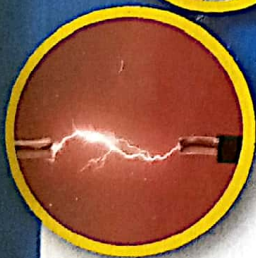
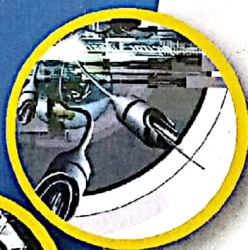




UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Institute of
Hydrogen Economy

Conference on
**Emerging Energy &
Process Technology**
CONCEPT 2012



Date:
5th December 2012
Venue:
Lotus Desaru, Johor



Conference on
Emerging Energy & Process Technology
CONCEPT 2012

GREETING FROM THE DIRECTOR

In the name of Allah, Most Gracious, Most Merciful.

Ladies and Gentlemen,

On behalf of the Institute of Hydrogen Economy (IHE), let me extend a warm welcome to all of you.

Thank you very much for taking part in the 2012 Conference on Emerging Energy & Process Technology (CONCEPT 2012). I am pleased to be able to write these words as an introduction to the Programme Book and in support of CONCEPT 2012.

This event provides an avenue for researchers, scientists, executives and students to report progress of their works and exchange opinions on the work of others. This positive dialogue opportunity should be fully exploited to maximise exchange of knowledge and experiences among fellow researchers. More importantly, this is a place to make new professional contacts and find new friends while contributing to the advancement of knowledge.

CONCEPT2012 focuses on 4 main themes – Sustainable Energy, Health and Safety in process Industries, Process Intensification, Modelling and Control, and Emerging Materials for Sustainable Energy Production. It is intended to be an annual event and is expected to expand accordingly in line with the progress of research.

Have a nice meeting. God bless all of you.

Professor Arshad Ahmad
Director
Institute of Hydrogen Economy
Universiti Teknologi Malaysia



Tentative Program
2012 Conference on Emerging Energy and
Process Technology

Date: 5th December 2012

Venue: Lotus Desaru, Johor.

5th December 2012

0900 - 0945	Arrival of Participants	
1010 - 1045	Keynote: Professor Mohamed Mahmoud Nasef "Radiation Grafted Material for Fuel Cell and Battery Applications"	
	SUNFLOWER ROOM	LILY 3 ROOM
1100 - 1300	B1-B7	A1-A7
1300 - 1430	LUNCH (SEAVIEW CAFÉ)	
1430 - 1530	B8-B9 & D4-D5	D1-D3 & E1
1530 - 1545	TEA BREAK	
1545 - 1745	B10-B16	C1-C8
1930 - 2200	DINNER (FUN PUB)	

CHAIRPERSONS

Session A: Sustainable Energy

Track Chair: Dr Tuan Amran Tuan Abdullah

Session B: Emerging Materials

Track Chair: Assoc. Prof. Dr Aishah Abdul Jalil

Session C: Safety and Health in Process Industry

Track Chair: Assoc. Prof. Dr Mohamad Wijayanuddin Ali

Session D: Process Intensification

Track Chair: Assoc. Prof. Adnan Ripin



Conference on
Emerging Energy & Process Technology
CONCEPT 2012

Day 1	
5 th December 2012 (Wednesday)	
Venue: SUNFLOWER ROOM (Time shown includes Paper Presentation, and Question and Answer)	
Time	Paper Title
1100 - 1115	B1. IR study of acid sites on Pt-HZSM5 and Ir/Pt-HZSM5 <i>H.D. Setiabudi, A.A. Jalil, S. Triwahyono, N.H.N. Kamarudin, and M.A.A. Aziz.</i>
1115 - 1130	B2. Photocatalytic study of methylene blue over EGZrO ₂ /HY photocatalyst under different type of light irradiation. <i>N. Sapawe, A.A. Jalil, and S. Triwahyono.</i>
1130 - 1145	B3. Methanation of CO ₂ over Ni loaded on Mesoporous Silica Nanoparticle. <i>M.A.A. Aziz, A.A. Jalil, S. Triwahyono, and H.D. Setiabudi.</i>
1145 - 1200	B4. Interaction of H ₂ with MoO ₃ and Pt/MoO ₃ catalysts elucidated by 2, 6-lutidine FTIR and ESR Spectroscopy <i>S.N. Timmiati, A.A. Jalil, and S. Triwahyono</i>
1200 - 1215	B5. Catalytic activity of the bimetallic mesoporous silica structures for cumene cracking reaction under hydrogen gas pressure. <i>M.R. Sazegar, S. Triwahyono, A. A. Jalil, M. Aziz, and R.R. Mukti.</i>
1215 - 1230	B6. Relating cumenehydrocracking activity to the acidic center of CrO ₃ -ZrO ₂ . <i>N.H.R. Annuar, A.A. Jalil, and S. Triwahyono.</i>
1230 - 1245	B7. Adsorption of Methylene Blue from Aqueous Solution by Pore Expanded Mesoporous Silica. <i>A.H. Karim, A.A. Jalil, and S. Triwahyono.</i>
1245 - 1400	Lunch (SEAVIEW)

**** Each presenter will be given 10 minutes presentations and 5 minutes Q&A**



Conference on
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CONCEPT 2012

Day 1

5th December 2012 (Wednesday)

Venue: LILY 3 ROOM

(Time shown includes Paper Presentation, and Question and Answer)

Time	Paper Title
1100 - 1115	A1. Optimization Model for Tanjung Bin Coal Fired Power Station with CO ₂ Emission Consideration. <i>A. Johari, S. SitiHafshar and H. Hashim.</i>
1115 - 1130	A2. Recycling as a viable option for municipal solid waste management in Malaysia. <i>A. Johari, H. Alkali, H. Hashim, M. Ramli, and S.I. Ahmed.</i>
1130 - 1145	A3. Bio-hydrogen production from Landfill gas and its Carbon reduction potentials in Seelong landfill, Malaysia. <i>Saeed I. Ahmed, Anwar Johari, Haslenda, Hashim, Mat Ramli and Habib Alkali.</i>
1145 - 1200	A4. Design of a Bubbling Fluidized Bed Gasifier for the gasification of palm waste. <i>Bemgba Bevan Nyakuma, Anwar Johari, Arshad Ahmad, Tuan Amran Tuan Abdullah, and MojtabaMazangi.</i>
1200 - 1215	A5. Membranes from radiation grafted poly-(vinyl imidazoles)-poly (ethylene-alt-tetrafluoroethylene) doped with heteropoly-acids for high-temperature fuel-cell. <i>HabibuUthman and Hamdani Saidi.</i>
1215 - 1230	A6. Mathematical Modeling of PEM fuel cell – A Brief Summary. <i>HamdaniSaidi, and NurulHidayah Ibrahim</i>
1230 - 1245	A7. Optimization of Bio-Fuel Properties Using Computational Fluid Dynamics (CFD). <i>IqbalTahir, and Anwar Johari.</i>
1245 - 1400	Lunch (SEAVIEW)

** Each presenter will be given 10 minutes presentations and 5 minutes Q&A



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Day 1	
5 th December 2012 (Wednesday)	
Venue: SUNFLOWER ