Majlan, E.H. & Daud W.R.W. 2015. A review on energy management system for fuel cell hybrid electric vehicle: Issues and challenges. *Renewable and Sustainable Energy Reviews* 52: 802–814
  46. Husaini, T., Daud, W.R.W., Yaakob, Z. & Majlan, E.H. 2015. Preparation and characterization of low temperature PTFE-Nafion composite membranes for hydrogen production. *International Journal of Hydrogen Energy* 40: 10072-10080
  47. Rohendi, D., Majlan, E.H., Mohamad, A.B., Daud, W.R.W., Kadhum, A.A.H. & Shyuan, L.K. 2015. Effects of temperature and backpressure on the performance degradation of MEA in PEMFC. *International Journal of Hydrogen Energy* 40:10960-10968.

48. Kamaruddin, M.Z.F., Kamarudin, S.K., Masdar, M.S. & Daud, W.R.W. 2015. Investigating design parameter effects on the methanol flux in the passive storage of a direct methanol fuel cell. *International Journal of Hydrogen Energy* 40:10931-10942.
49. Abdullah, S., Kamarudin, S.K., Hasran, U.A., Masdar, M.S. & Daud, W.R.W. 2015. Development of a conceptual design model of a direct ethanol fuel cell (DEFC). *International Journal of Hydrogen Energy* 40:11943-11948.
50. Daud, S.M., Kim, B.H., Ghasemi, M. & Daud, W.R.W. 2015 Separators used in microbial electrochemical technologies: current status and future prospects. *Bioresource Technology* 195: 170-179.
51. Wong, W.Y., Daud, W.R.W., Mohamad, A.B. & Loh, K.S. 2015. Effect of temperature on the oxygen reduction reaction kinetic at nitrogen-doped carbon nanotubes for fuel cell cathode. *International Journal of Hydrogen Energy* 40:11444-11450.
52. Leong, J.X., Daud, W.R.W., Ghasemi, M., Ahmad, A., Ismail, M. & Liew, K.B. 2015. Composite membrane containing graphene oxide in sulfonated polyether ether ketone in microbial fuel cell applications. *International Journal of Hydrogen Energy* 40: 11604-11614.
53. Liew, K.B., Daud, W.R.W., Ghasemi, M., Loh, K.S., Ismail, M., Lim, S.S. & Leong, J.X. 2015. Manganese oxide/functionalised carbon nanotubes nanocomposite as catalyst for oxygen reduction reaction in microbial fuel cell. *International Journal of Hydrogen Energy* 40: 11625-11632.
54. Rachid, C., Daud, W.R.W., Abdellah, B. & Yarmo, M.A. 2015. Physical parameters affecting on the electrode performance for proton exchange membrane fuel cells (PEMFCs). *Advanced Materials Research* 1105:320-324.
55. Kim, B.H., Lim, S.S., Daud, W.R.W., Gadd, G.M. & Chang, I.S. 2015. The biocathode of microbial electrochemical systems and microbially-influenced corrosion. *Bioresource Technology* 195: 395-401.
56. Zainoodin, A.M., Kamarudin, S.K., Masdar, M.S., Daud, W.R.W. & Mohamad, A.B. 2015. Optimization of a porous carbon nanofiber layer for the membrane electrode assembly in DMFC. *Energy Conversion and Management* 101: 525-531.
57. Karim, N.A., Kamarudin, S.K., Shyuan, L.K., Yaakob, Z. & Daud, W.R.W. 2015. Study on the electronic properties and molecule adsorption of  $W_{18}O_{49}$  nanowires as a catalyst support in the cathodes of direct methanol fuel cells. *Journal of Power Sources* 288:461-472.
58. Soo, L.T., Loh, K.S., Mohamad, A.B., Daud, W.R.W. & Wong, W.Y. 2015. An overview of the electrochemical performance of modified graphene used as an electrocatalyst and as a catalyst support in fuel cells. *Applied Catalysis A: General* 497: 198-210.
59. Keshani, S., Montazeri, M.H., Daud, W.R.W., Nourouzi, M. M. & Woo, M.W. 2014. CFD modelling of air flow: Assessment of wall deposition in conical and parabolic spray dryer geometry. *Drying Technology* 33 (7): 784-795.
60. Jafary, T., Daud, W.R.W., Ghasemi, M., Kim, B.H., Jahim, J.M., Ismail, M. & Lim, S.S. 2015. Biocathode in microbial electrolysis cell; present status and future prospects. *Renewable and Sustainable Energy Reviews* 47: 23-33.
61. Mayahi, A., Ilbeygi, H., Ismail, A.F., Jaafar, J., Daud, W.R.W., Emadzadeh, D., Shamsaei, E., Martin, D., Rahbari-Sisakht, M., Ghasemi, M. & Zaidi, J. 2015. PEEK/cSMM membrane for simultaneous electricity generation and wastewater treatment in microbial fuel cell. *Journal Chemical Technology and Biotechnology. Journal of Chemical Technology and Biotechnology* 90 (4): 641-647.
62. Keshani, S., Daud, W.R.W., Nourouzi, M., Namvar, F. & Ghasemi, M. 2015. Spray drying: An overview on wall deposition and modelling. *Journal of Food Engineering* 146: 152-162.
63. Basri, S., Kamarudin, S.K., Daud, W.R.W. & Yaakob, Z. 2015. Study on kinetic energy of a novel metal composite for anode catalyst in direct methanol fuel cell. *International Journal of Energy Research*. 39 (2): 181-190.

**Year 2014:**

64. Karim, N.A., Kamarudin, S.K., Shyuan, L.K., Yaakob, Z. & Daud, W.R.W. 2014. Novel cathode catalyst for DMFC: Study of the density of states of oxygen adsorption using density functional theory. *International Journal of Hydrogen Energy* 39 (30): 17295-17305.
65. Hassan, M.A., Kamarudin, S.K., Loh, K.S. & Daud, W.R.W. 2014. Sensors for direct methanol fuel cells. *Renewable and Sustainable Energy Reviews* 40: 1060-1069
66. Zainoodin, A.M., Kamarudin, S.K., Masdar, M.S., Daud, W.R.W. & Mohamad, A.B. 2014. Investigation of MEA degradation in a passive direct methanol fuel cell under different modes of operation. *Applied Energy* 135: 364-372
67. Abdullah, S., Kamarudin, S.K., Hasran, U.A., Masdar, M.S. & Daud, W.R.W. 2014. Modeling and simulation of a direct ethanol fuel cell: An overview. *Journal of Power Sources* 262: 401-406
68. Esmaeili, C., Ghasemi, M., Heng, L.Y., Hassan, S.H.A., Abdi, M.M. & Daud, W.R.W. 2014. Synthesis and application of polypyrrole/carrageenan nano-bio composite as a cathode catalyst in microbial fuel cells. *Carbohydrate Polymers* 114: 253-259.
69. Nasir, N.F., Daud, W.R.W., Kamarudin, S.K. & Yaakob, Z. 2014. Methyl esters selectivity of transesterification reaction with homogenous alkaline catalyst to produce biodiesel in batch, plug flow and continuous stirred tank reactors. *International Journal of Chemical Engineering* Article ID 931264.
70. Toh, S.Y., Loh, K.S., Kamarudin, S.K. & Daud, W.R.W. 2014 Graphene production via electrochemical reduction of graphene oxide: synthesis and characterization. *Chemical Engineering Journal* 251:422-434.
71. Basri, S., Kamarudin, S.K., Daud, W.R.W., Yaakob, Z. & Kadhum, A.A.H. 2014. Novel anode catalyst for direct methanol fuel cells. *The Scientific World Journal* Article ID 547604.
72. Puspasari, I., Talib, M.Z.M., Daud, W.R.W. & Tasirin S.M. 2014. Characteristic drying curve of oil palm fibers. *International Journal on Advanced Science, Engineering and Information Technology* 4(1):35-39.
73. Rohendi, D., Majlan, E.H., Mohamad, A.B., Daud, W.R.W. & Kadhum, A.A. 2014. Effect of PTFE content and sintering temperature on the properties of a fuel cell electrode backing layer. *Journal of Fuel Cell Science and Technology* 11 (4):041003-1-041003-6.
74. Abdullah, S., Kamarudin, S.K., Hasran, U.A., Masdar, M.S., Daud, W.R.W. 2014. Modeling and simulation of a direct ethanol fuel cell: An overview. *Journal of Power Sources* 262:401-406.
75. Shahgaldi, S., Ghasemi, M., Wan Daud, W.R., Yaakob, Z, Sedighi, M., Alam, J. & Ismail, A.F. 2014. Performance enhancement of microbial fuel cell by PVDF/Nafion nanofibre composite proton exchange membrane. *Fuel Processing Technology* 124: 290-295.
76. Wong, W.Y., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Loh, K.S., Majlan, E.H. & Lim, K.L. 2014. The impact of loading and temperature on the oxygen reduction reaction at nitrogen-doped carbon nanotubes in alkaline. *Electrochimica Acta* 129:47-54.
77. Liew, K.B., Daud, W.R.W., Ghasemi, M., Leong, J.X., Lim, S.S. & Ismail, M. 2014. Non-Pt catalyst for oxygen reduction reaction in microbial fuel cells: A review. *International Journal of Hydrogen Energy* 39 (10):4870-4883.
78. Arifin, K., Daud, W.R.W. & Kassim, M.B. 2014. A DFT analyses for molecular structure, electronic state and spectroscopic property of a dithiolene tungsten carbonyl complex. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 124: 375 - 382
79. Zainoodin, A.M., Kamarudin, S.K., Masdar, M.S., Daud, W.R.W., Mohamad, A.B. & Sahari, J. 2014. High power direct methanol fuel cell with a porous carbon nanofiber anode layer. *Applied Energy* 113:946-954
80. Arifin, K., Minggu, L.J., Daud, W.R.W., Yamin, B.M., Daik, R., Kassim, M.B. 2014. Synthesis, structure and theoretical investigation into a homoleptic tris(dithiolene) tungsten. *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy* 120:208-215.
81. Panuh, D., Muchtar, A., Muhamad, N., Majlan, E.H. & Daud, W.R.W. 2014. Fabrication of thin Ag-YSB composite cathode film for intermediate-temperature solid oxide fuel cells. *Composites Part B: Engineering* 58, 193-198

82. Shyuan, L.K., Tan, E.L., Daud, W.R.W. & Mohamad, A.B. 2014. Synthesis and characterization of sulfonated polybenzimidazole (SPBI) copolymer for polymer exchange membrane fuel cell. *Advanced Materials Research* 860:803-806
83. Arifin, K., Daud, W.R.W. & Kassim, M.B. 2014. Novel ruthenium-tungsten bimetallic complex dye-sensitizer for photoelectrochemical cells application. *Sains Malaysiana* 43 (1):95-101.
84. Ghoreishi, K.B., Ghasemi, M., Rahimnejad, M., Yarmo, M.A. & Daud, W.R.W. 2014. Development and application of vanadium oxide/polyaniline composite as a novel cathode catalyst in microbial fuel cell. *International Journal of Energy Research* 38 (1):70-77

**Year 2013:**

85. Nasir, N.F., Daud, W.R.W., Kamarudin, S.K. & Yaakob, Z. 2013. Process system engineering in biodiesel production: A review. *Renewable and Sustainable Energy Reviews* 22: 631–639.
86. Daud, W.R.W. Editorial. 2013. *International Journal of Hydrogen Energy* 38(22): 9360 – 9361.
87. Yun, T.M., Puspasari, I., Tasirin, S.M., Talib, M.Z.M., Daud, W.R.W. & Yaakob, Z. 2013. Drying of oil palm frond particles in a fluidized bed dryer with inert medium (Sūenje čestica lišča uljane palme u sušari sa fluidizovanim slojem u prisustvu inertnih čestica). *Chemical Industry and Chemical Engineering Quarterly* 19(4): 593 – 603
88. Thiam, H.S., Daud, W.R.W., Kamarudin, S.K., Mohamad, A.B., Kadhum, A.A.H., Loh, K.S. & Majlan, E.H. 2013. Performance of direct methanol fuel cell with a palladium-silica nanofibre/Nafion composite membrane. *Energy Conversion and Management* 75:718-726.
89. Leong, J.X., Daud, W.R.W., Ghasemi, M., Liew, K.B. & Ismail, M. 2013. Ion exchange membranes as separators in microbial fuel cells for bioenergy conversion: A comprehensive review. *Renewable and Sustainable Energy Reviews* 28:575–587.
90. Halim, F.A., Hasran, U.A., Masdar, M.S., Kamarudin, S.K. & Daud, W.R.W. 2013. Study on a passive vapour feed direct methanol fuel cell with high methanol concentration. *Journal of Clean Energy Technologies* 1 (4): 292-294.
91. Mokhtarian, N., Ghasemi, M., Daud, W.R.W., Ismail, M., Najafpour, G. & Alam, J. 2013. Improvement of microbial fuel cell performance by using nafion-polyaniline composite membranes as a separator. *J. Fuel Cell Science & Technology* 10(4), 041008 (6 pages).
92. Jafary, T., Rahimnejad, M., Ghoreyshi, A.A., Najafpour, G., Hghparast, F. & Daud, W.R.W. 2013. Assessment of bioelectricity production in microbial fuel cells through series and parallel connections. *Energy Conversion and Management* 75: 256–262.
93. Ghasemi, M., Daud, W.R.W., Ismail, A.F., Jafari, Y., Ismail, M., Mayahi, A. & Othman, J. 2013. Simultaneous wastewater treatment and electricity generation by MFC: performance comparison, cost investigation of using Nafion 117 and SPEEK as separator. *Desalination* 325: 1–6.
94. Ghasemi, M., Daud, W.R.W., Hassan, S.H.A., Oh, S-E., Ismail, M., Rahimnejad, M. & Jahim, J.M. 2013. Nano-structured Carbon as Electrode Material in Microbial Fuel Cells: A Comprehensive Review. *J. Alloys & Compounds* 580: 245–255.
95. Ghasemi, M., Daud, W.R.W., Rahimnejad, M., Rezayi, M., Fatemi, A., Jafari, Y., Somalu, M.R. & Manzour, A. 2013. Copper-phthalocyanine and nickel nanoparticles as novel cathode catalysts in microbial fuel cells. *International Journal of Hydrogen Energy*. 38 (22): 9533-9540.
96. Husaini, T., Majlan, E.H., Yaakob, Z. & Daud, W.R.W. 2013. PTFE-Nafion Membrane Reactor For Hydrogen Production. *International Journal of Hydrogen Energy* 38 (22): 9553–9561.
97. Hakim, L., Yaakob, Z., Ismail, M., Daud, W.R.W. & Sari, R. 2013. Hydrogen production by steam reforming of glycerol over Ni/Ce/Cu hydroxyapatite-supported catalysts. *Chemical Papers* 67 (7): 703-712.
98. Kamaruddin, M.Z.F., Kamarudin, S.K., Daud, W.R.W. & Masdar, M.S. 2013. An overview of fuel management in direct methanol fuel cells. *Renewable and Sustainable Energy Reviews* 24: 557-565

99. Zolfaghari, R., Ahmadun, F., Othman, M.R., Daud, W.R.W. & Ismail, M. 2013. Nonionic surfactant-templated mesoporous carbon as an electrocatalyst support for methanol oxidation. *Materials Chemistry and Physics* 139: 262-269.
100. Puspasari, I., Talib, M.Z.M., Daud, W.R.W. & Tasirin, S.M. 2013. Fluidization characteristics of oil palm frond particles in agitated bed. *Chemical Engineering Research and Design* 91 (3): 497-507.
101. Ghasemi, M., Rahimnejad, M., Esmaeili, C., Daud, W.R.W., Masdar, M.S., Majlan, E.H., Hassan, S.H.A., Alam, J., Ismail, M. & Alhoshan, M.S. 2013. Polysulfone composed of polyaniline nanoparticles as nanocomposite proton exchange membrane in microbial fuel cell. *American Journal of Biochemistry and Biotechnology*, 9 (1), 19-27.
102. Misran, E., Mat Hassan, N.S., Wan Daud, W.R., Majlan, E.H. & Irwan, M.R. 2013. Electrochemical properties of a PEMFC operating with saturated hydrogen and dry air. *International Journal of Hydrogen Energy* 38 (22): 9395-9400.
103. Hasran, U.A., Kamarudin, S.K., Daud, W.R.W., Majlis, B.Y., Mohamad, A.B., Kadhum, A.A.H. & Ahmad, M.M. 2013. Optimization of hot pressing parameters in membrane electrode assembly fabrication by response surface method. *International Journal of Hydrogen Energy* 38 (22): 9484-9493.
104. Wong, W.Y., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Loh, K.S. & Majlan, E.H. 2013. Recent progress in nitrogen-doped carbon and its composites as electrocatalysts for fuel cell applications. *International Journal of Hydrogen Energy* 38: (22) 9370-9386.
105. Wong, W.Y., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Loh, K.S. & Majlan, E.H. 2013. Influence of nitrogen doping on carbon nanotubes towards the structure, composition and oxygen reduction reaction. *International Journal of Hydrogen Energy* 38 (22): 9421-9430.
106. Misran, E., Hassan, N.S.N., Daud, W.R.W., Majlan, E.H. & Rosli, M.I. 2013. Water transport characteristics of a PEM fuel cell at various operating pressures and temperatures. *International Journal of Hydrogen Energy* 38 (22): 9401-9408.
107. Mulyazmi, Daud, W.R.W., Majlan, E.H. & Rosli M.I. 2013. Water balance for the design of a PEM fuel cell system Original Research Article. *International Journal of Hydrogen Energy* 38 (22): 9409-9420.
108. Keshani, S., Daud, W.R.W., Woo, M.W., Nourouzi, M. M., Talib, M.Z.M., Chuah, A.L. & Russly, A.R. 2013. Reducing the deposition of fat and protein covered particles with low energy surfaces. *J. Food Engineering* 116 (3): 737-748.
109. Ghasemi, M., Daud, W.R.W., Mokhtarian, N., Mayahi, A., Ismail, M., Anisi, F. & M. Sedighi, J. 2013. The effect of nitric acid, ethylenediamine, and diethanolamine modified polyaniline nanoparticles anode electrode in a microbial fuel cell. *International Journal of Hydrogen Energy* 38 (22): 9525-9532.
110. Shamsudin, R., Ling, C.S., Adzahan, N.M. & Daud, W.R.W. 2013. Rheological properties of ultraviolet-irradiated and thermally pasteurized yankee pineapple juice. *Journal of Food Engineering* 116 (2): 548-553.
111. Thiam, H.S., Daud, W.R.W., Kamarudin, S.K., Mohamad, A.B., Kadhum, A.A.H., Loh, K.S. & Majlan, E.H. 2013. Nafion/Pd-SiO<sub>2</sub> nanofiber composite membranes for direct methanol fuel cell applications. *International Journal of Hydrogen Energy* 38 (22): 9474-9483.
112. Sari, R., Yaakob, Z., Ismail, M., Daud, W.R.W. & Hakim, L. 2013. Palladium-alumina composite membrane for hydrogen separator fabricated by combined sol-gel, and electroless plating technique *Ceramics International* 39 (3): 3211-3219.
113. Ghasemi, M., Daud, W.R.W., Ismail, M., Rahimnejad, M., Ismail, A.F., Leong, J.X., Miskan, M. & Liew, K.B. 2013. Effect of pre-treatment and biofouling of proton exchange membrane on microbial fuel cell performance. *International Journal of Hydrogen Energy* 38 (13): 5480-5484.
114. Milad, A.M.H., Daud, W.R.W. & Kassim, M.B.. 2013. Carbon doped TiO<sub>2</sub> nanotubes photoanodes prepared by in-situ anodic oxidation of Ti-foil in acidic and organic medium with photocurrent enhancement. *Ceramics International*. 39: 3731-3739.
115. Arifin, K., Daud, W.R.W. & Kassim, M.B. 2012. Optical and photoelectrochemical properties of a TiO<sub>2</sub> thin film doped with a ruthenium-tungsten bimetallic complex. *Ceramics International* 39 (3) , pp. 2699-2707.

116. Kamarudin, M.Z.F., Kamarudin, S.K., Masdar, M.S. & Daud, W.R.W. 2012. Review: Direct ethanol fuel cells. *International Journal of Hydrogen Energy* 38 (22): 9438–9453.
117. Rohendi, D., Majlan, E.H., Mohamad, A.B., Daud, W.R.W., Kadhum, A.A.H. & Loh, K.S. 2013. Characterization of electrodes and performance tests on MEAs with varying platinum content and under various operational conditions. *International Journal of Hydrogen Energy* 38 (22): 9431-9437.
118. Ghasemi, M., Ismail, M., Kamarudin, S.K., Saeedfar, K., Daud, W.R.W., Hassan, S.H.A., Heng, L.Y., (...), & Oh, S.-E. 2013. Carbon nanotube as an alternative cathode support and catalyst for microbial fuel cells. *Applied Energy* 102: 1050-1056.
119. Sadeqzadeh, M., Ghasemi, M., Ghannadzadeh, A., Salamatinia, B., Jafary, T., Daud, W.R.W. & Hassan, S.H.A. 2013. Mass transfer limitation in different anode electrode surface areas on the performance of dual chamber microbial fuel cell. *American Journal of Biochemistry and Biotechnology* 8 (4): 320-325
- Year 2012:**
120. Nasir, N.F., Daud, W.R.W., Kamarudin, S.K. & Yaakob, Z. 2012. Synthesis of reactor networks for methyl ester production. *International Journal of Chemical Engineering and Applications* 3 (6): 421-423.
121. Ismail, A., Kamarudin, S.K., Daud, W.R.W. & Masdar, M.S. 2012. Development of conceptual design model of direct methanol fuel cell for a portable application. *Chemical Engineering Transactions* 29: 349-354.
122. Shahgaldi, S., Yaakob, Z., Khadem, D.J. & Daud, W.R.W. 2012. Characterization and the hydrogen storage capacity of titania-coated electrospun boron nitride Nanofibers. *International Journal of Hydrogen Energy* 37 (15): 11237-11243.
123. Su, L.S., Md. Jahim, J., Shari, S.N., Ismail, M. & Daud, W.R.W. 2012. Development of Microbial Fuel Cell for Palm Oil Mill Effluent Treatment (Pembangunan Sel Fuel Mikrob untuk Rawatan Air Sisa Kilang Sawit). *Sains Malaysiana* 41 (10): 1253-1261.
124. Mokhtarian, N., Daud, W.R.W., Rahimnejad, M. & Najafpour, G.D. 2012. Bioelectricity generation in biological fuel cell with and without mediators. *World Applied Sciences Journal* 18 (4): 559-567.
125. Lim, S.S., Daud, W.R.W., Jahim, J.M., Ghasemia, M., Chong, P.S. & Ismail, M. 2012. Sulfonated poly(ether ether ketone)/poly(ether sulfone) composite membranes as an alternative proton exchange membrane in microbial fuel cells. *International Journal of Hydrogen Energy* 37 (15) : 11409-11424.
126. Chia, S.L., Rosnah, S., Noranizan, M.A. & Daud, W.R.W. 2012. The effect of storage on the quality attributes of ultraviolet-irradiated and thermally pasteurised pineapple juices. *International Food Research Journal* 19 (3): 1001-1010.
127. Anuar, N., Daud, W.R.W., Roberts, K.J., Kamarudin, S.K. & Tasirin, S.M. 2012. Morphology and associated surface chemistry of l-isoleucine crystals modeled under the influence of l-leucine additive molecules. *Crystal Growth and Design* 12 (5): 2195-2203.
128. Hosseini, S., Daud, W.R.W., Badiei, M., Kadhum, A.A.H. & Mohammad, A.B. 2011. Effect of surfactants in synthesis of CsH 2PO 4 as protonic conductive membrane. *Bulletin of Materials Science* 34 (4): 759-765.
129. Yaakob, Z., Khadem, D.J., Shahgaldi, S., Daud, W.R.W. & Tasirin, S.M. 2012. The role of Al and Mg in the hydrogen storage of electrospun ZnO Nanofibers. *International Journal of Hydrogen Energy* 37: 8388-8394.
130. Puspasari, I., Talib, M.Z.M., Daud, W.R.W., & Tasirin, S.M. 2012. Drying kinetics of oil palm frond particles in an agitated fluidized bed dryer. *Drying Technology* 30 (6) : 619-630.
131. Sedighi, M., Ghasemi, M., Hassan, S.H.A., Daud, W.R.W., Ismail, M. & Abdallah, E. 2012. Process optimization of batch biosorption of lead using *Lactobacillus bulgaricus* in an aqueous phase system using response surface methodology. *World J Microbiol Biotechnol* 28 (5): 2047-2055
132. Ghasemi, M., Shahgaldi, S., Ismail, M., Yaakob, Z. & Daud, W.R.W. 2012. New generation of carbon nanocomposite proton exchange membranes in microbial fuel cell systems. *Chemical Engineering Journal* 184: 82-89

133. Woo, M.W., Daud, W.R.W., Mujumdar, A.S. & Chen, X.D. 2012. Highly swirling transient flows in spray dryers and consequent effect on modelling of particle deposition. *Chem. Eng. Res. Des.* 90 (3): 336-345.
134. Keshani, S., Daud, W.R.W., Woo, M.W., Talib, M.Z.M., Chuah, A.L. & Russly, A.R. 2012. Artificial Neural Network modeling of the deposition rate of lactose powder in spray dryers. *Drying Technology* 30: 386-397.
135. Kamal, S.A. Jahim, J.M, Anuar, N., Hassan, O., Daud, W.R.W., Mansor, M.F. & Rashid, S.S. 2012. Pre-treatment effect of palm oil mill effluent (POME) during hydrogen production by a local isolate *Clostridium butyricum*. *International Journal of Advanced Science, Engineering and Information Technology.* 1(4): 54-60.
136. Ahmad, A.L., Ramli, W.K.W., Fernando, W.J.N. & Daud, W.R.W. 2012. Effect of ethanol concentration in water coagulation bath on pore geometry of PVDF membrane for Membrane Gas Absorption application in CO<sub>2</sub> removal. *Separation and Purification Technology* 88 (3) :11-18.
137. Arifin, K., Majlan, E.H., Daud, W.R.W. & Kassim, M.B.. 2012. Bimetallic complexes in artificial photosynthesis for hydrogen production: A Review *International Journal of Hydrogen Energy* 37 (4) :3066-3087.
138. Mokhtarian, N., Rahimnejad, M, Najafpour, G. D., Daud, W.R.W. & Ghoreyshi, A. A. 2012. Effect of different substrate on performance of microbial fuel cell. *African Journal of Biotechnology* 11(14): 3363-3369.
139. Raharjo, J., Muchtar, A., Daud, W.R.W., Muhamad, N. & Majlan, E.H. 2012. Physical and thermal characterisations of SDC-(Li/Na)<sub>2</sub>CO<sub>3</sub> electrolyte ceramic composites | [Pencirian fizikal dan terma komposit seramik elektrolit SDC-(Li/Na) 2CO<sub>3</sub>]. *Sains Malaysiana* 41 (1):. 95-102
140. Panuh, D., Muchtar, A., Muhamad, N. & Daud, W.R.W. 2012. Effect of heat treatment on the microstructure of porous Ag<sub>2</sub>O<sub>3</sub>-Bi<sub>2</sub>O<sub>3</sub> cathode on stainless steel substrates prepared by the slurry painting method | Kesan rawatan haba terhadap mikrostruktur katod berliang Ag<sub>2</sub>O<sub>3</sub>-Bi<sub>2</sub>O<sub>3</sub> di atas substrat keluli kalis karat yang disediakan dengan kaedah pengecatan sluri. *Sains Malaysiana* 41 (1):, pp. 121
141. Wong, W.Y., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Majlan, E.H. & Loh, K.S. 2012. Nitrogen-containing Carbon Nanotubes as Cathodic Catalysts for Proton Exchange Membrane Fuel Cells. *Diamond & Related Materials* 22 (7): 12-22.

#### **Year 2011:**

142. Rosnah, S., Coskan, Daud, W.R.W., Mohd Sobri, T. & Osman, H. 2011. Effect of temperature on the rheological behaviour of 'Josapine' pineapple (*Ananas comosus* L.) pulp. *Acta Horticulturae* 902: 449-452.
143. Hosseini, S., Daud, W.R. W., Badiei, M., Kadhum, A.A.H. & Mohammad, A.B. 2011. Effect of surfactants in synthesis of CsH<sub>2</sub>P<sub>2</sub>O<sub>4</sub> as protonic conductive membrane. *Bulletin of Materials Science* 34 (4): 759-765.
144. Ghasemi, M., Shahgaldi, S., Ismail, M., Byung Hong Kim, Yaakob, Z., Daud, W.R.W. 2011. Activated carbon nanofibers as an alternative cathode catalyst to platinum in a two-chamber microbial fuel cell. *International Journal of Hydrogen Energy* 36 (21): 13746-13752.
145. Hassan, I.N., Yamin, B.M., Daud, W.R.W., Kassim, M.B. 2011. Synthesis, spectral characterization and crystal structural of 1-(2-Morpholinoethyl)-3-(3- phenylacryloyl)thiourea. *International Journal of Physical Sciences* 6 (35) : 7898-7903.
146. Daud, W.R.W., Najafpour, G. and Rahimnejad, M.. 2011. Clean Energy for Tomorrow: Towards Zero Emission and Carbon Free Future: A Review. *Iranica Journal of Energy & Environment* 2 (3): 262-273.
147. Shamsudin, R., Daud, W.R.W., Takriff, M.S. & Hassan, O. 2011. Chemical compositions and thermal properties of the Josapine pineapple fruit (*Ananas Comosus* L.) at different storage systems, *Journal of Food Process Engineering* 34 (5): 1558-1572.

148. Ismail, A., Kamarudin, S.K., Daud, W.R.W., Masdar, S. & Yosfiah, M.R. 2011. Mass and heat transport in direct methanol fuel cells. *Journal of Power Sources* 196 (23): 9547-9855.
149. Ahmad, H., Kamarudin, S.K., Hasran, U.A., Daud, W.R.W. 2011. A novel hybrid Nafion-PBI-ZP membrane for direct methanol fuel cells. *International Journal of Hydrogen Energy* 36 (22), pp. 14668-14677.
150. Shahgaldi, S., Yaakob, Z., Khadem, D.J., Ahmadrezaei, M., Daud, W.R.W. 2011. Synthesis and characterization of cobalt-free Ba<sub>0.5</sub>Sr<sub>0.5</sub>Fe<sub>0.8</sub>Cu<sub>0.2</sub>O<sub>3-δ</sub> perovskite oxide cathode nanofibers. *Journal of Alloys and Compounds* 509 (37): 9005-9009.
151. Nasir, M.F.M., Hassan, I.N., Daud, W.R.W., Yamin, B.M. and Kassim, M. 2011. 1,1-Dibenzyl-3-(4-fluorobenzoyl)thiourea. *Acta Crystallographica Section E* 67 (8): o1987.
152. Hassan, I.N., Daud, W.R.W., Yamin, B.M., Kassim, M.B. 2011. (E)-2-(3-Cinnamoylthioureido)acetic acid dimethyl sulfoxide disolvate. *Acta Crystallographica Section E: Structure Reports Online* 67(10): o2686.
153. Zain, S.M., Hashim, R., Roslani, N.S., Anuar, N., Suja, F., Daud, W.R.W., Basri, N.E.A. 2011. Pencegahan awal komuniti bakteria sel bahan api mikrob dalam air sisa kumbahan. *Sains Malaysiana* 40 (9): 959-964.
154. Zain, S.M., Roslani, N.S., Hashim, R., Anuar, N., Suja, F., Daud, W.R.W. & Basri, N.E.A. 2011. Microbial fuel cells using mixed cultures of wastewater for electricity generation. *Sains Malaysiana*, 40(9):993-997.
155. Basri, S., Kamarudin, S.K., Daud, W.R.W., Hashim, N. 2011. Unsteady state modeling and analysis of a passive liquid-feed DMFC. *Journal of Applied Sciences* 11 (13): 2426-2430
156. Hosseini, S., Daud, W.R.W., Malakbalaa, M.R., Soltani, S.M., Zolfagharej, R. 2011. Overpotentials analysis in solid acid fuel cell using CsH<sub>2</sub>PO<sub>4</sub> as anhydrous membrane. *World Journal of Modelling and Simulation* 7 (2): 123-132.
157. Nasir, M.F.M., Hassan, I.N., Yamin, B.M., Daud, W.R.W. & Kassim, M. 2011. 3-(3-methoxybenzoyl)-1,1-Diphenyl-thiourea. *Acta Crystallographica Section E* 67, o1947–o1948.
158. Nasir, M.F.M., Hassan, I.N., Bohari Yamin, Daud, W.R.W. & Kassim, M. 2011. 1,1-Dibenzyl-3-(3-chlorobenzoyl)thiourea. *Acta Cryst. E* 67: o1742
159. Nasir, M.F.M., Hassan, I.N., Daud, W.R.W., Yamin, B.M., Kassim, M.B. 2011. 2-Bromo-N-(dibenzylcarbamothioyl)-benzamide. *Acta Crystallographica Section E: Structure Reports Online* 67 (5): o1218
160. Dewi, K.H., Markom, M. & Daud, W.R.W. 2011. Parameter estimation in the extraction of sea cucumber (*holothuria scarab J*) as a source of testosterone. *Advanced Materials Research* 233-235: 1358-1365
161. Wong, W.Y., Daud, W.R.W., Mohamad, A.B., Khadum, A.A.H., Loh, K.S., Majlan, E.H. 2011. Density-functional theory of O<sub>2</sub> physical adsorption on sp<sup>3</sup> and sp<sup>2</sup> hybridized nitrogen-doped CNT surfaces for fuel cell electrode. *Advanced Materials Research* 233-235: 17-22
162. Mohamad, A.B., Khadum, A.A.H., Musa, A.Y., Hosseini, S. & Daud, W.R.W, 2011. *Advanced Materials Research* 233-235 : 2299-2304
163. Hasran, U.A., Kamarudin, S.K., Daud, W.R.W., Majlis, B.Y., Mohamad, A.B., Kadhum, A.A.H. 2011. A simple thermal oxidation technique and KOH wet etching process for fuel cell flow field fabrication. *International Journal of Hydrogen Energy* 36(8):5136-5142.
164. Chebbi, R., Daud, W.R.W., Mohamad, A.B. & Kadhum, A.A.H. 2011. Review of Parameters Affecting Performance of (Pt/C) Electrode for Proton Exchange Membrane Fuel Cells (PEMFCs). *Advanced Materials Research*. 233-235: 43-49.
165. Shahgaldi, S., Yaakob, Z., Ghasemi, M., Daud, W.R.W. & Khademe, D.J. 2011. Investigation of the Effect of Electrospun Polyethersulfone Nanofibers in Membrane. *Defect and Diffusion Forum*. 312-315: 607-612.
166. Khadem, D.J., Yaakob, Z., Shahgaldi, S., Ghasemi, M., Daud, W.R.W. 2011. Synthesis and Characterization of PES/TiO<sub>2</sub> Nanofibers Membrane. *Defect and Diffusion Forum*. 312-315: 613-619.

167. Abdullah, A.R.S., Takriff, M.S., Ismail, M., Kalil, M.S., Daud, W.R.W., Mohamad, A.B., Rahman, R.A., Mohammad, A.W., Anuar, N., Abdul Amir Hassan Khadum, Normah Abdullah, Shuhaida Harun, Kamarudin, S.K., Tasirin, S.M., Yaakob, Z., Jahim, J., Noorhisham Tan Kofli, Markom, M., Norliza Abd. Rahman, Rosiah Rohani Reehan, Adne Ab. Rahim, Muhammad Syukri Abd. Rahaman 2011. Analisis keberkesanan projek bersepadu dalam penerapan kemahiran generik Asian Journal of Teaching and Learning in Higher Education 3 (1): 36-49.
168. Shahgaldi, S., Yaakob, Z., Khadem, D.J., Daud, W.R.W. 2011. Synthesize and Evaluation of Electrospun Perovskite ( $Ba_{0.5}Sr_{0.5}Co_{0.2}Fe_{0.8}O_{3-\delta}$ ) Nanofibers for Intermediate Temperature Solid-Oxide Fuel Cell. Applied Mechanics and Materials 52-54: 1544-1550.
169. Khadem, D.J., Yaakob, Z., Shahgaldi, S., Daud, W.R.W., Majlan, E.H. 2011. Effect of Calcinations on Morphology of Electrospun Copper and Copper Oxide Nanofibers. Applied Mechanics and Materials, 52-54, 1884-1889.
170. Kurniawan, M., Daud, W.R.W., Majlan, E.H. 2011. Stress Analysis of Proton Exchange Membrane Fuel Cell. Applied Mechanics and Materials, 52-54: 875-880
171. Raharjo, J., Muchtar, A., Daud, W.R.W., Muhamad, N., Majlan, E.H. 2011, Porous NiO-SDC Carbonates Composite Anode for LT-SOFC Applications Produced by Pressureless Sintering Applied Mechanics and Materials, 52-54: 488-493.
172. Misran Erni, Hassan, N.S.M., Daud, W.R.W., Majlan, E.H., Kurniawan, M. 2011, Operating Temperature Effects on Water Transport Behavior in a Single Cell PEMFC. Applied Mechanics and Materials 52-54: 1153-1158.
173. Milad, A.M., Kassim, M., Daud, W.R.W. 2011. Fabrication of Carbon Doped TiO<sub>2</sub> Nanotubes via In-situ Anodization of Ti-foil in Acidic Medium. World Academy of Science, Engineering and Technology 74: 171-175.
174. Esfandarani, T.M., Minggu, L.J., Daud, W.R.W. & Kassim, M. 2010. Synthesis and characterization of Fe<sub>2</sub>O<sub>3</sub>/SiO<sub>2</sub>/TiO<sub>2</sub> composite thin film on different substrates for water splitting. Journal of New Materials for Electrochemical Systems 13 (4): 333-335
175. Thiam, H.S., Daud, W.R.W., Kamarudin, S.K., Mohammad, A.B., Kadhum, A.A.H., Loh, K.S., Majlan, E.H. 2011 Overview on nanostructured membrane in fuel cell applications International Journal of Hydrogen Energy 36 (4): 3187-3205.
176. Achmad, F., Kamarudin, S.K., Daud, W.R.W., Majlan, E.H. 2011. Passive direct methanol fuel cells for portable electronic devices Applied Energy 88 (5), 1681-1689.
177. Loh, K.S., Mohamad, A.B., Harahap, N., Kadhum, A.A.H., Daud, W.R.W. 2011. Analysis and optimization of operating parameters of a membrane-electrode assembly, Chemical Engineering & Technology Special Issue: Microtechnology in Chemical Engineering 34 (3): 439-444.
178. Yaakob, Z., Hakim, L., Satheesh Kumar, M.N., Ismail, M. & Daud, W.R.W. 2010. Hydroxyapatite supported Nickel catalyst for hydrogen production, American Journal Of Scientific And Industrial Research 1 (2): 122-126.
179. Dedikarni, Muchtar, A., Muhamad, N. & Daud, W.R.W. 2011. Microstructure characterisation Ag<sub>2</sub>O<sub>3</sub>-Bi<sub>2</sub>O<sub>3</sub> composite cathode for intermediate temperature solid oxide fuel cell (IT-SOFC). Key Engineering Materials 471-472: 97-102
180. Raharjo, J., Muchtar, A., Daud, W.R.W., Muhamad, N. & Majlan, E.H. 2011. Fabrication of LSCF-SDC carbonates cathode for solid oxide fuel oxide (SOFC) applications. Key Engineering Materials 471-472: 179-184
181. Khadem, D.J., Yaakob, Z., Shahgaldi, S., Daud, W.R.W. & Majlan, E.H. 2011. Investigation of phase transformation and structure evolution of electrospun copper oxide nanofibers during thermal annealing. Key Engineering Materials Vols. 471-472 (2011) pp 792-797
182. Shahgaldi, S., Yaakob, Z., Khadem, D.J., Daud, W.R.W. & Majlan, E.H. 2011. Doping of palladium in silica nanofibers via electrospinning and sol gel synthesize as hydrogen storage material. Key Engineering Materials. 471-472: 1040-1045.

183. Hakim, L., Yaakob, Z., Ismail, M., Daud, W.R.W. & Majlan, E.H. 2011. Effect of Nickel Composition and preparation method for production of hydrogen via glycerol steam reforming. *Key Engineering Materials* 471-472: 1046-1051.
184. Shahgaldi, S., Yaakob, Z., Khadem, D.J., Daud, W.R.W., Norazrina Mat Jali & Herianto, E.H. 2011. Influence of iron oxide nanoparticles electrospun poly(vinylidene fluoride)-based carbon nanofibers for hydrogen storage. *Key Engineering Materials* 471-472: 1184-1189.
185. Fadhel, M.I., Sopian, K., Daud, W.R.W., Alghoul, M.A. 2011 Review on advanced of solar assisted chemical heat pump dryer for agriculture produce. *Renewable and Sustainable Energy Reviews* 15 (2): 1152-1168.
186. Markom, M., Hasan, M.; Daud, W.R.W.; Anuar, N.; Hassan, O.; Harcharan Singh 2010. Chemical Profiling and Quantification of Tannins in *Phyllanthus niruri* Linn. Fractionated by SFE Method. *Separation Science and Technology*, 46 (1): 71-78.
- Year 2010:**
187. Shahgaldi, S., Z. Yaakob, Sh. Moradi, M. Ghorannevis, Daud, W.R.W., D.J. Khadem and N. Mokhtarian 2010. Effects of sputtering gas and metallic thin film on the growth of carbon nanostructures. *World Applied Sciences Journal* 9 (Special Issue of Carbon Nanotubes ): 08-13.
188. Lim, S.S., Jahim, J.M., Daud, W.R.W., Ismail, M., Anuar, N., Kamarudin, S.K., Shari, S.N. 2010. Optimization of electricity generation and palm oil mill effluent (POME) treatment from microbial fuel cell. *Journal of Applied Sciences* 10 (24): 3355-3360
189. Hashim, N., Kamarudin, S.K., Daud, W.R.W. 2010. Reka bentuk dan pembangunan mikro sel fuel metanol langsung ( $\mu$ sfml ) untuk aplikasi mudah alih. *Sains Malaysiana* 39(6): 1015–1023.
190. Fadhel, M.I., Sopian, K., Daud, W.R.W. 2010 Performance analysis of solar-assisted chemical heat-pump dryer. *Solar Energy* 84 (11): 1920-1928.
191. Muchtar, A., Noorashina A. Hamid, Muhamad, N., Daud, W.R.W.. 2010. Sintering Effects on LSCF Cathodes for Intermediate Temperature Solid Oxide Fuel Cells (IT-SOFCs). *Advanced Materials Research* 139 – 141: 141-144
192. Najafpour, G.D., Rahimnejad, M., Mokhtarian, N., Daud, W.R.W. and Ghoreyshi, A.A. 2010. Bioconversion of whey to electrical energy in a biofuel cell using *Saccharomyces cerevisiae*. *World Applied Sciences Journal* 8:1-5.
193. Basri, S., Kamarudin, S.K., Daud, W.R.W. & Yaakob, Z. 2010 Nanocatalyst for direct methanol fuel cell (DMFC). *International Journal of Hydrogen Energy* 35(15): 7957-7970.
194. Memar, A., Daud, W.R.W., Hosseini, S., Eftekhari, E., Minggu, L.J. 2010. Study on photocurrent of bilayers photoanodes using different combination of  $WO_3$  and  $Fe_2O_3$ . *Solar Energy* 84 (8): 1538-1544.
195. Minggu, L.J., Daud, W.R.W. & Kassim, M.. 2010. An overview of photocells and photoreactors for photoelectrochemical water splitting. *International Journal of Hydrogen Energy* 35 (11): 5233-5244.
196. Zainoodin, A.M., Kamarudin, S.K. & Daud, W.R.W. 2010. Electrode in direct methanol fuel cells. *International Journal of Hydrogen Energy* 35 (10): 4606-4621.
197. Sari, R., Yaakob, Z., Ismail, M. & Daud, W.R.W. 2010. Thin film of palladium on alumina ceramic membrane tube: Effect of combined sol-gel process with electroless plating on deposits morphology. *Key Engineering Materials* 447-448: 700-704.
198. Hakim, L., Yaakob, Z., Ismail, M., Daud, W.R.W.. 2010. Nickel-Hydroxyapatite as Biomaterial Catalysts for Hydrogen Production via Glycerol Steam Reforming. *Key Engineering Materials* 447-448: 770-774
199. Mulyazmi, Daud, W.R.W. & Majlan, E.H. 2010. Design Models of Polymer Electrolyte Membrane Fuel Cell System. *Key Engineering Materials* 447-448: 554-558.
200. Misran, E., Daud, W.R.W. & Majlan, E.H. 2010. Review of serpentine flow field design for PEM fuel cell system. *Key Engineering Materials* 447-448: 559-563.
201. Kurniawan, M., Daud, W.R.W. & Majlan, E.H. 2010. study effect of stress in electrical contact resistance of bipolar plate and membrane electrode assembly in proton exchange fuel cell: A review. *Key Engineering Materials* 447-448: 775-779.

202. Raharjo, J., Muchtar, A., Daud, W.R.W., Muhammad, N. & Majlan, E.H. 2010. Fabrication of dense composite ceramic electrolyte SDC-(Li.Na)<sub>2</sub>CO<sub>3</sub>. *Key Engineering Materials* 447-448: 666-670.
203. Ahmad, M.M., Kamarudin, S.K. & Daud, W.R.W. 2010. Reka Bentuk Optimum Mikro Sel Fuel Metanol Langsung untuk Peralatan Mudah Alih. *Sains Malaysiana* 39(3):467-472.
204. Sari, R., Yaakob, Z., Ismail, M., Daud, W.R.W. 2010. Preparation of palladium-alumina membrane tube by combine sol-gel process with electroless plating for hydrogen permeation. *Journal of Applied Sciences* 10 (12): 1151-1156.
205. Jajaei, S.M., Daud, W.R.W., Markom, M., Zakaria, Z., Lo Presti, M., Costa, R. & Mondello, L. 2010. Extraction of melaleuca cajuputi using supercritical fluid extraction and solvent extraction. *J. Essential Oil Research* 22 (3): 205-210.
206. Basri, S., Kamarudin, S.K., Daud, W.R.W. & Ahmad, M.M. 2010. Non-linear optimization of passive direct methanol fuel cell (DMFC). *International Journal of Hydrogen Energy* 35 (4): 1759 – 1768.
207. Ahmad, M.M., Kamarudin, S.K., Daud, W.R.W. & Yaakob, Z. 2010. High power passive  $\mu$ DMFC with low catalyst loading for small power generation. *Energy Conversion and Management* 51 (4): 821-825.
208. Ahmad, H., Kamarudin, S.K., Hasran, U.A. & Daud, W.R.W. 2010. Overview of hybrid membranes for direct-methanol fuel-cell applications. *International Journal of Hydrogen Energy* 35 (5): 2160-2175
209. Lim, K.L., Kazemian, H. Yaakob, Z. & Daud, W.R.W.. 2010. Solid State Materials and Method for Hydrogen Storage: a Critical Review. *Chem. Eng. Technol.* 33 (2), pp. 213-226.
210. Woo, M.W., Daud, W.R.W., Mujumdar, A.S., Tasirin, S.M. & Talib, M.Z.M. 2010. Role of rheological characteristics in amorphous food particle-wall collisions in spray drying. *Powder Technology* 198 (2): 251-257.
211. Hosseini, S., Mohamad, A.B., Daud, W.R.W. & Kadhum, A.A.H. 2010. Thermal analysis of CsH<sub>2</sub>PO<sub>4</sub> nanoparticles using surfactants CTAB and F-68. *J. Thermal Analysis & Calorimetry* 99 (1): 197-202.
212. Yaakob, Z., Kamarudin, S.K., Daud, W.R.W., Yosfiah, M.R., Lim, K.L. & Kazemian, H. 2010. Hydrogen production by methanol-steam reforming using Ni-Mo-Cu/g-alumina trimetallic. *Asia-Pacific Journal of Chemical Engineering.* 5 (6), pp. 862-868.
- Year 2009:**
213. Wan Ramli Wan Daud. 2009. Hydrogen fuel-cells: the future of clean energy technology. *Science Vision.* 15 (2): 41-47 (published in 2012)
214. Chong, C.H., Law, C.L., Cloke, M., Abdullah, L.C. & Daud, W.R.W. 2009. Kinetics of mass transfer, colour, total polyphenol and texture change of Manilkara Zapota during convective air drying. *ASEAN JChE* 2009, Vol. 1, No. 1, 47 – 59
215. Ibrahim, M., Sopian, K., Daud, W.R.W., Alghoul, M.A., Yahya, M., Sulaiman, M.Y., Zaharim, A. 2009. Solar chemical heat pump drying system for tropical region. *WSEAS Transactions on Environment and Development* 5 (5): 404-413
216. Ibrahim, M., Sopian, K., Daud, W.R.W., Alghoul, M.A., Yahya, M., Sulaiman, M.Y., Zaharim, A. 2009. Solar chemical heat pump drying system for tropical region. *WSEAS Transactions on Environment and Development* 5 (5): 404-413.
217. Basri, S., Kamarudin, S.K. & Daud, W.R.W. 2009. Design and optimization of Direct Methanol Fuel Cell (DMFC). *Chemical Engineering Transactions* 18: 111-116
218. Mohd Zamri Ibrahim, Sopian, K. & Daud, W.R.W. 2009. Experimental performance of PV-Wind-Battery Hybrid System for hydrogen production in tropical climatic condition through water electrolysis: a case study for Terengganu state, Malaysia. *RERIC International Energy Journal.* 10(1):11-18.
219. Ibrahim, M., Sopian, K., Daud, W.R.W. & Alghoul, M.A. 2009. An experimental analysis of solar-assisted chemical heat pump dryer. *International Journal of Low-Carbon Technologies* 4(2):78-83.

220. Rahimnejad, M., Mokhtarian, N., Najafpour, G.D., Daud, W.R.W., & Ghoresyhi, A.A. 2009. Low voltage power generation in a biofuel cell using anaerobic cultures. *World Applied Sciences Journal* 6(11):1585-1588.
221. Chong, C.H., Law, C.L., Cloke, M., Abdullah, L.C., Daud, W.R.W. 2009. Drying models and quality analysis of sun-dried ciku. *Drying Technology* 27 (9): 985-992.
222. Hamid, N.A., Muchtar, A., Daud, W.R.W. & Muhamad, N. 2009. Pencirian Mikrostruktur Katod La-Sr-Co-Fe-O bagi Sel Fuel Oksida Pepejal Bersuhu Sederhana (It-Sofc). *Sains Malaysiana* 38(6): 857–861.
223. Woo, M.W., Daud, W.R.W., Mujumdar, A.S., Wu, Z-H, Talib, M.Z.M. & Tasirin, S.M. 2009. Non-Swirling Steady and Transient Flow Simulations in Short-Form Spray Dryers. *Chemical Product and Process Modeling* 4(1): Article 20.
224. Hashim, N., Kamarudin, S.K. & Daud, W.R.W.. 2009 Design, fabrication and testing of a PMMA-based passive single-cell and a multi-cell stack micro-DMFC. *International Journal of Hydrogen Energy* 34 (19): 8263-8269.
225. Basri, S., Kamarudin, S.K., Daud, W.R.W., Yaakob, Z., Ahmad, M.M., Hashim, N. & Hasran, U.A. 2009 Unsteady-state modelling for a passive liquid-feed DMFC *International Journal of Hydrogen Energy* 34 (14): 5759-5769.
226. Kamarudin, S.K., Achmad, F. & Daud, W.R.W. 2009 Overview on the application of direct methanol fuel cell (DMFC) for portable electronic devices. *International Journal of Hydrogen Energy* 34 (16): 6902-6916.
227. Ibrahim, M., Sopian, K., Daud, W.R.W., Alghoul, M.A., Yahya, M., Sulaiman, M.Y. & Zaharim, A., A. 2009 Solar chemical heat pump drying system for tropical region. *WSEAS Transactions on Environment and Development* 5 (5): 404-413.
228. Anuar, N., Daud, W.R.W., Roberts, K.J., Kamarudin, S.K. & Tasirin, S.M.. 2009. An examination of the solution chemistry, nucleation kinetics, crystal morphology, and polymorphic behavior of aqueous phase batch crystallized L-Isoleucine at the 250 mL scale size. *Crystal Growth & Design* 9 (6): 2853-2862.
229. Nik Suhaimi Mat Hassan, Daud, W.R.W., Sopian, K. & Sahari, J.. 2009. Water management in a single cell pemfc with serpentine flow field. *Journal of Power Sources* 193: 249-257.
230. Yaakob, Z., Jaharah Abd. Ghani, Kamarudin, S.K., Daud, W.R.W. & Lim, K.L. 2009. The effect of catalyst metal loading and temperature on the reduction of carbon monoxide concentration in hydrogen production by steam reforming of methanol (SRM). *European Journal of Scientific Research* 26 (2): 238-246.
231. Shamsudin, R., Daud, W.R.W., Takriff, M.S. & Hassan, O. 2009, Physico-mechanical properties of Josophine pineapple fruit. *Pertanika J. Sci. & Technol.* 17 (1): 117 – 123.
232. Woo, M.W., Daud, W.R.W., Tasirin, S.M. & Talib, M.Z.M. 2009. Controlling food powder deposition in spray dryers: Wall surface energy manipulation as an alternative. *J. Food Eng.* 94: 192–198.
233. Ho, S.L., Kamarudin, S.K., Daud, W.R.W. & Hasran, U.A. 2009. Performance evaluation of a passive small direct methanol fuel cell (DMFC). *Journal of Applied Sciences* 9(7):1324-1330.
234. Majlan, E.H., Daud, W.R.W., Iyuke, S.E. Mohamad, A.B., Kadhum, A.A.H., Mohammad, A.W., Takriff, M.S. & Nurhaswani Bahaman. 2009. Hydrogen purification using compact pressure swing adsorption system for fuel cell. *Intern. J. Hydrogen Energy.* 34(6): 2771-2777.
235. Chebbi, R., Beicha, A., Daud, W.R.W. & Zaamouche, R. 2009 Surface analysis for catalyst layer (PT/PTFE/C) and diffusion layer (PTFE/C) for proton exchange membrane fuel cells systems (PEMFCs). *Applied Surface Science* 255(12): 6367-6371.
236. Sitanggang, R., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H. & Iyuke, S.E. 2009. Fabrication of gas diffusion layer based on x-y robotic spraying technique for proton exchange membrane fuel cell application. *Energy Conversion & Management* 50: 1419–1425.
237. Sopian, K., Ibrahim, M.Z., Daud, W.R.W., Othman, M.Y., Yatim, B. & Amin, N. 2009 Performance of a PV-wind hybrid system for hydrogen production. *Renewable Energy* 34(8): 1973-1978.

238. Kamarudin, S.K., Daud, W.R.W., Yaakob, Z., Misron, Z., Anuar, W. & Yusuf, N.N.A.N. 2009 Synthesis and optimization of future hydrogen energy infrastructure planning in Peninsular Malaysia Intern. J. Hydrogen Energy 34 (5): 2077-2088.
239. Ibrahim, M., Sopian, K. & Daud, W.R.W. 2009. Study of the drying kinetics of lemon grass American Journal of Applied Sciences 6 (6): 1070-1075,
240. Shamsudin, R., Daud, W.R.W., Mohd Sobri Takrif, Hassan, O. & Coskan Ilicali 2009. Rheological properties of Josapine pineapple juice at different stages of maturity. International Journal of Food Science and Technology 44: 757-762
241. Yaakob, Z., Kumar, M.N.S., Ibrahim, M.A., Daud, W.R.W. & Kadhum, A.A.H. 2009. Multi-composition Cu-Zn-Al catalyst supported on ZSM-5 for hydrogen production. European Journal of Scientific Research 28 (1): 141-154.
242. Mahreni, A., Mohamad, A.B. Kadhum, A.A.H., Daud, W.R.W. & Iyuke, S.E. 2009. Nafion/silicon oxide/phosphotungstic acid nanocomposite membrane with enhanced proton conductivity. J. Membrane Science 327 (1-2): 32-40.
243. Hasibuan, R. & Daud, W.R.W.. 2009. Quality changes of superheated steam dried empty fruit bunches fibers. Drying Technology 27(2): 194-200.
244. Batiha, M.A., Kadhum, A.A.H., Mohamad, A.B., Takriff, M.S., Faisal, Z., Daud, W.R.W. & Batiha, M.M. 2009. Modeling the fate and transport of non-volatile organic chemicals in the agro-ecosystem: A case study of Cameron Highlands, Malaysia. Process Safety and Environmental Protection 87 (2): 121-134.
- Year 2008:**
245. Batiha, M.A., Kadhum, A.A.H., Mohamad, A.B., Mohd S. Takriff, Faisal, Z., Daud, W.R.W. and Batiha, M.M. 2008. MAM-An Aquivalence-based Dynamic Mass Balance Model for the Fate of Non-Volatile Organic Chemicals in the Agricultural Environment. American J. of Engineering and Applied Sciences 1 (4): 252-259.
246. Basri, S., Kamarudin, S.K., Daud, W.R.W. & Yaakob, Z. 2008 Development of design advisor tool for direct methanol fuel cell. European Journal of Scientific Research 23 (2): 338-350
247. Raharjo, J., Dedikarni & Daud, W.R.W. 2008. Perkembangan teknologi material pada sel bahan bakar padat suhu operasi menengah. Jurnal Sains Materi Indonesia 10 (1): 28-34.
248. Hamid, N.A., Muchtar, A., Muhamad, N. & Daud, W.R.W. 2008. Microstructure and Electrical Properties of La<sub>1-x</sub>Sr<sub>x</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3-d</sub> Cathodes for IT-SOFC. Indonesian Nanoletter 2 (3): 13-18 ISSN 1907-803X
249. Woo, M.W., Daud, W.R.W., Mujumdar, A.S., Wu, Z.H., Talib, M.Z.M. & Tasirin, S.M. 2008. CFD Evaluation of droplet drying models in a spray dryer fitted with a rotary atomizer. Drying Technology 26(10): 1180 - 1198
250. Daud, W.R.W. 2008. Fluidized bed dryers – recent advances, Advanced Powder Technology. 19(5): 403-418.
251. Sopian, K. & Daud, W.R.W. 2008. Development of the hydrogen energy roadmap and current status on R&D for Malaysia. ISESCO Science & Technology Vision 4 (5): 12-15.
252. Chong, C.H., Law, C.L., Cloke, M., Hii, C.L., Abdullah, L.C. & Daud, W.R.W. 2008. Drying kinetics, texture, colour and determination of effective diffusivities during sun drying of chempedak. Drying Technology 26(10): 1286 – 1293.
253. Woo, M.W., Daud, W.R.W., Mujumdar, A.S., Talib, M.Z.M., Wu, Z.H. & Tasirin, S.M.. 2008. Comparative study of drying models for CFD simulations of spray dryers. Chem. Eng. Res. & Design 86(9): 1038-1048.
254. Law, C.L. & Daud, W.R.W.. 2008. Design of hybrid drying- dedusting unit processor for rough rice processing. International Journal of Food Engineering, 4 (6): Article 8.
255. Woo, M.W., Daud, W.R.W., Tasirin, S.M. & Talib, M.Z.M.. 2008. Amorphous particle deposition and product quality under different conditions in a spray dryer. Particuology 6 (4): 265-270.

256. Chong, C.H., Law, C.L., Cloke, M., Hii, C.L., Abdullah, L.C. & Daud, W.R.W. 2008. Drying kinetics and product quality of dried chempedak. *Journal of Food Engineering*, 88(4): 522-527.
257. Yusri Yusup, Daud, W.R.W., Zaharim, A. & Talib, M.Z.M. 2008. Structure of the atmospheric surface layer over an industrialized equatorial area. *Atmospheric Research*, 90: 70–77.
258. Nordin, M.F.M., Daud, W.R.W., Talib, M.Z.M. & Hassan, O. 2008. Effect of process parameter on quality properties of microwave dried red pitaya (*hylocereus undatus*) *International Journal of Food Engineering* 4 (6): Article 2.
259. Rahman, F.H., Arifin, K., Daud, W.R.W., Daik, R. & Kassim, M.. 2008. Synthesis and characterization of tetraalkylammonium tetrathiotungstate complexes: x-ray crystal structure of tetrapropylammonium tetrathiotungstate  $[(C_3H_7)_4N]_2 WS_4$ . *Sains Malaysiana* 37(2): 195 -199.
260. Rahman, F.H., Arifin, K., Daud, W.R.W., Daik, R. & Kassim, M.. 2008. Synthesis and characterization of tris(1-carboxyl-2-phenyl-1,2-ethylenedithiolenic-S,S') tungsten complex as photocatalyst for photolysis of H<sub>2</sub>O molecules. *Sains Malaysiana* 37(2): 201- 203.
261. Woo, M.W., Daud, W.R.W., Tasirin, S.M. & Talib, M.Z.M. 2008. Effect of wall surface properties at different drying kinetics on the deposition problem in spray drying. *Drying Technology* 26(1): 15-26.
- Year 2007:**
262. Kamarudin, S.K., Daud, W.R.W. & Mohammad, A.W.. 2007. Development of short cut design method for co removal system. *Jurnal Kejuruteraan* 19:63-76.
263. Kamarudin, S.K., Daud, W.R.W., Som, A.M. & Masdar, M.S.. 2007. Conceptual design of 5 kW PEM fuel cell stack. *Jurnal Kejuruteraan* 19:43-53.
264. Alhwaige, A.A., Tasirin, S.M. & Daud, W.R.W. 2007. Experimental study on the mixing of binary polymer particles in different types of mixer. *Journal of Applied Sciences* 7 (15): 2200-2205
265. Law, C.L., Daud, W.R.W. & Abdullah, L.C.. 2007. Design of hybrid heat pump dryer – dehumidifier for drying of agricultural products. *Chemical Engineering Transactions*, 12: 263-274.
266. Rosli, N. R., Daud, W.R.W., Md Jahim, J. & Markom, M. 2007. Supercritical fluid extraction of citronella (*cymbopogon nardus*) essential oil: modelling the effects of varying operating temperature and pressure. *Malaysian Journal of Chemical Engineering* 1:143-152.
267. Shamsudin, R., Daud, W.R.W., Takriff, M. S., & Hassan, O. 2007. Physicochemical properties of the josapine variety of pineapple fruit, *International Journal of Food Engineering* 3(5): Article 9.
268. Woo, M.W., Daud, W.R.W., Tasirin, S.M. & Talib, M.Z.M. 2007. Optimization of the spray drying operating parameters – a quick trial and error method. *Drying Technology*. 25(10): 1741-1747.
269. Daud, W.R.W. 2007. A crossflow model for continuous plug flow fluidised bed crossflow dryers *Drying Technology*. 25 (7-8): 1229-1235.
270. Hasibuan, R. & Daud, W.R.W. 2007. Through drying characteristic of oil palm empty fruit bunches (EFB) fiber using superheated steam. *Asia Pacific Journal Chemical Engineering* 2 (1): 35-40.
271. Daud, W.R.W., Talib, M.Z.M. & Kyi, T.M. 2007. Drying with chemical reaction in cocoa beans, *Drying Technology*. 25(5):877-885.
272. Sopian, K., Supranto, Othman, M.Y., Daud, W.R.W. & Yatim, B. 2007. Double-pass solar collectors with porous media suitable for higher-temperature solar-assisted drying systems. *Journal of Energy Engineering* 133 (1):13-18
273. Batiha, M.A., Kadhum, A.A.H., Faisal, Z., Mohamad, A.B., Daud, W.R.W., Takriff, M.S. & Batiha, M.M. 2007. The Fate of non-volatile organic chemicals in the agricultural environment. *American Journal of Applied Sciences* 2 (7): 456-464.
274. Kamarudin, S.K., Daud, W.R.W., Ho, S.L. & Hasran, U.A.. 2007. Overview on the challenges and developments of micro-direct methanol fuel cells (DMFC). *J. of Power Sources*. 163(2): 743-754.
275. Markom, M., Hasan, M., Daud, W.R.W., Singh, H. & Md Jahim, J. 2007. Extraction of hydrolysable tannins from *phyllanthus niruri* Linn.: Effects of solvents and extraction method. *Separation and Purification Technology* 52: 487–496.

**Year2006:**

276. Daud, W.R.W. 2006. Shortcut design method for reverse osmosis tubular module: the effect of varying transmembrane pressure and concentration polarization. *Desalination* 201: 297–305.
277. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Takriff, M.S. & Mohammad, A.W. 2006. Synthesis and optimization of a PEM fuel cell system via reactor-separation network (RSN). *Journal of Power Sources* 159: 1194–1204.
278. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Takriff, M.S. & Mohammad, A.W. 2006. Technical design and economic evaluation of a PEM fuel cell system. *Journal of Power Sources* 157: 641-649.
279. Othman, M.Y., Sopian, K., Yatim, B. & Daud, W.R.W. 2006. Development of advanced solar assisted drying systems. *Renewable Energy* 31 (5): 703-709.
280. Sopian, K. & Daud, W.R.W. 2006. Challenges and future developments in proton exchange membrane fuel cells. *Renewable Energy* 31 (5): 719-727.

**Year2005:**

281. Kamarudin, S.K., Daud, W.R.W. & Mohammad, A.W. 2005. Hydrogen purification system for pemfc: a mesoporous tubular ceramic membrane and a pressure swing adsorber in series. *Journal of Solid State Science and Technology Letters* 12(1): 139-139.
282. Kamarudin, S.K., Daud, W.R.W. & Som, A.M. 2005. Clean cheap and compact (3c) power generation system for mobile and portable application: PEM fuel cell. *Journal of Solid State Science & Technology (Letters)* 12(1): 151-151
283. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Mohammad, A.W., Takriff, M.S. & Loke, Y.K. 2005. Design of a fuel processor unit for PEM fuel cell via shortcut design method. *Fuel Cell Virtual Journal* 2(12) (penerbitan terpilih- atas talian).
284. Sopian, K., Othman, M.Y., Yatim, B. & Daud, W.R.W. 2005. Future directions in Malaysian environment friendly renewable energy technologies research and development. *ISESCO Science & Technology Vision* 1(1): 30 -36.
285. Ng, P.P., Law, C.L., Tasirin, S.M. & Daud, W.R.W. 2005. Drying characteristics of malaysian paddy: kinetics & grain cracking quality. *Drying Technology* 23 (12): 2477 – 2490.
286. Kyi, T.M., Daud, W.R.W., Mohamad, A.B., Samsudin, M.W., Kadhum, A.A.H. & Talib, M.Z.M. 2005. Kinetics of polyphenol degradation during the drying of malaysian cocoa beans, *Int. J. Food Sci. & Tech.* 40: 323–331.

**Year2004:**

287. Law, C.L., Tasirin, S.M., Daud, W.R.W. & Ng, P.P. 2004. The Effect of vertical internal baffles on fluidization hydrodynamics and grain drying characteristics. *Chinese J. Chemical Engineering.* 12 (6): 801-808.
288. Daud, W.R.W. 2004. A New Short-cut design method for ultrafiltration and hyperfiltration cross-flow hollow fibre membrane modules. *J. Teknologi.* 41(F): 21 - 40.
289. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Takriff, M.S., Mohammad, A.W. & Loke, Y.K. 2004. Design of a fuel processor unit for PEM fuel cell via shortcut design method. *Chem. Eng. J.* 104: 7–17.
290. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Mohammad, A.W., Takriff, M.S. & Masdar, M.S. 2004. The conceptual design of a PEMFC system via simulation. *Chem. Eng. J.* 103: 99-113.
291. Daud, W.R.W. 2004. Rate-based design of non-fouled cross-flow hollow fibre membrane modules for hyperfiltration. *Chem. Eng. Res. & Des.* 82 (8): 993 - 998.
292. Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Chebbi, R. & Iyuke, S.E., 2004. Performance optimisation of PEM fuel cell during MEA fabrication. *Energy Conversion and Management* 45: 3239–3249.
293. Mujumdar, A.S., Law, C.L. & Daud, W.R.W. 2004 Fluidized bed dryers: classification and selection. *Chemical Engineering Digest* April, 71- 83.

294. Daud, W.R.W. 2004. Rate-based design of non-fouled cross-flow hollow fiber membrane modules for ultrafiltration. *Separation Science & Technology* 39 (6): 1221–1238.
295. Turmuzi, M., Daud, W.R.W., Tasirin, S.M., Mohd. Sobri Takriff & Iyuke, S.E. 2004. Production of activated carbon from candlenut shell by CO<sub>2</sub> activation. *Carbon* 42: 453–454.

**Year2003:**

296. Daud, W.R.W. 2003. Kaedah reka bentuk singkat penjerap J. *Jurutera Kimia Malaysia* 3 : 13 – 20.
297. Kamarudin, S.K., Daud, W.R.W., Mohammad, A.W., Som, A.M. & Takriff, M.S. 2003. Design of a tubular ceramic membrane for gas separation in PEMFC system. *Fuel Cells* 3 (3) : 1 - 10.
298. Law, C.L., Tasirin, S.M. & Daud, W.R.W. 2003. A new variable diffusion drying model for the second falling rate period of paddy dried in a rapid bin dryer. *Drying Technology* 21(9), 1703-1722.
299. Law, C.L., Tasirin, S.M., Daud, W.R.W. & Geldart, D. 2003. Effect of vertical baffles on particle mixing and drying in fluidized beds of group D particles. *China Particology* 1 (3): 115 – 118.
300. Iyuke, S.E., Mohamad, A.B., Kadhum, A.A.H., Daud, W.R.W. & Chebbi, R. 2003 Improved membrane and electrode assemblies for proton exchange membrane fuel cells. *Journal of Power Sources* 114 (2): 195-202.

**Year2002:**

301. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Mohammad, A.W., Takriff, M.S. & Iyuke, S.E. 2002. A review on fuel cell as advanced power source, *ASEAN J. Chem. Eng.*, 2(1): 75-86.
302. Al-Khatib, M.F., Iyuke, S.E., Mohamad, A.B., Daud, W.R.W., Kadhum, A.A.H., Shariff, A.M. & Yarmo, M.A. 2002. The effect of impregnation of activated carbon with SnCl<sub>2</sub>.2H<sub>2</sub>O on its porosity, surface composition and CO gas adsorption. *Carbon* 40 (11) : 1929-1936.

**Year2001:**

303. Sarmidi, M.R., Aziz, R., Hussain, M.A. & Daud, W.R.W. 2001. Overview of petrochemical based industries in Malaysia. *ASEAN J. Chem. Eng.* 1 (1) : 7 : 16
304. Iyuke, S. E., Mohamad, A.B. & Daud, W.R.W. 2001. The use of Sn-impregnated activated carbon for the removal of CO in PSA system. *Jurnal Kejuruteraan* 13:115-125.
305. Iyuke, S. E., Daud, W.R.W. & Mohamad, A.B. 2001. Estimation of humidification load from humidifier column by convective heat transfer in water-air-vapour system. *Chemical Engineering Science* 56 (16): 4949-4956.
306. Lwin, Y., Daud, W.R.W., Yaakob, Z. & Mohamad, A.B., 2001. Synthesis & characterization of cu-al layered double hydroxides. *Materials Research Bulletin* 36: 193 - 198.
307. Daud, W.R.W. & Zain, S.M.. 2001. Indegenisation of technology and the challenge of globalization: the case of Malaysia. *MAAS Journal of Islamic Science* 15(1-2):109-134.

**Year2000:**

308. Iyuke, S.E., Mohamad, A.B., Daud, W.R.W., Kadhum, A.A.H., Faisal, Z. & Shariff, A.M.. 2000 Heavy metal uptake from aqueous solution by cork and yohimbe bark wastes. *Journal of Chemical Technology and Biotechnology* 75 (9): 812-816
309. Daud, W.R.W., Myint, S., Mohamad, A.B. & Kadhum, A.A.H. 2000. Prediction of chromatographic separation of eugenol by the fast fourier transform method. *Pertanika J. Sci. & Technol.* 8(2): 217 – 227.
310. Takriff, M.S., Alam, Z., Daud, W.R.W. & Faisal, Z. 2000, Multiphase oscillatory flow in a baffled tube. *Journal of Industrial Technology* 9 (2) : 75-84.
311. Mohamad, A.B., Iyuke, S.E., Daud, W.R.W., Kadhum, A.A.H., Faisal, Z., Al-Khatib, M.F. & Shariff, A.M. 2000. Adsorption of carbon monoxide on activated carbon-tin ligand, *Journal of Molecular Structure* 550 – 551: 511 – 519.
312. Iyuke, S.E., Mohamad, A.B., Daud, W.R.W., Kadhum, A.A.H., Faisal, Z. & Shariff, M.A. 2000 Removal of CO from process gas with Sn-activated carbon in pressure swing adsorption. *Journal Chemical Technology & Biotechnology* 75: 803 - 811.

313. Iyuke, S.E., Mohamad, A.B., Daud, W.R.W., Kadhum, A.A.H., Faisal, Z.&Shariff, M.A. 2000. Application of Sn-activated carbon in pressure swing adsorption for purification of H<sub>2</sub>. *Chemical Engineering Science* 55: 4745 - 4755.
314. Daud, W.R.W., Sarker, M.N.H. & Talib, M.Z.M., 2000. Drying characteristics of Malaysian padi, *PERTANIKA J. of Sci. & Technol.* 8 (1): 105 – 115.
315. Lwin, Y., Daud, W.R.W., Yaakob, Z.&Mohamad, A.B., 2000. Hydrogen production from steam-methanol reforming: thermodynamic analysis. *International Journal of Hydrogen Energy* 25: 47 –53.
316. Lwin, Y., Mohamad, A.B., Yaakob, Z.&Daud, W.R.W.. 2000. XRD and TPR studies of Cu-Al hydrotalcite derived highly dispersed mixed metal oxides. *Reaction Kinetics and Catalysis Letters* 70(2) : 303-310.
317. Kadhum, A.A.H., Daud, W.R.W., Mohamad, A.B., Rasheed, M.H. & Yarmo, M.A. 2000. X-ray photoelectron spectroscopy analysis of Nafion 117 electrolytic membrane. *Sains Malaysiana* 29: 187 – 196.

**Year 1999:**

318. Daud, W.R.W.&Zain, S.M. 1999. Pemelayuan, pemalaysiaan dan pengislaman ilmu sains dan teknologi dalam konteks dasar sains negara. *Kesturi* 9(1):1-32.
319. Supranto, Sopian, K., Daud, W.R.W., Othman, M.Y.&Yatim, B. 1999. Design of an experimental solar assisted dryer for palm oil fronds. *Renewable Energy* 16 (1-4): 643 - 646.
320. Sopian, K., Supranto, Daud, W.R.W., Yatim, B.&Othman, M.Y. 1999. Thermal performance of the double-pass solar collector with and without porous media. *Renewable Energy* 18 (4): 557- 564.

**Year 1997:**

321. Mohamad, A.B., Daud, W.R.W., Kadhum, A.A.H., Messaud, F. & Mohd. Yarmo, M.A. 1997. Characterisation of Aciplex membrane by X-ray photoelectron spectroscopy. *Sains Malaysiana* 26(3 &4): 109-117.
322. Daud, W.R.W., Ibrahim, M.H.&Talib, M.Z.M. 1997. Parameter estimation of Fick's Law drying equation. *Drying Technology* 15 (6-8), 1673 - 1686.
323. Ibrahim, M.H., Daud, W.R.W.&Talib, M.Z.M. 1997. Drying characteristics of oil palm kernels. *Drying Technology* 15(3&4): 1103-1117.
324. Daud, W.R.W., Ibrahim, M.H.&Talib, M.Z.M. 1997. Equilibrium relative humidity-equilibrium moisture content isotherms of oil palm kernel. *PERTANIKA J. of Sci. & Technol.* 5 (1): 1 - 6.

**Year 1996:**

325. Myint, S., Daud, W.R.W., Mohamad, A.B.& Kadhum, A.A.H. 1996. Gas chromatographic analysis of eugenol in alcohol clove extract of cloves. *J. of Chromatography B* 679: 193 - 195.
326. Myint, S., Daud, W.R.W., Mohamad, A.B.& Kadhum, A.A.H. 1996. Temperature-dependent diffusion coefficient of soluble substances during ethanol extraction of clove. *J. Amer. Oil Chemists' Soc.* 73 (5): 603 - 610.
327. Daud, W.R.W., Talib, M.Z.M.&Ibrahim, M.H. 1996. Characteristic drying curves of cocoa beans. *Drying Technology* 14 (10): 2387 - 2396..

**Year 1995:**

328. Kadhum, A.A.H., Daud, W.R.W., Mohamad, A.B.& Zakaria, M.N. 1995. Carbonization process of coconut shell. *Sains Malaysiana* 24 (2):1 - 7.
329. Myint, S., Daud, W.R.W.&Mohamad, A.B. 1995. Determination of optimal conditions for extraction of alcohol-soluble eugenol containing material from cloves. *PERTANIKA J. of Sci. & Technol.* 3(1): 99 - 106.
330. Myint, S., Daud, W.R.W., Mohamad, A.B.& Kadhum, A.A.H. 1995. Separation and identification of eugenol in ethanol extract of cloves by reversed phase high-performance liquid chromatography. *J. Amer. Oil Chemists' Soc.* 72 (10): 1231 - 1233.
331. Talib, M.Z.M., Daud, W.R.W., &Ibrahim, M.H. 1995. Moisture desorption isotherms for cocoa beans. *TRANS. ASAE* 38 (4): 1153 - 1155.

**Year 1993:**

332. Daud, W.R.W. 1993. Sejarah teknologi Melayu pada Zaman Islam. Jurnal SARI 11: 127 - 168.

**Year 1992:**

333. Daud, W.R.W.&Omar, Z. 1992. Numerical simulation of conductive drying. Jurutera Kimia Malaysia 1 (2): 46 - 56.

334. Daud, W.R.W.&Jabar, J. 1992. Data keseimbangan torium and uranium daripada sisa perlombongan timah dalam sistem air-kerosin-TBP berasid. Jurutera Kimia Malaysia 1 (2): 85 - 94.

335. Rahman, R.A., Suwandi, M.S., Yusoff, M.F., Daud, W.R.W., Salihon, J., Faisal, Z., Mohamad, A.B., Abdullah, N. & Mohammad, A.W. 1992. Kemajuan jurutera kimia di Malaysia: Penyelidikan di Jabatan Kejuruteraan Kimia and Proses UKM. Jurutera Kimia Malaysia 1 (2): 1 - 19.

**Year 1991:**

336. Daud, W.R.W. 1991. Thermal dynamics of a drum dryer. Drying Technology 9 (2): 463 - 478.

**Year 1990:**

337. Daud, W.R.W. 1990. Reologi kanji beras tergelatin pada suhu rendah (rheology of gelatinised rice starch). Sains Malaysiana 19 (2): 89 - 97.

338. Daud, W.R.W.& Govindasamy, P. 1990. Proses penghasilan kitin daripada kulit udang (chitin production process from prawn shells). PERTANIKA 13 (2): 229 - 237.

339. Daud, W.R.W., Mohd. Fauzi Yusoff & Rao, D.S.K. 1990. Proses penghasilan bromelin daripada batang nenas (bromelin production process from pineapple stems). PERTANIKA 13 (1) 113 - 121.

**Year 1989:**

340. Daud, W.R.W. 1989. Theoretical simulation on conductive drying of thin films of gel. PERTANIKA 12 (2): 245 - 263.

**Year 1988:**

341. Daud, W.R.W.& Armstrong, W.D. 1988, Residence time distribution of drum dryers. Chemical Engineering Science 43 (9): 2399-2405.

342. Daud, W.R.W.& Armstrong, W.D. 1988. Conductive drying characteristics of gelatinized rice starch. Drying Technology 6 (4):655-674.

**Year 1986:**

343. Daud, W.R.W. 1986. Calendering of non-newtonian fluids. Journal of Applied Polymer Science 31: 2457-2465.

**b. Articles in Proceedings of International Conferences****Tahun 2015:**

1. Rosli, R.E. Sulong, A.B., Daud, W.R.W., Zulkifley, M.A. Rosli, M.I., Haque. M.A. 2015. Overview of high temperature proton exchange membrane fuel cell system. The 5<sup>th</sup> International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur.
2. Jaafar, S.N.H., Minggu, L.J., Ariffin, K., Kassim, M.B. and Daud, W. R.W. 2015. Pitaya peel as a TiO<sub>2</sub> natural dye sensitizer with PEDOT:PSS membrane for photoelectrochemical water splitting. The 5<sup>th</sup> International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur.
3. Wafi, N.I.B., Daud, W.R.W., Majlan, E.H., Somalu, M.R. and Ahmad, A. 2015. Performance of a gel electrolyte of immobilized in Poly (2- hydroxyethyl methacrylate) for battery application. The 5<sup>th</sup> International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur.
4. Ahmad, H., Kamarudin, S.K., Minggu, L.J., Daud, W.R.W., Masdar, M.S. and Hasran U.A. 2015. Enhancing direct methanol fuel cell performance with TiO<sub>2</sub> semiconductor as photocatalyst. The 5<sup>th</sup> International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur.

5. Satar, I., Ghasemi, M., Isahak, W.N.R.W., Daud, W.R.W. and Yarmo, M.A. 2015. Production of hydrogen by *Enterobacter aerogenes* in an immobilized cell reactor. The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur.
6. Ismail, A., Kamarudin, S.K. Daud, W.R.W. Masdar S. and Hasran, U.A. 2015. Conceptual design for a single cell of direct methanol fuel cell, The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur
7. Daud, W.R.W. 2015. Microbial fuel cells: a sustainable emerging fuel cell technology, Keynote Address, The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur.
8. Panuh, D., Masdar, M.S., Zainoodin, A.M., Kamarudin, S.K. and Daud, W.R.W. 2015. Fabrication and testing of a single cell and 6-cell stack: Performance and Stability of Passive Direct Methanol Fuel Cells (DMFCS). The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur
9. Lim, B.H., Majlan, E.H., Daud, W.R.W., Husaini, T. and Rosli, M.I. 2015. Numerical analysis of modified parallel flow field design for fuel cells. The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur
10. Lee, P.H., Loh, K.S., Daud, W.R.W. and Somalu, M.R. 2015. Sulfonated Polybenzimidazole (SPBI) based Membranes via a sol-gel process for Polymer Electrolyte Membrane Fuel Cell (PEMFC) Application. The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur
11. Talib, S.F.A, W Mohamed, W.A.N., Azmi, W.H., Mamat, A.M.I and Daud, W.R.W. 2015. Cooling performance model of a closed cathode PEM fuel cell system using water and SiO<sub>2</sub> nanofluid coolants. The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur
12. Ghasemi, M., Ahmad, A. and Daud, W.R.W. 2015. Impact of microbial fuel cell for simultaneous treatment of cheese whey and energy production. The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur
13. Husaini, T., Asri, N. F., Sulong, A.B., Daud, W.R.W. and Majlan, E.H. 2015. Coating of metal bipolar plates for anticorrosion in PEMFC: A Review. The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur.
14. Toh, S.Y., Loh, K.S., Kamarudin, S.K. and Daud, W.R.W. 2015. Characterization of electrochemically reduced graphene oxides and their activity toward oxygen reduction reaction for fuel cell applications. The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur
15. Soo, L.T., Loh, K.S., Mohamad, A.B. and Daud, W.R.W. 2015. Synthesis of nitrogen-doped reduced graphene oxide using various ratio of melamine and graphene. The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur.
16. Husaini, T., Asri, N. F., Sulong, A.B., Daud, W.R.W. and Majlan, E.H. 2015. Interfacial contact resistance for gold plated titanium and 316l stainless steel bipolar plate. The 5th International Conference on Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015), 1-3 September 2015, Kuala Lumpur.
17. Daud, W.R.W. 2015. Carbon-neutral chemical engineering. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015) 21-22 October 2015, Putrajaya, Malaysia.
18. Almahdi A. Alhwaigea, Ishida, H., Tasirin, S.M., Daud, W.R.W. and Qutubuddin, S. 2015 Nitrogen-rich polybenzoxazine aerogel for CO<sub>2</sub> adsorption. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015) 21-22 October 2015, Putrajaya, Malaysia.
19. Wafi, N.I.B., Daud, W.R.W., Majlan, E.H., Somalu, M.R. and Ahmad, A. 2015 Application of poly (2-hydroxyethyl methacrylate) gel electrolyte in electrochemical device: a review The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015) 21-22 October 2015, Putrajaya, Malaysia

20. Karim, N.A., Kamarudin, S.K., Loh, K.S., Yaakob, Z., Daud, W.R.W. and Khadum, A.A.H. 2015. Non-platinum catalyst for single cell DMFC. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015) 21-22 October 2015, Putrajaya, Malaysia
21. Ismail, A, Kamarudin, S.K., Daud, W.R.W., Masdar, M.S. and Hasran, U.A. 2015. Model development of direct methanol fuel cell for stacking application. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015) 21-22 October 2015, Putrajaya, Malaysia.
22. Daud, S.M., Kim, B.H., Daud, W.R.W., Lim, S.S., Ghasemi, M., Jahim, J.M., Muchtar, A., Somalu, M.R. 2015 Ceramic membrane as a separator comparing with CEM in microbial fuel cell. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015) 21-22 October 2015, Putrajaya, Malaysia
23. Lim, B.H., Majlan, E.H. Daud, W.R.W., Rosli, M.I. and Husaini T. 2015. Effects of flow configuration in a PEMFC stack: A review. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015) 21-22 October 2015, Putrajaya, Malaysia
24. Sulaiman, N., Hannan, M.A., Mohamed, A., Majlan, E.H. and Daud, W.R.W. 2015 Simulation of energy management system for a fuel cell hybrid electric vehicle. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015) 21-22 October 2015, Putrajaya, Malaysia
25. Jafary, T., Daud, W.R.W., Ghasemi, M. and Kim, B.H., Jahim, J. M. and Ismail, M. 2015 A review on biohydrogen production in biocathode microbial electrolysis cell. The 28th Symposium of Malaysian Chemical Engineers (SOMCHE2015) 21-22 October 2015, Putrajaya, Malaysia

**Tahun 2014:**

26. Shu-Hong Lim, Siek-Ting Yong, Chien-Wei Ooi, Siang-Piao Chai, Veena Doshi & Wan Ramli Wan Daud 2014. Pyrolysis of Palm waste for the application of direct carbonfuel cell The 6th International Conference on Applied Energy – ICAE2014, Energy Procedia 61:878 – 881.
27. Jaafar, S.N.H.,Minggu, I.J., Kassim, M. & Daud, W.R.W. 2014. Improvement of photoelectrochemical water splitting with natural dye of Pitaya Peel. 3rd IET International Conference on Clean Energy and Technology 2014 (CEAT2014),24-26 November 2014, Kuching, Sarawak, Malaysia, RS7.
28. Wong, W.Y. & Daud, W.R.W. 2014. Density functional theory study of oxygen reduction mechanism at nitrogen-doped carbon nanotubes for fuel cell applications. Proceedings of The 27th Symposium of Malaysian Chemical Engineers (SOMChE 2014) & 21st Regional Symposium on Chemical Engineering (RSCE 2014)SOMChE & RSCE 2014, 29-30 October 2014, Kuala Lumpur, Vol. 1, RAE058.
29. Majlan, E.H., Daud, W.R.W., Rohendi, D. & Loh, K.S. 2014. Temperature and Backpressure Effects on MEA Degradation in PEMFC, The 20<sup>th</sup> World Hydrogen Energy Conference 2014 (WHEC2014), 15-20 June 2014, Gwangju, Republic of South Korea.
30. Leong, J.X., Daud, W.R.W., Ahmad, A., Ghasemi, M. &Ismail, M. Graphene oxide/SPEEK composite membrane for better performance in microbial fuel cell. The 20<sup>th</sup> World Hydrogen Energy Conference 2014 (WHEC2014), 15-20 June 2014, Gwangju, Republic of South Korea.
31. Liew, K.B., Daud, W.R.W., Ghasemi, M. & Lim, S.S. 2014. Manganese oxide/functionalised carbon nanotubes nanocomposite as catalyst for oxygen reduction reaction in microbial fuel cell, The 20th World Hydrogen Energy Conference 2014 (WHEC2014), 15-20 June 2014, Gwangju, Republic of South Korea.
32. Wong, W.Y., Daud, W.R.W., Mohamad A.B.& Loh K.S. 2014. Effect of temperature on the oxygen reduction reaction at nitrogen-doped carbon nanotubes for fuel cell cathode, The 20th World Hydrogen Energy Conference 2014 (WHEC2014), 15-20 June 2014, Gwangju, Republic of South Korea.
33. Majlan, E.H., Rosli, R.E., Hamid, S.A.A., Rohendi, D., Daud, W.R.W. &Sahari J. 2014. Air-breathing pem fuel cell system for golf cart, European Hydrogen Energy Conference (EHEC-2014),12-14 March 2014, Seville, Spain, P-305.
34. Daud, W.R.W. 2014. Improvement of fuel cells' cost and performance by application of nanotechnology: a review, European Hydrogen Energy Conference (EHEC-2014),12-14 March 2014, Seville, Spain, P-345.

**Year 2013:**

35. Arifin, K., Daud, W.R.W. & Kassim, M.B. 2013. Photoelectrochemical water splitting on titanium dioxide surface: a density functional theory study. The 4th International Conference on Fuel Cell and Hydrogen Technology (ICFCHT2013), 7-10 Oktober 2013, Jogjakarta, Indonesia.
36. Arifin, K., Kadir, H.A., Minggu, L.J., Daud, W.R.W. & Kassim, M.B. 2013. TiO<sub>2</sub> doped with Fe<sub>2</sub>O<sub>3</sub> for photoelectrochemical water splitting electrode: experimental and density functional theory study. The 4th International Conference on Fuel Cell and Hydrogen Technology (ICFCHT2013), 7-10 Oktober 2013, Jogjakarta, Indonesia.
37. Rohendi, D., Daud, W.R.W., Kamarudin, S.K., Mohamad, A.B., Kadhum, A.A.H., Loh, K.S. & Majlan, E.H. 2013. Effects of temperature and backpressure on the performance degradation of MEA in PEMFC. The 4th International Conference on Fuel Cell and Hydrogen Technology (ICFCHT2013), 7-10 Oktober 2013, Jogjakarta, Indonesia.
38. Thiam, H.S., Daud, W.R.W., Kamarudin, S.K., Mohamad, A.B., Kadhum, A.A.H., Loh, K.S. & Majlan, E.H. 2013. Molecular dynamics simulation of proton and methanol diffusion in nafion-based composite membrane. The 4th International Conference on Fuel Cell and Hydrogen Technology (ICFCHT2013), 7-10 Oktober 2013, Jogjakarta, Indonesia.
39. Kamaruddin, M.Z.F., Kamarudin, S.K., Daud, W.R.W. & Masdar, M.S. 2013. Computational fluid dynamics of passive direct methanol fuel cell. The 4th International Conference on Fuel Cell and Hydrogen Technology (ICFCHT2013), 7-10 Oktober 2013, Jogjakarta, Indonesia.
40. Thiam, H.S., Daud, W.R.W., Kamarudin, S.K., Mohamad, A.B., Kadhum, A.A.H., Loh, K.S. & Majlan, E.H. 2013. Optimizing the preparation of composite membrane for DMFC using Taguchi method, The 4th International Conference on Fuel Cell and Hydrogen Technology (ICFCHT2013), 7-10 Oktober 2013, Jogjakarta, Indonesia.
41. Ismail, A., Kamarudin, S.K., Daud, W.R.W., Masdar, M.S., & Hasran, U.A. 2013. Synthesis of cell network for various type of direct methanol fuel cell, 6th International Conference Process System Engineering.
42. Nasharudin, M.N., Kamarudin, S.K., Hasran, U.A., Masdar, S. & Daud, W.R.W. 2013. Development of conceptual design model for membraneless microfluidic methanol fuel cell. The 4th International Conference on Fuel Cell and Hydrogen Technology (ICFCHT2013), 7-10 Oktober 2013, Jogjakarta, Indonesia.
43. Hassan, M.A., Kamarudin, S.K., Daud, W.R.W. & Loh, K.S. 2013. Graphene Oxide/Polypyrrole composite as methanol sensor in DMFC. The 4th International Conference on Fuel Cell and Hydrogen Technology 2013 (ICFCHT2013), 7-10 Oktober 2013, Jogjakarta, Indonesia.
44. Toh, S.Y., Loh, K.S., Daud, W.R.W. & Kamarudin, S.K. 2013. Review on transition metal-doped graphene composites for electrocatalyst in fuel cells. The 4th International Conference on Fuel Cell and Hydrogen Technology (ICFCHT2013), 7-10 Oktober 2013, Jogjakarta, Indonesia.

**Year 2012:**

45. Rosli, R.E., Majlan, E.H., Wan Daud, W.R., Hamid, S.A.A. 2012. Hydrogen rate manipulation of proton exchange membrane fuel cell (PEMFC) stack using feedback control system. IEEE International Conference on Power and Energy (PECon 2012), 2 - 5 December 2012, Kota Kinabalu, Malaysia.
46. Thiam Hui San, Wan Ramli, Wan Daud, Abu Bakar Bin Mohamad, Abdul Amir Hassan, Kadhum, Siti Kartom, Kamarudin, Loh Kee Shyuan & Edy Herianto 2012. Annealing effect of Nafion-based nanofiber composite membrane on proton conductivity and methanol diffusion, 19th World Hydrogen Energy Conference 2012 (WHEC 2012)
47. Thiam Hui San, Wan Ramli, Wan Daud, Abu Bakar Bin Mohamad, Abdul Amir Hassan, Kadhum, Siti Kartom, Kamarudin, Loh Kee Shyuan & Edy Herianto 2012. Palladium-silica nanofiber modified Nafion composite membrane for DMFC application, The 3rd ISESCO International Workshop and Conference on Nanotechnology 2012 (IWCN 2012)

48. A.M.Zainoodin, S.K.Kamarudin & W.R.W.Daud 2012. Passive Direct Methanol Fuel Cell with Carbon-nanofiber Supported Electrode, The 3rd ISESCO International Workshop and Conference on Nanotechnology 2012 (IWCN 2012)
49. U.A. Hasran, S.K. Kamarudin, W.R.W. Daud, B.Y. Majlis, A.B. Mohamad & A.A.H. Kadhum. 2012. Alternative Energy : Direct Methanol Fuel Cell in Focus, International Conference on Engineering and Built Environment (ICEBE 2012)
50. F.A. Halim, U.A. Hasran, M.S. Masdar, S.K. Kamarudin & W.R.W. Daud 2012. Overview on Vapor Feed Direct Methanol Fuel Cell APCBEE Procedia
51. N.M. Aslam, M.S. Masdar, S.K.Kamarudin & W.R.W.Daud.2012. Overview on Direct Formic Acid (DFAFCs) as an Energy APCBEE Procedia
52. Azlina Ismail, Siti Kartom Kamarudin, Wan Ramli W. Daud & Mohd Shahbudin Masdar. 2012. Development of Conceptual Design Model of Direct Methanol Fuel Cell for a Portable Application. Chemical Engineering Transactions.

**Tahun 2011:**

53. Abu Bakar Mohamad, Abdul Amir Hassan Kadhum, AY Musa, Soraya Hosseini & Wan Ramli Wan Daud. 2011. Over-potentials analysis in solid acid fuel cell using CsH<sub>2</sub>PO<sub>4</sub> as anhydrous membran., Proceeding of of International Conference on Chemical Engineering and Advanced Materials, May 28-30, Changsha, China.
54. Asma M. Husin Milad, Mohammad B. Kassim & Wan Ramli Wan Daud. 2011. Fabrication of carbon doped TiO<sub>2</sub> nanotube via in-situ anodization of Ti foil in phosphoric acid/NaF electrolyte, Proceeding of WASET 2011 Winter International Conference.
55. Dariush Jaafar Khadem, Zahira Yaakob, Samaneh Shahgaldi & Wan Ramli Wan Daud. 2011. Investigation of phase transformation and structure evolution of electrospun copper oxide nanofibers during thermal annealing, Proceeding of 1st International Conference on Mechanical Engineering (ICME 2011), 3 – 4 April 2011, Phuket, Thailand.
56. Dedikarni, Andanastuti Muchtar, Norhamidi Muhamad & Wan Ramli Wan Daud. 2011. Microstructure characterisation of Ag<sub>2</sub>O<sub>3</sub>-Bi<sub>2</sub>O<sub>3</sub> composite cathodes for intermediate temperature solid oxide fuel cells (IT-SOFC), Proceeding of Eighth International Conference on Composite Science and Technology, 22-24 March 2011, Malaysia.
57. Jarot Raharjo, Muchtar, A., Daud, W.R.W., Muhamad, N. & Majlan, E.H. 2011. Porous NiO-SDC carbonates composite anode for LT-SOFC applications produced by pressureless sintering. Proceeding of 1st International Conference on Mechanical Engineering (ICME 2011), 3 – 4 April 2011. Phuket, Thailand.
58. Jarot Raharjo, Muchtar, A., Daud, W.R.W., Muhamad, N. & Majlan, E.H. 2011 Fabrication of Porous LSCF-SDC Carbonates Composite Cathode for Solid Oxide Fuel Cell (SOFC) Applications. Proceeding of Eighth International Conference on Composite Science and Technology, 22-24 March 2011, Malaysia
59. Lukman Hakim, Zahira Yaakob, Manal Ismail & Wan Ramli Wan Daud. 2011. Effect of nickel composition & preparation method for production of hydrogen via glycerol steam reforming, Proceeding of Eighth International Conference on Composite Science and Technology, 22-24 March 2011.
60. Rachid Chebbi, W. Ramli. W. Daud, Abu Bakar Mohamad & Abdul Amir H. Kadhum. 2011. Review of parameters affecting performance of (Pt/C) electrode for proton exchange membrane fuel cells (PEMFCs). Proceeding of 2011 International Conference on Chemical Engineering and Advanced Materials, May 28-30, 2011, Changsha, China
61. Samaneh Shahgaldi, Zahira Yaakob, Norazrina Mat Jali, Wan Ramli Wan Daud & Edy Harianto Majlan. 2011. Influence of Iron Oxide Nanoparticles on Electrospun Poly(vinylidene Fluoride)-based carbon nanofibers on Hydrogen Storage. Proceeding of 1st International Conference on Mechanical Engineering (ICME 2011), 3 – 4 April 2011, Phuket, Thailand.

62. Samaneh Shahgaldi, Zahira Yaakob, Dariush Jaafar & Wan Ramli Wan Daud. 2011. Doping of Palladium in Silica Nanofibers via electrospinning and sol gel synthesis as hydrogen storage material, Proceeding of 1st International Conference on Mechanical Engineering (ICME 2011), 3 – 4 April 2011. Phuket, Thailand.
63. Wong Wai Yin, Wan Ramli Wan Daud, Abu Bakar Mohamad, Abdul Amir Hassan Kadhum, Loh Kee Shyuan & Edy Herianto Majlan . 2011. Density-functional theory of O<sub>2</sub> physical adsorption on sp<sup>3</sup> and sp<sup>2</sup> hybridized nitrogen-doped CNT surfaces for fuel cell electrode. Proceeding of International Conference on Chemical Engineering and Advanced Materials, May 28-30, 2011, Changsha, China
64. Asma M. Husin Milad, Wan Ramli Wan Daud, Lorna Jeffery Minggu, Mohammad B. Kassim, Akrajas Ali & Mohammad Hafizuddin Haji Jumali. 2011. Microstructural & Photochemical Properties of GaP-TiO<sub>2</sub> Nanotubes, Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
65. Asma M. Husin Milad, Mohammad B. Kassim & Wan Ramli Wan Daud. 2011. Fabrication of Carbon Doped TiO<sub>2</sub> Nanotubes via in-situ Anodization of Ti foil in Phosphoric Acid/NaF Electrolyte. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
66. Dedi Rohendi, Edy Herianto Majlan, Abu Bakar Mohamad, Wan Ramli Wan Daud, Abdul Amir Hassan Kadhum & Loh Kee Shyuan. 2011. Characterization of electrodes and mea performance test with varies platinum content. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
67. Edy Herianto Majlan, Dedi Rohendi, Abu Bakar Mohamad, Wan Ramli Wan Daud, Abdul Amir Hassan Kadhum & Loh Kee Shyuan. 2011. Effect of PTFE content and sintering temperature on the properties of backing layer. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
68. Erni misran, Nik Suhaimi Mat Hasan, W.R.W. Daud & E.H. Majlan. 2011. Electrochemical properties of a single serpentine PEMFC with saturated hydrogen and dry air. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
69. Jarot Raharjo, A. Muchtar, W.R.W. Daud, N. Muhamad & E.H. Majlan. The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 NOVEMBER 2011, INTERCONTINENTAL HOTEL, KUALA LUMPUR, MALAYSIA. 2011. La<sub>0.6</sub> Sr<sub>0.4</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3</sub>-based cathodes for SDC-carbonate composite electrolyte. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
70. Khuzaimah Arifin, Wan Ramli Wan Daud & Mohammad B. Kassim. 2011. A Novel Heterobinuclear Complex based on Ruthenium-tungsten Metals in Artificial Photosynthesis Technology. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
71. Loh, K.S., Wong, W.Y., Daud, W.R.W., Muhamad, A.B., Khadum, A.A.H. & Majlan, E.H. 2011. Nitrogen-doped carbon and its composites as electrocatalysts for fuel cell application: Review. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
72. Loh Kee Shyuan, Wong Wai Yin, Wan Ramli Wan Daud, Abu Bakar Mohamad, Abdul Amir Hassan Kadhum & Edy Herianto Majlan. 2011. Synthesis of electrochemically active nitrogen doped carbon nanotubes from iron(II) phthalocyanine. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
73. Lim Swee Su, Chong Poh She, Jamaliah Md Jahim & Wan Ramli Wan Daud. 2011. Biofouling effect on sulfonated poly(ether ether ketone)/poly(ether sulfone) composite membrane in microbial fuel cell, Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), , 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.

74. Hakim, L., Yaakob, Z., Ismail, M. & Daud, W.R.W. 2011. Hydrogen production by steam reforming of glycerol over Ni/Ce/Cu hydroxyapatite supported catalysts. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), ), 22 - 23 November 2011, Intercontinental Hotel, Kuala Lumpur, Malaysia.
75. Manal Ismail, Mostafa Gasemi, Wan Ramli Wan Daud, Lee Yoke Heng & Siti Kartom Kamarudin. 2011. Copper-phthalocyanine and nickel nanoparticles as novel cathode catalyst in microbial fuel cells. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia..
76. Mulyazmi, W.R.W. Daud & E.H. Majlan. 2011. Simulation of water balance in PEM fuel cell system that uses external humidifier. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia.
77. Mojgan Ahmadsaei, Muchtar, A., Daud, W.R.W., Muhamad, N. & Tan E.Y.. 2011. Characteristic and electrochemical performance of Ba<sub>0.2</sub>Sr<sub>0.8</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3</sub>- Cathode materials for intermediate temperature solid oxide fuel cells. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia.
78. Norazrina Mat Jali, Yaakob, Z., Samaneh, S. & Daud, W.R.W. 2011. Syntheses and characterization of nickel oxide and iron oxide doped carbon nanofibers via electrospun PVDF nanofibers. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia.
79. Syafawati Ahmad Kamal, Jamaliah Md Jahim, Nurina Anuar, Osman Hassan, Wan Ramli Wan Daud, & Shah Samiur Rashid. 2011. Effect of total carbohydrate concentration on hydrogen production from palm oil mill effluent (POME). Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia
80. Siti Rahmah Mokhtaruddin, Abu Bakar Mohamad, Abdul Amir Hassan Kadhum, Loh Kee Shyuan, Mahreni Akhmad & Wan Ramli Wan Daud. 2011. Thermal stability of nafion membrane and nafion-ZrO<sub>2</sub> composite membrane. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia.
81. Samaneh, S., Yaakob, Z., Khadem, D.J. & Daud, W.R.W. 2011. Palladium-doped titania nanofibers for hydrogen storage. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia.
82. Thiam Hui San, Wan Ramli Wan Daud, Siti Kartom Kamarudin, Abu Bakar Mohamad, Abdul Amir Hassan Kadhum, Loh Kee Shyuan & Edy Herianto Majlan. 2011. Nafion/Pd-SiO<sub>2</sub> nanofibers composite membrane with improved selectivity for DMFC application. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia.
83. U.A. Hasran, S.K. Kamarudin, W.R.W. Daud, B.Y. Majlis, A.B. Mohamad & A.A.H. Khadum. 2011. Optimization of the membrane electrode assembly (MEA) fabrication factors by design of experiment (DOE) method. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia.
84. Wong Wai Yin, Wan Ramli Wan Daud, Abu Bakar Mohamad, Abdul Amir Hassan Kadhum, Loh Kee Shyuan & Edy Herianto Majlan. 2011. Nitrogen-doped carbon and its composites as electrocatalysts for fuel cell applications: Review. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia.
85. W.R.W. Daud, Mostafa Gasem, Nader. M, Manal Ismail, S.K. Kamarudin & Ghasem. N. 2011 The effect of nitric acid, ethylenediamine, and diethanolamine modified polyaniline nanoparticle anode electrode in a microbial fuel cell system. Proceeding of The 3rd International Conference on Fuel Cell & Hydrogen Technology (ICFCHT 2011), 22 - 23 November 2011, InterContinental Hotel, Kuala Lumpur, Malaysia.
86. Daud, W.R.W., Ghasemi, M., Chong, P.S., Jahim, J.Md., Lim, S.S. & Ismail, M. 2011. SPEEK/PES composite membranes as an alternative for proton exchange membrane in microbial fuel cell (MFC).

2011 IEEE 1st Conference on Clean Energy and Technology, CET 2011, 2011, Article number 6041505, Pages 400-40.

87. Wan Ramli Wan Daud, Lorna Jeffery Minggu & Mohammad B. Kassim 2011. Solar hydrogen production from direct photoelectrochemical cells (PEC) water splitting. Proc. 4th World Hydrogen Technologies Convention, 2011, Glasgow, U.K., Paper ID: 0136.
88. Mohammad Hafizuddin Haji Jumali, Asma M. Husin Milad, Wan Ramli Wan Daud, Lorna Jeffery Minggu, Akrajas Ali Umar & Mohammad B. Kassim. 2011. Enhancement of TiO<sub>2</sub> Nanotubes Photoactivity by Inclusion of GaP Nanoparticles. The International Conference for Nanomaterials Synthesis and Characterization 2011(INSC 2011). 4-5 July 2011, Seri Kembangan, Malaysia, ms. 91/P52-022.
89. Asma M. Husin Milad, Aisha A. Al-abbasi, Mohammad B. Kassim & Wan Ramli Wan Daud. 2011. Fabrication and Photoactivity Study of Titania Nanotube with Oxovanadium(IV) Complex in a Photoelectrochemical Cell with an Aqueous Electrolyte. First EuCheMS Inorganic Chemistry Conference.2011.11-14 April 2011, Manchester, United Kingdom, EP\_P07.
90. Wong Wai Yin, Wan Ramli Wan Daud, Abu Bakar Mohamad, Abdul Amir Hassan Kadhum, Edy Herianto Majlan & Loh Kee Shyuan. 2011. Direct Synthesis of Nitrogen-containing Carbon Nanotubes on Carbon Paper for Fuel Cell Electrode, 2nd ASEAN-APCTP Workshop On Advanced Materials Science & Nanotechnology, 21-23 December 2010. Flamingo Hotel Penang. (accepted for publication under AIP conference proceeding - pg no. unknown)

**Year 2010:**

91. Daud, W.R.W.. 2010. Hydrogen fuel cells: the ultimate clean energy technology. Keynote Paper. Proc. The 17<sup>th</sup> Regional Symposium of Chemical Engineers (RSCE2010), 22-23 November 2010, Bangkok, Thailand, p. 49-56.
92. Woo, M.W., Che, L.M., Daud, W.R.W., Mujumdar, A.S. & Chen X.D. 2010. Particle deposition criterion in cfd modelling of spray dryers, Proc.The 17th International Drying Symposium (IDS 2010), 3-6 October 2010, Magdeburg, Germany, p. 172-178.
93. Milad, A.M.H., Kassim, M.&Daud, W.R.W.Fabrication of Carbon Doped TiO<sub>2</sub> Nanotube by 'In-situ' Anodic Oxidation Technique, 2nd International Conference on the Advancement of Materials and Nanotechnology (II-ICAMN) , 29 Nov.- 1 Dec, 2010. Prince Hotel and Residence, Kuala Lumpur.
94. Basri, S., Kamarudin, S.K.. 2010. Nanocatalyst Development for Direct Methanol Fuel Cell (DMFC). International Conference on the Advancement of Materials and Nanotechnology" (ICAMN II 2010), 29 November – 1 Disember 2010, Prince Hotel & Residence Kuala Lumpur, Malaysia.
95. Basri, S., Kamarudin, S.K.. 2010.Study on Multi Walled Carbon Nanotube (MWCNT) Preparation for Platinum Metal Based Nanocatalyst. 2nd ASEAN-APCTP Workshop on Advanced Materials Science and Nanotechnology(AMSN-2010), 21st- 23rd December 2010, Flamingo Hotel, Penang.
96. Thiam, H.S., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Kamarudin, S.K., Loh, K.S.&Majlan, E.H.. 2010. Synthesis of Palladium-doped Silica Nanofibers by Sol-gel Reaction and Electrospinning Process.'2nd ASEAN-APCTP Workshop on Advanced Materials Science and Nanotechnology(AMSN-2010), 21st- 23rd December 2010, Flamingo Hotel, Penang.
97. Kassim, M., Arifin, K.&Daud, W.R.W. 2010. Modelling of Tris(ditheolenes) Complex Energies and Structures as a Sensitizer In Photoelectrochemical CellThe 5th Asian Conference on Electrochemical Power Sources (ACEPS 2010), 17-20 September 2010, National University of Singapore.
98. Basri, S., Kamarudin, S.K., Daud, W.R.W.&Yaakob, Z.. 2010. DFT Analysis for Nanocatalyst Direct Methanol Fuel Cell. The 5th Asian Conference on Electrochemical Power Sources (ACEPS 2010), 17-20 September 2010, National University of Singapore.
99. Kadir, H.A., Kassim, M., Daud, W.R.W.&Minggu, L.J.. 2010. Review: NanoStructured TiO<sub>2</sub> Thin Films as Photoelectrode for Photoelectrochemical Cell . 5th Asian Conferences on Electrochemical Power Sources, 17-20 September 2010, National University of Singapore.

100. Kadir, H.A., Kassim, M., Daud, W.R.W.&Minggu, L.J.. 2010. Characterization of Iron Oxide doped Ga for photoelectrochemical water splitting.16th Malaysian Chemical Conference, 12-14 October 2010, PWTC, K.L
101. Hakim, L., Yaakob, Z., Ismail, M., Daud, W.R.W.. 2010. Nickel-Hydroxyapatite as Biomaterial Catalysts for Hydrogen Production via Glycerol Steam Reforming. International Conference on Precision Engineering (ICoPE2010 & 13<sup>th</sup> ICPE), Singapore, 29-30 July 2010
102. Sari, R., Yaakob, Z., Ismail, M.&Daud, W.R.W. 2010. Thin film of palladium on alumina ceramic membrane tube: Effect of combined sol-gel process with electroless plating on deposits morphology. International Conference on Precision Engineering (ICoPE2010 & 13<sup>th</sup> ICPE), Singapore, 29-30 July 2010.
103. Mulyazmi, Daud, W.R.W.&Majlan, E.H. 2010. Design Models of Polymer Electrolyte Membrane Fuel Cell System. International Conference on Precision Engineering (ICoPE2010 & 13<sup>th</sup> ICPE), Singapore, 29-30 July 2010..
104. Misran, E., Daud, W.R.W.&Majlan, E.H. 2010. Review of serpentine flow field design for PEM fuel cell system. International Conference on Precision Engineering (ICoPE2010 & 13<sup>th</sup> ICPE), Singapore, 29-30 July 2010..
105. Kurniawan, M., Daud, W.R.W.&Majlan, E.H. 2010. study effect of stress in electrical contact resistance of bipolar plate and membrane electrode assembly in proton exchange fuel cell: A review. International Conference on Precision Engineering (ICoPE2010 & 13<sup>th</sup> ICPE), Singapore, 29-30 July 2010.:
106. Raharjo, J., Muchtar, A., Daud, W.R.W., Muhammad, N.&Majlan, E.H. 2010. Fabrication of dense composite ceramic electrolyte SDC-(Li.Na)<sub>2</sub>CO<sub>3</sub>. International Conference on Precision Engineering (ICoPE2010 & 13<sup>th</sup> ICPE), Singapore, 29-30 July 2010.
107. Shahgaldi, S., Yaakob, Z.,Ghasemi, M. , Daud, W.R.W., Khadem, D.J., 2010, Investigation of the Effect of Electrospun Poly Ether Sulfone Nanofibers in Membrane .DSL 2010 July 5-7. Publishing in defect and diffusion journals. France
108. Dedikarni., Muchtar, A., Muhamad, N., Daud, W.R.W., 2010. Electrophoretic deposition and thermal treatment of bismuth oxide thin film on Ag<sub>2</sub>O<sub>3</sub>-Bi<sub>2</sub>O<sub>3</sub> composite cathode. International Conference on Process Engineering and Advanced Materials 2010 & 24<sup>th</sup> Symposium of Malaysian Chemical Engineers (ICPEAM2010 & SOMChe 2010). Malaysia 15-17 Jun 2010.
109. Misran, E., Daud, W.R.W., Majlan, E.H.. 2010. Review: Channel Dimension, Shape and Configuration of Serpentine Design for PEMFC Operation. 1st International Conference on Process Engineering and Advanced Materials / 24<sup>th</sup> Symposium of Malaysian Chemical Engineers (ICPEAM/SOMChe), KLCC, 15-17 June 2010
110. Mulyazmi, Daud, W.R.W., Majlan, E.H.. Water Management with External Humidifier for Performance PEMFC system : a Review. International Conference on Precision Engineering and Advance Material (ICPEAM) & 24<sup>th</sup> SOMCHE 2010. ISBN 978-983-2271-03-1, pp.76. Malaysia,15-17 Jun 2010.
111. Shahgaldi, S., Yaakob, Z., Daud, W.R.W. , Khadem, D.J. . 2010, IESCO International conference and workshop on Nanotechnology (IWCN 2010), p31, Investigation of hydrogen storage on electrospun nanofibers with different polymer. 25-27 jan 2010. Malaysia.

**Year 2009:**

112. Arifin, K., Minggu, L.J., Daud, W.R.W., Bohari, M.Y. &Kassim, M. 2009. Structural geometry and electronic properties of Tris{1,2-Bis(3,5-dimethoxyphenyl)-1,2-ethylenedithiolenic-S,S'}tungsten. The Fourth Asian Pacific Conference of Theoretical and Computational Chemistry (APCTCC-4), 21-23 December 2009, Port Dickson, Malaysia.
113. Eftekhari, E., Minggu, L.J., Daud, W.R.W.&Kassim, M. 2009. Review of WO<sub>3</sub> thin film preparation for photoelectrochemical water splitting. International Advanced Technology Congress (ATCi), 3-5 November 2009, Kuala Lumpur, Malaysia.

114. Talebi, M., Minggu, L.J., Daud, W.R.W.&Kassim, M. 2009. Synthesis and characterization of photoelectrode based on TiO<sub>2</sub> and mixture with Fe<sub>2</sub>O<sub>3</sub> and SiO<sub>2</sub>. International Advanced Technology Conmgress (ATCi), 3-5 Novemnber 2009, Kuala Lumpur, Malaysia.
115. Memar, A., Minggu, L.J., Daud, W.R.W.&Kassim, M. 2009. Review of iron oxide for photoelectrode application in water splitting. International Advanced Technology Conmgress (ATCi), 3-5 Novemnber 2009, Kuala Lumpur, Malaysia.
116. Arifin, K., Minggu, L.J., Daik, R., Daud, W.R.W.&Kassim, M. 2009. Tris(dithiolene) tunstate as dye sensitizers for photocatalytic applications. International Conference on Science & Technology. 24 January 2009, Yogyakarta, Indonesia
117. Daud, W.R.W. 2009. Recent Fuel Cell R&D in Malaysia. Proceedings of The 2nd International Conference on Fuel; Cell and Hydrogen Technology, 28 -29 October 2009, Center of Material Technology, Agency for the Assessment and Application of Technology, Jakarta, Indonesia.
118. Misran, E., Daud, W.R.W.&Majlan, E.H.. 2009. Water management strategies for PEM fuel cell system operation: A review. Proceeding The 2nd International Conference on Fuel; Cell and Hydrogen Technology, 28 -29 October 2009, Center of Material Technology, Agency for the Assessment and Application of Technology (BPPT), Jakarta, Indonesia.
119. Mulyazmi, Daud, W.R.W.&Majlan, E.H.. 2009. Operating conditions for thr concept design of PEM fuel cell system. Proceeding The 2nd International Conference on Fuel; Cell and Hydrogen Technology, 28 - 29 October 2009, Center of Material Technology, Agency for the Assessment and Application of Technology (BPPT), Jakarta, Indonesia.
120. Hakim, L., Yaakob, Z., Ismail, M., Daud, W.R.W.&Kazemian, H. 2009. Hydrogen production from glycerol by steam reforming over nickel catalyst supported by hydroxyapatite. Proceeding The 2nd International Conference on Fuel; Cell and Hydrogen Technology, 28 -29 October 2009, Center of Material Technology, Agency for the Assessment and Application of Technology (BPPT), Jakarta, Indonesia.
121. Sari, R., Yaakob, Z., Ismail, M., Daud, W.R.W.&Kazemian, H. 2009. Hydrogen permeation of palladium coating film on alumina membrane ceramic tube. Proceeding The 2nd International Conference on Fuel; Cell and Hydrogen Technology, 28 -29 October 2009, Center of Material Technology, Agency for the Assessment and Application of Technology (BPPT), Jakarta, Indonesia.
122. Raharjo, J., Daud, W.R.W., Muhamad, N., Muchtar, A.&Majlan, E.H.. 2009. Microstructure characteristics of SDC-carbonate composite electrolyte produced by solgel for LT-SOFC application. Proceeding of the International Conference on Fuel Cell and Hydrogen Technology. The Agency for Assessment and Application of Technology (BPPT). 28-29 Oktober 2009. Jakarta, Indonesia.
123. Dedikarni, Muchtar, A., Muhamad, N., &Daud, W.R.W.. 2009. Microstructure and characterisation of  $\delta$ -Bi<sub>2</sub>O<sub>3</sub> Thin film electrolyte on electrodes by electrophoretic deposition method. Proceeding of the Regional Engineering Postgraduate Conference. 20-21 oktober 2009. Palm Garden Hotel, Putrajaya.
124. Raharjo, J., Daud, W.R.W., Muhamad, N., Muchtar, A.&Majlan, E.H.. 2009. The influence of carbonate content to the characteristics of SDC-carbonate composite electrolytes for low temperature solid oxide fuel cells. Proceeding of the Regional Engineering Postgraduate Conference. 20-21 Oktober 2009. Palm Garden Hotel. Putrajaya.
125. Sastaviana, N., Muchtar, A., Daud, W.R.W.&Muhamad, N.. 2009. Synthesis and microstructure characterisation of NiO-SDC composite powders. Proceeding of the Regional Engineering Postgraduate Conference. 20-21 Oktober 2009. Palm Garden Hotel. Putrajaya.
126. Muchtar, A., Hamid, N.A., Muhamad, N.&Daud, W.R.W. 2009. Development La<sub>1-x</sub>Sr<sub>x</sub>Co<sub>0.8</sub>Fe<sub>0.8</sub>O<sub>3</sub> (LSCF) cathodes for intermediate temperature solid oxide fuel cells (IT-SOFCs). International

- Conference on Natural and Mineral Sciences (NAMES09). 3-4 Julai 2009. Kalimantan Selatan, Indonesia.
127. Muchtar, A., Raharjo, J., Muhamad, N., Majlan, E.H.&Daud, W.R.W.. 2009. Characterisation of SDC-carbonate composite electrolyte for low temperature solid oxide fuel cell. Proceeding of the International Conference on Sustainable Energy. ISBN 978-979-19992-0-5. 16-17 Jun 2009. Bandung Institute of Technology. Bandung. Indonesia.
  128. Raharjo, J., Muchtar, A., Muhamad, N., Daud, W.R.W.&Majlan, E.H.. 2009. Microstructure characterisation of SDC-carbonate composite electrolytes produced by solid state method. Proceedings of 4th International Conference on Recent Advances in Materials, Minerals Environment and 2nd Asian Symposium on Material and Processing. ISBN 978-983-3986-57-6. 1-3 Jun 2009. Penang. Malaysia.
  129. Dedikarni, Muchtar, A., Muhamad, N.&Daud, W.R.W.. 2009.  $\delta$ -Bi<sub>2</sub>O<sub>3</sub> thin film coating on gilded gold substrate by Electrophoretic Deposition Method (EPD). Proceeding of the 4th International Conference on Recent Advances in Materials, Minerals and Environment and 2nd Asian Symposium on Material and Processing (RAMM & ASMP 2009). ISBN 978-983-3986-56-9. 1-3 Jun 2009. Penang, Malaysia.
  130. Sastaviana, N., Muchtar, A., Daud, W.R.W.&Muhamad, N.. 2009. Material development in intermediate temperature solid oxide fuel cells (IT-SOFC): Review. Proceeding of the 4th International Conference on Recent Advances in Materials, Minerals and Environment and 2nd Asian Symposium on Material and Processing (RAMM & ASMP 2009). ISBN 978-983-3986-56-9. 1-3 Jun 2009. Penang, Malaysia.
  131. Majlan, E.H.&Daud, W.R.W. 2009. Teknologi Fuel Cell: Harapan dalam Menyongsong Krisis Energi Global. Prosiding Seminar Nasional Teknik Kimia 2009. Departemen Teknik Kimia USU. 14 Ogos 2009, Medan, Indonesia.
  132. Misran, E., Daud, W.R.W.&Majlan, E.H.. 2009. Review pengoperasian PEM fuel cell tanpa subsistem pelembapan eksternal. Prosiding Seminar Nasional Teknik Kimia 2009. Departemen Teknik Kimia USU. 14 Ogos 2009, Medan, Indonesia.
  133. Majlan, E.H., Daud, W.R.W., Sunny E. Iyuke, Mohamad, A.B.,Kadhun, A.A.H., Mohammad, A.W., Takriff, M.S.& Nurhaswani Bahaman. 2009. Adsorption of carbon monoxide using a compact pressure swing adsorption system for hydrogen purification. The International Workshop on Advanced Material for New and Renewable Energy, 9-12 Jun 2009, Jakarta, Indonesia.
  134. Lim, S.S., Daud, W.R.W., Md Jahim, J., Ismail, M., Kamarudin, S.K.&Shari, S.N.. 2009. Electricity generation in microbial fuel cell by local isolate of Clostridium butyricum from palm oil mill effluent. 2nd Microbial Fuel Cell Symposium, 10 – 12 June 2009. Gwangju, Korea.
  135. Basri, S., Kamarudin, S.K., Daud, W.R.W. 2009. Design and Optimization Of Direct Methanol Fuel Cell (DMFC). The 12th Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction (PRES09), 10-13 May 2009, Rome, Italy, Paper P16.
  136. M.F.M. Nordin, Daud, W.R.W., Y. Gariépy, Talib, M.Z.M.& G.S.V. Raghavan 2009. Combined microwave and vacuum drying of red pitaya slices. Proceedings of the 6th Asia-Pacific Drying Conference, (ADC2009), October 19-21, 2009, Bangkok, Thailand, pp. 288-294.
  137. Chong, C.H., Law, C.L., Daud, W.R.W., Abdullah, L.C. 2009. Drying kinetics and product quality of artocarpus integer in hybrid dehumidifier-dryer. Proceedings of the 6th Asia-Pacific Drying Conference, (ADC2009), October 19-21, 2009, Bangkok, Thailand, pp. 420-429.
  138. Woo, M.W., Daud, W.R.W., Mujumdar, A.S., Wu, Z., Talib, M.Z.M., Tasirin, S.M.. 2009. Flow stability in short form spray dryers. Proceedings of the 6th Asia-Pacific Drying Conference, (ADC2009), October 19-21, 2009, Bangkok, Thailand, pp. 614-623.

139. Puspasari, I., Talib, M.Z.M., Daud, W.R.W.&Tasirin, S.M. 2009. Mathematical modeling of convective drying kinetics of oil palm fronds. Proceedings of the 6th Asia-Pacific Drying Conference, (ADC2009), October 19-21, 2009, Bangkok, Thailand, pp. 704-711..
140. Woo, M.W., Daud, W.R.W., Mujumdar, A.S., Tasirin, S.M.&Talib, M.Z.M. 2009. Rheology Characteristics as a Criterion in Amorphous Particle-Wall Collisions in Spray Drying. Proceedings of the 4th Asian Particle Technology Symposium (APT2009), 14-16 September 2009, New Delhi, India, Paper APT2009/17.
141. Kamarudin, S.K., Ahmad, M.M.&Daud, W.R.W. 2009. High power passive  $\mu$ dmfc for portable applications. Proceedings of The 3rd World Hydrogen Technology Convention, 26-28 August 2009, New Delhi, India, P13.
142. Mahreni, A., Mohamad, A.B., Kadhum, A.A.H., Daud, W.R.W.. 2009. Moderate temperature and low relative humidity hydrogen proton exchange membrane fuel cell (hpemfc) using nanocomposite membrane as electrolyte. Proceedings of The 3rd World Hydrogen Technology Convention, 26-28 August 2009, New Delhi, India, H26.
143. Lim, S.S., Daud, W.R.W., Md Jahim, J., Ismail, M., Kamarudin, S.K. and Shari, S.N.. 2009. Biohydrogen and power generation microbial fuel cell hybrid system prototype for local industrial wastewater treatment. Proceedings of The 3rd World Hydrogen Technology Convention, 26-28 August 2009, New Delhi, India, I32.
144. Ismail, M., Yaakob, Z., Daud, W.R.W., Sari, R. 2009. Preparation of palladium on alumina ceramic membrane tube via electroless plating and osmotic process. Proceedings of The 3rd World Hydrogen Technology Convention, 26-28 August 2009, New Delhi, India, B23.
145. Hashim, N., Kamarudin, S.K., Daud, W.R.W., Ahmad, M.M. 2009. Design and performance testing of dmfc stacking. The Proceeding of the 3rd International Conference on Chemical & Bioprocess Engineering (ICCBE2009) and 23rd Symposium of Malaysia Chemical Engineering (SOMCHE2009), 12 – 14 August 2009, Universiti Malaysia Sabah, Kota Kinabalu, Sabah pp. 956-959.
146. Chong, C.H., Law, C.L., Daud, W.R.W.&Abdullah, L.C.. 2009. Effects of Hybrid Dehumidifier Drying on Texture and Kinetics of Manilkara zapota. The Proceeding of the 3rd International Conference on Chemical & Bioprocess Engineering (ICCBE2009) and 23rd Symposium of Malaysia Chemical Engineering (SOMCHE2009), 12 – 14 August 2009, Universiti Malaysia Sabah, Kota Kinabalu, Sabah, pp. 108-113.
147. Basri, S., Kamarudin, S.K., Daud, W.R.W., Ahmad, M.M., Hashim, N.&Hasran, U.A.. Unsteady state modeling and analysis of passive liquid-feed for DMFC. Proceeding of the 3rd International Conference on Chemical and Bioprocess Engineering (ICCBE2009) and 23rd Symposium of Malaysia Chemical Engineering (SOMCHE2009), 12 - 14 August 2009, Universiti Malaysia Sabah, Kota Kinabalu, Sabah.
148. Ahmad, M.M., Kamarudin, S.K.&Daud, W.R.W. Reka bentuk dan pembangunan Mikro Sel Fuel Metanol Langsung ( $\mu$ SFML) untuk aplikasi mudah alih. Proceeding of the 3rd International Conference on Chemical and Bioprocess Engineering (ICCBE2009) and 23rd Symposium of Malaysia Chemical Engineering, Malaysia (SOMCHE2009), 12 - 14 August 2009, Universiti Malaysia Sabah, Kota Kinabalu, Sabah.
149. Rahimnejad, M., Mokhtarian, N., Najafpour, G.D., Ghoreyshi, A.A. &Daud, W.R.W.. 2009. Effective parameters on performance of Microbial Fuel Cell. Second International Conference on Environmental and Computer Science 2009, 411-415.
150. Markom, M., Daud, W.R.W. and Hasan, M.. 2009. Supercritical Fluid Polarity-Based Fractionation of Plant Products. 29th International Symposium on SuperCritical Fluids (ISASF2009) : New trends in Supercritical Fluids: Energy, Materials, Processing, May 18-20, 2009, Arcachon, France, pp. 175-182.

## Year 2008:

151. Marnoto, T., Sopian, K., Daud, W.R.W., Algoul, M. A. & Zaharim, A. 2008. Mathematical Model for Determining the Performance Characteristics of Multi-Crystalline Photovoltaic Modules. Proc. of the 9th WSEAS Int. Conf. on Mathematical and Computational Methods in Science and Engineering, Trinidad and Tobago, 5-7 November 2007. 79-84.
152. Sopian, K., Marnoto, T., Daud, W.R.W., Alghoul, M.A., Zaharim, A., Amin, A. and Yahya, M.. 2008. Grid Connected Solar Hydrogen Production System 2nd WSEAS/IASME International Conference on Renewable Energy Sources (RES'08), Corfu, Greece, 26-28 October 2008, 105 – 111.
153. Ibrahim, M., Sopian, K., Daud, W.R.W., Yahya, M., Alghoul, M.A. & Zaharim, A... 2008 Performance Predication of Solar Assisted Chemical Heat Pump Drying System in Tropical Region, 2nd WSEAS/IASME International Conference on Renewable Energy Sources (RES'08), Corfu, Greece, 26-28 October 2008, 122-126.
154. Yaakob, Z., Kamarudin, S.K., Daud, W.R.W., Yosfiah, M.R. & Lim, K.L.. 2008. Thermodynamic Study of Hydrogen Production from Methanol, 2nd WSEAS/IASME International Conference on Renewable Energy Sources (RES'08), Corfu, Greece, 26-28 October 2008, 250-256.
155. Anuar, N., Daud, W.R.W., Roberts, K.J., Kamarudin, S.K., Tasirin, S.M., Abidin, S.N.Z.Z. and Othman, S.Z.. 2008. Characterisation of L-isoleucine Salt Crystals Grown in Acidic and Basic Solution. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. I, 365-372.
156. Nordin, M.F.M., Daud, W.R.W., Gariépy, Y., Talib, M.Z.M., Nemes, S., Vijaya Raghavan, G.S.. 2008. Optimization Of Microwave Assisted Hot Air Drying For Red Pitaya (*Hylocereus undatus*). Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. I, 473-480.
157. Puspasari, I., Talib, M.Z.M., Daud, W.R.W., and Tasirin, S.M.. 2008. Thin-layer Drying Characteristics of Oil Palm Frond Chips: Part I. Particle Size Measurement and Distribution. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. I, 517-522.
158. Puspasari, I., Talib, M.Z.M., Daud, W.R.W., and Tasirin, S.M.. Thin-layer Drying Characteristics of Oil Palm Frond Chips: Part II. A semi-theoretical and Empirical Approach. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. I, 523-528.
159. Jajaei, S.M., Daud, W.R.W., Markom, M., Kadhum, A.A.H., Zakaria, Z.. 2008. Supercritical Fluid Fractionation of Melaleuca Cajuputi oil. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. I, 557-562.
160. Chong, C.H., Law, C.L., Cloke, M., Abdullah, L.C., Daud, W.R.W. 2008. Intermittent Turbulent Hot Air Drying of Ciku. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. I, 863-868.
161. Shamsudin, R., Daud, W.R.W., Takriff, M.S. & Hassan, O.. Changes in Chemical Compositions of the Josapine Variety of Pineapple Fruit (*Ananas Comosus* L.) at Different Storage Conditions. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. I, 963-970.

162. Markom, M. and Daud, W.R.W. 2008. Parameter Effects in the Pressurised Water Extraction of Hydrolysable Tannins from *Phyllanthus niruri* linn. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. I,
163. Hasran, U.A., Kamarudin, S.K., Daud, W.R.W., and Hashim, N.. 2008. Flow field fabrication using wet etching. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 169-174.
164. Woo, M.W., Daud, W.R.W., Tasirin, S.M., Talib, M.Z.M. 2008. Pilot-scale spray dryer optimization know-how. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 323-328.
165. Basri, S., Kamarudin, S.K., Daud, W.R.W., Ahmad, M.M., Hashim, N., Hasran, U.A., and Sitanggang, R.. 2008.  $\mu$ SFUKM : Design advisor tool for direct methanol fuel cell (DMFC) applications. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 413-416.
166. Takriff, M.S., Bahnuddin, N.N., Mohammad, A.W., Abdullah, A.R.S., and Daud, W.R.W. 2008. Integrating inherent safety at early stage of process design: Index based approach. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 447-450.
167. Mahreni, A., Mohamad, A.B., Kadhum, A.A.H., W.R. W. Daud. 2008. Synthesis and characterization the composite organic-inorganic membrane using sol-gel process for proton exchange membrane fuel cell (PEMFC), Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 467-472.
168. Mahreni, A., Mohamad, A.B., Kadhum, A.A.H., W.R. W. Daud. 2008. Performance of nano composite membranes as electrolyte for proton exchange membrane fuel cell (pemfc) application. Performance of nano composite. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 473-478.
169. Rahman, F.H., Minggu, L.J., Kassim, M., Daud, W.R.W. 2008. Short review on group ii-vi semiconductor photoelectrode with metal oxides as protector. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 517-524.
170. Shari, S.N., Md Jahim, J., Kamarudin, S.K. and Daud, W.R.W. 2008. Development of micro biofuel cell for power generation, Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 561-566.
171. Hosseini, S., Mohamad, A.B. , Kadhum, A.A.H., Daud, W.R.W. 2008. Analysis and modeling of overpotentials in a solid acid fuel cell. Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II. 573-578.
172. Dedikarni, J. Raharjo, Muchtar, A., Muhamad, N., W. R.W Daud, and J. Sahari 2008. Synthesis and characterization of  $\delta$ - Bi<sub>2</sub>O<sub>3</sub> phase in the bi<sub>1-x</sub>Ce<sub>x</sub>O<sub>y</sub> system for low temperature SOFC electrolytes, Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of

173. Raharjo, J., Dedikarni, and Daud, W.R.W. 2008. Materials technology in low and intermediate temperature solid oxide fuel cells : a review, Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 609-612.
174. Ahmad, M.M., Kamarudin, S.K., Daud, W.R.W., Hashim, N., Basri, S., Hasran, U.A. and Sitanggang, R. 2008. Direct methanol fuel cell (DMFC) for portable application, Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 613-616.
175. Hashim, N., Kamarudin, S.K., Daud, W.R.W., Basri, S., Ahmad, M.M., Sitanggang, R. and Hasran, U.A.. 2008. Development of passive micro direct methanol fuel, Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 617-620.
176. Yaakob, Z., Daud, W.R.W., and Long, L.K 2008. Preparation and characterization of coconut fiber for hydrogen storage, Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 631-634.
177. Arifin, K., Minggu, L.J., Kassim, M., Daud, W.R.W. 2008. Photoactivity study of Tris (dithiolene) tungstate, dye sensitizers for a photocatalytic H<sub>2</sub>O splitting reaction, Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 709-714.
178. Minggu, L.J., Kassim, M., Daud, W.R.W. 2008. Combination of TiO<sub>2</sub>-WO<sub>3</sub>-Fe<sub>2</sub>O<sub>3</sub> photoelectrodes for photoelectrochemical water splitting, Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 715-720.
179. Hamid, N.A., Daud, W.R.W., Muhamad, N., and Muchtar, A.. 2008. Preparation and characterization of La<sub>1-x</sub>Sr<sub>x</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3-δ</sub> (LSCF) with X = 0.3-0.5 for the intermediate temperature solid oxide fuel cell (IT-SOFC), Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, Vol. II, 925-928.
180. Sitanggang, R., Daud, W.R.W., Mohamad, A.B. & Kadhum, A.A.H. 2008. Electrode Spraying Process Modeling Using a Dimensionless Spraying Number. Fuel Cell Science & Technology 2008: Scientific Advances in Fuel Cell Systems Confederation of Danish Industries, Copenhagen, Denmark, 8th – 9th October 2008
181. Hassan, N.S.M., Daud, W.R.W., Sopian, K., & Sahari, J. 2008. Water Management in a Single Cell PEMFC with Serpentine Flow Field, Fuel Cell Science & Technology 2008: Scientific Advances in Fuel Cell Systems Confederation of Danish Industries, Copenhagen, Denmark, 8th – 9th October 2008
182. Woo, M.W., Daud, W.R.W., Mujumdar, A.S., Wu, Z.H., Talib, M.Z.M., & Tasirin, S.M. 2008. CFD Evaluation Of Droplet Drying Models In A Spray Dryer Fitted With A Rotary Atomizer, 16th International Drying Symposium (IDS 2008), Ramoji Film City, Hyderabad, India 9-12 November 2008.
183. Nordin, M.F.M., Gariépy, Y., Daud, W.R.W., Raghavan, G.S.V. & Talib, M.Z.M.. 2008. Microwave And Hot Air Drying For Red Pitaya (*Hylocereus Undatus*). 16th International Drying Symposium (IDS 2008), Ramoji Film City, Hyderabad, India 9-12 November 2008.

184. Woo, M.W., Daud, W.R.W., Talib, M.Z.M.&Tasirin, S.M. 2008. Deposition of amorphous particles in spray drying: Effect of wall surface energy manipulation at steady state wall thermal condition. 16th International Drying Symposium (IDS 2008), Ramoji Film City, Hyderabad, India 9-12 November 2008.
185. Chong, C.H., Law, C.L., Cloke, M., Abdullah, L.C. &Daud, W.R.W.. 2008. Drying kinetics, texture, total polyphenol, colour change during hot air drying of ciku. In Proceeding of the 16th International Drying Symposium (IDS2008), Ramoji Film City, Hyderabad, India, 9- 12 November 2008.
186. Rahman, F.H., Arifin, K., Kassim, M., Daik, R. &Daud, W.R.W. 2008. Inorganic Synthesis of Tris(1-carboxyl-2-phenyl-1,2-ethylenedithiolenic-S,S?) Tungsten Complex as Photocatalyst for Water Photolysis. 17th World Hydrogen Energy Conference WHEC 2008, Brisbane Convention & Exhibition Centre, Queensland, Australia, 5<sup>th</sup> – 8<sup>th</sup> June 2008, paper no.
187. Minggu, L.J., Daud, W.R.W.&Kassim, M. 2008. Photoelectrochemical Performance of  $TiO_2WO_3Fe_2O_3$  Photoelectrode for Water Splitting, 17th World Hydrogen Energy Conference WHEC 2008, Brisbane Convention & Exhibition Centre, Queensland, Australia, 5<sup>th</sup> – 8<sup>th</sup> June 2008, paper no. 620.

#### Year 2007:

188. Marnoto, T., Daud, W.R.W., Sopian, K., Alghoul, M.A. & Amin, N., Grid Connected Photovoltaic Solar Hydrogen Production System”, Proceedings of the 2007 World Renewable Energy Conference –Pacific Rim Region, Taipei Taiwan, Oct 29 – Nov, 2007. “Development and Applications of Renewable Energy”, page 194, ISBN 978-986-01-1108-8.
189. Marnoto, T., Daud, W.R.W., Sopian, K., Zulkifli, R., Rahman, M.N.A., Al-Ghoul, M. & Amin, N.. Performance Of A Grid Connected Solar Hydrogen Pv System In Malaysia. 17th International Photovoltaic Science and Engineering Conference - PVSEC-17, Fukuoka, Japan, Dec 3 -7, 2007. Technical Digest of the International PVSEC-17, Fukuoka, Japan, 2007; Pages 669-670
190. Marnoto, T., Daud, W.R.W., Sopian, K., Rahman, M.N.A., Zulkifli, R., AlGhoul, M. & Amin, N.; Economic Analysis Of A Grid Connected Solar Hydrogen Pvsystem, 17th International Photovoltaic Science and Engineering Conference - PVSEC-17, Fukuoka, Japan, Dec 3 -7, 2007. Technical Digest of the International PVSEC-17, Fukuoka, Japan, 2007; Pages 909-910.
191. Marnoto, T., Sopian, K., Daud, W.R.W., AlGhoul, M.,& Zaharim, A., Mathematical Model For Determining The Performance Characteristics Of Multi- Crystalline Photovoltaic Modules, Proceedings of the 9th WSEAS Int.Conf. On Mathematical And Computational Methods In Science And Engineering (MACMESE'07) ,Trinidad And Tobago, November 5-7, 2007. pp 79 -85. ISSN: 1790-5117 ISBN: 978-960-6766-11-4
192. Anuar, N., Daud, W.R.W., Roberts, K.J., Kamarudin, S.K.&Tasirin, S.M.. 2007 Crystallization Study Of L-Isoleucine: The Surface Energy Determination And Morphology Prediction, Regional Symposium of Chemical Engineering RSCE 2007, 3 -5 December 2007, Jogjakarta, Indonesia.
193. Nordin, M.F.M., Daud, W.R.W., Talib, M.Z.M.&Hassan, O. 2007 Optimization of Dried Red Pitaya (*Hoylocereus Udantus*) Quality Regional Symposium of Chemical Engineering RSCE 2007, 3 -5 December 2007, Jogjakarta, Indonesia, PE18.
194. Jajaei, S.M., Daud, W.R.W., Zakaria, Z., Markom, M., Kadhum, A.A.H. 2007. Supercritical Extraction of Tea Trees Essential Oil, Regional Symposium of Chemical Engineering RSCE 2007, 3 -5 December 2007, Jogjakarta, Indonesia
195. Kamarudin, S.K., Daud, W.R.W., Ho, S.L. & Hasran, U.. 2007. Mathematical Modeling of a Micro Direct Methanol Fuel Cell (DMFC), Regional Symposium of Chemical Engineering RSCE 2007, 3 -5 December 2007, Jogjakarta, Indonesia

196. Shamsudin, R., Daud, W.R.W., Takriff, M.S., Hassan, O. 2007, influence of Temperature and Soluble Solid Contents on Rheological Properties of the Josapine variety of Pineapple Fruit (*Ananas Comosus* L.), The 2nd International Engineering Convention 2007, Saudi Arabia
197. Shamsudin, R., Daud, W.R.W., Takriff, M.S., Hassan, O., 2007 Physical and Mechanical Properties of the Josapine variety Pineapple Fruit (*Ananas Comosus* L.) at different Stage of Maturity, World Engineering Congress 2007. Malaysia
198. Takriff, M.S., A.A.H Khadum, Daud, W.R.W., Ali, E., 2007, VOCs pollution from Mobile Sources in Klang Valley, Malaysia, accepted for presentation in The 3rd Seminar of JSPS-VCC Core University Program on Research On the Planning Urban Energy System to Minimize of CO<sub>2</sub> and Other Air Pollution in Cities under Different Climate, Johore Baharu, Malaysia
199. Takriff, M.S., Bhatia, M., A.A.H Khadum, Daud, W.R.W., Faisal, Z., Mohamad, A.B., 2007, Modeling the Distribution of Spinosad in the Environment, accepted for presentation in The 3rd Seminar of JSPS-VCC Core University Program on Research On the Planning Urban Energy System to Minimize of CO<sub>2</sub> and Other Air Pollution in Cities under Different Climate, Johore Baharu, Malaysia
200. Shamsudin, R., Daud, W.R.W., Takriff, M.S., Hassan, O., 2007, Effect of Fruit maturity on the Chemical composition of Josapine Pineapple Fruit, Accepted for presentation in the 10th Asean Food Conference 2007, Kuala Lumpur, Malaysia
201. Kamarudin, S.K., Daud, W.R.W.,. 2007. Overview On The Infrastructure Planning Of Hydrogen Energy In Malaysia, ENCON 2007
202. Daud, W.R.W.. 2007. Fluidized Bed Dryers – Recent Advances. Keynote Address, The 3rd Asian Particle Technology Symposium APT 2007, 3 – 5 September 2007, Beijing China.
203. Woo, M.W., Daud, W.R.W., Tasirin, S.M.&Talib, M.Z.M. 2007 Condition of amorphous particle deposits and products at different drying rates in a spray dryer. Proceeding of the Third Asian Particle Technology Symposium, APT2007, 3rd-5th September 2007, Beijing China, Vol. 1, pp. 105-114.
204. Woo, M.W., Daud, W.R.W., Tasirin, S.M.&Talib, M.Z.M. 2007 Effect of wall surface properties at different drying kinetics on the deposition problem in spray dryers, Proceedings of the 5th Asia-Pacific Drying Conference, Guohua Chen (Edt.), World Scientific Publishing Co, Singapore. Vol. 1, pp. 234-240.
205. Daud, W.R.W., Talib, M.Z.M., Hooi, O.C. 2007. Characteristics of superheated steam through drying of kenaf fibers, Proceedings of the 5th Asia-Pacific Drying Conference, Guohua Chen (Edt.), World Scientific Publishing Co, Singapore. Vol. 1, pp. 144-149.
206. Nordin, M.F.M., Daud, W.R.W., Talib, M.Z.M., Hassan, O., 2007. Effect of process parameters on quality properties of microwave dried Red Pittaya (*Hylocereus Undatus*), Proceedings of the 5th Asia-Pacific Drying Conference, Guohua Chen (Edt.), World Scientific Publishing Co, Singapore. Vol. 1, pp. 404-409.
207. Law, C.L. &Daud, W.R.W. 2007. Design of hybrid dryers – dedusting unit processor for rough rice process. Proceedings of the 5th Asia-Pacific Drying Conference, Guohua Chen (Edt.), World Scientific Publishing Co, Singapore. Vol. 1, pp. 553-560.
208. Talib, M.Z.M., Abdullah, S., Daud, W.R.W.&Tasirin, S.M. 2007. On-line web-based simulator of a plug flow fluidised bed cross-flow dryer, Proceedings of the 5th Asia-Pacific Drying Conference, Guohua Chen (Edt.), World Scientific Publishing Co, Singapore. Vol. 1, pp. 620-625.
209. Hasibuan, R. &Daud, W.R.W. 2007. Changes in the Quality of Superheated Steam Through Drying of Palm Empty Fruit Bunches fibers, Proceedings of the 5th Asia-Pacific Drying Conference, Guohua Chen (Edt.), World Scientific Publishing Co, Singapore. Vol. 2, pp. 904-909.

## Year 2006:

210. Rosli, N., Daud, W.R.W., Md Jahim, J.&Markom, M. 2006. Supercritical Fluid Extraction of Citronella (*Cymbopogon nardus*) Essential Oil: Modelling the Effects of Varying Temperature and Pressure, Proceedings of the 20th Symposium of Malaysian Chemical Engineers, 19-21 December 2006, Shah Alam, Malaysia, 721-726 (ISBN: 983-3644-07-4).
211. Yaakob, Z., Ibrahim, M.A., Daud, W.R.W., Kadhum, A.A.H. 2006. Characterization of Novel Multi-Function Catalyst Cu-Zn-Al supported on ZSM-5 for steam reforming methanol. Proceedings of International Conference on Green Chemistry: Malaysian Chemical Congress (MCC 2006), 19 – 21 September 2006, Sunway Pyramid Convention Centre, Petaling Jaya, Selangor, Malaysia, pp. 119-127.
212. Rahman, F.H., Kassim, M., Daik, R. &Daud, W.R.W.. 2006. Inorganic synthesis of tris(1-carboxyl-2-phenyl-1,2-ethylenedithiolenic-S,S') tungsten complex as photocatalyst for water photolysis. Proceedings of International Conference On Green Chemistry: Malaysian Chemical Congress (MCC 2006), 19 – 21 September 2006, Sunway Pyramid Convention Centre, Petaling Jaya, Selangor, Malaysia, pp. 634-637.
213. Anuar, N., Daud, W.R.W., Roberts, K.J., Kamarudin, S.K.&Tasirin, S.M.. 2006. Crystallisation of L-isoleucine aqueous solution. Proceedings of International Conference On Green Chemistry: Malaysian Chemical Congress (MCC 2006), 19 – 21 September 2006, Sunway Pyramid Convention Centre, Petaling Jaya, Selangor, Malaysia, pp. 626-632.
214. Jajaei, S.M., Daud, W.R.W., Zakaria, Z., Markom, M.& Kadhum, A.A.H. 2006. Extraction of High Quality and Quantity Tea Tree Oil using Supercritical Fluid Extraction without using Organic Solvent, Proceedings of International Conference On Green Chemistry: Malaysian Chemical Congress (MCC 2006), 19 – 21 September 2006, Sunway Pyramid Convention Centre, Petaling Jaya, Selangor, Malaysia, 537-540.
215. Arifin, K., Rahman, F.H., Lorna J.M., Daud, W.R.W., Daik, R., Kassim, M.&. 2006. Synthesis and cyclic voltammetry study of tris{1,2-bis(3,5-dimethoxyphenyl)-1,2-ethylenedithiolenic-S,S'} tungsten dye sensitizer for photoelectrochemical cell to generate hydrogen from water. Proceedings of International Conference On Green Chemistry: Malaysian Chemical Congress (MCC 2006), 19 – 21 September 2006, Sunway Pyramid Convention Centre, Petaling Jaya, Selangor, Malaysia. pp. 621-625.
216. Majlan, E.H., Daud, W.R.W., Yaakob, Z.&Takriff, M.S. 2006. Hydrogen Purification Using Compact Pressure Swing Adsorption System for Fuel Cell. International Conference on Green Chemistry: Malaysian Chemical Congress (MCC 2006), 19-21 September 2006, Sunway Pyramid Convention Centre, Petaling Jaya, Selangor, Malaysia. pp. 274-281.
217. Yaakob, Z., Daud, W.R.W., Amer Mohammad Al-Shareef, Ibrahim, M.A. 2006. Production of Hydrogen over methanol over Ni and Cu based catalyst, The First International Conference on Natural Resources Engineering and Technology, 24 – 25 Julai 2006, Marriott Putrajaya, Malaysia.
218. Daud, W.R.W., Kamarudin, S.K., Ho, S.L. &Hasran, U.A.. 2006. Direct methanol fuel cell for portable application. Proceedings of the 11th Asian Pacific Confederation of Chemical Engineering (APCChE 2006) Congress, Kuala Lumpur. Paper ID: 517.
219. Hosseini, S., Mohamad, A.B., Kadhum, A.A.H., Daud, W.R.W. 2006. Study on A Potential of Using CsH<sub>2</sub>PO<sub>4</sub> as Electrolyte Membrane Fuel Cell. Proceeding Of The 11th APCChE Congress 2006.
220. Rosli, M.I., Sopian, K., Sahari, J.&Daud, W.R.W.. 2006. Advances In The Development Of A PEM Fuel Cell In An Open-Air Cathode Stack Design. Proceeding of the International Symposium & Exhibiton on Sustainable Energy & Environment, ISESEE 2006. Kuala Lumpur, Malaysia. pp 323-329.

221. Ibrahim, M.Z., Sopian, K., Daud, W.R.W.&Othman, M.Y. 2006. Malaysia's First 2kW Hybrid PV-Wind Hydrogen Production System International Symposium & Exhibition on Sustainable Energy & Environment, ISESEE 2006. Kuala Lumpur, Malaysia 331 – 340
222. Marnoto, T., Sopian, K., Daud, W.R.W.& Shaari, S. 2006. Generalized Equations for Determining the Characteristics of Crystalline Photovoltaic Modules, International Symposium & Exhibition on Sustainable Energy & Environment, ISESEE 2006. Kuala Lumpur, Malaysia 389 – 400.
223. Rosli, M.I., Sopian, K.&Daud, W.R.W.. 2006. An Open Air Cathode PEMFC Stack Suitable For Portable System, Proceeding of the World Renewable Energy Congress IX and Exhibition, (WREN 2006), 19 – 25 August 2006, Florence, Italy. (in CD)
224. Sopian, K., Daud, W.R.W., Saidi, H., Kamarudin, W. N. & Ramli, N.A. 2006 The Hydrogen Energy Fuel Cell Roadmap for Malaysia, Proceeding of the World Renewable Energy Congress IX and Exhibition, 19 – 25 August 2006, Florence, Italy.
225. Ibrahim, M., Sopian, K.&Daud, W.R.W. 2006. CFD Study Of Water Flow In An Electrolyzer's Spacer, Proceedings of the World Renewable Energy and Environment Conference, Tripoli Libya, 22 -24 January 2006 (in CD Paper H6).
226. Daud, W.R.W. 2006. A Crossflow Model For Continuous Plug Flow Fluidised Bed Crossflow Dryers. Drying 2006 Proceedings of the 15th International Drying Symposium (IDS 2006), Budapest, Hungary, 20-23 August 2006, Vol. A, pp. 459-464.
227. Hasibuan, R. &Daud, W.R.W. 2006. Through Drying Characteristic of Oil Palm Empty Fruit Bunches (EFB) Fiber Using Superheated Steam. Drying 2006 Proceedings of the 15th International Drying Symposium (IDS 2006), Budapest, Hungary, 20-23 August 2006, Vol. C, pp. 1349-1355
228. Yaakob, Z., Minggu, L.J., Daud, W.R.W., Mohamad, A.B.. 2006. Role of Pd on Catalysts Supported on Gamma Alumina For Hydrogen Production. Process Intensification and Innovation Process (PI) Conference II -Cleaner, Sustainable, Efficient Technologies for the Future, Christchurch, New Zealand, September 24 - 29, 2006, [ECI/PI2/064]
229. Kamarudin, S.K., Tasirin, S.M., Daud, W.R.W., and Al-Mahdi A. Al-Hweage 2006. Local Behavior of Solid Mixing in Bubbling Fluidized Bed Tuesday, Fifth World Congress on Particle Technology, The 2006 AIChE Spring National Meeting, Orlando, Florida, USA 25 April 2006, 116b
230. Anuar, N., Daud, W.R.W., Roberts, K.J., Kamarudin, S.K., and Tasirin, S.M. 2006. Batch Crystallisation of L-Isoleucine Using on-Line Monitoring System. Fifth World Congress on Particle Technology, The 2006 AIChE Spring National Meeting, Orlando, Florida, USA 25 April 2006, 164b

**Year 2005:**

231. Daud, W.R.W. 2005 Fuel Cell Developmnet in Malaysia: Prospects for the Future. Keynote Paper. International Science Congress (ISC) 2005 Science for Humanity. 3 – 6 August 2005, Putra World Trade Centre, Kuala Lumpur, Malaysia, pp. 306-307.
232. Takriff, M.S., Daud, W.R.W., Kadhum, A.A.H., & Hussaini, T. 2005, VOCs Pollution in Klang Valley, Malaysia, The planning of Urban Energy and Environmental Systems, The 2nd Seminar of JSPS-VCC, Ritsumeikan University, Biwako-Kusatsu Campus, Shiga, Japan, pp 35
233. Yaakob, Z., Mahmud, M.S.,Daud, W.R.W.&Mohamad, A.B., 2005, Catalysts For Hydrogen Production From Methanol Reforming, Proceedings International Hydrogen Energy Congress and Exhibition IHEC 2005 Istanbul, Turkey, 13-15 July 2005

234. Rosli, M.I., Sopian, K., Sahari, J., Daud, W.R.W., 2005, Development and Performance of a 1 kW PEM Fuel Cell Stack, Proceedings of the World Renewable Energy Regional Congress and Exhibition 2005, Jakarta, Indonesia, 17 - 21 April 2005
235. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Mohammad, A.W. & Takriff, M.S. 2005. Techno-economic view of a proton electrolyte membrane (PEM) fuel Cell. Regional Symposium On Chemical Engineering. m.s 259-265.
236. Daud, W.R.W. 2005. Fluidised Bed Dryers : Recent Advances, Keynote Paper. The 4th Asia Pacific Drying Conference, ADC 2005, 13 – 16 December 2005, Kolkata, India, Jil. 1, Pp. 228 - 244.
237. Markom, M., Hasan, M. & Daud, W.R.W. 2005. Optimization of Supercritical Fluid Extraction of *Phyllanthus niruri* L. (Dukung Anak) by Experimental Design Approach, Symposium of Malaysia Chemical Engineering 2005 (SOMChE 2005)/ International Conference on Chemical & Bioprocess Engineering 2005 (ICCBPE 2005), Kota Kinabalu, Sabah, 7 – 10 December 2005, BPE-28, pp. 88-94.
238. Alhwaige, A.A., Tasirin, S.M. & Daud, W.R.W. 2005. Experimental study on the mixing of binary polymer particles in different types of mixer, Symposium of Malaysia Chemical Engineering 2006 (SOMChE - 2005)/ International Conference on Chemical & Bioprocess Engineering 2005 (ICCBPE 2005), Kota Kinabalu, Sabah, 7 – 10 December 2005, CPE-47, pp. 455 - 463.
239. Yaakob, Z., Ibrahim, M.A., Daud, W.R.W. & Kadhum, A.A.H. 2005. Preparation and Characterization of Cu-Zn-Al Supported on Zeolite ZSM-5 For Hydrogen Production from Methanol, Symposium of Malaysia Chemical Engineering 2005 (SOMChE -2005)/ International Conference on Chemical & Bioprocess Engineering 2005 (ICCBPE 2005), Kota Kinabalu, Sabah, 7 – 10 December 2005, MTE-10, pp. 852-857.
240. Kamarudin, S.K., Daud, W.R.W. & Som, A.M.. 2005. Synthesis And Optimal Design Of PEM Fuel System, Symposium of Malaysia Chemical Engineering 2006 (SOMChE -2005)/ International Conference on Chemical & Bioprocess Engineering 2005 (ICCBPE 2005), Kota Kinabalu, Sabah, 7 – 10 December 2005, EES-52, pp. 787 - 787.
241. Daud, W.R.W. 2005. Shortcut design method for hyperfiltration hollow fibre module: the effect of varying transmembrane pressure and concentration polarization, International Congress on Membranes & Membrane Processes 2005, ICOM 2005, Seoul, South Korea, 21-26 August 2005.
242. Kamarudin, S.K. & Daud, W.R.W. 2005. Economic Analysis of A PEM Fuel Cell System, Ninth Grove Fuel Cell Symposium, London, UK, 4 – 6 October 2005.
243. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Takriff, M.S. & Mohammad, A.W. 2005. Synthesis and Global Optimization of Reactor-Separation Networks (RSN) Via NLP Procedures: PEM Fuel Cell System, 8th Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction, PRES'05, 15 - 18 May 2005 Giardini Naxos, Italy, Vol. 1, pp. 327 – 332.

**Year 2004:**

244. Daud, W.R.W. 2004. Modelling of Continuous Plug Flow Fluidised Bed Crossflow Dryers. International Workshop and Symposium on Industrial Drying (Topics in Heat & Mass Transfer), 20 – 23 December, Mumbai, India, pp. 368-375.
245. Law, C.L., Tasirin, S.M., Daud, W.R.W., Cheah, H.M. 2004. Glutinous Rice Drying in Rapid Bin Dryer, International Workshop and Symposium on Industrial Drying, 20 – 23 December, Mumbai, India, pp. 202.
246. Law, C.L., Tasirin, S.M., Daud, W.R.W. & Geldart, D. 2004. Particle Flowability And Dedusting / Dehusking Separation Efficiency Of Rough Rice In An Inclined Plug Flow Fluidized Bed, The 10th Asia-

Pacific Confederation of Chemical Engineers Congress APCChE 2004, 17-21 October 2004, Kitakyushu, Japan, A-11.

247. Law, C.L., Tasirin, S.M., Daud, W.R.W. 2004. Derivation of New Drying Model from Theoretical Diffusion Controlled Drying Period, The 14th International Drying Symposium, IDS2004, 22 – 25 August 2004, Sao Paolo, Brazil, Vol. A, pp. 430 - 435.
248. Hasibuan, R. & Daud, W.R.W. 2004. Through Drying of Oil Palm Empty Fruit Bunches (Efb) Fiber Using Superheated Steam, The 14th International Drying Symposium, IDS2004, 22 – 25 August 2004, Sao Paolo, Brazil, Vol. C, pp. 2027 - 2034.
249. Yahya, M., Othman, M.Y., Sopian, K., Daud, W.R.W. & Yatim, B. 2004. Quality Of Pegaga Leaf Dried In A Solar Assisted Dehumidification Drying System, The 14th International Drying Symposium, IDS2004, 22 – 25 August 2004, Sao Paolo, Brazil, Vol. B, pp. 1049 - 1054.
250. Iyuke, S.E., Yasin, F.M., Fakhru'l-Razi, A., Shamsuddin, S., Mohamad, A.B. & Daud, W.R.W. 2004. FCCVD-Coating of Multifilament Carbon Fibres by Whiskerization with Fe Catalyst, The 11th International Conference on Composites/Nano Engineering, ICCE-11, 8 – 14 August, 2004, Hilton-Ketua Beach, South Carolina, USA, p. 297.
251. Daud, W.R.W. 2004. A New Short-Cut Design Method for Ultrafiltration and Hyperfiltration Cross-Flow Hollow Fiber Membrane Modules, Regional Symposium on Membrane Science & Technology 2004, MST2004, 21 – 25 April 2004, Johor Bahru, Johor, Malaysia.
252. Kadhum, A.A.H., Mohamad, A.B., Daud, W.R.W. & Sitanggang, R. 2004. Water Permeability Study of Membrane Electrode Assembly (MEA) Fabrication Using X-Y Robotic Sprayer Machine, Regional Symposium on Membrane Science & Technology 2004, MST2004, 21 – 25 April 2004, Johor Bahru, Johor, Malaysia.

#### **Year 2003:**

253. Mohamed, Z., Tasirin, S.M. & Daud, W.R.W.. 2003. The Effect of Temperature on umf of Geldart Group B Particles, Proceedings of the 2nd Asian Particle Technology Symposium (APT2003), 17-19 Dec 2003, Penang, Malaysia, Vol. 1, 455 – 458.
254. Yosfiah, M.R., Yaakob, Z., Daud, W.R.W. & Md Jahim, J.. 2003. The Effect of Ni Metal Compound Particle in Surface Area of Support  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, Proceedings of the 2nd Asian Particle Technology Symposium (APT2003), 17-19 Dec 2003, Penang, Malaysia, Vol. 1, pp. 449 – 454.
255. Law, C.L., Tasirin, S.M. & Daud, W.R.W.. 2003. Particle Flowability of Group D Particles in an Inclined Fluidized Bed Column, Proceedings of the 2nd Asian Particle Technology Symposium (APT2003), 17-19 Dec 2003, Penang, Malaysia, Vol. 2, pp. 29 - 34.
256. Ng, P.P., Tasirin, S.M., Daud, W.R.W., Law, C.L. & Eng, K. H.. 2003. Physical, Bulk and Instant Properties of Spray Dried Soymilk Powder, Proceedings of the 2nd Asian Particle Technology Symposium (APT2003), 17-19 Dec 2003, Penang, Malaysia, Vol. 2, pp. 253 – 258.
257. Law, C.L., Tasirin, S.M. & Daud, W.R.W.. 2003. On Constant Speed of Drying Boundary and Drying Model in Variable Diffusion Controlled Drying Period, Proceedings of the Regional Symposium on Chemical Engineering 2003 (RSCE2003), Metro Manila, Philippines, December 1 – 3, 2003, Ref. G3 in CD.
258. Miloud, S., Sopian, K., & Daud, W.R.W.. 2003. The Modeling of Three Cells Proton Exchange Membrane Fuel Cell (PEMFC), Proceedings of the Regional Symposium on Chemical Engineering 2003 (RSCE2003), Metro Manila, Philippines, December 1 – 3, 2003, Ref. G8 in CD.

259. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Mohammad, A.W.&Takriff, M.S.. 2003 Optimization of 5 kW Mobile and Portable PEMFC System Via Energy Integration, Proceedings of the Regional Symposium on Chemical Engineering 2003 (RSCE2003), Metro Manila, Philippines, December 1 – 3, 2003, Ref. PP3 in CD.
260. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Mohammad, A.W., Takriff, M.S.& Iyuke, S.E. 2003, A Conceptual Design Of The Fuel Processor System For A 5kw PEMFC, The Eight Grove Fuel Cell Symposium, 24t – 26 September 2003, Excel, London, P1.26.
261. Kamarudin, S.K., Daud, W.R.W.&Mohammad, A.W., 2003, The Conceptual Design Of A Hydrogen Purification System For Pemfc: A Mesoporous Tubular Ceramic Membrane And A Pressure Swing Adsorber In Series, The Eight Grove Fuel Cell Symposium, 24t – 26 September 2003, Excel, London, P1.27.
262. Iyuke, S.E., Kadhum, A.A.H., Mohamad, A.B., Daud, W.R.W.& Rachid, C. 2003. The Impacts of Low Platinum Loading of a Fabricated Electrode and Gas Diffusion Layer in MEA on the performance of a Single PEM Fuel Cell, The Eight Grove Fuel Cell Symposium, 24t – 26 September 2003, Excel, London, P2.1.
263. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Takriff, M.S., &Mohammad, A.W. 2003. Stack Design For 5kW Mobile And Portable Application Of PEMFC System Via Simulation. International Conferences on Advances in Strategic Technologies, ICAST 2003, ms. 915-920.
264. Kamarudin, S.K., Daud, W.R.W., &Mohammad, A.W. 2003, Design Of A Mesoporous Tubular Ceramic Membrane Via CrosFlow Method. International Conferences on Advances in Strategic Technologies. ICAST 2003 ms: 327-334.
265. Yaakob, Z., Daud, W.R.W., Mohamad, A.B.& Mahmud, M.S. 2003. The effect of vanadia on Cu-Al based catalysts in methanol reforming: literature review, ICAST2003, 12-14 August 2003, Renaissance Hotel Kuala Lumpur, Pp. 1039-1044
266. Masdar, M.S., Daud, W.R.W., Sopian, K., &Sahari, J. 2003 Modeling of proton exchange membrane fuel cell with variable distance gas flow in anode and cathode, Proceedings of the International Symposium on Renewable Energy: Environment Protection & Energy Solution for Sustainable Development 2003, ms. 247-254
267. Hassan, N.S.M., Daud, W.R.W., Sopian, K., &Sahari, J. 2003 Mathematical modelling of water mass balance for proton exchange membrane fuel cell. Proceedings of the International Symposium on Renewable Energy: Environment Protection & Energy Solution for Sustainable Development 2003, ms. 239-246
268. Law, C.L., Tasirin, S.M.&Daud, W.R.W. 2003. A New Model of Thin Layer Drying Equation in Grain Drying. Proceedings of 4th International Conference for Conveying and Handling of Particulate Solids, CHoPS 2003, Budapest, Hungary. 27-30 May 2003, pg. 13.37-13.42.
269. Law, C.L., Tasirin, S.M., Daud, W.R.W.& Leat, L.W. 2003. Moisture Content of Rough Rice across Inclined Bed Dryer. Proceedings of 1st International Conference on Chemical and Bioprocess Engineering, ICCBPE 2003. Tuaran, Sabah, Malaysia. 27th-29th Aug 2003, pg. 15-21..
270. Ng, P.P., Tasirin, S.M., Daud, W.R.W., Law, C.L. & Eng, K.H. 2003. Stickiness in Spray Drying of Soymilk. Proceedings of 1st International Conference on Chemical and Bioprocess Engineering, ICCBPE 2003, Tuaran, Sabah, Malaysia. 27th-29th Aug 2003, . pg. 728-732..
271. Daud, W.R.W., Law, C.L.. 2003. Novel Fluidized Bed Technology, Keynote paper. Proceedings of 3rd Asian Pacific Drying Conference, ADC2003, Bangkok, Thailand. 1-3 Sep 2003, pg. 73-88.

272. Ng, P.P., Tasirin, S.M., Daud, W.R.W.& Law, C.L.. 2003. Effect of Temperature, Bed Height and Tempering on the Cracking Quality of Paddy Dried in a Cylindrical Column Dryer. Proceedings of 3rd Asian Pacific Drying Conference, ADC2003, Bangkok, Thailand. 1-3 Sep 2003, pg. 153-162.
273. Law, C.L., Tasirin, S.M.&Daud, W.R.W.. 2003. A Tale of Shallow Bed Unit Operation. Proceedings of 3rd Asian Pacific Drying Conference, ADC2003, Bangkok, Thailand. 1-3 Sep 2003, pg. 539-550.
274. Law, C.L., Tasirin, S.M.&Daud, W.R.W.. 2003. Drying Rate Gradient: Another Way of Describing Drying Kinetics. Proceedings of 3rd Asian Pacific Drying Conference, ADC2003, Bangkok, Thailand. 1-3 Sep 2003, pg. 551-560.
275. Hasibuan, R. &Daud, W.R.W. 2003. The Effects of Temperature and Velocity on Drying Rate in Superheated Steam Drying of EFB Fibres, Proceedings of 3rd Asian Pacific Drying Conference, ADC2003, Bangkok, Thailand. 1-3 Sep 2003, pg. 619 -626.
276. Yahya, M., Othman, M.Y., Sopian, K., Daud, W.R.W.&Yatim, B. 2003. Evaporative Capacity of a Solar-Assisted Dehumidification Drying System, Proceedings of 3rd Asian Pacific Drying Conference, ADC2003, Bangkok, Thailand. 1-3 Sep 2003, pg. 531 -538.
277. Othman, M.Y., Sopian, K., Yatim, B.&Daud, W.R.W. 2003. Development of Advanced Solar Assisted Drying System, Proceedings of 3rd Asian Pacific Drying Conference, ADC2003, Bangkok, Thailand. 1-3 Sep 2003, pg. 113 – 122.

**Year 2002:**

278. Iyuke, S.E., Mohamad, A.B., Daud, W.R.W., Kadhum, A.A.H. & Fakhru'l-Razi, A. 2002. Synthesised Tin-Activated Carbon Adsorbent for Purer and Cheaper Hydrogen Part 2: Numerical Simulation, Fuel Cell Science and Tehcnology 2002, 25 – 26 September 2002, Amsterdam, The Netherlands, P3B.26
279. Law, C.L., Tasirin, S.M., Daud, W.R.W., & Cheah Hui Ming. 2002. Drying Characteristic of Glutinous Rice in Rapid Bin Dryer, Proceedings of the Second World Engineering Congress – Biological, Agricultural & Food Engineering, 22-25 Jul 2002, Holiday Inn, Kuching, Sarawak, Malaysia, 185 – 190.
280. Law, C.L., Tasirin, S.M., &Daud, W.R.W. 2002. A Method of Predicting the Particle Sphericity of Non-Spherical Particles: Illustrations from SEM (Scan Electron Microscope), World Congress on Particle Technology 4, 21-25 Jul 2002. Sydney, Australia, Kertas no. 124.
281. Law, C.L., Tasirin, S.M., Daud, W.R.W.& Ng, P.P. 2002. Effect of Internal Baffles in Fluidized Bed Column on Fluidized Bed Hydrodynamic and Grain Drying Characteristic, International Drying Symposium, 2002, 27-30 Aug 2002, Beijing, China, 571 – 579.
282. Teoh, B.J., Law, C.L., Tasirin, S.M.&Daud, W.R.W.. 2002. Automatic Sphericity Determination of Non Spherical Particles Using Digital Image Processing, Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002, Petaling Jaya, Malaysia, 861-868.
283. Daud, W.R.W., 2002 Rate-Based Design of Cross-Flow Hollow Fiber Membrane Modules for Ultrafiltration, Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002, Petaling Jaya, Malaysia, 1141 -1150
284. Daud, W.R.W., 2002 Rate-Based Design of Cross-Flow Hollow Fiber Membrane Modules for Hyperfiltration, Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002, Petaling Jaya, Malaysia, 1325 – 1338.

285. Hasibuan, R. & Daud, W.R.W., 2002 The Effect of Temperature in Superheated Steam Impingement Drying, Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002, Petaling Jaya, Malaysia, 1339 – 1346.
286. Kamarudin, S.K., Daud, W.R.W., Som, A.M., Mohammad, A.W., Takriff, M.S., Iyuke, S.E.. 2002 Fuel Cell: An Alternative To Standard Sources of Energy, Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002, Petaling Jaya, Malaysia, 1419 – 1426
287. Rahman, N.A., Daud, W.R.W. & Fisal, Z., 2002 Tuning Optimization on PID Controller for Distillation Column via Simulation, Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002, Petaling Jaya, Malaysia, 1679 – 1684
288. Kamarudin, S.K. & Daud, W.R.W., 2002 An Overview on the Optimization and Synthesis of Reactor Network, Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002, Petaling Jaya, Malaysia, 1741 - 1748
289. Taslim, Takriff, M.S. & Daud, W.R.W., 2002 Characterizing Oscillatory Flow Mixing in a Baffled Column with Residence Time Distribution, Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002, Petaling Jaya, Malaysia, 685 – 692.
290. Law, C.L., Tasirin, S.M. & Daud, W.R.W.. 2002. Drying Rate Gradient as an Indicator for Second Critical Moisture Content in a Drying Process, Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002. Petaling Jaya, Malaysia, 937-944.
291. Law, C.L., Teoh, B.J., Tasirin, S.M. & Daud, W.R.W.. 2002. Particle Sphericity: Comparison Results from various Sphericity Descriptors. Regional Symposium on Chemical Engineering (RSCE 2002) in conjunction with 16th Symposium of Malaysian Chemical Engineers (SOMChE 2002), 28-30 Oct 2002, Petaling Jaya, Malaysia, 929-936.

**Year 2001:**

292. Lwin, Y., Mohamad, A.B., Yaakob, Z., Daud, W.R.W. 2001. Thermodynamic Analysis of Sorption-Enhanced Catalytic Steam Reforming of Methanol for Hydrogen Production. Bangkok International Conference on Heterogeneous Catalysis (BICC), Bangkok, Thailand, 7-9 January 2001.
293. Sopian, K., Supranto, Othman, M.Y., Daud, W.R.W. & Yatim, B., Performance Of Double-Pass Solar Air Heaters With Integrated Storage System, Regional World Renewable Energy Congress, Sharjah, UAE, 19-22 February 2001.
294. Rahman, N.A., Daud, W.R.W. & Fisal, Z. 2001. Simulation of Binary Distillation Column for Fuzzy Logic Control, RSCE 2001, The Proceedings of the Regional Symposium of Chemical Engineering, 29 – 31 October 2001, Bandung, Indonesia, MO1-1.
295. Daud, W.R.W. 2001. A Novel Short-Cut Design Method for Adsorbers Used in Gas Dryers and Dehumidifiers, ADC 2001 : High Quality Product through Efficient and Environmental Friendly Drying Technology, Proceedings of the 2nd Asian-Oceania Drying Conference, 20 – 22 August 2001, Golden Sands Resort, Batu Feringhi, Pulau Pinang, Malaysia, ms. 115 – 122.
296. Othman, M.Y., Ruslan, M.H., Sopian, K., Yatim, B. & Daud, W.R.W., 2001. Solar Assisted Drying for Chilli ADC 2001 : High Quality Product through Efficient and Environmental Friendly Drying Technology,

Proceedings of the 2nd Asian-Oceania Drying Conference, 20 – 22 August 2001, Golden Sands Resort, Batu Feringhi, Pulau Pinang, Malaysia, ms. 355 – 360.

297. Sopian, K., Supranto, Othman, M.Y., Daud, W.R.W.&Yatim, B. 2001. The Cost Effectiveness of a Double-Pass Solar Collector with Porous Media, ADC 2001 : High Quality Product through Efficient and Environmental Friendly Drying Technology, Proceedings of the 2nd Asian-Oceania Drying Conference, 20 – 22 August 2001, Golden Sands Resort, Batu Feringhi, Pulau Pinang, Malaysia, ms. 367 – 374.
298. Yahya, M., Sopian, K., Daud, W.R.W., Othman, M.Y., &Yatim, B. 2001. Design of Solar Assisted Dehumidification of Air Drying System, ADC 2001 : High Quality Product through Efficient and Environmental Friendly Drying Technology, Proceedings of the 2nd Asian-Oceania Drying Conference, 20 – 22 August 2001, Golden Sands Resort, Batu Feringhi, Pulau Pinang, Malaysia, ms. 383 – 392.
299. Law, C.L., Tasirin, S.M., Daud, W.R.W. 2001. Batch Drying of Paddy in Rapid Fluidized Bin Dryer, ADC 2001 : High Quality Product through Efficient and Environmental Friendly Drying Technology, Proceedings of the 2nd Asian-Oceania Drying Conference, 20 – 22 August 2001, Golden Sands Resort, Batu Feringhi, Pulau Pinang, Malaysia, ms. 607 – 616.
300. Kyi, T.M., Daud, W.R.W., Kadhun, A.A.H., Mohamad, A.B.&Talib, M.Z.M. 2001. Drying with Chemical Reaction in Cocoa bean Drying, ADC 2001 : High Quality Product through Efficient and Environmental Friendly Drying Technology, Proceedings of the 2nd Asian-Oceania Drying Conference, 20 – 22 August 2001, Golden Sands Resort, Batu Feringhi, Pulau Pinang, Malaysia, ms. 623 – 636.
301. Hasibuan, R. &Daud, W.R.W. 2001. Drying of Fibrous Material Using Impingement of Superheated Steam as Drying Medium, ADC 2001 : High Quality Product through Efficient and Environmental Friendly Drying Technology, Proceedings of the 2nd Asian-Oceania Drying Conference, 20 – 22 August 2001, Golden Sands Resort, Batu Feringhi, Pulau Pinang, Malaysia, ms. 711 – 716.
302. Trisakti, B. &Daud, W.R.W. 2001. Selective Drying of Powders Containing Binary Mixtures, ADC 2001 : High Quality Product through Efficient and Environmental Friendly Drying Technology, Proceedings of the 2nd Asian-Oceania Drying Conference, 20 – 22 August 2001, Golden Sands Resort, Batu Feringhi, Pulau Pinang, Malaysia, ms. 77 – 86.

#### **Year 2000:**

303. Lwin, Y., Yaakob, Z., Mohamad, A.B.&Daud, W.R.W. 2000. Preparation of Cu-Al Hydrotalcites as Catalyst Precursors, Chemical and Process Engineering Conference, CPEC 2000/Regional Symposium on Chemical Engineering RSCE 2000, 11 – 13th December 2000, Singapore, Paper RE2.4.
304. Husaini, T., Daud, W.R.W.& Kadhun, A.A.H. 2000. Optimisation of Sampling Volatile Organic Compounds, Chemical and Process Engineering Conference, CPEC 2000/Regional Symposium on Chemical Engineering RSCE 2000, 11 – 13th December 2000, Singapore, Paper PDD3.3.
305. Kamaruzzaman, I., Yaakob, Z., Daud, W.R.W., Takriff, M.S. 2000 Adsorption Equilibria & Isothermic Heats of Alkanes on Activated Charcoal and Molecular Sieves, Chemical and Process Engineering Conference, CPEC 2000/Regional Symposium on Chemical Engineering RSCE 2000, 11 – 13th December 2000, Singapore, Paper ET2.3.
306. Iyuke, S.E. &Daud, W.R.W. 2000. Identification and Estimation of Dispersion Parameter from Adsorption Models and Experiments in Pressure Swing Adsorption. Chemical and Process Engineering Conference, CPEC 2000/Regional Symposium on Chemical Engineering RSCE 2000, 11 – 13th December 2000, Singapore, Paper PDD5.2
307. Iyuke, S.E., Mohamad, A.B.&Daud, W.R.W. 2000 Synthesised Tin-Activated Carbon Adsorbent for Purer and Cheaper Hydrogen: Part 1, Chemical and Process Engineering Conference, CPEC 2000/Regional Symposium on Chemical Engineering RSCE 2000, 11 – 13th December 2000, Singapore, Paper SP2.1.

308. Majlan, E.H., Yaakob, Z., Daud, W.R.W.&Takriff, M.S. 2000 Effect of Concentration on Adsorbent and Adsorption Process of VOC using Thermal Swing Adsorption Chemical and Process Engineering Conference, CPEC 2000/Regional Symposium on Chemical Engineering RSCE 2000, 11 – 13th December 2000, Singapore, Paper SP4.3.
309. Kadhum, A.A.H., Mohamad, A.B., Daud, W.R.W.& Ali, E.N. 2000. An Investigation on the Efficiency of Coconut Shell Activated Carbon as an Adsorbent for the Volatile Organic Compounds in Ambient Air in Malaysia, Chemical and Process Engineering Conference, CPEC 2000/Regional Symposium on Chemical Engineering RSCE 2000, 11 – 13th December 2000, Singapore, Paper SPP4.4.
310. Sopian, K., Supranto, Othman, M.Y., Daud, W.R.W.&Yatim, B., Theoretical and Experimental Investigations into the Performance of a Double-Pass Solar Collector with Porous Media, Proceedings of the in the First International Energy Conference, May 7 - 9, 2000, UAE University, College of Engineering, Al-Ains, United Arab Emirates
311. Daud, W.R.W.&Talib, M.Z.M.. 2000. Drum Dryer Model, The Proceedings of the 12th International Drying Symposium, IDS 2000, 28th – 31st Ogos 2000, Noordwijkerhout, The Netherlands, Paper no. 196
312. Ruslan, M.H., Daud, W.R.W., Othman, M.Y., Yatim, B., &Sopian, K. 2000. Solar Assisted Drying Of Chilli Using A V-Grooved Solar Collector, The Proceedings of the 12th International Drying Symposium, IDS 2000, 28th – 31st Ogos 2000, Noordwijkerhout, The Netherlands, Paper no. 197
313. Supranto, Sopian, K., Daud, W.R.W., Othman, M.Y.&Yatim, B. 2000. Auxiliary Energy Requirement Of A Solar-Assisted Dryer Using A Double-Pass Solar Collector With Porous Media, The Proceedings of the 12th International Drying Symposium, IDS 2000, 28th – 31st Ogos 2000, Noordwijkerhout, The Netherlands, Paper no. 198
314. Sopranto, Daud, W.R.W., Sopian, K., Othman, M.Y.&Yatim, B. 2000. Drying Kinetics of Oil Palm Fronds The Proceedings of the 12th International Drying Symposium, IDS 2000, 28th – 31st Ogos 2000, Noordwijkerhout, The Netherlands, Paper no. 199
315. Yahya, M., Daud, W.R.W., Ali, Y. 2000. Drying Curves Of Some Tropical Agricultural Crops Of Small Holding Farms. The Proceedings of the 12th International Drying Symposium, IDS 2000, 28th – 31st Ogos 2000, Noordwijkerhout, The Netherlands, Paper no. 200
316. Sopian, K., Daud, W.R.W., Shamsuddin, A.H. & Sutarno 2000. Performance of a Solar Hydrogen Production System, The Proceeding of the 2nd International Conference on Staretgic Technologies, ICAST 2000, Putrajaya, Selangor, Malaysia, 15 – 17hb Ogos 2000, Vol. II, ms. 1099 – 1106.
317. Yeoh, H.K., Kadhum, A.A.H. &Daud, W.R.W.. 2000. Predicting Light Excitability of Molecules in Photocatalyst Development: Model vs. Reality, The Proceeding of the 2nd International Conference on Staretgic Technologies, ICAST 2000, Putrajaya, Selangor, Malaysia, 15 – 17hb Ogos 2000, Vol. II, ms. 1107 –1118.
318. Iyuke, S.E. Mohamad, A.B.&Daud, W.R.W. 2000. Adsorption Equilibria of CO Gas in PSA System, The Proceeding of the 2nd International Conference on Staretgic Technologies, ICAST 2000, Putrajaya, Selangor, Malaysia, 15 – 17hb Ogos 2000, Vol. I, ms. 413 – 422.
319. Majlan, E.H., Yaakob, Z., Daud, W.R.W.&Takriff, M.S. 2000. Effect of Concentration on Adsorption Process of VOC using Thermal Swing Adsorption System, The Proceeding of the 2nd International Conference on Staretgic Technologies , ICAST 2000, Putrajaya, Selangor, Malaysia, 15 – 17hb Ogos 2000, Vol. II, ms. 1233 –1240.

320. Kamaruzaman, I., Yaakob, Z., Daud, W.R.W., Takriff, M.S. 2000. Description of Adsorption of Methane Equilibria, The Proceeding of the 2nd International Conference on Starectic Technologies , ICAST 2000, Putrajaya, Selangor, Malaysia, 15 – 17hb Ogos 2000, Vol. I, ms. 881 –890.
321. Ali, E.N., Kadhum, A.A.H., Mohamad, A.B.&Daud, W.R.W. 2000. Development of Analytical Method for the Volatile Organic Compounds in Ambient Air in Malaysia, The Proceeding of the 2nd International Conference on Starectic Technologies , ICAST 2000, Putrajaya, Selangor, Malaysia, 15 – 17hb Ogos 2000, Vol. II, ms.1303 –1312.
322. Husaini, T., Daud, W.R.W.& Kadhum, A.A.H. 2000. Air Pollution Modelling in Kelang Valley Area, The Proceeding of the 2nd International Conference on Starectic Technologies , ICAST 2000, Putrajaya, Selangor, Malaysia, 15 – 17hb Ogos 2000, Vol. II, 1325 – 1332
323. Othman, M.Y.H., Sopian, K., Yatim, B.&Daud, W.R.W. 2000. Solar Drying Technology for Agricultural Produce, World Renewable Energy Congress VI (WREC 2000), 1 –7 July 2000, Brighton, UK, Part II, ms. 922 – 927.

**Year 1999:**

324. Takriff, M.S., Daud, W.R.W., Faisal, Z. & Alam, M.Z. 1999, Hydrodynamics investigation of multiphase oscillatory flow in a baffled tube, Proceeding of Regional Symposium on Chemical Engineering 1999, Songkla, Thailand, ms. B55-1 – B55-7.
325. Kamaruzaman, I., Yaakob, Z., Daud, W.R.W., Takriff, M.S. 1999. Adsorption Equilibrium Models for Pure Volatile Organic Compounds on Activated Charcoal Proceeding of Regional Symposium on Chemical Engineering 1999, Songkla, Thailand, ms. P-Ads.-45-1 – P-Ads.-45 –7.
326. Supranto, Daud, W.R.W. , Sopian, K., Yatim, B.&Othman, M.Y.. 1999 Drying Curves of Oil Palm Fronds, The First Asian-Australian Drying Conference, Bali, Indonesia, 24 - 27 October 1999.
327. Supranto, Sopian, K., Daud, W.R.W., Yatim, B.&Othman, M.Y.. 1999 Performance of a Solar Assisted Dryer for Oil Palm Fronds, The First Asian-Australian Drying Conference, Bali, Indonesia, 24 - 27 October 1999.
328. Daud, W.R.W., Ibrahim, M.H., Talib, M.Z.M., 1999 Parameter Estimation of Distributed and Lumped Parameters Drying Kinetic Models, The First Asian-Australian Drying Conference, Bali, Indonesia, 24 - 27 October 1999.
329. Iyuke, S.E., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H. & Faisal, Z., 1999. The Design of Proton Exchange Membrane Fuel Cell, World Renewable Energy Congress '99 Malaysia, Kuala Lumpur, 8 - 11 June 1999.
330. Sutarno, Sopian, K., Shamsuddin, A.H. &Daud, W.R.W. 1999. Cost Optimisation of Solar Photovoltaic Hydrogen Production System, World Renewable Energy Congress '99 Malaysia, Kuala Lumpur, 8 - 11 June 1999.
331. Sutarno, Sopian, K., Shamsuddin, A.H. &Daud, W.R.W. 1999. Preliminary Result of Solar Photocoltaic Hydrogen Production System, World Renewable Energy Congress '99 Malaysia, Kuala Lumpur, 8 - 11 June 1999.
332. Chebbi, R., Daud, W.R.W., Mohamad, A.B., & Kadhum, A.A.H. 1999. Effects of Diffusion Layer (PTFE-C) on Low Pt Loading Electrode for PEMFC. World Renewable Energy Congress '99 Malaysia, Kuala Lumpur, 8 - 11 June 1999.
333. Supranto, Sopian, K., Daud, W.R.W., Yatim, B.&Othman, M.Y. 1999, Dresign of a Low Cost Solar Simulator, World Renewable Energy Congress '99 Malaysia, Kuala Lumpur, 8 - 11 June 1999.

334. Supranto, Sopian, K., Daud, W.R.W., Yatim, B.&Othman, M.Y. 1999. Performance Characteristic Curves of the Double Pass Solar Collector with Porous Media. World Renewable Energy Congress '99 Malaysia, Kuala Lumpur, 8 - 11 June 1999
335. Supranto, Sopian, K., Daud, W.R.W., Yatim, B.&Othman, M.Y. 1999. Design of a Solar Assisted Drying System Using a Double Pass Solar Collector with Porous Media. World Renewable Energy Congress '99 Malaysia, Kuala Lumpur, 8 - 11 June 1999
336. Kamaruzzaman, I., Yaakob, Z., Daud, W.R.W.&Takriff, M.S. 1999. Comparison of Equilibrium Models for Methane-Ethane-Activated Carbon System, World Engineering Congress, 19 – 22 July 1999, Kuala Lumpur, Chemical and Environmental Engineering ms. 99 – 102
337. Taslim, Takriff, M.S., Daud, W.R.W., Yaakob, Z. 1999. Oscillatory Flow Mixing System, World Engineering Congress, 19 – 22 July 1999, Kuala Lumpur, Chemical and Environmental Engineering, ms. 123 – 128.

**Year 1998:**

338. Supranto, Sopian, K., Daud, W.R.W., Yatim, B.&Othman, M.Y., 1998. Indoor Testing of the Thermal Performance of a Double-Pass Solar Collector with Porous Media, Proceedings of the 5th ASEAN Science and Technology Week Scientific Conference on Non-Conventional Energy Research, Hanoi, Vietnam, 12 - 14 October, 1998, Non-Conventional Energy, ms. 45 – 50.
339. Supranto, Sopian, K., Daud, W.R.W., Othman, M.Y.&Yatim, B., 1998. Design of an Experimental Solar Assisted Dryer for Palm Oil Fronds, World Renewable Energy Congress V, 20 - 25 September 1998, Florence Italy
340. Daud, W.R.W., Ibrahim, M.H.&Talib, M.Z.M., 1998. Parameter Estimation of Luikov's Drying Equation, Drying '98, The 11th International Drying Symposium, Halkidiki, Greece, 19 - 22 August 1998, Vol. A, pp. 150-159.
341. Daud, W.R.W., Ibrahim, M.H.&Talib, M.Z.M., 1998. Simulation of Two Layer Drying Model for Cocoa Bean, Drying '98, The 11th International Drying Symposium, Halkidiki, Greece, 19 - 22 August 1998, Vol. A, pp.375-382.

**Year 1997:**

342. Takriff, M.S., Daud, W.R.W., Mushrab, M.H. 1997. Gas Holdup in Gas-Liquid Oscillatory Flow in a Baffled Tube, Regional Symposium on Chemical Engineering, Johor Baharu, Malaysia, 13th - 15th October 1997, Vol. 2, pp. 40-44
343. Daud, W.R.W., Takriff, M.S., & Ahmad, N.. 1997. Simulation of Oscillatory Flow in Baffled Tubes. Regional Symposium on Chemical Engineering, Johor Baharu, Malaysia, 13th - 15th October 1997, Vol. 2, pp. 440-44
344. Daud, W.R.W., Myint, S., Mohamad, A.B.& Kadhum, A.A.H.. 1997. Simulation of Chromatographic Adsorption Column, Regional Symposium on Chemical Engineering, Johor Baharu, Malaysia, 13th - 15th October 1997, Vol. 2, pp. 241-148
345. Shariff, A.M., Iyuke Sunny Esayegbemu, Daud, W.R.W., Mohamad, A.B., Faisal, Z. & Kadhum, A.A.H.. 1997. Using Stage Model to Solve Pressure Swing Adsorption System, Regional Symposium on Chemical Engineering, Johor Baharu, Malaysia, 13th - 15th October 1997, Vol. 2, pp. 289 – 296
346. Kadhum, A.A.H., Daud, W.R.W., Mohamad, A.B., Faisal, Z. & Rasheed, M.H., Alkali Fusion of Malaysian Zircon Sand, Regional Symposium on Chemical Engineering, Johor Baharu, Malaysia, 13th - 15th October 1997 (presented but not published due to late delivery).

**Year 1996:**

347. Daud, W.R.W., Ibrahim, M.H.&Talib, M.Z.M., 1996. Parameter Estimation of Fick's Law Drying Equation, Drying '96, The 10th International Drying Symposium, 30th July - 3 August 1996, Krakow, Poland, 111 - 119.
348. Daud, W.R.W., Sarker, M.N.H., &Talib, M.Z.M., 1996. Characteristic Drying Curves and Desorption Isotherms of Malaysian Paddy, Drying '96, The 10th International Drying Symposium, 30th July - 3 August 1996, Krakow, Poland, 897 - 904.

**Year 1995:**

349. Zain, S.M. &Daud, W.R.W., 1995. Bahasa Melayu dalam Sains & Teknologi: Mitos, Kenyataan & Unggulannya (The Malay Language in Science and Technology: Myth, Reality and Idealism, Kongres Bahasa Melayu Sedunia, (World Congress on Malay Language), Kumpulan Kertas Kerja, Vol. II, 503 - 515.
350. Daud, W.R.W., Kadhum, A.A.H., Mohamad, A.B.&Sahari, J., Low Platinum Loaded Electrodes for Solid Polymer Fuel Cell, The 6th ASEAN Conference on Energy Technology, The 4th ASEAN Science and Technology Week, Abstracts & Proceedings, Non-Conventional Energy, 28th - 29th August 1995, Bangkok, 82 -86
351. Myint, S., Daud, W.R.W., Mohamad, A.B.& Kadhum, A.A.H., 1995. HPLC Studies of Eugenol : Mobile Phase System Optimization in the Reversed -Phase Chromatography, First International Conference on Strategic Technologies, ICAST '95, Universiti Kebangsaan Malaysia, 12th to 17th June 1995.
352. Daud, W.R.W., Abdullah, I., & Bakar, B.. 1995. Rheological Characterisation of Natural Rubber/Liquid Natural Rubber/Polypropylene/Low Low Density Polyethylene Blend Melt at 200C, First International Conference on Strategic Technologies, ICAST '95, Universiti Kebangsaan Malaysia, 12th to 17th June 1995
353. Daud, W.R.W., Abdullah, I., & Bakar, B.. 1995. Rheological Characterisation of Natural Rubber/Liquid Natural Rubber/Polypropylene Blend Melt at 200C, First International Conference on Strategic Technologies, ICAST '95, Universiti Kebangsaan Malaysia, 12th to 17th June 1995.
354. Daud, W.R.W., Abdullah, I., & Bakar, B.. 1995. Rheological Characterisation of Natural Rubber/Liquid Natural Rubber/Low Low Density Polyethylene Blend Melt at 200C, First International Conference on Strategic Technologies, ICAST '95, Universiti Kebangsaan Malaysia, 12th to 17th June 1995.
355. Daud, W.R.W., Kadhum, A.A.H., Mohamad, A.B.&Sahari, J., Low Platinum Loading Solid Polymer Fuel Cell, First International Conference on Strategic Technologies, ICAST '95, Universiti Kebangsaan Malaysia, 12th to 17th June 1995.
356. Kadhum, A.A.H., Daud, W.R.W., Mohamad, A.B.& Zakaria, M.N., Carbonization of Coconut Shell, First International Conference on Strategic Technologies, ICAST '95, Universiti Kebangsaan Malaysia, 12th to 17th June 1995.
357. Daud, W.R.W., Ibrahim, M.H., &Talib, M.Z.M. 1995. Drying Kinetic Models: Van Meel's Characteristic Drying Function Model versus Luikov's Diffusion-like Continuum Drying Model, First International Conference on Strategic Technologies, ICAST '95, Universiti Kebangsaan Malaysia, 12th to 17th June 1995.

**Year 1994:**

358. Ibrahim, M.H., Daud, W.R.W.&Talib, M.Z.M., 1994. Drying of Oil Palm Kernels, Drying '94, 9th International Drying Symposium, August 1st - 4th 1994, Gold Coast, Queensland, Australia, 1121 - 1128.

359. Daud, W.R.W., Talib, M.Z.M.&Ibrahim, M.H., 1994, Drying of Cocoa Beans, Drying '94, 9th International Drying Symposium, August 1st - 4th 1994, Gold Coast, Queensland, Australia, 1129 - 1135.

**Year 1990:**

360. Daud, W.R.W. 1990, A Model of a Top Loading Drum Dryer, Seventh International Drying Symposium, August 27th - September 1st 1990, Prague, Czechoslovakia

**Tahun1989:**

361. Ibrahim, M.H.&Daud, W.R.W. 1989, Drying of a Porous Sphere in an Air Stream, Numerical Methods in Thermal Problem, Proc. Sixth International Conference on Numerical Methods in Thermal Problems, July 3rd - July 7th 1989, Swansea, United Kingdom, Swansea: Pineridge Press, Vol. VI, Part 2, pp. 938 – 947.
362. Daud, W.R.W., 1989, Determination of the Thickness of Film of Drying Material in a Top Loading Dryer, Drying '89, Hemisphere Publishing Corporation, pp. 496 - 500.

**Year 1988:**

363. Jumari, K., Daud, W.R.W.& Mydin, A.M., 1988, A Microcomputer Based Process Control System, Proc. Regional Seminar on Process Control, pp. 172-194, 28-29 November 1988, Putra World Trade Centre, Kuala Lumpur.
364. Daud, W.R.W., 1988, Determination of the Characteristic Drying Curves of Agricultural Materials Using a Low Wind Speed Wind Tunnel, Proc. Regional Seminar on Postharvest Technology and Equipment, pp. III.7.1-III.7.12, 16-18 November 1988, Guangzhou, China.
365. Daud, W.R.W., 1988, Non-Ideal Flow Model of a Top Loading Drum Dryer, Proc. Sixth International Drying Symposium, Vol. 2, pp. PA.77-PA.86, 5-8 September 1988, Versailles, France.
366. Daud, W.R.W., 1988, Theoretical Determination of the Thickness of Film of Drying Material in a Top Loading Dryer, Proc. Sixth International Drying Symposium, pp. PA.87-PA.91, Vol. 2, 5-8 September 1988, Versailles, France.

**Year 1987:**

367. Daud, W.R.W.& Armstrong, W.D., 1987, Pilot Plant Study of the Drum Dryer, Drying '87, Hemisphere Publishing Corporation, 101-108.

**c. Articles in Proceedings of National Conferences**

**Year 2010:**

1. Thiam, H.S., Daud, W.R.W., Mohamad, A.B., Kadhun, A.A.H., Kamarudin, S.K., Loh, K.S.&Majlan, E.H.. 2010. Review: Synthesis Methods of Nanostructure Proton Exchange Membrane for Fuel Cell Application . Symposium on Energy & Green Technology - Hydrogen & Fuel Cell, 24 November 2010, Monash University Sunway Campus.
2. Husaini, Yaakob, Z., Mohammad, A.W.&Daud, W.R.W.. 2010. Hydrogen permeation trough PTFE-Nafion composite membrane. Symposium on Energy & Green Technology 2010 (EGT2010); Hydrogen & Fuel Cell. 24 November 2010, Monash University Sunway Campus, Kuala Lumpur, Malaysia.
3. Ahmad, H., Kamarudin, S.K., Hasran, U.A.&Daud, W.R.W.. 2010 Conductivity and Water uptake rate of hybrid nafion/ polybenzimidazole/ zirconium phosphate membrane for DMFC application, Symposium on Energy & Green Technology 2010 (EGT2010); Hydrogen & Fuel Cell. 24 November 2010, Monash University Sunway Campus, Kuala Lumpur, Malaysia.

4. Basri, S., Kamarudin, S.K., Daud, W.R.W.& Yaakob, Z. 2010. Kinetic reaction study of nanocatalyst based on molecular dynam, Symposium on Energy & Green Technology 2010 (EGT2010); Hydrogen & Fuel Cell. 24 November 2010, Monash University Sunway Campus, Kuala Lumpur, Malaysia.c
5. Kurniawan, M., Daud, W.R.W.&Majlan, E.H. Madjlan. 2010. The assembly pressure effect on the fuel cell, Symposium on Energy & Green Technology 2010 (EGT2010); Hydrogen & Fuel Cell. 24 November 2010, Monash University Sunway Campus, Kuala Lumpur, Malaysia.
6. Fauzie, A., Kamarudin, S.K., Daud, W.R.W.& Edi Herianto1. 2010. Study on DMFC passive system for mobile phone charger, Symposium on Energy & Green Technology 2010 (EGT2010); Hydrogen & Fuel Cell. 24 November 2010, Monash University Sunway Campus, Kuala Lumpur, Malaysia.
7. Memar, A., Daud, W.R.W., Minggu, L.J.&Kassim, M. 2010. Recent advances of photo-electrodes for photoelectrochemical water splitting, Symposium on Energy & Green Technology 2010 (EGT2010); Hydrogen & Fuel Cell. 24 November 2010, Monash University Sunway Campus, Kuala Lumpur, Malaysia.
8. Iswandi, Sahari, J.&Sulong, A.B.. 2010. Polymer matrix composite for injection molded bipolar plate in proton exchange membrane fuel cell (PEMFC): overview on material selection, Symposium on Energy & Green Technology 2010 (EGT2010); Hydrogen & Fuel Cell. 24 November 2010, Monash University Sunway Campus, Kuala Lumpur, Malaysia.

**Year 2009:**

9. Misran, E., Daud, W.R.W.&Majlan, E.H.. 2009. Review on serpentine flow field design and its effects on PEMFC performance. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
10. Mulyazmi, Daud, W.R.W.&Majlan, E.H.. 2009. Tinjauan rekabentuk pada rangkaian sistem sel fuel membran pertukaran proton (PEMFC). Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
11. Kurniawan, M., Daud, W.R.W.&Majlan, E.H.. 2009. Stress analysis of proton exchange membrane fuel cell using finite element method: A review. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
12. T. Husaini, Daud, W.R.W., Muhammad, A.W.&Yaakob, Z.. 2009. Membrane reactor for hydrogen modelling. Abstrak Pascasidang Bengkel Penulisan Manuskrip Jurnal dan Tesis. p.1. Institut Sel Fuel, UKM. 18-19 April 2009. Dewan D'Tasik, Hotel Residence, UNITEN, Serdang.
13. Misran, E., Mulyazmi, Daud, W.R.W.&Majlan, E.H.. 2009. Review modelling of water and thermal management for PEM fuel cell system. Abstrak Pascasidang Bengkel Penulisan Manuskrip Jurnal dan Tesis. p.2. Institut Sel Fuel, UKM. 18-19 April 2009. Dewan D'Tasik, Hotel Residence, UNITEN, Serdang.
14. Misran, E., Daud, W.R.W.&Majlan, E.H.. 2009. Review Mulyazmi, Daud, W.R.W.&Majlan, E.H.. 2009. Review of proton exchange membrane (PEM) fuel cell system. Proceeding of the Graduate Publication Workshop 2009. p. 87-88. Fakulti Kejuruteraan dan Alam Bina, UKM. 30-31 Mac 2009. The Residence Hotel, UNITEN, Serdang.
15. Misran, E., Daud, W.R.W.&Majlan, E.H.. 2009. Review pengubahsuaian pada membran dan elektrod resapan gas pada sistem PEMFC bagi usaha pengembangan kaedah self-humidification. Prosiding Seminar dan Pameran Sel Fuel 2009: Peluang, Cabaran dan Perkembangan Penyelidikan Sel Fuel di UKM Jilid II. Institut Sel Fuel, UKM. 25-26 Mac 2009. Palace of the Golden Horses, Serdang.
16. Mulyazmi, Daud, W.R.W.&Majlan, E.H.. 2009. Reka bentuk sistem polimer sel bahan api membran elektrolit polimer (PEMFC). Prosiding Seminar dan Pameran Sel Fuel 2009: Peluang, Cabaran dan Perkembangan Penyelidikan Sel Fuel di UKM Jilid II. p. 8-14. Institut Sel Fuel, UKM. 25-26 Mac 2009. Palace of the Golden Horses, Serdang.

17. Ahmad, H., Kamarudin, S.K., Hasran, U.A.&Daud, W.R.W. 2009. Membran hibrid sebagai membran pengalir proton dalam operasi sel bahan api metanol langsung (DMFC). Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
18. Hashim, N., Kamarudin, S.K., Daud, W.R.W.&Ahmad, M.M.. 2009. DMFC stacking: design and performance. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
19. Fauzie, A., Hashim, N., Kamarudin, S.K.,Daud, W.R.W.&Majlan, E.H.. 2009. Influence of hot pressing condition (pressure, time and temperature) in fabricating direct methanol fuel cell membrane electrode assembly. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
20. Kamarudin, S.K., Daud, W.R.W., B.Y. Majlis, Mohamad, A.B., Kadhum, A.A.H.&Hasran, U.A.. 2009. Filling of a vertical capillary channel: assumption, validation and modeling. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
21. Fauzie, A., Kamarudin, S.K., Daud, W.R.W.&Majlan, E.H.. 2009. Influence of thickness on 25 cm<sup>2</sup> direct methanol fuel cell influence of methanol concentration, orientation and membrane. Prosiding Regional Engineering Postgraduate Conference (EPC) 2009. 20-21 Oktober 2009. Putrajaya, Malaysia.
22. Hasran, U.A., Kamarudin, S.K., Daud, W.R.W.&Burhanuddin, Y.M.. 2009. Micro-machining of silicon wafer by laser direct etching. Nanotech Malaysia 2009. 27-29 Oktober 2009.
23. Hasran, U.A., Kamarudin, S.K., Daud, W.R.W.&Burhanuddin, Y.M.. 2009. The role of laser direct etch and chemical etch in fabricating a capillary hole. Nanotech Malaysia 2009. 27-29 Oktober 2009.
24. Fauzie, A., Kamarudin, S.K., Daud, W.R.W.&Majlan, E.H.. 2009. Performance of passive single stack 25 cm<sup>2</sup> active area polymethylmethacrylate (PMMA) based DMFC. Buku Abstrak Pascasidang Bengkel Penulisan Manuskrip Jurnal dan Tesis. 18-19 April 2009. Residence Hotel, UNITEN, Serdang, Malaysia.
25. Basri, S., Kamarudin, S.K., Daud, W.R.W., Yaakob, Z., Ahmad, M.M.. 2009. Pembangunan model tidak mantap bagi sistem sel fuel metanol langsung (SFML) pasif (unsteady state modeling on passive liquid feed direct methanol fuel cell (DMFC)). Buku Abstrak Pascasidang Bengkel Penulisan Manuskrip Jurnal dan Tesis. 18-19 April 2009. Residence Hotel, UNITEN, Serdang, Malaysia.
26. Ahmad, M.M., Kamarudin, S.K., Daud, W.R.W.&Yaakob, Z.. 2009. Penghasilan kuasa yang tinggi oleh sistem pasif MDMFC dengan penggunaan muatan mangkin yang rendah untuk penjanaan peralatan berkuasa kecil. Buku Abstrak Pascasidang Bengkel Penulisan Manuskrip Jurnal dan Tesis. 18-19 April 2009. Residence Hotel, UNITEN, Serdang, Malaysia.
27. Hasran, U.A., S. K. Kamarudin, Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H.& B.Y. Majlis. 2009. Overview of the mechanistic modelling approach for direct methanol fuel cell. Buku Abstrak Pascasidang Bengkel Penulisan Manuskrip Jurnal dan Tesis. 18-19 April 2009. Residence Hotel, UNITEN, Serdang, Malaysia.
28. Hashim, N., S. K. Kamarudin, Daud, W.R.W.&Yaakob, Z.. 2009. Rekabentuk, fabrikasi dan pengujian stek multi-sel dan sel tunggal sel feul pasif mikro metanol langsung dengan binaan asas PMMA. Buku Abstrak Pascasidang Bengkel Penulisan Manuskrip Jurnal dan Tesis. 18-19 April 2009. Residence Hotel, UNITEN, Serdang, Malaysia.
29. Ahmad, H., Kamarudin, S.K., U. A. Hasran &Daud, W.R.W.. 2009. Review paper of hybrid membrane for DMFC application. Buku Abstrak Pascasidang Bengkel Penulisan Manuskrip Jurnal dan Tesis. 18-19 April 2009. Residence Hotel, UNITEN, Serdang, Malaysia.
30. Fauzie, A., Kamarudin, S.K., Daud, W.R.W.&Majlan, E.H.. 2009. Review miniatur DMFC untuk komputer riba. Prosiding Seminar dan Pameran Sel Fuel: Peluang, Cabaran dan Perkembangan

Penyelidikan Sel Fuel di UKM Jilid II. ISBN 9789834-43492. 25-26 Mac 2009. Palace of the Golden Horses, Serdang, Malaysia.

31. Ahmad, H., Kamarudin, S.K., Hasran, U.A.&Daud, W.R.W. 2009. Membran hibrid sebagai membran pengalir proton dalam operasi sel bahan api metanol langsung (DMFC). Prosiding Seminar dan Pameran Sel Fuel: Peluang, Cabaran dan Perkembangan Penyelidikan Sel Fuel di UKM Jilid II. ISBN 9789834-43492. 25-26 Mac 2009. Palace of the Golden Horses, Serdang, Malaysia.
32. Basri, S., Kamarudin, S.K.&Daud, W.R.W. 2009.  $\mu$ SFUKM-design advisor tool for Direct Methanol Fuel Cell (DMFC) applications. Seminar Fakulti Kejuruteraan dan Alam Bina. 31 Januari 2009.
33. Ahmad, M.M., Kamarudin, S.K.&Daud, W.R.W. 2009. Performance of Direct Methanol Fuel Cell (DMFC) for portable applications. Seminar Fakulti Kejuruteraan dan Alam Bina. 31 Januari 2009.
34. Raharjo, J., Daud, W.R.W., Muhamad, N., Muchtar, A.&Majlan, E.H.. 2009. Pembuatan butang sel elektrolit berasaskan komposit SDC-(Li/Na)<sub>2</sub>CO<sub>3</sub> untuk sel fuel oksida pepejal bersuhu sederhana/rendah. Prosiding Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
35. Dedikarni, Muchtar, A., Muhamad, N.&Daud, W.R.W.. 2009. Kesan pengulangan salutan Ag<sub>2</sub>O<sub>3</sub>-Bi<sub>2</sub>O<sub>3</sub> terhadap keliangan katod. Prosiding Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
36. Sastaviana, N., Muchtar, A., Daud, W.R.W., Muhamad, N.&Majlan, E.H.. 2009. Sintesis dan morfologi komposit NiO-SDC sebagai bahan anod sel fuel oksida pejal. Prosiding Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Disember 2009. Hotel Hydro Penang, Malaysia.
37. Raharjo, J., Daud, W.R.W., Muhamad, N., Muchtar, A.&Majlan, E.H.. 2009. Development of composite electrolytes based on samarium doped ceria-carbonate for low temperature solid oxide fuel cells. Proceeding of the Graduate Publication Workshop. ISBN 978-983-2982-26-5. 30-31 Mac 2009. Residence Hotel, UNITEN, Serdang, Malaysia.
38. Dedikarni, Muchtar, A., Muhamad, N.&Daud, W.R.W.. 2009. Synthesis and characterisation of  $\delta$ -Bi<sub>2</sub>O<sub>3</sub> Thin film electrolyte on electrodes by electrophoretic deposition method. Proceeding of the Graduate Publication Workshop. ISBN 978-983-2982-26-5. 30-31 Mac 2009. Residence Hotel, UNITEN, Serdang, Malaysia.
39. Raharjo, J., Daud, W.R.W., Muhamad, N., Muchtar, A.&Majlan, E.H.. 2009. Pencirian sifat mikrostruktur komposit elektrolit berasaskan ceria-carbonat pada kandungan yang berbeza untuk sel fuel oksida pepejal. Prosiding Seminar dan Pameran Sel Fuel: Peluang, Cabaran dan Perkembangan Penyelidikan Sel Fuel di UKM Jilid II. ISBN 9789834-43492. 25-26 Mac 2009. Palace of the Golden Horses, Serdang, Malaysia.
40. Dedikarni, Muchtar, A., Muhamad, N.&Daud, W.R.W.. 2009. sintesis elektrolit filem nipis  $\delta$ - bi<sub>2</sub>o<sub>3</sub> di atas elektrod menggunakan kaedah pengendapan elektroporesis. Prosiding Seminar dan Pameran Sel Fuel: Peluang, Cabaran dan Perkembangan Penyelidikan Sel Fuel di UKM Jilid II. ISBN 9789834-43492. 25-26 Mac 2009. Palace of the Golden Horses, Serdang, Malaysia.
41. Kazemian, H., Daud, W.R.W., Yaakob, Z., Torkaman, R., Ahmadi, M.& Alinejad, M.M.. 2009. Controled synthesis of ultrathin zeolite membrane on nanoporous anodic alumina (Npaa) substrate. Proceeding of 25th Regional Conference on Solid State Science and Technology 2009 RCSSST '09: Solid State Science and Technology for Scientific Advancement. 21-23 Disember 2009. Penang, Malaysia.
42. Shahgaldi, S., Yaakob, Z., Moradi, S., Nevis, M.G.&Daud, W.R.W.. 2009. Growth of aligned carbon nanowalls and carbon nanotubes on glass substrate at atmospheric pressure through the thermal chemical vapor deposition method. Proceeding of 25th Regional Conference on Solid State Science and

- Technology 2009 RCSSST '09: Solid State Science and Technology for Scientific Advancement. 21-23 Desember 2009. Penang, Malaysia.
43. Hakim, L., Yaakob, Z., Ismail, M.&Daud, W.R.W. 2009. Production of hydrogen via glycerol steam reforming on Ni loaded hydroxyapatite as biomaterial catalysts. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Desember 2009. Hotel Hydro Penang, Malaysia.
  44. Sari, R., Yaakob, Z.&Daud, W.R.W. 2009. Hydrogen production from methanol steam reforming in palladium-silver membrane reactor. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Desember 2009. Hotel Hydro Penang, Malaysia.
  45. Shahgaldi, S., Yaakob, Z.&Daud, W.R.W.. 2009. Investigation of hydrogen storage in nanomaterials. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Desember 2009. Hotel Hydro Penang, Malaysia.
  46. Shahgaldi, S., Yaakob, Z., Moradi, S., Nevis, M.G.&Daud, W.R.W.. 2009. Effect of two layers metallic thin films on growth of carbon nanowalls by TCVD. Nanotech Malaysia 2009. 27-29 Oktober 2009. KLCC Malaysia.
  47. Kazemian, H., Daud, W.R.W.&Yaakob, Z.. 2009. Health and environmental concerns of nanomaterials. Nanotech Malaysia 2009. 27-29 Oktober 2009. KLCC Malaysia.
  48. Kazemian, H., Daud, W.R.W., Yaakob, Z.&Jafari, S.. 2009. Gold nano particles supported on rare earth modified FAU zeolites: A high performance novel catalyst for CO oxidation. Nanotech Malaysia 2009. 27-29 Oktober 2009. KLCC Malaysia.
  49. Minggu, L.J., Daud, W.R.W.&Kassim, M.. 2009. Morphology of WO<sub>3</sub> film prepared by different methods. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Desember 2009. Hotel Hydro Penang, Malaysia.
  50. Arifin, K., Daud, W.R.W.&Kassim, M.. 2009. DFT study on Tris{1,2-Bis(3,5-Dimethoxyphenyl)-1,2-Ethylene Dithiolenic-S,S'}Tungsten. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Desember 2009. Hotel Hydro Penang, Malaysia.
  51. Milad, A.M.H., Kassim, M.&Daud, W.R.W. 2009. Photoelectrochemical water splitting for hydrogen production using nanotube metal oxide as photoelectrode. Kolokium dan Sanggar Kerja ISF 2009. Institut Sel Fuel, UKM. 18-20 Desember 2009. Hotel Hydro Penang, Malaysia.
  52. Minggu, L.J., Daud, W.R.W.&Kassim, M.. 2009. Introduction to photoelectrochemical water splitting for hydrogen production. Prosiding Seminar dan Pameran Sel Fuel: Peluang, Cabaran dan Perkembangan Penyelidikan Sel Fuel di UKM Jilid II. ISBN 9789834-43492. 25-26 Mac 2009. Palace of the Golden Horses, Serdang, Malaysia.
  53. Arifin, K., Daud, W.R.W., &Kassim, M.. 2009. Bahan pewarna pemeka sel fotoelektrokimia untuk penghasilan hidrogen daripada air. Prosiding Seminar dan Pameran Sel Fuel: Peluang, Cabaran dan Perkembangan Penyelidikan Sel Fuel di UKM Jilid II. ISBN 9789834-43492. 25-26 Mac 2009. Palace of the Golden Horses, Serdang, Malaysia.
  54. Minggu, L.J., Daud, W.R.W.&Kassim, M.. 2009. Overview of various photocells for photoelectrochemical water splitting study. Seminar Pemantauan Separuh Penggal dan Bengkel Penulisan Kumpulan Hidrogen Suria. ISBN : 978-983-44349-4-6. 15-18 Oktober 2009. Corus Paradise, Port Dickson, Malaysia.
  55. Arifin, K., Daud, W.R.W., Rahman, F.H., Yamin, B.M., Daik, R.&Kassim, M.. 2009. Tris{1,2-Bis(3,5-Dimethoxyphenyl)-1,2-Ethylenodithiolenic-S,S'}Tungsten: Synthesis, structure, electrochemistry and photostability study. Seminar Pemantauan Separuh Penggal dan Bengkel Penulisan Kumpulan

- Hidrogen Suria. ISBN : 978-983-44349-4-6. 15-18 Oktober 2009. Corus Paradise, Port Dickson, Malaysia.
56. Arifin, K., Minggu, L.J., Daud, W.R.W., Kassim, M.&Yamin, B.M. 2009. Crystal structure and DFT studies of Tris{1,2-Bis(3,5-Dimethoxyphenyl)-1,2-Ethylenedithiolenic-S,S'}Tungsten. Seminar Pemantauan Separuh Penggal dan Bengkel Penulisan Kumpulan Hidrogen Suria. ISBN : 978-983-44349-4-6. 15-18 Oktober 2009. Corus Paradise, Port Dickson, Malaysia.
  57. Milad, A.M.H., Lorna Jeffry, Kassim, M.&Daud, W.R.W. 2009. Doping of semiconductors with C or N2 to photoelectrochemical water splitting. Seminar Pemantauan Separuh Penggal dan Bengkel Penulisan Kumpulan Hidrogen Suria. ISBN : 978-983-44349-4-6. 15-18 Oktober 2009. Corus Paradise, Port Dickson, Malaysia.
  58. Esfandarani, T.M., Minggu, L.J., Daud, W.R.W.&Kassim, M.. 2009. Synthesis, characterization and photoelectrochemical study of nanocrystalline Fe2O3/TiO2, Fe2O3/SiO2 and Fe2O3/SiO2/TiO2 composite film electrodes for water splitting. Seminar Pemantauan Separuh Penggal dan Bengkel Penulisan Kumpulan Hidrogen Suria. ISBN : 978-983-44349-4-6. 15-18 Oktober 2009. Corus Paradise, Port Dickson, Malaysia.
  59. Esfandarani, T.M., Minggu, L.J., Daud, W.R.W.&Kassim, M.. 2009. Synthesis and characterization of Fe2O3/SiO2/TiO2 composite thin film on different substrate for water splitting. Seminar Pemantauan Separuh Penggal dan Bengkel Penulisan Kumpulan Hidrogen Suria. ISBN : 978-983-44349-4-6. 15-18 Oktober 2009. Corus Paradise, Port Dickson, Malaysia.
  60. Eftekhari, E., Minggu, L.J., Kassim, M.&Daud, W.R.W. 2009. Review of deposition method to prepare metal oxide thin film for photoelectrochemical water splitting. Seminar Pemantauan Separuh Penggal dan Bengkel Penulisan Kumpulan Hidrogen Suria. ISBN : 978-983-44349-4-6. 15-18 Oktober 2009. Corus Paradise, Port Dickson, Malaysia.
  61. Memar, A., Minggu, L.J., Daud, W.R.W.&Kassim, M.. 2009. Review of different methods of preparation iron oxide photo anode application in water splitting. Seminar Pemantauan Separuh Penggal dan Bengkel Penulisan Kumpulan Hidrogen Suria. ISBN : 978-983-44349-4-6. 15-18 Oktober 2009. Corus Paradise, Port Dickson, Malaysia.
  62. Rahman, F.H., Minggu, L.J., Arifin, K., Kassim, M.&Daud, W.R.W. 2009. A Review: Recent development of visible-lightdriven hybrid photoelectrode for water splitting. Seminar Pemantauan Separuh Penggal dan Bengkel Penulisan Kumpulan Hidrogen Suria. ISBN : 978-983-44349-4-6. 15-18 Oktober 2009. Corus Paradise, Port Dickson, Malaysia.
  63. Arifin, K., Minggu, L.J., Daik, R., Daud, W.R.W.&Kassim, M.. 2009. Tris(dithiolene) tungsten as dye sensitizers for photocatalytic applications. Proceeding of the Graduate Publication Workshop 2009. p. 53-54. ISBN 978-983-2982-26-5. Fakulti Kejuruteraan dan Alam Bina, UKM. 30-31 Mac 2009. The Residence Hotel, UNITEN, Serdang.

#### Year 2008:

64. Daud, W.R.W. 2008. Teknologi Islam, Bengkel Pengislaman Ilmu ASASI II 2008. 18 Oktober 2008, Jabatan Matematik, Fakulti Sains dan Teknologi, Universiti Putra Malaysia.
65. Daud, W.R.W. 2008. Kimia hijau dalam kerangka teknologi Islam. Bengkel Intensif Pengislaman Sains Siri ke 2: Pengislaman Ekologi dan Pengajian Alam Sekitar -Sejarah, Falsafah dan Pelaksanaan, 10-11 Mei 2008, EIMAS, UKM, Bangi.
66. Husaini, T., Daud, W.R.W., Mohammad, A.W.&Yaakob, Z.. 2008. Modeling of methanol water membrane reactor for hydrogen production. Kolokium dan Sanggar Kerja Institut Sel Fuel UKM I: 1-6, Langkawi, 21-23 November 2008

67. Hosseini, S., Mohamad, A.B., Daud, W.R.W., Abdul Amir Hassan Khadum 2008. Analysis and Modeling of Overpotentials in a Solid Acid Fuel Cell Kolokium Sel Fuel I, Langkawi

**Year 2007:**

68. Minggu, L.J., Daud, W.R.W.&Kassim, M. 2007. Types Of Photoelectrochemical Cells For Hydrogen Production From Water Splitting. 21<sup>st</sup> Symposium of Malaysian Chemical Engineers, Universiti Putra Malaysia, 12-14 Disember 2007, Paper no. ET013.
69. Nordin, M.F.M., Daud, W.R.W., Talib, M.Z.M., Hassan, O.. 2007. Pengerangan Buah Mata Naga Merah (*Hylocereus undatus*) Menggunakan Pengerang Gelombang Mikro. Prosiding Seminar Penyelidikan Siswazah 2007, pp 69 – 75.
70. Hasran, U.A., Kamarudin, S.K., Daud, W.R.W., Burhanuddin, Y.M., Mohamad, A.B., Kadhum, A.A.H.2007. Prestasi & Ulasan Perbandingan Model Mikro Sel Bahan Api Metanol Sistem Langsung (DMFC). SPS2007, ESSET, Bangi. 99 – 103.
71. Hasran, U. A., Kamarudin, S. K., Daud, W. R. W., Ramli, S., Hashim, N., Ahmad, M.S.M., Basri, S. 2007. OCV Study on the Performance of a Micro Direct Methanol Fuel Cell. International Networking for Young Scientists in Renewable Energy Technology (INYSRE). Puri Pujangga, Universiti Kebangsaan Malaysia.

**Year 2006:**

72. Jajaei, S.M., Daud, W.R.W., Zakaria, Z., Kadhum, A.A.H., Markom, M. 2006. Optimization of Supercritical CO<sub>2</sub> Extraction of Essential Oil from Herbs, Seminar Penyelidikan Siswazah, UKM, 29-30 August 2006, ms 85- 87

**Year 2005:**

73. Jajaei, S.M., Daud, W.R.W., Kadhum, A.A.H., Markom, M. 2005 Extraction of Essential oil from *Melaleuca* sp. Using Supercritical Fluid Method, Seminar Penyelidikan Siswazah UKM, ms. 125-128
74. Jajaei, S.M., Daud, W.R.W., Kadhum, A.A.H., Markom, M. 2005 Extraction Essential oil from *Zataria multiflora* Using Supercritical Fluid Method. Seminar on the application of Supercritical Fluid Technology: Towards Green Technology for the Earth, Dec 3rd 2005 USM, ms. 12-17
75. Ani, F. &Daud, W.R.W. 2005. Manufacturing of Carbon Molecular Sieve for O<sub>2</sub> /N<sub>2</sub> Separation From Oil Palm Shell by Chemical Vapor Deposition of Ethane, National Conference On Advanced In Mechanical Engineering 2005.

**Year 2004:**

76. Daud, W.R.W. 2004. Challenges and Future Developments in Fuel Cells, Keynote Paper, Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Plenary Paper 2B.2.
77. Husaini, T., Daud, W.R.W., Mohammad, A.W.&Yaakob, Z.. 2004. Methanol-Water Membrane Reactor for Hydrogen Production, Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. I, p. 1.46- 1.49.
78. Harahap, N., Rosli, M.I., Mohamad, A.B., Kadhum, A.A.H. &Daud, W.R.W. 2004. Performance of Membrane Electrode Assembly Fabrication Using Hot Press, Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. I, pp. 1-57-1-60.

79. Arifin, K., Daud, W.R.W., Kassim, M. & Daik, R.. 2004. Synthesis and Characterisation of Trans[1-(4-Methoxyphenyl)-2-(4-Carboxylphenyl)-1,2-Ethylenedithioleneic-S,S'] Tungsten Photocatalyst for Hydrogen Production from Water. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. I, pp. 1-92-1-96.
80. Rahman, F.H., Kassim, M., Daik, R. & Daud, W.R.W.. 2004. Heterogenous Tungsten Photocatalyst Precursor for Water Hydrolysis. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. I, pp. 1-97 – 1-99.
81. Ibrahim, M.A., Yaakob, Z., Daud, W.R.W., & Kadhum, A.A.H.. 2004. Preparation and Characterization of Metal Mixed Oxides Catalysts for Steam Reforming of Methanol: A Literature Review. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. I, pp. 1-100-1-106.
82. Mahmud, M.S., Yaakob, Z., Daud, W.R.W., & Mohamad, A.B.. 2004 Characterisation of Cu-Zn-Al Oxides Catalyst Promoted with Vanadia for Oxidative Steam Reforming of Methanol by BET and TPR Testes. The Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. I, pp. 1-222 – 1-227.
83. Yosfiah, M.R., Yaakob, Z., Daud, W.R.W., & Jahim, J.. 2004. Influence of Ni Metal Concerning of Gamma Alumina ( $\gamma\text{Al}_2\text{O}_3$ ) Support. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. I, pp. 1-242-1-245.
84. Hasibuan, R. & Daud, W.R.W.. 2004. Superheated Steam Drying of Empty Fruit Bunches Fiber Effects on Physical Strength and Color Properties. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. I, pp. 2-20 – 2-26.
85. Panuh, D., Sahari, J., Muhamad, N. & Daud, W.R.W.. 2004. Electrically Conducting Polymer Composite for Bipolar Plate. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. I, pp. 2-56 – 2-59.
86. Miloud, S., Sopian, K. & Daud, W.R.W.. 2004. Interdigitated Flow Field Pattern of the Proton Exchange Membrane Fuel Cell. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. II, pp. 4-3 – 4-8.
87. Rosli, M.I., Harahap, N., Sopian, K., Sahari, J. & Daud, W.R.W.. 2004. Development and performance of an Open Air Cathode PEM Fuel Cell Stack. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. II, pp. 4-9-4-12.
88. Majlan, E.H., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Mohammad, A.W., Takriff, M.S., Som, A.M. & Iyuke, S. E. 2004. Compact Pressure Swing Adsorption System for Hydrogen Purification in PEM Fuel Cell. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. II, pp. 4-13-4-17.
89. Masdar, M.S., Daud, W.R.W., Sopian, K. & Sahari, J.. 2004. Predicting the Performance of Proton Exchange Membrane Fuel Cell. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. II, 4-18-4-4-28.

90. Hassan, N.S.M., Daud, W.R.W., Sopian, K.&Sahari, J.. 2004. Variation of Water Content of Gas Flows in the Anode and Cathode of a Conventional Flow Field PEM Fuel Cell. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. II, pp. 4-29-4-36.
91. Mahreni, A., Mohamad, A.B., Kadhum, A.A.H. &Daud, W.R.W.. 2004. Review on Membrane Electrode Assembly to Proton Electrolyte Membrane Fuel Cell (PEMFC). Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. II, pp. 4-37-4-43.
92. Mohamad, A.B., Daud, W.R.W., Kadhum, A.A.H. & Sitanggang, R.. 2004. Current density model of Membrane electrode Assembly manufactured by X-Y Robotic Sprayer. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. II, pp. 4-44-4-51.
93. Abu Bakar, M.H. , A. B Mohamad, Kadhum, A.A.H. &Daud, W.R.W. 2004. Highly Modified Activated Carbon of Nano Particle Size Exhibits Higher Pore Surface Area. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol. II, pp. 5-99-5-104.
94. Loke, Y.K., Mohammad, A.W., Takriff, M.S., Som, A.M.&Daud, W.R.W. 2004. Conceptual Design of 5 kW Methanol-Based PEM Fuel Cell System. Proceedings of the 18th Symposium of Malaysian Chemical Engineers, 13 – 14 December 2004, Universiti Teknologi Petronas, Bandar Seri Iskandar Tronoh, Ipoh, Perak, Vol.II, 6-81-6-89..
95. Rahman, F.H., Kassim, M., Daik, R. &Daud, W.R.W.. 2004. Dithiolene tungsten photocatalyst precursor for water electrolysis. Prosiding Seminar Nasional Teknik Kimia 2004, 2 Oktober 2004, Universitas Sumatera Utara , Medan, Indonesia, pp. B-03-1 – B-03-5.
96. Abu Baka, M.H., Sitanggang, R., Harahap, N., Mohamad, A.B., Kadhum, A.A.H. &Daud, W.R.W.. 2004. Low Platinum Loading Catalyst Preparation Impacts in MEA Fuel Cell Performance. Prosiding Seminar Nasional Teknik Kimia 2004, 2 Oktober 2004, Universitas Sumatera Utara , Medan, Indonesia, pp. .
97. Rosli, M.I., Sopian, K., Sahari, J., &Daud, W.R.W. 2004 Design, Assembly, and Operation of PEM Fuel Cell Stack, Prosiding Seminar Nasional Teknik Kimia 2004, 2 Oktober 2004, Universitas Sumatera Utara , Medan, Indonesia, pp.
98. Harahap, N., Rosli, M.I., Mohamad, A.B., Kadhum, A.A.H., &Daud, W.R.W. 2004. Pembuatan Membrane Electrode Assembly (Mea) Menggunakan Hot Press Untuk Pem Fuel Cell Sebagai Energi Alternatif, Prosiding Seminar Nasional Teknik Kimia 2004, 2 Oktober 2004, Universitas Sumatera Utara , Medan, Indonesia
99. Majlan, E.H., Daud, W.R.W., Rosli, M.I., Hassan, N.S.M., Masdar, M.S., & Sitanggang, R.. 2004. Fuel Cell Dalam Menyosong Krisis Energi Global, Prosiding Seminar Nasional Teknik Kimia 2004, 2 Oktober 2004, Universitas Sumatera Utara , Medan, Indonesia.
100. Mimi Hani Abu Bakar, Mohamad, A.B., Kadhum, A.A.H. &Daud, W.R.W.. 2004. Low Platinum Loading Catalyst Preparation and Characterzations. Advances in Fuel Cell Research and Development in Malaysia 2004, 3-4 Disember 2004, Melaka, pp. 14 -20.
101. Rahman, F.H., Kassim, M., Daik, R. &Daud, W.R.W.. 2004. Heterogenous photocatalyst precursor for hydrogen production. Advances in Fuel Cell Research and Development in Malaysia 2004, 3-4 Disember 2004, Melaka, pp. 202-206.
102. Sitanggang, R., Mohamad, A.B., Daud, W.R.W.& Kadhum, A.A.H. 2004. The Manufacturing Study of Membrane Electrode Assembly Applying Spraying Technology. Advances in Fuel Cell Research and Development in Malaysia 2004, 3-4 Disember 2004, Melaka, pp. 8-13..

103. Rosli, M.I., Sopian, K., Sahari, J.&Daud, W.R.W.. 2004. Development and Performance of a 1 kW PEM Fuel Cell Stack. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 45 - 48.
104. Miloud, S., Sopian, K.&Daud, W.R.W.. 2004. Interdigitated Flow Field Pattern PEM Fuel Cell. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 49-55.
105. Masdar, M.S., Sopian, K., Daud, W.R.W.&Sahari, J.. 2004. Performance Characteristics of PEMFC with Various Flow-Field Patterns. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 56-67.
106. Harahap, N., Rosli, M.I., Mohamad, A.B., Kadhum, A.A.H. &Daud, W.R.W.. 2004. Pressure Optimization in membrane Electrode Assembly Fabrication by Hot pressing for PEM Fuel Cell. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 74-78.
107. Mahreni, A., Mohamad, A.B., Kadhum, A.A.H. &Daud, W.R.W.. 2004. Organosilicate as Precursor to Improve the Surface Linking Structure between Membrane Electrolyte-Electrode Proton Electrolyte Membrane Fuel cell using Sol-Gel method. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 79-85.
108. Panuh, D., Sahari, J., Mohamad, N. &Daud, W.R.W. 2004. Graphite Composition Effects on the electrical Conductivity of Polypropylene Composite. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 101-106.
109. Yosfiah, M.R., Yaakob, Z., Daud, W.R.W.&Md Jahim, J.. 2004. The Characterisation of Ni Metal Catalyst to Produce Hydrogen from Methanol. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 107-111.
110. Majlan, E.H., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Mohammad, A.W., Takriff, M.S., Som, A.M.& Iyuke, S. E. 2004. Compact Pressure Swing Adsorption System for Hydrogen Purification in PEM Fuel Cell. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 136-141.
111. Arifin, K., Daud, W.R.W., Kassim, M.& Daik, R. 2004. Organic Synthesis Route of Tris (Dithiolenes) Tungsten Heterogeneous Photocatalyst for Hydrogen Production 2004. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 207-212.
112. Ibrahim, M., Sopian, K., Daud, W.R.W.& Ibrahim, M.Z. 2004. 1 kW Solar Hydrogen Production System. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp.213-219.
113. Ibrahim, M.Z., Sopian, K., Daud, W.R.W., Othman, M.Y.&Yatim, B. 2004. Simulation of a PV-Wind Hybrid Hydrogen Energy System Using HOMER. *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 220-225.
114. Marnoto, T., Sopian, K.&Daud, W.R.W. 2004. Futuristic and Environmental Friendly Dwellings: "Eco Wisma Suria Hydrogen". *Advances in Fuel Cell Research and Development in Malaysia 2004*, 3-4 Desember 2004, Melaka, pp. 226-232.
115. Ibrahim, M., Sopian, K.&Daud, W.R.W. 2004. A Short- Cut Design Method for Adsorber for a Solar Hydrogen System, *Advances in Malaysia Energy Research 2004* pp 93 - 101
116. Ibrahim, M.Z., Sopian, K., Daud, W.R.W., Yatim, B., Othman, M.Y. 2004. A Preliminary Investigation of Small Scale Autonomous Renewable Energy Hydrogen Production System, *Advances in Malaysia Energy Research 2004*, pp 101 – 108

117. Miloud, S., Sopian, K., &Daud, W.R.W. 2004. Experimental Analysis on Various Flow Field Patterns of The Proton Exchange Membrane Fuel Cel, *Advances in Malaysia Energy Research 2004*, pp 119-126
118. Ibrahim, M.Z., Sopian, K., Daud, W.R.W., Othman, M.Y.&Yatim, B. 2004. Performance of Malaysia's First Photovoltaic-Wind Hybrid System , *Advances in Malaysia Energy Research 2004*, pp. 189 - 194
119. Ibrahim, M.Z., Sopian, K., Daud, W.R.W., Othman, M.Y., Yatim, B. 2004. An introduction of Hydrogen energy for Malaysia towards Sustainable Energy System, *3rd Annual Seminar on Sustainability Science and Management*, 4 -5 May 2004 pp 38 -41.

**Year 2003:**

120. Masdar, M.S., Daud, W.R.W., Sopian, K.&Sahari, J. 2003. The Performance of Polarization Curve in Pem Fuel Cell with Combining Ohmic Loses and Gas Transportation at Flow Channel, *17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003*, pp. 805 – 811.
121. Rosli, M.I., Daud, W.R.W., Sopian, K., &Sahari, J. 20003. Design of Small Single Proton Exchange Membrane Fuel Cell, *17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003*, pp. 812 – 815
122. Hassan, N.S.M., Daud, W.R.W., Sopian, K.&Sahari, J. 2003 Mathematical Modeling of Water Mass Balance for Proton Exchange Membrane Fuel Cell, *17th Symposium of Malaysian Chemical Engineers, SOMChE 2003, Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003*. pp. 74 - 78
123. Majlan, E.H., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Mohammad, A.W., Iyuke, S. E., Takriff, M.S.& Ayob Md. Som 2003. Purification of hydrogen using compact pressure swing adsorptipon system for PEMFC, *Advances in Malaysian Fuel Cell Research & Development 2003*, pp. 131 – 139.
124. Loke, Y.K., Daud, W.R.W., Mohammad, A.W., Takriff, M.S., Som, A.M. 2003. Conceptual Design of a Proton Exchange Membrane (PEM) Fuel Cell System, *17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003*, pp. 822 – 827.
125. Miloud, S., Sopian, K., &Daud, W.R.W.. 2003. Simulation of a Proton Exchange Membrane Fuel Cell (PEMFC), *17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003*, pp. 30 – 35.
126. Markom, M., Singh, H., Anuar, N. &Daud, W.R.W. 2003. Supercritical Carbon Dioxide Extraction of Phyllantus Niruri: A Preliminary Study, *17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003*, pp. 276 – 281.
127. Ng, P.P., Mustapa, S.F.S., Law, C.L., Tasirin, S.M.&Daud, W.R.W. 2003. Spouted Bed Drying Behaviour of Paddy, *17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003*, pp.342 – 346.
128. Mohamad, A.B., Kadhum, A.A.H., Daud, W.R.W.& Abu Bakar, M.H.2003. The effect of Various Impregnations of Platinum Loading on Activated Carbon Substrate, *17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003*, pp. 542 – 547.
129. Minggu, L.J., Yaakob, Z., Daud, W.R.W.&Mohamad, A.B. 2003. Characterization of PdCuZn/ $\gamma$ -Alumina atalysts by XRD and TPR: For Autothermal Methanol Reforming to Produce Hydrogen, *17th Symposium*

- of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003, pp. 553 – 556.
130. Law, C.L., Tasirin, S.M.&Daud, W.R.W.. 2003. Dedusting / Separation Efficiency of Dust / Rice Husk from Rough Rice in an Inclined Fluidized Bed. 17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003, pp. 872 – 873
  131. Mohamad, A.B., Kadhun, A.A.H., Daud, W.R.W., & Harahap, N. 2003. Influence of Temperature and Pressure on Membrane Electrode Assembly (MEA) Fabrication using Hot Pressing, 17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003, pp. 878 – 880.
  132. Ibrahim, M., Sopian, K.&Daud, W.R.W. 2003. Design of a Compact Electrolyzer for Solar Hydrogen Production System, 17th Symposium of Malaysian Chemical Engineers, SOMChE 2003. Copthorne Orchid Hotel, Tanjung Bungah, Penang, Malaysia, 29 – 30 December 2003, pp. 893 – 897.
  133. Yaakob, Z., Daud, W.R.W., Mohamad, A.B.& Mahmud, M.S. 2003. Design Formulation of CuZnAl(V) catalysts in steam reforming of methanol, AMER2002, 22 Oktober 2003, Marriot Hotel Putrajaya, Pp 93-98
  134. Yaakob, Z., Daud, W.R.W., Mohamad, A.B.& Mahmud, M.S. 2003. Formulation and characterization of CuZnAl(V) catalyst in steam reforming of methanol, Advances in Malaysian Fuel Cell research and development 2003, Admiral Marine & Leisure Club, Port Dickson, 27-30 Jun 2003, Pp. 93-98
  135. Masdar, M.S., Daud, W.R.W., Sopian, K., &Sahari, J. 2003 Modeling of proton exchange membrane fuel cell with variable distance gas flow in anode and cathode. Advances in Malaysian Fuel Cell Research and Development 2003, ms. 71-78
  136. Hassan, N.S.M., Daud, W.R.W., Sopian, K., &Sahari, J. 2003 Mathematical modelling of water mass balance for proton exchange membrane fuel cell, Advances in Malaysian Fuel Cell Research and Development, ms. 2003 : 63-70
  137. Law, C.L., Tasirin, S.M., Daud, W.R.W.. 2003. Satu Model Baru Pengerangan Berdasarkan Peringkat-Peringkat Pengerangan. Prosiding Seminar IRPA RMK-7 2003, 17th-19th Jan 2003. Hotel Century Mahkota, Melaka, Malaysia, Vol. II, pg. 219-223..
  138. Law, C.L., Tasirin, S.M., Daud, W.R.W.. Peranan Sesekat Dalam Menegak Dalam Sebuah Turus Lapisan Terbendalir I: Kesannya Terhadap Hidrodinamik Lapisan Terbendalir. Prosiding Seminar IRPA RMK-7, 2003, 17th-19th Jan 2003. Hotel Century Mahkota, Melaka, Malaysia, Vol. II, pg. 224-227.
  139. Law, C.L., Tasirin, S.M.&Daud, W.R.W.. Peranan Sesekat Dalam Menegak Dalam Sebuah Turus Lapisan Terbendalir II: Kesannya Terhadap Ciri Pengerangan Bijirin. Prosiding Seminar IRPA RMK-7, 2003, 17th-19th Jan 2003. Hotel Century Mahkota, Melaka, Malaysia, Vol. II, pg. 228-231..
  140. Ng, P.P., Tasirin, S.M., Daud, W.R.W.& Law, C.L.. Prosiding Seminar IRPA RMK-7, 2003, 17th-19th Jan 2003. Hotel Century Mahkota, Melaka, Malaysia, Vol. II, pg. 232-235..
  141. Law, C.L., Tasirin, S.M.&Daud, W.R.W., Mujumdar, A.S.. 2003. Inovasi & Perkembangan Baru Dalam Teknologi Pengerangan. Kolokium Jabatan Kejuruteraan Kimia & Proses, Fakulti Kejuruteraan, UKM. Lanjut, Pahang, Malaysia. 22-24 Aug 2003.
  142. Law, C.L., Tasirin, S.M.&Daud, W.R.W.. 2003. Penerbitan satu Model Pengerangan Dalam Peringkat Kadar Pengerangan Menurun Kedua. Kolokium Jabatan Kejuruteraan Kimia & Proses, Fakulti Kejuruteraan, UKM. Lanjut, Pahang, Malaysia. 22-24 Aug 2003.

143. Law, C.L., Tasirin, S.M.&Daud, W.R.W., Mujumdar, A.S.. 2003. 2 D Drying Simulation of Cylindrical Rubber of Finite Length. Malaysian Science and Technology Congress, MSTC2003. P-138. Kuala Lumpur, Malaysia. 23-25 Sep 2003.

**Year 2002:**

144. Masdar, M.S., Miloud, S., Sopian, K., S. Abdullah, N. S. M. Masitah Hassan I., Rosli &Daud, W.R.W. 2002. Design of the fuel cell stack of a proton exchange membrane fuel cell, Advances in Malaysian Energy Research 2002, (AMER 2002 ), ms. 317-328
145. Law, C.L., Tasirin, S.M.&Daud, W.R.W.. 2002. Application of Fluidized Bed Technology in Agricultural and Food Engineering, Malaysian Chemical Congress 2002, Hilton Hotel, Kuching, Sarawak, 12-14 Dec 2002.
146. Othman, M.Y., Yatim, B., Sopian, K.&Daud, W.R.W. 2002. Merekabentuk, Memfabrikasi, Memasang & Menguji Prestasi Sistem Pengerangan Suria untuk Pengerangan Hasil Pertanian, Prosiding Seminar IRPA RMK-7 2002, Pusat Pengurusan Penyelidikan UKM, Jld II, 33 –37.
147. Yatim, B., Othman, M.Y., Daud, W.R.W.&Sopian, K. 2002. Penilaian Prestasi Sistem Suria Fotovolataik (PV) Bersambung ke Grid di UKM Bangi, Prosiding Seminar IRPA RMK-7 2002, Pusat Pengurusan Penyelidikan UKM, Jld II, 38 – 42.
148. Sopian, K., Yahya, M., Daud, W.R.W., Othman, M.Y.&Yatim, B. 2002. Sistem Pengerangan Penyahlembapan Udara Terbantu Suria untuk Herba Peubatan: Daun Pegaga (*Hydrocotyle asiatica* L.), Prosiding Seminar IRPA RMK-7 2002, Pusat Pengurusan Penyelidikan UKM, Jld II, 79 - 82.

**Year 2001:**

149. Rahman, N.A., Daud, W.R.W.& Faisal, Z. 2001. Simple Empirical Nonlinear Low-Order Model on Methanol-Water Distillation Column, SOMChE 2001, The Proceedings of the 15th Symposium of Malaysian Chemical Engineers, 11 - 12 September 2001, Johor Baharu, Johor, 271.
150. Supranto, Sopian, K., Othman, M.Y., Daud, W.R.W.&Yatim, B., 2001. Pengaruh Tinggi Celah Saluran udara terhadap Effisicnsi Pengumpul Suria Dua Pass dengan media Berpori, Prosiding Seminar Nasional "Kejuangan"Teknik Kimia Pengembangan Teknologi Pengolahan Sumber Daya Alam Indonesia, Yogyakarta, 30-31 Januari 2001, B3-1 -B3-6, ISBN 979-96137-0-1.
151. Supranto, Sopian, K., Othman, M.Y., Daud, W.R.W.&Yatim, B. 2001. Pengaruh Kecepatan Aliran udara & Intensitas Sinaran terhadap Effisicnsi Pengumpul Suria Dua Pass dengan media Berpori, Prosiding Seminar Nasional "Kejuangan"Teknik Kimia Pengembangan Teknologi Pengolahan Sumber Daya Alam Indonesia, Yogyakarta, 30-31 Januari 2001, B7-1 -B7-6, ISBN 979-96137-0-1.

**Year 2000:**

152. Daud, W.R.W. 2000. Advances in Chemical Process Design and Optimization, Keynote Paper, The 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, pp. 431-444
153. Daud, W.R.W. 2000. Kaedah Reka Bentuk Singkat Penjerap The 14<sup>th</sup> Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, pp. 445-452
154. Daud, W.R.W.& Tan, K.H. 2000. Reologi Gelatin Berkekuatan Gel Berlainan The 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, pp. 157 – 162
155. Chebbi, R., Daud, W.R.W., Kadhum, A.A.H., Mohamad, A.B.& Yarmo, M.A., 2000. Surface Analysis of Polytetrafluoroethylene/Carbon and Platinum/Carbon/Polytetrafluoroethylene of Electrode Using X-Ray Photoelectron Spectroscopy (Xps) Technique, The 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, pp. 103 - 112

156. Law, C.L., Tasirin, S.M., Daud, W.R.W., Yaakob, Z., Takriff, M.S., 2000 Elutriation of Group A/B Powders from Fluidized Beds, The 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, pp. 239 – 246
157. Iyuke, S.E., Mohamad, A.B.&Daud, W.R.W. 2000. Single Component Equilibrium Isotherm Modelling, The 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, 247 – 254.
158. Daud, W.R.W., Sopian, K., Othman, M.Y., Yatim, B.& Yahya, M. 2000. Drying Characteristics of Pegaga Leaf (*Hydrocotyle Asiatica* L) The 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, 349 – 354.
159. Yeoh, H.K., Daud, W.R.W., Kadhum, A.A.H., Mohamad, A.B., Sopian, K., Salleh, M.M. 2000 Dye-Sensitized Photoelectrochemical Cells : Towards Splitting Water, The 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, pp. 367-374
160. Rahman, N.A., Daud, W.R.W.& Fisal, Z. 2000. Perbandingan Kualiti Hasil Turus Penyulingan Dari Aspek Kawalan Analisis & Kawalan Suhu The 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, pp. 543 – 550.
161. Majlan, E.H., Yaakob, Z., Daud, W.R.W., Takriff, M.S. 2000. Kesan Bahan Penjerap Keatas Proses Penjerapan Sebatian Organik Meruap Menggunakan Jerapan Sistem Hayunan Suhu The 14th Symposium of Malaysian Chemical Engineers, 30 – 31 October, Putra Jaya, Selangor, pp 597 – 604.
162. Supranto, Sopian, K., Othman, M.Y., Daud, W.R.W.&Yatim, B. 2000 Penurunan Tekanan dalam Pengumpul Suria Udara Dua pass Dengan Media BerporiProceeding Seminar Teknik Kimmia Soehadi Reksowardgojo 2000, Teknolgi Process untuk Pengolahan Sumber Daya Alam Indonesia, Institute Teknologi Bandung, 3 –4 November 2000, ISSN 0854-7769 pp 45 – 50
163. Supranto, Sopian, K., Othman, M.Y., Daud, W.R.W.&Yatim, B., 2000. Distribusi Suhu & Efisiensi Therma dalam Susunan Pengumpul Suria Seri Proceeding Seminar Teknik Kimmia Soehadi Reksowardgojo 2000, Teknolgi Process untuk Pengolahan Sumber Daya Alam Indonesia , Institute Teknologi Bandung, 3 –4 November 2000, ISSN 0854-7769, pp 51 – 58.
164. Sopian, K., Supranto, M. Y Othman, Yatim, B.&Daud, W.R.W. 2000 Prestasi Pengumpul Suria Dua Laluan dengan Media Berliang dalam Ismail Sahid & Roslan Abd. Shukor (editor) Prosiding Seminar IRPA RMK-7, Vol. II, Pusat Pengurusan ,Penyelidikan, Universiti Kebangsaan Malaysia, 20 –22 Oktober 2000, Melaka. ms. , ISBN 983-9152-87-4, ms.63 – 66.

**Year1999:**

165. Sopian, K., Supranto , Othman, M.Y. , Daud, W.R.W.&Yatim, B. 1999. Evaporative Capacity Of A Solar Assisted Drying System For Oil Palm Fronds, Advances in Malaysia Energy Research 1999, Institute of Energy and Malaysia Energy Centre, Bangi, Selangor, 26 Oktober, pp.217 -233.
166. Supranto, Sopian, K., Daud, W.R.W., Othman, M.Y.&Yatim, B. 1999. Optimum Design Parameters for the Double-Pass Solar Collector With Porous Media, Advances in Malaysia Energy Research 1998, Institute of Energy and Combustion Research Centre, UKM, ms.12 – 20.
167. Sopian, K., Yatim, B., Othman, M.Y., Daud, W.R.W.& Supranto 1999. Pembinaan Simulator Suria, (The Contruction of Solar Simulator) (Seminar for Monitoring of Research and Development),Seminar Pemantauan Peyelidekan & Pembangunan (R&D) Universiti Kebangsaan Malaysia, 30 Julai –1 Ogos 1999, ms 101-104.
168. Supranto, Sopian, K., Daud, W.R.W., Othman, M.Y., Yatim, B. 1999. Keupayaan Menyejat Sistem Pengeringan Suria Terbantu Untuk Pelepah Kelapa Sawit, Pascasidang Penyelidikan & Pembangunan 1999, Penyelidikan ke Alaf Baru, Puri Pujangga 2 – 3 November, m.s. 266 – 271.

169. Sopian, K., Supranto, Othman, M.Y., Daud, W.R.W., &Yatim, B. 1999. Pemindahan Haba & Kejatuhan Tekanan dalam Pengumpul Suria Dua Laluan Dengan Media Berliang (Heat Transfer and Pressure Drop in Double-Pass Solar Collector with Porous Media), Pascasidang Penyelidikan & Pembangunan 1999, Penyelidikan ke Alaf Baru, Puri Pujangga 2 – 3 November, m.s. 295 – 299.

**Year 1998:**

170. Yaakob, Z., Mohamad, A.B., Daud, W.R.W., & Lwin, Y., 1998. Production of Hydrogen from Steam-Metanol reforming: Characterisation of CuO/Al<sub>2</sub>O<sub>3</sub> catalysts, The 7<sup>th</sup> JSPS-VCC Seminar on Integrated Engineering, Universiti malaya, Kuala Lumpur, 7 - 8 Disember 1998, pp. 201 - 206.
171. Majlan, E.H., Yaakob, Z., Daud, W.R.W., Takriff, M.S.& Shariff, A.M., 1998. VOC Control using Thermal Swing Adsorption System, The 7<sup>th</sup> JSPS-VCC Seminar on Integrated Engineering, Universiti malaya, Kuala Lumpur, 7 - 8 Disember 1998, pp. 360 - 364.
172. Supranto, Sopian, K., Daud, W.R.W., Othman, M.Y.&Yatim, B., 1998. Optimum Design Parameters for the Double-Pass Solar Collector With Porous Media, Advances in Malaysia Energy Research 1998, pp 12 - 20.
173. Sutarno, Sopian, K., Shamsuddin, A.H., &Daud, W.R.W., 1998. Design of Photovoltaic Hydrogen Production System (PHPS), Advances in Malaysia Energy Research 1998, pp 26 - 33.
174. Daud, W.R.W.& Zain, S.M., 1998. PeMelayuan, Pengislaman & PeMalaysiaan Ilmu Sains & Teknologi dalam Konteks Dasar Sains Negara, Seminar Dasar Sains & Teknologi Negara, Kelab Rekreasi UKM, 16 - 17 hb September 1998.
175. Daud, W.R.W. 1998. Teknologi & Pembangunan, Seminar Falsafah, Teknologi & Pembangunan: Beberapa Persoalan Epistimologi, Universiti Malaya, 21 Mac 1998.

**Year 1996:**

176. Daud, W.R.W., Ibrahim, M.H., Talib, M.Z.M., Sarker, M.N.H. & Kyi, T.M.. 1996. Penyelidikan Pengeringan di UKM: Pencapaian & Cabaran. Kolokium Fakulti Kejuruteraan Universiti Kebangsaan Malaysia, di Fakulti Teknik, Universiti Sumatera Utara, Medan, Republik Indonesia, 28 November 1996 (pascasidang article in print).
177. Kyi, T.M., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H. & Shamsuddin, A.W., 1996. Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 15 - 22.
178. Daud, W.R.W., Faisal, Z. & Tan, C.L. 1996. Dynamic Model of Solvent Extractioun Plant, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 95 -100.
179. Daud, W.R.W.& Pang, T.S. 1996. Modelling of Hollow Fibre Membrane for Hydrogen Separation from Reformed Gas, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 275 - 282.
180. Kadhum, A.A.H., Daud, W.R.W., Mohamad, A.B.& Rasheed, M.H., 1996. Alkali Fusion of Malaysian Zircon Sand, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 289 - 296.
181. Kadhum, A.A.H., Daud, W.R.W., Mohamad, A.B.& Thai, L.K. 1996. Esterification Process of Palm Oil at High Pressure Condition, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 309 - 318.
182. Daud, W.R.W., Uheida, A.B., Kadhum, A.A.H., Mohamad, A.B., Sahari, J.& Yarmo, M.A. 1996. Development of CO Tolerant Nonmetallic Catalyst Electrode for Proton Exchange Membrane H<sub>2</sub>/O<sub>2</sub>

Fuel Cell (PEMFCs), Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 367 - 372.

183. Kadhum, A.A.H., Daud, W.R.W., Mohamad, A.B., & Rasheed, M.H. 1996. Development of Solid Polymer Electrolyte Membrane for Use in SPEM Fuel Cells, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96, 373 - 382.
184. Daud, W.R.W., Elalem, K., Sahari, J., Mohamad, N. & M. Kamal Ariffin M. Ihsan 1996. Heat Management in Proton Exchange Membrane Fuel Cell Stack, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 383 - 386.
185. Sahari, J., Baharin, S., Sarker, M.N.H., & Daud, W.R.W. 1996. Polymer Electrolyte Fuel Cells: A Review of Recent Development of Stacks and Water/Heat Management, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 387 - 394.
186. Yaakob, Z., Mohamad, A.B., Daud, W.R.W. & Kadhum, A.A.H. 1996. Production of Hydrogen from Methanol for Use in Fuel Cell, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 407 - 412.
187. Shariff, A.M., Daud, W.R.W., Mohamad, A.B., Kadhum, A.A.H., Faisal, Z. & Iyuke Sunny Esayegbemu 1996. Purification of Hydrogen for Use in Fuel Cell Power Plant, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 419 - 434.
188. Talib, M.Z.M., Faisal, Z., & Daud, W.R.W. 1996. Review of Proton Exchange Membrane Fuel Cell Modelling and Simulation, Proceedings of the 12th Symposium of Malaysian Chemical Engineers (SOMCE'96), 427 - 433.

#### **Year 1995:**

189. Daud, W.R.W., Abdullah, I. & Bakar, B. 1995. Rheological Characterisation of Thermoplastic Natural Rubber Blend Melt at 200°C, The Eleventh Symposium of Malaysian Chemical Engineers, SOMCE '95, 18 - 19 June 1995, Kuala Terengganu, B9-1 - B9-5.

#### **Year 1994:**

190. Daud, W.R.W., Liew, S.L., Som, A.M., Ibrahim, M.H., & Talib, M.Z.M., 1994. Computer Aided Design of Small Steam Reformers for Fuel Cells, The Tenth Malaysian Chemical Engineering Symposium, 23 - 24 Ogos, 1994, Novotel, Tanjung Bungah, Pulau Pinang, pp. 84 -94.
191. Daud, W.R.W., Faisal, Z. & Cheah, C.M., 1994. Atmospheric Discharge of Multicomponent Hydrocarbon Liquids at High Pressure and Above Its Boiling Point, The Tenth Malaysian Chemical Engineering Symposium, 23 - 24 Ogos, 1994, Novotel, Tanjung Bungah, Pulau Pinang, pp.175 - 179.
192. Daud, W.R.W., 1994. Sejarah and Falsafah Teknologi Sebagai Pencetus Daya Cipta and Daya Saing, (History & Philosophy of Technology as Nurturer of Creativity and Competitiveness) Prosiding Seminar Kebangsaan Pengajaran Sejarah and Falsafah Sains di Institusi Pengajian Tinggi, Universiti Malaya, Kuala Lumpur (in press).

#### **Year 1993:**

193. Daud, W.R.W., 1993. Pemodelan Alam Sekitar untuk Penaksiran Alam Sekitar (Environmental Modelling for Environmental Impact Assessment), Pors. Kolokium Ke-5 Fakulti Kejuruteraan UKM 1993, 26 - 30 Ogos 1993, Langkawi Island Resort, Kedah Darul Aman, 138 -143 .
194. Daud, W.R.W., Talib, M.Z.M., Daud, N.M. & Husein, M.Z. 1993. Modelling Forest Growth in Equatorial Virgin Forest, Persiandgan Ekologi Malaysia ke-2: Ecotourism in Malaysia "Prospects and Potential Impact", 6th - 7th September 1993, Shagri-La Hotel, Kuala Lumpur, 159 - 168.

195. Ibrahim, M.H., Daud, W.R.W., Ismail, M.S. & Talib, M.Z.M., 1993. Moisture Desorption Isotherms of Oil Palm Kernel, 9th. Symposium of Malaysian Chemical Engineers, 6th - 7th July 1993, Universiti Kebangsaan Malaysia.
196. Daud, W.R.W., Shariff, A.M. & Othman, Z. 1993. Estimation of Insulation Thickness for Crude Oil Pipeline Buried in Sea Bed Mud, 9th. Symposium of Malaysian Chemical Engineers, 6th - 7th July 1993, Universiti Kebangsaan Malaysia.
197. Daud, W.R.W., Ahmad, A. & Lee, H.T. 1993. A Lagrangian Oil Spill Model with Monte Carlo and Markov Chain Wind Simulation, 9th. Symposium of Malaysian Chemical Engineers, 6th - 7th July 1993, Universiti Kebangsaan Malaysia.
198. Daud, W.R.W. & Talib, M.Z.M., 1993. Computer Modelling of the Dispersion of Lighter and Heavier than Air Gaseous Emissions, 9th. Symposium of Malaysian Chemical Engineers, 6th - 7th July 1993, Universiti Kebangsaan Malaysia.
199. Myint, S., Daud, W.R.W. & Mohamad, A.B. 1993. Optimisation of Extraction of Eugenol from Clove, 9th. Symposium of Malaysian Chemical Engineers, 6th - 7th July 1993, Universiti Kebangsaan Malaysia.

**Year 1992:**

200. Daud, W.R.W., Zain, S.M., Yatim, B. & Ibrahim, T.M.A.S.T. 1992. Pembudayaan Sains and Teknologi dalam Masyarakat Melayu Menjelang Year 2020 (Culturisation of Science in Malay Society in the Year 2020), Kongres Cendekiawan Melayu III, 3 - 5 Disember 1992, Institut Teknologi MARA, Dewan Bahasa and Pustaka, Kuala Lumpur, ms. 98 - 102.
201. Sopian, K., Othman, M.Y. & Daud, W.R.W.. 1992. Solar Drying System for Agricultural Produce, Kolokium ke-4 Fakulti Kejuruteraan UKM, 17 - 19 Ogos 1992, Kuantan, ms. 88 - 97.
202. Ahmad, R., Daud, W.R.W., Abdullah, N., Faisal, Z. & Mohamad, A.B.. 1992. Perolehan Semula Unsur-unsur Nadir dari Selut Sisa Lombong Timah di Malaysia (Recovery of Rare Earths from Tin Mining Waste in Malaysia), 1992. Kolokium ke-4 Fakulti Kejuruteraan UKM, 17 - 19 Ogos 1992, Kuantan, ms. 98 - 102.
203. Rahman, R.A., Suwandi, M.S., Yusoff, M.F., Daud, W.R.W., Salihon, J., Faisal, Z., Mohamad, A.B., Abdullah, N. & Mohammad, A.W. 1992. Pendidikan and Penyelidikan Kejuruteraan Kimia and Proses dalam Menghadapi Cabaran 2020 (Chemical Engineering Education & Research Facing the 2020 Challenge), Kolokium ke-4 Fakulti Kejuruteraan UKM, 17 - 19 Ogos 1992, Kuantan, ms. 7 - 24.

**Year 1991:**

204. Daud, W.R.W., Faisal, Z. & Salihon, J., 1991, Risk Assessment and the Development of Industry, 7th Symposium of Malaysian Chemical Engineers, Universiti Kebangsaan Malaysia, 2 - 3 July 1991.
205. Daud, W.R.W., Ibrahim, M.H., Talib, M.Z.M., 1991, Penyelidikan Pengeringan di UKM : Masalah and Cabaran (Drying Research at UKM: Problems & Challenges), Kolokium Ke-3 Fakulti Kejuruteraan UKM, Pulau Pangkor, Perak, 16 - 17 Jun 1991.
206. Daud, W.R.W., Faisal, Z. & Salihon, J., 1991, Pentaksiran Risiko and Pembangunan Industri (Risk Assessment and Industrial Development), Kolokium Ke-3 Fakulti Kejuruteraan UKM, Pulau Pangkor, Perak, 16 - 17 Jun 1991.

**Year 1990:**

207. Daud, W.R.W.& Omar, Z. 1990, Simulasi Berangka Pengeringan Beraliran, (Numerical Simulation of Conductive Drying), Proc. Sixth Symposium Malaysian Chemical Engineers, June 4th - June 5th 1990, Universiti Teknologi Malaysia, Kuala Lumpur, pp. POS-1 - POS-9.
208. Daud, W.R.W., Jabar, J., Sharif, J. & Rahman, S.A. 1990, Data Kesimbangan Torium and Uranium Daripada Sisa Perlombongan Timah di dalam Sistem Air-Kerosin-TBP Berasid, (Equilibrium Data of Thorium & Uranium from Tin Mining Wastes in Acidic Water-Kerosine-TBP System), Proc. Sixth Symposium Malaysian Chemical Engineers, June 4th - June 5th 1990, Universiti Teknologi Malaysia, Kuala Lumpur, pp. FUN-1 - FUN-9.

**Year 1989:**

209. Sopian, K., Shamsuddin, A.H., Ali, Y. & Daud, W.R.W., 1989, Caandgan Rekabentuk Sistem Pengeringan Padi Menggunakan Tenaga Suria (A Proposed Design of Padi Drying System Using Solar Energy), Pros. Seminar Penggunaan Tenaga Suria Dalam Pengeringan, October 3rd 1989, Universiti Kebangsaan Malaysia, pp. 11 - 18.
210. Daud, W.R.W. 1989, Thermal Dynamics of a Drum Dryer, Second National Conference of Thermal Engineering and Science, August 15th - August 16th 1989, Putra World Trade Centre, Kuala Lumpur, pp. 52 - 60.
211. Daud, W.R.W., Yusuff, M.F. & Rao, D.S.K., 1989, Pencaman Pembolehubah-Pembolehubah Penting Dalam Proses Penghasilan Bromelin daripada Batang Nenas (Identification of Significant Variables in the Bromelin Production Process from Pineapple Stems), Proc. Fifth Symposium of Malaysian Chemical Engineers, 27 - 28 June 1989, Kuala Lumpur, pp. 217 - 230.
212. Daud, W.R.W. & Govindasamy, P., 1989, Analisis Faktor Proses Penghasilan Kitin daripada Kulit Uandg (Factor Analysis of Chitin Production Process from Prawn Shells), Proc. Fifth Symposium of Malaysian Chemical Engineers, 27 - 28 June 1989, Kuala Lumpur, pp. 355 - 362.
213. Daud, W.R.W., King, P. & Mydin, A.M., 1989, HYSIM : An Interactive Flowsheeting Simulator for the Microcomputer, Proc. First National Computer Sciece Conference, pp. 314-326, 24-25 January 1989, Universiti Malaya, Kuala Lumpur.
214. Daud, W.R.W. & Wang, S.C. 1989, Peragaan and Simulasi Dinamik Penyejat Saput Mendaki (Dynamic Modelling & Simulation of Climbing Film Evaporator), Proc. First National Computer Sciece Conference, pp. 299-313, 24-25 January 1989, Universiti Malaya, Kuala Lumpur.

**Year 1988:**

215. Daud, W.R.W., Jumari, K., Abdullah, M.P. & Mydin, A.M., 1988, Sistem Kawalan and Perolehan Data Berdasarkan Mikrokomputer untuk Alat Kromatografi Gas Hewlett Packard 5790A (Microcomputer Based Control & Data Acquisition System for HP 5790A Gas Chromatography), Prosiding Simposium Kimia Analisis Kebangsaan Kedua, pp. 136-151, 6-8 September 1988, Universiti Sains Malaysia.
216. Daud, W.R.W., 1988, Theoretical Investigation on the Conductive Drying of Thin Films of Starch Gel, Prosiding Seminar Kejuruteraan Tema Kebangsaan, pp. 226-253, 4-6 April 1988, PJ Hilton, Malaysia.
217. Daud, W.R.W., 1988, Pendekatan Modul Berjujukan Untuk Penyediaan Rajahalir Proses Berkomputer Mudah Bahagian I Imbangan Jisim, (Sequential Modular Approach to Computerised Simple Process Flowsheeting), Prosiding Seminar Sains Komputer Kebangsaan II mengenai Inovasi Komputer di Malaysia, pp. 14-1 - 14-23, 6-7 April 1988, Universiti Kebangsaan Malaysia.
218. Jumari, K., Daud, W.R.W. & Mydin, A.M., 1988, Perisian For Sistem Perolehan Data Berdasarkan kepada Mikrokomputer (A Software for a Microcomputer Based data Acquisition System), Prosiding Seminar Sains Komputer Kebangsaan II mengenai Inovasi Komputer di Malaysia, pp. 6-1 - 6-12, 6-7 April 1988, Universiti Kebangsaan Malaysia.

219. Daud, W.R.W., Ali, M.A.M. & Tan, S.H. 1988, Sistem Perolehan Data and Kawalan Dasar Mikrokomputer For Penapai, (Microcomputer Based Data Acquisition & Control System for a Fermentor), Prosiding Seminar Sains Komputer Kebangsaan II mengenai Inovasi Komputer di Malaysia, pp. 8-1 - 8-25, 6-7 April 1988, Universiti Kebangsaan Malaysia.
220. Daud, W.R.W. 1988, Calendering of Power Law Fluids, Proc. Fourth Symposium of Malaysian Chemical Engineers, 14-15 June 1988, Putra World Trade Centre, Kuala Lumpur.
221. Daud, W.R.W. 1988, Reologi Kanji Beras Tergelatin Pada Suhu Rendah (Rheology of Gelatinised Rice Starch at Low Temperature), Proc. Fourth Symposium of Malaysian Chemical Engineers, 14-15 June 1988, Putra World Trade Centre, Kuala Lumpur.
222. Aton, M.A., Nor, M.T. & Daud, W.R.W., 1988, Chemical and Biochemical Engineering at UKM, , Proc. Fourth Symposium of Malaysian Chemical Engineers, 14-15 June 1988, Putra World Trade Centre, Kuala Lumpur.

**Year 1987:**

223. Daud, W.R.W. & Armstrong, W.D., 1987, Conductive Drying Characteristics of Gelatinized Starch, Proc. Third Symposium of Malaysian Chemical Engineers, 15-16 June 1987, Universiti Teknologi Malaysia.
224. Jumari, K., Daud, W.R.W., Aziz, M.K.A. & Mydin, A.M., 1987, Microcomputer Based Data Acquisition System for a QVF Climbing Film Evaporator, Proc. National Seminar on Computer Applications in Instrumentation and Control System, pp. 55-66, 27-28 October 1987, Universiti Malaya, Kuala Lumpur.

**Year 1986:**

225. Daud, W.R.W. 1986, Theories of Drying - A Review, Proc. Second Symposium of Malaysian Chemical Engineers, pp. 18-49, 24-25 June 1986, Universiti Kebangsaan Malaysia.

**d. General Articles**

**Year 1993:**

1. Daud, W.R.W. 1993. Sejarah Teknologi Melayu (A History of Malay Technology), dalam Aziz Deraman (peny.), Tamadun Islam di Alam Melayu (Islamic Civilisation in the Malay World), Dewan Bahasa and Pustaka, Kuala Lumpur.
2. Daud, W.R.W. 1993. Pemikiran sains al-Biruni (al-Biruni's Scientific Thought), ASASAINS, 1/93, ms. 3 - 19
3. Daud, W.R.W. 1993. Sejarah Teknologi Kimia (A History of Chemical Technology), ASASAINS, 1/93. ms. 20 - 45.
4. Daud, W.R.W. 1993. Falsafah Sains al-Biruni (al-Biruni's Philosophy of Science), dalam Othman, M.Y. et al. (peny.), Siri Wacana Sejarah and Falsafah Sains (Discourse on History and Philosophy Series), Vol. 2, Dewan Bahasa and Pustaka, Kuala Lumpur, ms. 39 - 55.

**Year 1992:**

5. Daud, W.R.W. 1992, Sejarah Perkembangan Teknologi dalam Tamadun Islam (History of Technology Development in Islamic Civilisation), ASASAINS, 1/92, 1992, pp.1-15

**Year 1990:**

6. Daud, W.R.W. 1990, Islamic Technology : A Preliminary Study, MAAS Journal of Islamic Science, Vol. 6, No. 1, pp. 79 - 85.
7. Daud, W.R.W., Yusof, K.M., Basri, H., Ali, Y. & Jumari, K. 1990, Sejarah and Falsafah Sains and Teknologi: Kepentingannya dalam Kurikulum Kejuruteraan Prasiswazah (History & Philosophy of Science & Technology: Its Impostance in the Undergraduate Engineering Curriculum), Kolokium Kedua Fakulti Kejuruteraan Universiti Kebangsaan Malaysia, March 13th - March 15th 1990, Port Dickson, Negeri Sembilan, pp. 1 - 14.

#### **Year 1989:**

8. Daud, W.R.W. 1989. Teknologi Islam: Satu Gagasan Awal (Islamic Technology : A Preliminary Study), ASASAINS, 3/89, pp 11- 24..

### **Book Publocations**

#### **a. International Books**

##### **i International Research Books**

1. Woo, M.W., Mujumdar, A.S. & Daud, W.R.W. (Ed.) 2010 Spray Drying Technology, Volume 1, E-book, [URL: http://serve.me.nus.edu.sg/aron/file/Publications/books/Spray%20Drying%20Technology.pdf](http://serve.me.nus.edu.sg/aron/file/Publications/books/Spray%20Drying%20Technology.pdf) pada 7 January 2011.
2. Woo, M.W., Mujumdar, A.S. & Daud, W.R.W. 2010. Spray Drying: Operation, Deposition & CFD Modelling. Saarbrücken, Germany: VDM Publishing House.

##### **ii. Chapters in International Research Books**

1. Wan Ramli Wan Daud 2015. Drum dryers. Dalam Mujumdar, A. S. (Peny.) Handbook of Industrial Drying, Fourth Edition, Boca Raton: CRC Press. pp. 249 – 257.
2. Chung Lim Law, Wan Ramli Wan Daud & Arun S. Mujumdar. 2014. Emerging Drying Technologies for Agricultural Products. In Introduction to Advanced Food Process Engineering, J.K. Sahu (ed.). Boca Raton: CRC Press, Pg. 31-77.
3. Mahreni, Mohamad, A.B., Kadhum, A.A.H. & Daud, W.R.W., 2011. Nanocomposite Electrolyte for PEMFC Application. Dalam Reddy, B. (Penye.). Advances in Nanocomposites - Synthesis, Characterization and Industrial Applications. Rijeka Croatia: Itech - Open Access Publisher pp. 263-288. [http://www.intechopen.com/source/pdfs/15408/InTech-Nanocomposite\\_electrolyte\\_for\\_pemfc\\_application.pdf](http://www.intechopen.com/source/pdfs/15408/InTech-Nanocomposite_electrolyte_for_pemfc_application.pdf)
4. Woo, M.W., Mujumdar, A.S. & Daud, W.R.W.. 2010. CFD Simulation of Spray Dryers. Di dalam Woo, M.W., Mujumdar, A.S. & Daud, W.R.W. (Peny.) Spray Drying Technology, Volume 1, E-book, [URL: http://serve.me.nus.edu.sg/aron/file/Publications/books/Spray%20Drying%20Technology.pdf](http://serve.me.nus.edu.sg/aron/file/Publications/books/Spray%20Drying%20Technology.pdf) pada 7 January 2011
5. Daud, W.R.W. 2006. Drum dryers. Di dalam Mujumdar, A. S. (Peny.) Handbook of Industrial Drying. Boca Raton: CRC Press. pp. 203 – 233.

##### **iii. Editing of International Conference Proceedings**

1. Daud, W.R.W. (Chief Editor), Takriff, M.S., Mohammad, A.W., Mohamad, A.B., Talib, M.Z.M., Tasirin, S.M., Abdullah, A.R.S., Md Jahim, J., Anuar, N., Markom, M. & Shuhaida Harun (Editors). Proceedings of the 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia, 2 Vol. 2000 pp.

2. Daud, W.R.W. (Chief Editor), Takriff, M.S., Tasirin, S.M., Abdullah, E.C., Ariffin, A.K., Mohammad, A.W., Muchtar, A., Abdullah, S., Chuah Teong Guan, Anuar, N. & Noorhisham Tan Kifli (Editors). 2003. Proceedings of the 2nd Asian Particle Technology Symposium (APT2003), 17-19 Dec 2003, Penang, Malaysia, 2 Vol., 1217 pp.
3. Daud, W.R.W. (Chief Editor), Rashid, A.K.A, Hamdan, A.R., Majlis, B.Y., Haron, C.H.C., Yusoff, K.M., Sopian, K., Jumari, K., Mahadi, N.M., Rahman, R.A., Saari, S., Ahmad, S. & Abdullah, S. (Editors). 2003. Proceedings of the 3rd International Conference on Advances in Strategic Technologies, Renaissance Hotel, Kuala Lumpur, Malaysia, 12 – 14 August 2003, 2 Vol., 1814 pp.
4. Daud, W.R.W. (Chief Editor), Sopian, K., Tasirin, S.M., Yatim, B., Othman, M.Y. & Rukunudin, I.H. (Editors) 2001. ADC 2001 : High Quality Product through Efficient and Environmental Friendly Drying Technology, Proceedings of the 2nd Asian-Oceania Drying Conference, 20 – 22 August 2001, Golden Sands Resort, Batu Feringhi, Pulau Pinang, Malaysia, 758 pp.
5. Daud, W.R.W. (Chief Editor), Shamsuddin, A.H., Rahman, R.A., Sembok, T.M.T., Sahari, J., Taha, M.R., Sopian, K., Mohamed, R., Shukur, R.A., Rashid, Z.A.A., Haron, C.H.C., & Abdullah, S. (Editors) 2000. ICAST 2000, The Proceeding of the 2nd International Conference on Strategic Technologies, 2 Vol., 1814 pp.

## **b. National Books**

### **ii. National Research Books**

1. Daud, W.R.W. 2010. Kejuruteraan: Seni atau Sains?, Syarahan Perdana, Bangi: Penerbit UKM. 94 pp.
2. Daud, W.R.W., 1992, Penyampaian Pneumatik, Kuala Lumpur: Dewan Bahasa and Pustaka, 158 pp.

### **ii. Chapters in National Research Books**

1. Daud, W.R.W. 2009. Sejarah Perkembangan Teknologi Melayu: Satu Kajian Awal. Dalam Othman, M.Y. (Penyelaras) 2009. Wacana Sejarah dan Falsafah Sains: Sains dan Masyarakat. Kuala Lumpur: Dewan Bahasa & Pustaka, pp.14-53.
2. Daud, W.R.W. 2009. Falsafah Sains Al-Biruni. Dalam Othman, M.Y. (Penyelaras) 2009. Wacana Sejarah dan Falsafah Sains: Sains dan Masyarakat. Kuala Lumpur: Dewan Bahasa & Pustaka, pp.172-185.
3. Daud, W.R.W. 2009. Teknologi dan Pembangunan. Dalam Othman, M.Y. (Penyelaras) 2009. Wacana Sejarah dan Falsafah Sains: Sains dan Masyarakat. Kuala Lumpur: Dewan Bahasa & Pustaka, pp.541-547.
4. Daud, W.R.W. 1993. Sejarah Teknologi Melayu dalam Aziz Deraman (peny.), Tamadun Islam di Alam Melayu, Kuala Lumpur: Dewan Bahasa and Pustaka.
5. Daud, W.R.W. 1993. Falsafah Sains al-Biruni. Dalam Othman, M.Y. (peny.), Siri Wacana Sejarah and Falsafah Sains, Vol. 2, Kuala Lumpur: Dewan Bahasa and Pustaka, pp. 39-55.

### **iii. National Text Book**

1. Daud, W.R.W. 2002. Prinsip Reka Bentuk Proses Kimia, Bandar Baru Bangi: Institusi Jurutera Kimia Malaysia, 322 pp.

### **iv. Translated Books**

1. Daud, W.R.W. (Translator) 1991. Pengenalan kepada Kendalian Pengeringan Secara Industri, Kuala Lumpur: Dewan Bahasa and Pustaka, 1991, translated from Kee, R. B. 1979. Introduction to Industrial Drying Operations, Oxford: Pergamon Press, 352 pp.
2. Daud, W.R.W., Salihon, J., Hamid, K.H.K., Abdullah, N. & Rahman, R.A. (Translators) 1994. Kejuruteraan Kimia : Rekabentuk, Vol. 6, Kuala Lumpur: Dewan Bahasa and Pustaka translated from Coulson, J. M. & Richardson, J. F. 1983, Chemical Engineering : Design, Vol. 6, Oxford: Pergamon Press, 971 pp..

## **v. Editing of Journals**

1. Daud, W.R.W. (Guest Editor) Special Issue of International Journal of Hydrogen Energy Vol. 38 No. 22 for selected papers from The 3rd International Conference on Fuel Cells and Hydrogen Technology 2011.
2. Daud, W.R.W. (Chief Editor), Othman, M., Ali, M.A.M., Mohamed, A., Fauzi, M., Taha, M.R., Sahari, J., Zain, F.M., Abdullah, N. & Muhamad, N. 1999. Jurnal Kejuruteraan, Vol. 11(1), 80 pp.
3. Daud, W.R.W. (Chief Editor), Othman, M., Ali, M.A.M., Mohamed, A., Fauzi, M., Taha, M.R., Sahari, J., Zain, F.M., Abdullah, N. & Muhamad, N. 1999. Jurnal Kejuruteraan, Jld 11(2), 101 pp.
4. Daud, W.R.W. (Chief Editor), Othman, M., Ali, M.A.M., Mohamed, A., Fauzi, M., Taha, M.R., Sahari, J., Zain, F.M., Abdullah, N. & Muhamad, N. 2000. Jurnal Kejuruteraan, Vol. 12, 116 pp.
5. Daud, W.R.W. (Chief Editor), Othman, M., Ali, M.A.M., Mohamed, A., Fauzi, M., Taha, M.R., Sahari, J., Zain, F.M., Abdullah, N. & Muhamad, N. 2001. Jurnal Kejuruteraan, Vol. 13, 125 pp.
6. Daud, W.R.W. (Chief Editor), Othman, M., Ali, M.A.M., Mohamed, A., Fauzi, M., Taha, M.R., Sahari, J., Zain, F.M., Abdullah, N. & Muhamad, N. 2002. Jurnal Kejuruteraan, Vol. 14, 107 pp.
7. Daud, W.R.W. (Chief Editor), Darus, Z.M., Mohammad, A.W., Haron, C.H.C., Ismail, A., Samad, S.A., Abdullah, S., Rashid, Z.A.A., Rahmat, R.A.A., Anuar, N. & Ismail, H.. 2003 Jurnal Kejuruteraan, Vol. 15, 105 pp.
8. Daud, W.R.W. (Chief Editor), Darus, Z.M., Mohammad, A.W., Haron, C.H.C., Ismail, A., Samad, S.A., Abdullah, S., Rashid, Z.A.A., Rahmat, R.A.A., Anuar, N. & Ismail, H.. 2004. Jurnal Kejuruteraan, Vol. 16, 103 pp.
9. Daud, W.R.W. (Chief Editor), Saidi, H., Masitah Hassan, Tow, T.T., Rahman, R.A., Aziz, R.A.. 2003. Jurnal Jurutera Kimia Malaysia. Vol.. 3. 105 pp.

## **vi. Editing of National Conference Proceedings**

1. Daud, W.R.W. (Chief Editor) & Sopian, K. (Editor), Kemajuan dalam Penyelidikan & Penganmbangan Sel Bahan Api Malaysia (Advances in Malaysian Fuel Cell Research & Development), Admiral Cove, Port Dickson, 27 – 30 June 2003, 306 pp.
2. Daud, W.R.W. (Chief Editor), Mohammad, A.W., Tasirin, S.M. & Takriff, M.S. (Editors) 2000. SOMChE 2000, The Proceedings of the 14th Symposium of Malaysian Chemical Engineers, 743 pp.

## **3. EXCELLENCE IN ACADEMIC LEADERSHIP AND MANAGEMENT**

### **4.1 Administrative Appointment in UKM:**

- Director, Fuel Cell Institute, Universiti Kebangsaan Malaysia (2010-2011)
- Founding Director, Fuel Cell Institute, Universiti Kebangsaan Malaysia (2007-2009)
- Chief Editor, Jurnal Kejuruteraan, journal of the Faculty of Engineering & Built Environment, UKM (1999–2004).
- Coordinator, Master of Engineering program by coursework (Chemical Engineering) (2000-2006).
- Member of Senate, Universiti Kebangsaan Malaysia (1998–2004).
- Deputy Dean, Faculty of Engineering, Universiti Kebangsaan Malaysia (1990–1993), (1995–1998)

- Head, Department of Chemical & Process Engineering, Faculty of Engineering, Universiti Kebangsaan Malaysia (1984–1988)

#### **4.2 Leadership in International Academic and Professional Societies**

- Ex-Officio Immediate Past Chairman, Institution of Chemical Engineers, Malaysia Board 2010.
- Chairman, Institution of Chemical Engineers, Malaysia Board 2009.
- Deputy Chairman, Institution of Chemical Engineers, Malaysia Board 2008.
- Chairman, International Advisory Committee, 15th Regional Symposium on Chemical Engineering and the 22nd Symposium of Malaysian Chemical Engineers RSCE-SOMCHE 2008, 2-3 December 2008, Kuala Lumpur, Malaysia.
- Chairman, International Organising Committee, 2nd Asian Particle Technology Symposium (APT 2003) held on 17- 19 December 2003, Penang, Malaysia.
- Chairman, International Advisory Committee, 2nd Asia-Oceania Drying Conference (ADC'2001) 20 – 22 August 2001 in Penang, Malaysia

#### **4. Public Service**

##### **5.1 Membership of International Academic and Professional Societies**

- Member, American Chemical Society, Membership no. 30086954 (2009-)
- Fellow, Institution of Chemical Engineers, United Kingdom, Membership no. 249300 (2007-).
- Chartered Chemical Engineer at the Institution of Chemical Engineers, United Kingdom and The Engineering Council UK (Registration No: 564829) (2007-)
- Associate Member, Institution of Chemical Engineers, Membership no. 249300 (1999-2006)
- Fellow Islamic Academy, United Kingdom (1984-)

##### **5.2 Membership in National Academic and Professional Societies**

- Fellow of the Academy of Science Malaysia
- Professional Engineer registered with the Board of Engineers Malaysia, Registration No. : 8561 (Chemical Engineering) (1996 -)
- Corporate Member, Institution of Engineers Malaysia, Member No. 07766 (1996-)
- Founding Corporate Member, Institusi Jurutera Kimia Malaysia (1985-2006) (Noe the Malaysia Branch of the Institution of Chemical Engineers)
- Life Member, Akademi Sains Islam Malaysia (1986-).

##### **5.3 Leadership in National Academic and Professional Societies**

- President, Akademi Sains Islam Malaysia (2004-2010).

- Deputy President, Institutusi Jurutera Kimia Malaysia (2004-2006).
- Chief Editor, Jurnal Jurutera Kimia Malaysia, jurnal the Institution of Chemical Engineers Malaysia (2000–2006).
- General Secretary, Akademi Sains Islam Malaysia (1997–2004)
- Committee Member, Akademi Sains Islam Malaysia (1995–1996)
- Memberof Council, Institutusi Jurutera Kimia Malaysia (1993-2004)
- General Secretary, Akademi Sains Islam Malaysia (1991–1995)
- Committee Member, Akademi Sains Islam Malaysia (1986-1991) (1995–1996)

#### 5.4 Leadership in National Committees

- Member, Examination & Qualification Committee, Board of Engineers Malaysia (2010-2012).
- Member, Examination & Qualification Committee, Board of Engineers Malaysia (2009-2010).
- Member of Evaluation Panel for the Engineering Accreditation Council, Board of Engineers Malaysia (2009-)
- Member, Steering Committee on Hydrogen, Solar Energy and Fuel Cells, Ministry of Energy, Water and Communication Malaysia, (now Ministry of Energy, Green Technology and Water Malaysia)(2003-2005).
- Chairman, Subcommittee on Fuel Cells, Ministry of Energy, Water and Communication Malaysia, (now Ministry of Energy, Green Technology and Water Malaysia)(2003-2005).
- Assessor for Chemical Engineering Programs at Board of Engineers Malaysia (2000-2007)
- Memberof Panel of Judges for the Intel's Science and Engineering Fair Malaysia Section 2000.
- Chairman of Techniucal Committeeevaluating a project proposal on fuel cells under the Industrial Grant Scheme, Ministry of Science, technology and Enmvironment (now Ministry of Science, Technology and Innovations) (1998)
- Member Technical committee evaluating research and development project proposals on energy at the Ministry of Science, technology and Enmvironment (now Ministry of Science, Technology and Innovations) (1996-2000)
- Member Panel of Judges for the PETRONAS Inventor's Award (1992–1998).

#### 5.5 Chemical Engineering Consulting Work

- Completed 54 chemical engineering consulting work on Quantitative Risk Assessment of on-shore and off-shore oil and gas production installations, gas processing plants, gas pipelines, petrochemical plants, power stations and rail transport.
- Completed 6 environmental impact assessment of manufacturing plants, power stations and petrochemical plants.
- Completed 1 chemical engineering design project for extraction of waste heat from transformer coolers.

##### a. Quantitative Risk Assessment

1. Faisal, Z., Mohammad, A.B., Takriff, M.S., Daud, W.R.W. 2004. Environmental Impact Assessment : Guideline for Quantitative Risk Assessment for Department of Environment, Kementerian Sains, Teknologi & Inovasi.

2. Mohammad, A.B., Takriff, M.S., Fisal, Z., Daud, W.R.W. 2001. Environmental Impact Assessment: (Risk and Hazard Assessment) of Multiproduct Re-routing project, PS pipeline Sdn Bhd and Kumpulan Juruteknik Sdn Bhd.
3. Mohammad, A.B., Takriff, M.S., Fisal, Z., Daud, W.R.W. 2001. Environmental Impact Assessment: (Risk and Hazard Assessment) for the proposed Port Dickson lateral Pipeline, Petronas Gas Sdn. Bhd.
4. Mohammad, A.B., Takriff, M.S., Fisal, Z., Daud, W.R.W. 2001. Quantitative Risk and Hazard Assesment Study for Ethane Extraction Improvement Project of the Gas Processing Plant-4 in Kerteh, Terengganu, Petronas.
5. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 2000. Quantitative Risk and Hazard Assesment Study for Ethane Pipeline, Kerteh, Terengganu, Petronas.
6. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 2000. Quantitative Risk and Hazard Assesment Study for Tronoh Lateral Pipeleine Tronoh, Perak, Petronas.
7. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 2000. Quantitative Risk and Hazard Assesment Study for Propane-Butane Looping Pipeline, Petronas.
8. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 2000. Quantitative Risk and Hazard Assesment Study for Trans Thailand Malaysia Pipelines Pulau Pinang dan Kedah, Petronas.
9. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 2000. Supplementary Quantitative Risk and Hazard Assesment Study for Kerteh Centralised Tankage Facility Project at Kerteh, Terengganu, Petronas.
10. Mustafa, M.M., Fisal, Z., Rahman, R.A., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 2000. Environmental Impact Assesment including Quantitative Risk and Hazard Analysis of Drumming, Warehousing and Tank Truck Cleaning Facilitiea, in Kertih, Terengganu, and Kertih Terminals Snd. Bhd.
11. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 1999 Risk and Hazard Assessment of the Bulk Depot in Seberang Perai, Penang, Petronas Dagangan Sdn. Bhd.
12. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 1999 Environmental Impact Assessment: (Risk and Hazard Assessment) for the proposed LPG Bottling Plant, Petronas Dagangan Sdn Bhd.
13. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 1998 Risk and Hazard Assessment) for the proposed olefin derivatives, Optimal Sdn Bhd
14. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 1998 Risk and Hazard Assessment for the proposed Propane Dehydrogenation plant, Kuantan, Pahang, Petronas.
15. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 1998 Risk and Hazard Assessment for the proposed Ammonia plant, Kerteh, Terengganu, Petronas
16. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 1998 Risk and Hazard Assessment for the proposed Syngas Plant, Kerteh, Terengganu, Petronas
17. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 1998 Risk and Hazard Assessment for the proposed PGU Loop II pipeline, Petronas Gas Sdn Bhd.
18. Fisal, Z., Mohammad, A.B., Takriff, M.S. dan Daud, W.R.W., 1997 Risk and Hazard Assessment for the proposed MLNG 3 Plant, Bintulu Sarawak, MLNG Sdn Bhd
19. Fisal, Z., Daud, W.R.W., Takriff, M.S., and Tasirin, S.M.. 1998 Quantitative Risk and Hazard Analysis of Johor Port, Pasir Gudang, Johor, dan Johor Port Authority.

20. Fisal, Z., Daud, W.R.W., Takriff, M.S., and Tasirin, S.M.. 1997. Quantitative Risk and Hazard Analysis of the Proposed BASF OXO Plant in Gebeng, Pahang dan BASF (Malaysia) Bhd.
21. Fisal, Z., Daud, W.R.W., Takriff, M.S., and Tasirin, S.M., 1997 Quantitative Risk and Hazard Analysis of the Proposed BASF Propylene Dehydrogenation Plant in Gebeng, Pahang, dan BASF (Malaysia) Bhd.
22. Fisal, Z., Daud, W.R.W., Takriff, M.S., and Tasirin, S.M., 1997 Quantitative Risk and Hazard Analysis of the Proposed Second Ethylene Plant in Kerteh, Terengganu, dan Petronas.
23. Fisal, Z., Daud, W.R.W., Takriff, M.S., and Tasirin, S.M., 1997 Quantitative Risk and Hazard Analysis of the Proposed Central Tank Facilities in Kerteh, Terengganu, dan Petronas
24. Fisal, Z., Daud, W.R.W., Takriff, M.S., and Tasirin, S.M., 1997 Quantitative Risk and Hazard Analysis of the Proposed Central Utility Facilities in Kerteh, Terengganu, dan Petronas
25. Fisal, Z., Daud, W.R.W., Takriff, M.S., and Tasirin, S.M., 1997 Quantitative Risk and Hazard Analysis of the Proposed PGU Loop 2, dan Petronas Gas Malaysia Berhad
26. Daud, W.R.W., Fisal, Z., Shariff, M.A., Tasirin, S.M., Talib, M.Z.M., 1997. Quantitative Risk and Hazard Assessment of Resak/Beranang Development. for Petronas Research & Scientific Services and Carigali Sdn Bhd.
27. Daud, W.R.W., Fisal, Z., Shariff, M.A., Tasirin, S.M., Talib, M.Z.M., 1997. Quantitative Risk and Hazard Assessment of MASA/Anding Development. for Petronas Research & Scientific Services and Carigali Sdn Bhd
28. Fisal, Z., Daud, W.R.W., Talib, M.Z.M., Abu Bakar Mohamad, Mohd. Fauzi Jani, Yaakob, Z. 1996 Quantitative Risk and Hazard Analysis of the Proposed Acrylic Acid/Acetate Plant in Gebeng, Pahang, for Petronas & BASF (Malaysia) Sdn Bhd.
29. Fisal, Z., Daud, W.R.W., Talib, M.Z.M., Abu Bakar Mohamad, Mohd. Fauzi Jani, Yaakob, Z. 1996 Quantitative Risk and Hazard Analysis of the Proposed VCM/PVC Plant in Kerteh, Terengganu, for Petronas & Land & General Berhad.
30. Fisal, Z., Daud, W.R.W., Talib, M.Z.M., Mohd. Fauzi Jani, Tasirin, S.M. 1996 Quantitative Risk and Hazard Analysis of the Proposed Kerteh Refinery II in Kerteh, Terengganu, for Petronas Penapisan (Terengganu) Sdn Bhd.
31. Jailani Salihon, Daud, W.R.W., Fisal, Z., Talib, M.Z.M., Mohd. Rasid Yaakob, & Mohd Fauzi Mohd. Jani, 1995. EIA for ABF Proposed Methanol Plant, UF80 Plant, Methanol Pipeline and Ammonia Plant Upgrading Project at Bintulu Sarawak: Quantitative Risk and Hazard Analysis, for ASEAN Bintulu Fertiliser Sdn Bhd.
32. Daud, W.R.W., Fisal, Z., Jailani Salihon, Mohd. Rasid Yaakob, Asmah Ahmad, and Talib, M.Z.M.. 1995. Quantitative Risk and Hazard Analysis of the Proposed PGU Loop 1 Project, for PETRONAS Gas Sdn Bhd.
33. Sharifah Mastura, Hassan Basri, Mohamad, A.B., Daud, W.R.W., Mohd. Fauzi Mohd Jani, Rahman, R.A., Nordin Jamaluddin, Kamaruddin Abu Taib, Kamaruddin Md. Saleh, Jamaluddin Jahi, Abdul Halim Shamsuddi. 1995. Environmental Impact Assessment Including Quantitative Risk and Hazard Analysis of Regional Clinical Waste Incinerator, for Radicare (M) Sdn Bhd.
34. Daud, W.R.W., Fisal, Z., Jailani Salihon, Meor Zainal Mero Talib, Mohd. Rasid Yaakob, and Mohamad Ramlan Mohamad Saleh, Environmental Impact Assessment Study including Quantitative Risk and Hazard Analysis and Archeological Impact Assessment Study of the Proposed Multiproduct Pipeline Project, Vol. II, Quantitative Risk and Hazard Analysis Study, , PETRONAS/Shell JV.

35. Fisal, Z., Daud, W.R.W., Jailani Salihon, Mohd. Rasid Yaakob, Talib, M.Z.M.. 1995, Chapter 9, Environmental Impact Assessment Including Quantitative Risk and Hazard Analysis Study of the Proposed Segamat Compressor Station, for PETRONAS Gas Sdn Bhd..
36. Fisal, Z., Daud, W.R.W., Jailani Salihon, Mohd. Rasid Yaakob, Talib, M.Z.M.. 1995, Chapter 9, Environmental Impact Assessment Including Quantitative Risk and Hazard Analysis Study of the PETRONAS Proposed Ammonia/Urea and integrated Methanol/Formaldehyde Plant at Gurun, Kedah Darul Aman, for PETROLIAM NASIONAL BERHAD.
37. Fisal, Z., Daud, W.R.W., Jailani Salihon, Mohd. Rasid Yaakob, Talib, M.Z.M., Mohd. Fauzi Mohd Jani. 1995, Quantitative Risk and Hazard Analysis on Bintulu LPG Extraction Project, for PETROLIAM NASIONAL BERHAD.
38. Abdul Halim Shamsuddin, Fisal, Z., Abu Bakar Mohamad, Mohammad, A.B., Kamaruzzaman Sopian, Che Hassan Che Harun, Kamaruddin Abu Taib, Aziz Arshad, Daud, W.R.W., Asmah Ahmad, Mohd. Shamsuddin Zahid Sopian and Abdul Aziz Bidin 1994. Preliminary Environmental Impact Assessment Including Quantitative Risk and Hazard Analysis of Petronas Second Refinery Project Melaka: Supplementary EIA of PSR-2 Stage I, Universiti kebangsaan malaysia and Petronas Penapisan (Melaka) Sdn. Bhd.
39. Jailani Salihon, Daud, W.R.W., Fisal, Z., Abu Bakar Mohamad, Che Hassan Che Haron, Mohammad, A.B., Mohd. Rasid Yaakob, Asmah Ahmad, Siti Rozaimah Shaikh Abdullah, Najib Mahmood Rafee, Amriah Buang, and Mohd. Shamsuddin Zahid Sopian, 1994. Environmental Impact Assessment Including Quantitative Risk and Hazard Analysis of the Proposed Liquefied Petroleum Gas Product Storage Tank at Kampung Tok Arun, Mukim Kuala Paka, Dungun, Terengganu Darul Iman, Vol. II: Quantitative Risk and Hazard Analysis, , OGP Technical Services Sdn Bhd, and Petronas Gas Sdn. Bhd.
40. Jailani Salihon, Daud, W.R.W., Fisal, Z., Abu Bakar Mohamad, Che Hassan Che Haron, Mohammad, A.B., Mohd. Rasid Yaakob, Asmah Ahmad, Siti Rozaimah Shaikh Abdullah, Najib Mahmood Rafee, Amriah Buang, and Mohd. Shamsuddin Zahid Sopian, 1994. Environmental Impact Assessment Including Quantitative Risk and Hazard Analysis of the Proposed Gas Processing Plants 5 & 6 at Kampung Tok Arun, Mukim Kuala Paka, Dungun, Terengganu Darul Iman, Vol. III: Quantitative Risk and Hazard Analysis, , OGP Technical Services Sdn Bhd, and Petronas Gas Sdn. Bhd.
41. Jailani Salihon, Daud, W.R.W., Fisal, Z., Abu Bakar Mohamad, Che Hassan Che Haron, Mohammad, A.B., Mohd. Rasid Yaakob, Asmah Ahmad, Siti Rozaimah Shaikh Abdullah, Najib Mahmood Rafee, Amriah Buang, and Mohd. Shamsuddin Zahid Sopian, 1994. Environmental Impact Assessment Including Quantitative Risk and Hazard Analysis of the Proposed Gas Processing Plants 5 & 6 Interconnecting Pipelines at Terengganu Darul Iman, Vol. II: Quantitative Risk and Hazard Analysis, , OGP Technical Services Sdn Bhd, and Petronas gas Sdn. Bhd.
42. Mustafa, M.M., Mazlan Othman, Pauzi Abdullah, Hassan Mat Nor, Zaidi Mohd. Isa, Kamaruzzaman Sopian, Masuri Othman, Shahbuddin Shaari, Kamaruddin Abu Taib and Daud, W.R.W., 1993. Environmental Impact Assessment including Quantitative Risk Assessment for Natural Gas Fuelled Power Station at Tg. Gemok, Port Dickson, and Sime Engineering for Port Dickson Power Sdn. Bhd.
43. Fisal, Z., Daud, W.R.W., Jailani Salihon, Abdul Wahab Muhammad, Mohamad, A.B., Che Hassan Che Haron, Normah Abdullah, Abdullah, A.R.S., and Mohd. Rasid Yaakob. November 1992. Quantitative Risk and Hazard Analysis for Gas Turbine Power Station, Port Dickson, and Sime Engineering Sdn. Bhd. for Port Dickson Power Sdn. Bhd.
44. Fisal, Z., Daud, W.R.W., Jailani Salihon and Abdul Wahab Muhammad. October 1993. Quantitative Risk and Hazard Analysis for Coal-Fired Power Station, Kuching, Sarawak, and MAB Environmental Consultant Sdn. Bhd. for Sarawak Electricity Supply Corporation.

45. Fisal, Z., Daud, W.R.W., Jailani Salihon, and Mohd. Rasid Yaakob, September 1993. Additional Quantitative Risk Analysis for Kertih Refinery Tankage Rationalisation Project, University Kebangsaan Malaysia for Petronas Penapisan (Terengganu) Sdn Bhd.
46. Daud, W.R.W., Fisal, Z., Jailani Salihon, Abdul Wahab Muhammad, Abdullah, A.R.S., and Mohd. Rasid Yaakob. October 1992. Environmental Impact Assessment Study including Quantitative Risk and Hazard Analysis on the Dew Point Control Unit - 2 (Addition to EIA of GPP4), Vol. II : Quantitative Risk and Hazard Analysis, for OGP Sdn. Bhd.
47. Daud, W.R.W. and Nordin Jamaluddin, June 1993. Supplementary Environmental Impact Assessment for the Proposed Lube Blending Facilities at Petronas Penapisan (Melaka) Sdn Bhd., Tangga Batu Melaka, for Petronas Penapisan (Melaka) Sdn Bhd.
48. Jailani Salihon, Abdul Rahim Md. Nor, Abdul Wahab Muhammad, Normah Abdullah, Mohd. Rasid Yaakob, Wan Ramli bin Wan Daud and Fisal, Z., 1992, Quantitative Risk and Hazard Analysis of GPP4 and Stage 2 Compressor Station, Vol. II, Environmental Impact Assessment of GPP4 and Stage 2 Compressor Station including Quantitative Risk and Hazard Analysis, untuk Petronas Gas (Malaysia) Sdn. Bhd., Kuala Lumpur, July 1992.
49. Jailani Salihon, Abdul Rahim Md. Nor, Abdul Wahab Muhammad, Normah Abdullah, Mohd. Rasid Yaakob, Wan Ramli bin Wan Daud and Fisal, Z., 1992, Quantitative Risk and Hazard Analysis of Stage 2 Compressor Station in Kuantan, Vol. II, Environmental Impact Assessment of Stage 2 Compressor Station in Kuantan including Quantitative Risk and Hazard Analysis, untuk Petronas Gas (Malaysia) Sdn. Bhd., Kuala Lumpur, July 1992.
50. Jailani Salihon, Abdullah Taib, Abdul Rahim Md. Nor, Abdul Wahab Muhammad, Normah Abdullah, Mohd. Rasid Yaakob, Wan Ramli bin Wan Daud and Fisal, Z., 1992, Quantitative Risk and Hazard Analysis of PGU III, Vol. II, Environmental Impact Assessment of PGU III including Quantitative Risk and Hazard Analysis, for Petronas Gas (Malaysia) Sdn. Bhd., Kuala Lumpur, July 1992.
51. Jailani Salihon, Asmah Ahmad, Normah Abdullah, Mohd. Rasid Yaakob, Wan Ramli bin Wan Daud and Fisal, Z., 1992, Quantitative Risk Analysis for Kertih Refinery with Emphasis on Tankage Rationalisation Project, with for Petronas Penapisan (Terengganu) Sdn. Bhd., Kerteh, Terengganu, April 1992.
52. Jailani Salihon, Asmah Ahmad, Normah Abdullah, Mohd. Rasid Yaakob, Wan Ramli bin Wan Daud and Fisal, Z., 1992, Quantitative Risk Analysis for Debottlenecking of Kertih Refinery, with for Petronas Penapisan (Terengganu) Sdn. Bhd., Kerteh, Terengganu, July 1992.
53. Wan Ramli bin Wan Daud, Fisal, Z., Jailani Salihon, Asmah Ahmad and Abdul Rahim Md. Nor, 1990, Hazard Analysis and Quantitative Risk Assessment of the Proposed Cracker and Polyethylene Plants at Pasir Gudang Industrial Estate, KDI and for Titan Petrochemical (M) Sdn. Bhd. and Titan Polyethylene (M) Sdn. Bhd, November 1990.
54. Wan Ramli bin Wan Daud, Fisal, Z., Jailani Salihon and Asmah Ahmad, 1990, Quantitative Risk Assessment and Hazard Analysis of the Shell Bagan Luar Depot, for Shell Trading Malaysia Sdn. Bhd., August 1990.

**b. Environmental Impact Assessment**

1. Daud, W.R.W., 1995. Air Pollution Dispersion Study for the Proposed 2000 MW Power Station at Tanjung Batu, Perak Darul Ridzuan, Tenaga Nasional Research & Development Sdn Bhd.
2. Daud, W.R.W., 1995. Air Pollution Study in Preliminiray EIA Study of the Proposed Aluminium Smelting Plant for Sumimetal Industries (M) Sdn Bhd on Lot 568 & 569 Kawasan Perindustrian Bukit Rambai, Daerah Melaka Tengah, Melaka, MAB Consultants.

3. Ahmad Badri Mohamad, et al (including Daud, W.R.W.), 1993. Preliminary Environmental Impact Assessment of the Proposed Coal-Fired Power Plant Project, Sejingkat, Kuching, Sarawak, MAB Environmental Consultant Sdn. Bhd. for Sarawak Electricity Supply Corporation.
4. Wong Yoke Fai, Noraini Mohd. Tamim, Asmah Ahmad, Ismail Mohd. Nor, Daud, W.R.W., Shaharuddin Ahmad, Abdul Rahim Mohd. Nor, Ngan Sik Yan and Khiri Pandak Saaid, 1991, Environmental Impact Assessment of the Proposed Industrial Estate and Housing Development at the Mukim Rasa, Daerah Ulu Selangor, with and Sepakat Setia Perunding Sdn Bhd for Perbaandan Kemajuan Negeri Selangor, June 1991.
5. Mazlan Othman, Abdul Rahim Md. Nor, Abdul Latiff Mohamed, Asmah Ahmad, G. W. H. Davidson, Hassan Basri, Syed Sheikh Almashoor, Wan Ramli bin Wan Daud, Zakaria Ismail, and Zakaria, Z., 1990, Environmental Impact Assessment for the Proposed Cracker and Polyethylene Plants at Pasir Guandg Industrial Estate, KDI and for Titan Petrochemical (M) Sdn. Bhd. and Titan Polyethylene (M) Sdn. Bhd, July 1990.
6. Mohd. Ariffin Hj. Aton, Ramli Mohammad, Sharifah Mastura Syed Abdullah, Sanusi Jangi, Abdul Majid Mat Salleh, Ismail Mohd. Nor, Mazlan Othman, Noraini Mohd. Tamim, Sanusi Othman, G. W. H. Davidson, S. Awadala, Daud, W.R.W., 1989, Preliminary Environmental Impact Assessment: Proposed PETRONAS MTBE/Propylene and Polypropylene Plants and Associated Facilities, Kuantan Pahang, in Association with SWEC/Zainal Sdn. Bhd. for PETRONAS, Neste Oy and Idemitsu, December 1989.

#### a. Chemical Engineering Design

1. Daud, W.R.W., 1995. Waste Heat Extraction from Transformer Coolers, Idwal Engineers Sdn Bhd. for Tenaga Nasional Research & Development Sdn Bhd.

### 6. TEACHING AND SUPERVISION

#### 6.1 Teaching

##### a. Post-Graduate Teaching

###### Courses Taught

- Computer Aided Chemical Process Design (2002-)
- Energy and the Environment (2000-)
- Air Pollutant Chemistry and Dispersion (1999-)
- Air Pollution Control (1999-)

##### b. Under-Graduate Teaching

###### Courses Taught:

- Transport Phenomena I (2007-2008)
- Separation Processes (2006-2007)
- Food Engineering (1999-)
- Chemical Process Principles (1999-)
- Technology and Civilization (1990-2006)
- Process Plant Design (1986-2006)

#### 6.2 Supervision of Doctor of Philosophy & Master of Science Students

Degree	Supervisor	Graduated	Ongoing	Withdrawn	Total	Overall Total
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PhD	Main	35	11	14	60	86
	Co	12	17	-	29	
MSc	Main	31	4	9	44	63
	Co	11	10	-	21	
Total Post-Graduate Students Supervised		89	42	23	154	154
Total Under-Graduate Students Supervised		111	-	-	-	111

### List of PhD Students' Thesis

No.	Period	Student	Title of Thesis	Supervisory role	Status of student
1	2016-	Ros Emilia Binti RosliSelfuel	Reka Bentuk dan Pengembangan Sistem Sel Fuel PEM Bersuhu Tinggi	Ahli J/K Penyeliaan	Sedang maju
2	2016	Siti Najibah Abd RahmanSelfuel	Reka Bentuk dan Pembangunan Penjana Kuasa Mudah Alih Sel Bahan Api	Ahli J/K Penyeliaan	Sedang maju
3	2016-	Raba'atun Adawiyah ShamsuddinSelfuel	Corrosion of Heat Treated Stainless Steel For Use As Base of Biocathode in Microbial Electrolysis Cell	Pengerusi J/K Penyeliaan	Sedang maju
4	2015-	Ibdal Satar	Sel mikrobial elektrolisis	Main Supervisor	Ongoing
5	2014-	Siti Mariam Bt. Daud Selfuel	Earthen Ware And Ceramic Membrane As A Separator In Microbial Fuel Cell	Chairman of Graduate Committee	Ongoing
6	2014-	Nur Fawwaz Binti Asri	Kajian Keberaliran Elektrik Plat Dwikutub Logam Untuk PEMFC Di Dalam Aplikasi Automotif	Member of Graduate Committee	Ongoing
7	2014-	Masniza Binti Mohamed @ Mahmood	Ekstraksi dan Penentuan Orthosiphon stamineus(OS) menggunakan hidropenyulingan yang dibantu Kesan Ohm	Main Supervisor	Ongoing
8	2014-	Lee Pak Hoe	Membran Penukar Proton Berasaskan Ko-polimer Berasaskan Polibenzimidaksole (Spbi) Bagi Aplikasi Sel Fuel For Fuel Cell Applications	Member of Graduate Committee	Ongoing
9	2013-	Syahir Bin Samsuddin	Sistem Kawalan bagi Kenderaan Sel Fuel	Member of Graduate Committee	Ongoing
10	2013-	Nasrin Binti Sulaiman	Sistem Pengurusan Tenaga bagi Kenderaan Sel Fuel	Member of Graduate Committee	Ongoing
11	2013-	Lim Bee Huah	Reka Bentuk, Simulasi, Pembikinan dan Penilaian Prestasi Stel Sel Fuel membran penukar proton 5 kW	Member of Graduate Committee	Ongoing
12	2013-	Nurhazira Azly Binti Minhat	Sel Fuel Mikrobial	Chairman of Graduate Committee	Withdrawn
13	2013-	Tahereh Jafari	A Novel Technology for Hydrogen Production From Organics Matters in a Microbial Electrolysis Cell (MEC)	Main Supervisor	Ongoing

14	2013-	Suhaila Binti Abdullah	Peningkatan Pembelahan Molekul Air Fotoelektrokimia Dengan Pewarna Semulajadi Daripada Buah Naga	Member of Graduate Committee	Ongoing
15	2013-	Fathie Binti Ahmad Zakil	Kajian Dinamik Sel Fuel Langsung Metanol	Co-Supervisor	Ongoing
16	2012-	Liew Kien Ben	Manganese oxide-carbon nanotubes nanocomposite as catalyst for oxygen reduction and POME treatment in microbial Fuel Cell	Chairman of Graduate Committee	Ongoing
17	2013-	Shiva Sadeghi Louyeh	Synthesis And Characterization Of Metal Coated Carbon Nanofiber For Hydrogen Storage	Co-Supervisor	Ongoing
18	2012-	Fathie Binti Ahmad Zakil	Dynamic studies of direct methanol fuel cell	Co-Supervisor	Ongoing
19	2012-	Suhaila Binti Abdullah	Synthesis and optimization of different type of fuel cells for different application	Member of Graduate Committee	Ongoing
20	2012-	Najua Delaila Binti Tumin	Kawalan Poliform Dan Penghabluran Asid Amino Dalam Pengeri Sembur Skala Perintis	Main Supervisor	Ongoing
21	2012-	Toh Shaw Yong	Sintesis dan Pencirian Elektromangkin Berasaskan Grafena Baru bagi Aplikasi Sel Fuel Metanol Langsung	Co-Supervisor	Ongoing
22	2012-	Leong Jun Xing	Novel nano-composite speak membrane in microbial fuel cell for waste water treatment and continuous power generation	Chairman of Graduate Committee	Ongoing
23	2012-	Haslina Binti Ahmad	Elektrod hibrid untuk sel fuel metanol dengan bantuan cahaya	Member of Graduate Committee	Ongoing
24	2011-	Mohd Nashriq B. Nasharudin	Analisis of microfluidic fuel cells - modeling & simulation.	Co-Supervisor	Ongoing
25	2011-	Nabila Binti A. Karim	Mankin Cobalt Ftalodianina/karbon-Tungsten Pksida Nanowayar (W18O49) Untuk Katod Sel Fuel Metanol Langsung (DMFC)	Co-Supervisor	Ongoing
26	2011-	Norhafiz Bin Hashim	Rekabentuk, fabrikasi dan pengoptimuman sel fuel metanol langsung	Co-Supervisor	Ongoing
27	2011-	Azlyana Binti Ismail	Synthesis and Optimisation of Direct Methanol Fuel Cells via Cell Network	Co-Supervisor	Ongoing
28	2011-	Dang Sri Ayu Binti Abdul Halim	Biofilem dalam anod sel fuel mikrobial	Main Supervisor	Ongoing
29	2010-	Azran Bin Mohd Zainoodin	Lapisan Berliang Nanogentian Karbon untuk Sokongan Elektrod Anod Dalam Sel Fuel Metanol Langsung Pasif	Member of Graduate Committee	Ongoing
30	2010 – 2013	Wong Wai Yin	Sintesis dan Pencirian Nanotiub Karbon Terdop Nitrogen Sebagai Mangkin Katod untuk Aplikasi Sel Fuel	Main Supervisor	Finished
31	2010 - 2013	Thiam Hui San	Membran Nanokomposit Nafion/SiO <sub>2</sub> -Pd untuk Aplikasi Sel Fuel Metanol Langsung	Main Supervisor	Finished
32	2010-2015	Sahriah Binti Basri	Pembangunan Mangkin Berstruktur Nano Untuk Sel Fuel Metanol Langsung	Co-Supervisor	Finished
33	2010-2014	Dedi Rohendi	Pembangunan Himpunan Elektrod Membran Ketumpatan Arus Tinggi	Co-Supervisor	Finished

			untuk PEMFC Mudah Alih		
34	2010-2015	Nurul Fitriah Binti Nasir	Pemodelan dan Pengoptimuman Proses Biodiesel Selanjara dan Sesejumlah Menggunakan Mangkin Homogen dan Heterogen	Main Supervisor	Finished
35	2009 - 2013	Mulyazmi	Pengembangan Metodologi Reka Bentuk Proses Sistem Sel Fuel Membran Penukaran Proton Untuk Pencapaian Prestasi Optimum	Main Supervisor	Finished
36	2009 - 2014	Erni Misran	Pemodelan dan Simulasi Pemindahan Air Di Sepanjang Alur Aliran Gas Sel Fuel Membran Penukar Proton	Main Supervisor	Finished
37	2009 - 2014	Asma M Husin Milad	Photocurrent Enhancement of Titania Nanotubular Arrays By Doped and Hetero Nanocomposite With Non Metal and Metal Oxide For Photoelectrochemical Water Splitting	Main Supervisor	Finished
38	2009-2009	Majid Talebi Esfandarani	Photoelectrochemical cell for hydrogen production	Main Supervisor	Withdrawn
39	2009 - 2013	Samaneh Keshani	Deposition of Sugar, Fat and Protein-Rich Food Materials in Pilot Scale Spray Drye	Main Supervisor	Finished
40	2009 - 2010	Soo Chan Wai	Producing hydrogen gas from salt water through radiofrequency	Co-Supervisor	Withdrawn
41	2008 - 2012	Nader Mokhtarian Mohammad Sadegh	Microbial Fuel Cells Development for Detection of Electrochemical Potential and Low Voltage Electricity	Main Supervisor	Finished
42	2008-2009	Mohd Shaiful Ramze Bin Endut	Crystallization Process of Pharmaceuticals and Macromolecules (Protein)	Main Supervisor	Withdrawn
43	2008 - 2012	Ifa Puspasari	Hydrodynamic and Drying Characteristics of Oil Palm Frond Particles in An Agitated Fluidized Bed Dryer	Main Supervisor	Finished
44	2008 - 2013	Dedikarni Bin Panuh	Penyediaan dan Pencirian Sel Butang Tunggal Elektrolit Dwi Lapisan $Sm_{0.2}Ce_{0.8}I_{1.90}(SDC)/Y_{0.25}Bi_{0.75}O_{1.5}(YSB)$ Bagi Sel Fuel Oksida Pepejal Bersuhu Sederhana dan Rendah	Co-Supervisor	Finished
45	2008 - 2012	Khuzaimah Arifin	Kompleks Dwilogam Rutenium - Tungsten Sebagai Bahan Pemeka Warna Bagi Sel Fotoelektrokimia Pembelahan Molekul Air.	Co-Supervisor	Finished
46	2008 - 2010	Fadhli Hadana Rahman	Fotoelektrol Untuk Penghasilan Hidrogen	Co-Supervisor	Withdrawn
47	2008 - 2012	Jarot Raharjo	Sintesis dan Pencirian Elektrolit $Ce_{0.8}Sm_{0.2}O_{2-\delta}(Li/Na)_2CO_3$ Dengan Kaedah Pensinteran Tanda Tekanan Untuk Sel Fuel Oksida Pepejal Bersuhu Sederhana.	Main Supervisor	Finished
48	2006-2010	Mustafa I Fadhel	Studies on a Solar Assisted Chemical Heat Pump Dryer	Co-Supervisor	Finished
49	2006-2010	Mohammad Ahmad Najib Batiha	Modelling The Environmental Fate and Impact of Non-Volatile Organic Agro-Chemicals	Co-Supervisor	Finished
50	2006-	Mariam Firdhaus	Microwave-Assisted Drying of Pitaya	Main	Finished

	2009	Binti Mad Nordin	(Hylocereus) Slices	Supervisor	
51	2006-2009	Woo Meng Wai	Product Deposit Reduction in Spray Dryers	Main Supervisor	Finished
52	2006 – 2014	Umi Azmah Asran	Pembangunan Sel Fuel etanol Langsung (DMFC) Mikro dengan Teknologi Sistem Mikro-Elektro-Mekanikal (MEMS)	Main Supervisor	Finished
53	2006-2012	Lorna Binti Jeffery Minggu	Pembelahan Air Fotoelektrokimia dengan Semikonduktor Oksida Logam dalam Sistem Fotoreaktor	Main Supervisor	Finished
54	2004-2010	Mahreni Akhmad	Sintesis dan Penggunaan Membran Komposit Sebagai Elektrolit Sel Fuel Membran Penukar Proton	Co-Supervisor	Finished
55	2004-2007	Yusri bin Yusup	Struktur Lapisan Permukaan Atmosfera di Kawasan Perindustrian Khatulistiwa	Main Supervisor	Finished
56	2004-2008	Rosnah Bt Shamsudin	Sifat-Sifat Fizikal-Kimia, Terma, Mekanikal dan Reologi <i>Ananas Comosus</i> / (Varieti Josaphine)	Main Supervisor	Finished
57	2004-2010	Tjukup Marnoto	Reka Bentuk, Operasi Dan Kawalan Untuk Sistem Tenaga Hidrogen Suria Tersambung Grid	Main Supervisor	Finished
58	2004 – 2012	Nornizar Bt Anuar	Behaviour of Aqueous Solution, Crystallisation and Characterisation of L-isoleucine.	Main Supervisor	Finished
59	2004–2009	Shahnaz Mansouri Jajaei	Extraction of Essential Oils From Herbs using Supercritical Fluid Method	Main Supervisor	Finished
60	2004–2009	Soraya Hosseini	Synthesis of Proton Conductive Membrane Using Cesium Diposphate Nanoparticles for the Fabrication of Membrane Electrode Assembly for Fuel Cells	Co-Supervisor	Finished
61	2002 - 2005	Ramli Sitanggang	Pembuatan Himpunan Elektrod Membran Sel Bahan Api Menggunakan Kaedah Semburan	Co-Supervisor	Finished
62	2002–2003	Haider O Mahmood Al-Mahdi	Optimization of MEA Coating Process By Screen Printing	Main Supervisor	Withdrawn
63	2002-2010	T.Husaini	Membran Reaktor Penghasilan Gas Hidrogen.	Main Supervisor	Finished
64	2002-2005	Siti Kartom Bt Kamarudin	Sintesis Proses dan Reka Bentuk Optimum Untuk Rangkaian Reaktor-Pemisah Menggunakan Kaedah Algoritma	Main Supervisor	Finished
65	2002-2005	M. Rusli Yosfiah	Model Kinetik dan Pengoptimuman Penghasilan Gas Hidrogen Daripada Metanol dengan Menggunakan Mangkin Ni, Cu, Mo/Gamma Al <sub>2</sub> O <sub>3</sub>	Main Supervisor	Finished
66	2001-2004	Muhammad Yahya	Sistem Penyahlembapan Terbantu Suria untuk Herba Perubatan	Co-Supervisor	Finished
67	2002 – 2007	Edy Herianto	Penulenan Gas Hidrogen Menggunakan Sistem Jerapan Buaian Tekanan Terpadat Untuk Sel Bahan Api	Main Supervisor	Finished
68	1999-2003	Bambang Trisakti	Pengeringan Terpilih Serbuk	Main Supervisor	Withdrawn
69	1999-2003	Rosdanelli Hasibuan	Pengeringan Gantian Tandan Kosong Kelapa Sawit Menggunakan Sistem	Main Supervisor	Finished

			Pengerigan Telus Stim Panas Lampau		
70	1999–2002	Yeoh Hak Koon	Kajian Fotoelektrod Tersensitasi Pewarna Untuk Pengeluaran Hidrogen Melalui Fotoelektrolisis-tidak-terbantu Air	Main Supervisor	Withdrawn
71	1999-2003	Law Chung Lim	Pembendaliran: Hidrodinamik dan Penggunaannya dalam Proses Pengeringan	Main Supervisor	Finished
72	1998-2002	Muhammad Turmuzi	Pembuatan Karbon Teraktif dan Karbon Penapis Molekul daripada Tempurung Buah Keras	Main Supervisor	Finished
73	1998-2002	Taslim	Fenomena Pengangkutan Aliran Berayun dalam Turus Bersesekat	Co-Supervisor	Finished
74	1997-2001	Ye Lwin @ Mohammed Husein	Characterization of Cu-Al Hydrotalcite-Derived Mixed Oxide for Hydrogen Production by Steam-Methanol Reforming	Main Supervisor	Finished
75	1997-2000	Supranto	Reka Bentuk dan Penilaian Sistem Pengeringan Terbantu Suria Dua Laluan dengan Media Berliang	Main Supervisor	Finished
76	1997-2002	Widayanti	Fenomena Pengelutan Zarah dari Turus Lapisan Terbendalir	Co-Supervisor	Finished
77	1997-1998	Gunarto	Pemodelan Matematik Sistem Penjerapan Buai Suhu	Main Supervisor	Withdrawn
78	1996-2002	Meor Zainal Bin Meor Talib	Pemodelan dan Simulasi untuk Sel Bahan Api bermembran Elektrolit Polimer	Main Supervisor	Finished
79	1996-2001	Tin Mar Kyi	Drying with Chemical Reaction in Cocoa Bean Drying	Main Supervisor	Finished
80	1996-1996	Muhammad Niazul Haque Sarker	Design of Proton Exchange Membrane Fuel Cell Stack	Main Supervisor	Withdrawn
81	1996-1996	Khaled El-Alem	Heat Transfer in Proton Exchange Membrane Fuel Cell	Main Supervisor	Withdrawn
82	1996-1996	Abdul Salam Uheida	Novel Gas Diffusion Electrode for Proton Exchange Membrane Fuel Cell	Main Supervisor	Withdrawn
83	1995-1999	Sunny Iyuke Esayegbemu	Pressure Swing Adsorption of Hydrogen	Main Supervisor	Finished
84	1992-1996	Sam Myint	Extraction of Eugenol from clove	Main Supervisor	Finished
85	1989-1994	Mahamad Hakimi Ibrahim	Drying of Oil Palm Kernels	Main Supervisor	Finished
86	1988-1990	Ibrahim Shouib	Numerical Simulation of a Rotating Boiler	Main Supervisor	Withdrawn

#### List of MSc Students' Thesis

No.	Period	Student	Title of Thesis	Supervisory role	Status of student
1	2016	Ahmad Tajuddin Bin Abdullah	Sel Fuel Membran Penukaran Proton (Pemfc) Sistem Penyejukan Air	Member of Graduate Committee	Ongoing

2	2016	Shuaiba Binti Samad	Mangkin DMFC	Co-Supervisor	Ongoing
3	2015	Mohd Azri Ahmad	Stainless steel electrode for MFC	Main Supervisor	Ongoing
4	2014-	Siti Mariam Bt. Daud Selfuel	Screening Of Earthen Ware And Ceramic Membrane As A Separator In Microbial Fuel Cell	Chairman of Graduate Committee	Ongoing
5	2014-	Nurul I'Zzati Binti Baharul Wafi	Development Of Lithium Ion Phosphate Battery Based On Immobilization Of Lithium Iron Phosphate Into Poly(2-Hydroxyethyl Methacrylate) As A Gel Electrolyte	Co-Supervisor	Ongoing
6	2014-	Badrullzamin Bin Mohd Yassin	Mengkuang Composite for car bodies	Co-Supervisor	Ongoing
7	2013-	Mohd Azwan Bin Husin	Penggunaan bahan eco-komposit ( komposit diperkuat gentian mengkuang) untuk komponen badan kereta sel fuel.	Member of Graduate Committee	Ongoing
8	2013-	Muhamad Norfais Bin Faisal	Converter And Control Design For Fuel Cell Hybrid Electric Vehicle Application	Co-Supervisor	Ongoing
9	2013-	Joy Liew Wei Yi	Membran Polimer Elektrolit Berasaskan K-Karagenan dan K-Karageenan Terfosforil Untuk Aplikasi Sel Fuel	Co-Supervisor	Ongoing
10	2013-	Soo Li Ting	Sintesis dan Pencirian Elektromangkin Berasaskan Logam Peralihan dan Nitrogen Didopkan Grafir Untuk Tindak Balas Penurunan Oksigen	Member of Graduate Committee	Ongoing
11	2013-	Norsyaidatul Binti Ibrahim	Production of Biomethanol from Photoelectrochemical reaction of Biomass	Member of Graduate Committee	Ongoing
12	2012-	Mumtazah Atiqah Binti Hassan	Development of sensor in DMFC	Chairman of Graduate Committee	Tukar ke PhD
13	2012-	Leong Jun Xing	Novel nano-composite speak membrane in microbial fuel cell for waste water treatment and continuous power generation	Main Supervisor	Finished
14	2012-2014	Liew Kien Ben	Manganese oxide-carbon nanotubes nanocomposite as catalyst for oxygen reduction and POME treatment in microbial Fuel Cell	Main Supervisor	Ongoing
15	2011-2015	Mohd Zul Fadli Kamaruddin	Pembangunan Tangki Simpanan Pasif untuk Sel Fuel Metanol Langsung Pasif	Main Supervisor	Finished
16	2010 -2015	Siti Afiqah Binti Abd Hamid	Reka Bentuk Dan Pembangunan Sistem Pengurusan Kuasa Hibrid Sel Fuel, Superkapasitor, Dan Bateri Untuk Aplikasi Kenderaan	Main Supervisor	Finished
17	2010 -2014	Ros Emilia Binti Rosli	Pembangunan Sistem Kawalan Hidrogen untuk Stek PEMFC	Co-Supervisor	Finished
18	2009 –2012	Miftah Kurniawan	Kesan Tekanan Pemasangan Stek Terhadap Prestasi Sel Fuel Membrane Penukaran Proton.	Co-Supervisor	Finished
19	2008 - 2009	Sahriah Binti	Pembangunan Peranti Reka Bentuk	Co-	Withdrawn

		Basri	Untuk Sel Fuel Metanol Langsung	Supervisor	
20	2008 – 2010	Mismisuraya Bt Meor Ahmad	Pembangunan Sel Fuel Metanol Langsung Untuk Kegunaan Mudah Alih	Co-Supervisor	Finished
21	2008 - 2010	Muhammad Shahid	Simulation of Complete Fuel Cell Systems	Main Supervisor	Finished
22	2008 - 2010	Norhafiz B Hashim	Rekabentuk Dan Fabrikasi Sel Fuel Mikro Metanol Langsung.	Co-Supervisor	Finished
23	2008 –2011	Lim Swee Su	Pengoptimuman Penghasilan Kuasa elektrik Dari Sel Fuel Mikrob (SFM) Berasaskan Kultur Campuran Dan Kultur Tunggal.	Co-Supervisor	Finished
24	2008-2010	Haslina Binti Ahmad	Membran Hibrid Nafion/Polibenzimidazol /Zirkonium Fosfat untuk Aplikasi SFML	Co-Supervisor	Withdrawn
25	2008 –2010	Achmad Fauzie	Pembangunan Sel Fuel Metanol Langsung Sebagai Pengecas Telefon Mudah Alih.	Main Supervisor	Finished
26	2008 –2010	Nanda Sastaviana	Solid oxide fuel cell (SOFC)	Co-Supervisor	Withdrawn
27	2007 - 2009	Noorashrina Binti A Hamid	Pembangunan Katod $La_{1-x}Sr_xCo_{0.2}Fe_{0.8}O_3$ (LSCF) Bagi Sel Fuel Oksida Pejal Bersuhu Sederhana (IT-SOFC)	Main Supervisor	Finished
28	2004 – 2005	Wong Kuek Keong	CFD simulation of separtion	Main Supervisor	Finished
29	2004 - 2007	Shuhaida Binti Harun	Pembangunan Sistem Penasihat Reka Bentuk Untuk Reka Bentuk Konsep Loji dan Proses Kimia	Co-Supervisor	Finished
30	2003 – 2005	Nor Roslina Binti Rosli	Pengekstrakan Minyak Serai Wangi (Cymbogonna Nardus) Secara Pengekstrakan Bendalir Lampau Genting	Co-Supervisor	Finished
31	2003 - 2006	Khuzaimah Arifin	Sintesis Organik,Pencirian dan Kestabilan Foto Kompleks Tris(Diotelena) Tunsten	Co-Supervisor	Finished
32	2003-2006	Fadhli Hadana Rahman	Sintesis Takorganik Kompleks Tris(Diotelena) Tunsten Sebagai Ftomangkin Bagi Fotolisis Air	Co-Supervisor	Finished
33	2003-2006	Navriani Harahap	Kesan Tekanan Dalam Pengoptimuman Suhu Ke Atas Pembikinan Himpunan Elektrod Membran	Main Supervisor	Finished
34	2002 - 2004	Zahiruddin Bin Mohamed	Kesan Suhu Tinggi ke Atas Hidrodinamik Pembendaliran dan Pengirigan Zarah Dalam Lapisan Terbendalir	Main Supervisor	Finished
35	2002 - 2005	Elradi Adam Musa	Heat Transfer in Proton Exchange Membrane Fuel Cell	Main Supervisor	Finished
36	2002 - 2004	Azman Yazid	Reka Bentuk Konsep Sistem Sel Bahan Api Eelektrolit Polimer dengan Modul Membran Seramik Menggunakan Perisian Simulasi Proses HYSYS	Main Supervisor	Finished
37	2002 - 2004	Loke Yan Kai	Reka Bentuk Sistem Sel Bahan Api Jenis Membran Elektrolit Polimer Dengan Perisian Simulasi HYSYS	Co-Supervisor	Finished
38	2002 - 2004	Masli Irwan Bin Rosli	Prestasi Sel Bahan Api Membran Pertukaran Proton - Pemilihan Reka	Main Supervisor	Finished

			Bentuk Plat Laluan		
39	2002 - 2004	Mimi Hani Binti Abu Bakar	Proses Penyediaan Mangkin Platinum di atas Substrat Karbon Teraktif Tempatan Menggunakan Teknik Isitepu	Main Supervisor	Finished
40	2002 - 2003	Mohd Shahbudin Bin Mastar @Masdar	Pembangunan Model Matematik dan Kajian Parameter Sel Bahan Api Membran Elektrolit Polimer	Co-Supervisor	Finished
41	2002 - 2004	Nik Suhaimi Bin Mat Hassan	Pembangunan Model Matematik bagi Pemindahan Jisim Air dalam Sel Bahan Api Membran Elektrolit Polimer	Main Supervisor	Withdrawn
42	2002 - 2004	Mustafa I Fadhil	Solar Hydrogen Production System	Co-Supervisor	Finished
43	2002 - 2005	Vickneswaran S/O M.Veloo	Optimization of Batch Drilling Fluids/Mud Mixing Plant	Main Supervisor	Finished
44	2002 - 2004	Souiyah Miloud	Performance of Proton Exchange Membrane Fuel Cell with Interdigitated Flowfield	Co-Supervisor	Finished
45	2002 - 2004	Ng Pin Pin	Pengerigan Padi dalam Lapisan Terpancut	Co-Supervisor	Finished
46	2001 - 2004	Lorna Binti Jeffery Minggu	Penghasilan Hidrogen Daripada Pembentukan Semula Metanol	Main Supervisor	Finished
47	2001 - 2003	Mohd Sabri Bin Mahmud	Penyediaan dan Pencirian Mangkin Cu-Zn-V-Al Dalam Pembentukan Semula Autoterma Metanol	Main Supervisor	Withdrawn
48	2000 - 2002	Mohd Nahar Bin Othman	Pemusnahan Benzena (Bahan Organik Mudah Meruap) Menggunakan Kaedah Alur Elektron	Main Supervisor	Finished
49	2000 - 2002	Abdol Salam Bin Ns Mohd Sariff	Pengoptimuman Proses Loji Pemprosesan Gas	Main Supervisor	Finished
50	1999-2002	Eman Noori Ali	Sampling and Analysis of Volatile Organic Compounds in Ambient Air in Malaysia	Main Supervisor	Finished
51	1999 - 2002	T.Husaini	Penyampelan dan Analisa Statistik Sebatian Organik Meruap di Kawasan Lembah Kelang	Co-Supervisor	Finished
52	1999 - 2001	Islina Binti Kamaruzaman	Keseimbangan Jerapan Alkana-alkana Berberat Molekul Rendah Ke Atas Karbon Teraktif dan Penapis-Penapis Molekul	Main Supervisor	Finished
53	1998 - 2000	Law Chung Lim	Pengirangan Bagi Zarah Halus Dari Pengelut Terbendalir Sesejumlah	Main Supervisor	Finished
54	1999 - 2002	Norliza Binti Abd Rahman	Penalaan Pengawal Lazim PID ke Atas Menara Penyulingan Dengan Kaedah Logik Kabur	Main Supervisor	Finished
55	1998 - 2000	Edy Herianto	Penjerapan Sebatian Organik Mudah Meruap Menggunakan Sistem Jerapan Buaiaan Terma	Main Supervisor	Finished
56	1998 - 2000	Chebbi Rachid	Fabrication of Low Platinum Loading Elektrode for Proton Exchange Membrane Fuel Cell System	Main Supervisor	Withdrawn
57	1998 - 2000	Ma'an Fahmi Rashid Al Khatib	Surface Modification of Activated Carbon by Impregnation with SnCl <sub>2</sub> .H <sub>2</sub> O for Purification of H <sub>2</sub> /CO Gas Mixture	Co-Supervisor	Finished
58	1997-1997	Loo Yong Eng	Pencirian Elektrodialiser	Main	Finished

				Supervisor	
59	1997-2000	Monsurah Begum	Preparation and Characterisation of Cu-Al Catalysts for Steam-Methanol Reforming Reaction	Main Supervisor	Withdrawn
60	1996-1998	Fathi Abdul Aziz Messaud	Characterisation of Asahi Membrane using X-ray Photoelectron Spectroscopy	Main Supervisor	Finished
61	1996-1996	Ahmad Sadik Hassan	Electrode Catalyst for Methanol Conversion to Hydrogen	Main Supervisor	Finished
62	1995-1997	Muhammad Hazza Rasheed	Characterization of Solid Polymer Electrolytic Membrane Nafion117 by X-Ray Photoelectron Spectroscopy	Main Supervisor	Finished
63	1993-1996	Muhammad Niazul Haque Sarker	Drying Characteristics of Paddy	Main Supervisor	Finished
64	1990-1994	Meor Zainal Bin Meor Talib	Ciri-ciri Pengeringan Biji Koko	Main Supervisor	Finished
65	1986-1987	Zakaria Omar	Pengeringan Biji Sawit	Main Supervisor	Withdrawn

### List of Undergraduate Students' Thesis

No.	Year	Nam3	Title
1	2016	Norsyafika Binti Hassim	Permodelan Dan Simulasi Mikrobial Sel Fuel Untuk Penghasilan Kuasa Elektrik
2	2016	Nur Amera Binti Mohamad Bakri	Permodelan dan simulasi sel mikrobil elektrolisis
3	2015	Ying Ying Ch'ng	Sintesis membrane komposit baru bagi kegunaan sel fuel
4	2015	Fatimah Azzahra	Sintesis membrane komposit baru bagi kegunaan sel fuel
5	2014	Nurul Nadia Nga	Penyediaan, Pencirian Dan Pengujian Fotoelektrod Bagi Bateri Boleh Cas Semula
6	2014	Noor Zaiyan Misyan	Tindak balas fotokatalisis efluen kilang minyak sawit (POME) bagi penghasilan hidrogen hijau
7	2013	Tan Eng Lee	Membran polimer elektrolit berasaskan blok kopolimer untuk aplikasi sel fuel.
8	2013	Dahiyah Binti Mohd Fadzillah	Komposit membran asid pepejal untuk sel fuel bersuhu perantaraan
9	2012	Mohd Kamaruzzaman Bin Mat Daud	Penganggaran Pekali Serapan Air yang Boleh-ubah daripada Data Kadar Pengeringan
10	2012	Normalayati Binti Mahmud Raseh	Keterpilihan dan Ruang Pecapaian Metil Ester dan Gliserol dalam Tindak Balas Trans-Esterifikasi Pelbagai Minyak Makan dan Tak Boleh Dimakan bagi Menghasilkan Biodiesel
11	2011	Norbaini Binti Bahtiar	Penentuan Saiz (Luas Permukaan) Membran dan Masa Proses bagi Modul Osmosis Terbalik Beraliran Silang yang Berkitar Semula
12	2011	Mohamad Zulhairi Bin Ibrahim	Pemodelan dan Simulasi Rangkaian Kuasa Kereta Bugi Golf yang Dipacu Sel Fuel
13	2010	Lee Seet Yee	Pemerangkapan Karbon Menggunakan Penjerapan Ke Atas Kapur
14	2010	Farhan Bin Mohd Pozi	Simulasi Aliran dalam Sel Fuel menggunakan CFD

15	2008	Ong Hee Hwee	Pengeringan Cip Gantian Pelepah Sawit dengan Pengering Lapisan Terbendalir Bergetar
16	2008	Mary Khoo	Pelembap Udara Membran bagi Sistem Sel bahan Api
17	2007	Awis bin Zakaria	Permodelan dan Simulasi loji Proses Kimia
18	2007	Yeap Kim Gaik	Pengeringan Sumber Ekstraksi The
19	2007	Chua Ynyen A	Ekstraksi Lampau Genting Likopena daripada Pulpa Jambu Batu Merah Buangan
20	2006	Wong Wai San	Pengeringan Buah Jambu Kampuchea (psidium guajava) dalam Kebuk Pengeringan
21	2006	Ong Chin Hooi	Pengeringan Stim Gantian Kenaf
22	2006	The Shu Yi	Pengeringan Hirisan Buah Mangga dalam Kebuk Pengeringan
23	2005	Awis Bin Zakaria	Pemodelan dan Simulasi Dinamik Loji Proses
24	2005	Fara Fazreena Binti Zulkifli	Penghasilan Zarah Nano Dengan Menggunakan Proses Anti Pelarut Supergenting
25	2005	Chin Sui Kem	Pengeringan Berbagai Herba
26	2005	YeoThian Soon	Pengeringan Cili dengan Lapisan Terpancut
27	2005	Khoo Boon Ken	Alat Nauta Mixer sebagai Alat Penggalak Aliran
28	2004	Mohd Fadzly Bin Ariffin	Penghasilan komputer untuk penghasilan bentuk modul membran ultraturasan dan osmosis terbalik
29	2004	Zarirah Binti Mohamad Yusof	Pengeringan ekstrak herba Andrographis
30	2004	Chan Chee Wai	Pengeringan Herba Andrographis
31	2003	Aliza Binti Surip	Pemodelan dan penyelakuan pengangkutan jisim dan haba utk biji koko menggunakan pendekatan multi fizik
32	2003	Naimatul Fitriyah Binti Mohamad	Pengeringan Produk Tanah liat
33	2003	Norhaslina Binti Mohd Sidek	Susuk suhu pepejal suhubebuli kering suhu bebuli basah kelembapan udara dan kandungan lembapan pepejal di dalam pengeringan lapisan terbendalir aliran silang
34	2003	Eng Kok Hoe	Pengeringan Sembur Susu Soya
35	2003	Low Ee Mee	Kembangan sistem pemisahan H <sub>2</sub> /CO <sub>2</sub> dengan membran paladium
36	2002	Shafiza Binti Zakaria	Reka Bentuk Konsep Sistem Sel Bahanapi
37	2002	Zarin B Zid	Proses Pembentukan Zarah Gelatin dan Pengeringannya
38	2002	Cheah Hui Ming	Pengeringan Beras Pulut Di dalam Turus Terbendalir Bagi Aplikasi Industri
39	2002	Farmasuhaini Binti Mohd	Pengeringan Stim Beras
40	2002	Mohd Asmawi Syahrulnizam Bin Mohd	Pengeringan Beberapa Bahan Berkabohidrat
41	2002	Mohd Shohib Bin Talib	Pengoptimuman Proses Ssesekumpul
42	2002	Cheah Hui Ming	Pengeringan Beras Pulut
43	2001	Mohd Asmawi Syahrulnizam B Mohd	Pengeringan Gelatin
44	2001	Nik Suhaimi Bin Mat Hassan	Pengoptimuman Proses Ssesekumpul
45	2001	Pasilatun Adawiyah Binti Ismail	Pengeringan Stim Padi
46	2000	Tan Kok Han	Reologi Larutan Bergelatin
47	2000	Yap Mee Foong	Penjadualan Kawalan Proses Ssesekumpul Dua Peringkat
48	2000	Zahiruddin B Mohamed	Penghasilan Karbon Teraktif daripada Tempurung Kelapa Sawit dengan Tindak Balas Kimia untuk Menjerap Gas Hidroklorik
49	1999	Chan Chiaw Fang	Reka Bentuk Ringkas Penjerap
50	1999	Kew See Shin	Pengoptimuman Proses Ssesekumpul

51	1999	Ahmad Firdaus Bin Mat Taib	Reologi Makanan
52	1998	Azlan Kahalil	Pencirian dan Penoperasian Turus Penyulingan
53	1998	Yong Hong Sin	Simulasi Aliran dalam Stek Sel Bahan Api
54	1998	Hazrein A. Hamid	Kajian Aliran Elektrolit di dalam Reruang untuk Sistem Penghasilan Hidrogen Secara Hidrogen Suria
55	1998	Khor Min Che	Pentauliahan loji Pandu Ekstraksi
56	1998	Werry Lipi	Kesan Peratusan Zarah Haluske Atas Kebolehaliran Bahan
57	1998	Nor Farhana Mohd Aris	Pengeringan Buah-Buahan Tempatan
58	1998	Maizura Ibrahim	Penghasilan Hidrogen Daripada Metanol: Pencirian Mangkin Kuprum/Aluminium (III) dengan Penggalak Zn
59	1998	Seet Elaine	Perisian Analisis Risiko dalam Loji Pemprosesan Kimia
60	1998	Chan Chee Wei	Rekabentuk Sel Elektrodialisis
61	1998	Tee Yeow Fong	Pemncirian Mangkin Kuprum/Aluminium dengan Penggalak Mn dan Ch untuk Tindakbalas Penguraian Metanol
62	1997	Rafezal Mohd Said	Pemilihan Pengekstrak Multi-komponen
63	1997	Azzuddin	Simulasi Pengeringan dengan Tindak balas Kimia
64	1996	Yusnizam Yusof	Pemodelan Sel Bahan Api Polimer Pejal
65	1996	Wan Suriati	Membran Sel Bahan Api Polimer Pejal Baru
66	1996	Wong Kuek Keong	Pemodelan Pengeringan Lapisan Dalam Padi
67	1996	Nazri Ahmad	Simulasi Aliran Kucar-Kacir
68	1996	Enjang al Lanting	Ekstraksi Kucar Kacir
69	1995	Pang Tuck Seng	Simulasi Pemisahan Membran Gas dalam Gentian Berkelongsong
70	1995	Rosnah	Lokus Alah Padi pada Kandungan Lembapan Berlainan
71	1995	Nordin Zakaria	Penghasilan Karbon daripada Tempurung Kelapa
72	1995	Tan Chey Ling	Simulasi Dinamik Loji Ekstraksi Zirconium
73	1994	Sivakumar Subramaniam	Reka bentuk Sistem Pembentuk Semula Stim
74	1993	Liew Siew Loon	Kembangan Pembentuk Semula untuk Menghasilkan Hidrogen drpd Gas Asli & Stim
75	1993	Chong Loong How	Lokus Alah Biji Koko pada Kandungan Lembapan Berlainan
76	1993	Amiruddin Abd. Hamid	Pengering Koko Lapisan Bergetar
77	1993	Cheah Chee Mun	Luahan Hidrokarbon MultiKomponen Bertekanan Atas Takat Didih
78	1993	Samah Che Lamin	Kembangan Motor Roket Berbahan Dorong Pepejal
79	1992	Mohd. Shihabuddin b. Ismail	Penentuan Faktor Pandangan bagi Satu Objek Kecil Terhadap Satu Nyalaan Kebakaraan
80	1992	Azhar Ahmad	Simulasi Tumpahan Minyak
81	1992	Norleha bt. Mohd. Yusuff	Rekabentuk Sistem Penyampaian Pneumatik dengan Komputer
82	1992	Zuraimi b. Othman	Penyelesaian Masalah Pindah Haba daripada Paip Minyak Mentah Dasar Laut Menggunakan Kaedah Berangka
83	1992	Rohana Ahmad	Ekstraksi Yterrium
84	1992	Liza bt. Jaafar	Kesan Pengeringan Terhadap Tindakbalas 'Browning' Koko
85	1992	Lee Hong Tein	Simulasi Monte Carlo Model Tumpahan Minyak dalam Lautan
86	1992	Mohd. Zainuddin b. Mohd. Zainal	Rekabentuk Turus Ekstraksi Zirkonium
87	1992	Farok b. Maasom	Pengeringan Terbendalir Arang Batu Malaysia
88	1991	Halimahton bt. Baharum	Penskalaan Naik Penghasilan Kitin daripada Kulit

			Udang
89	1991	Badariah bt. Manab	Penskalaan Naik Penghasilan Bromelin dari Batang Nenas
90	1991	Ropandi b. Mamat	Pengekstrakan Torium dengan Turus Ekstraksi Terpadat
91	1989	Kamaroulzaman b. Thith	Pengoptimuman Penghasilan Bromelin daripada Batang Nenas
92	1989	Juriah bt. Jabar	Lengkung Keseimbangan Sistem Air-Thorium-Kerosin-TBP dan Sistem Air-Uranium-Kerosin-TBP daripada Sisa Perlombongan
93	1989	Md. Salleh b. Kamaruddin	Pengoptimuman Proses Penghasilan Kitin daripada Kulit Udang
94	1989	Bitak ak Ata	Simulasi Pengereng Kernel Kelapa Sawit
95	1989	Yusof Darus	Penggunaan AutoCad dalam Penyusunan Loji
96	1988	Gerard Wang Chee Shoon	Dinamik dan Kawalan Penyejat Filem Memanjat QVF
97	1988	Raveentiram Krishna	Rekabentuk Rig bagi Penghidrogenan Selanjat Kelapa Sawit
98	1988	Norsham bt. Nordin	Ciri Pengerengan Padi
99	1988	Wan Othman b. Wan Yahya	Simulasi Kawalan Fermentor
100	1988	Siti Fatimah bt. Hj. Abd. Rashid	Kinetik Pengerengan Kelapa Sawit
101	1987	Tajul Ariffin b. Hj. Mohd. Rais	Penghasilan Kanji Pra-Digelatin dengan Pengereng Lapisan Terpancut
102	1987	Mut Sagai	Pengaturcaraan Rekabentuk Menara Penyulingan Berplat
103	1987	D. S. Krishana Rao	Pembangunan Proses Pemisahan Bromelin daripada Batang Nenas
104	1986	Othman Darus	Rekabentuk Proses Pengerengan Lapisan terpancut
105	1986	Goh Eng Hooi	Ciri-Ciri Injap Kawalan
106	1986	Mohd. Razi b. Mohd. Toff	Reologi Kanji Beras Digelatin pada Suhu Tinggi
107	1986	Suhaimi b. Said	Rekabentuk Terbantu Komputer
108	1986	P. Govindasamy	Pemprosesan Kitin daripada Kulit Udang
109	1985	Beh Kok Chuan	Penyediaan Rajah aliran Proses dengan Kaedah Komputer
110	1985	Ku Halim Ku Hamid	Reologi Kanji Beras Digelatin pada Suhu Rendah
111	1985	Zakaria Omar	Penyelesaian Berangka Persamaan Pengerengan Bahan Berliang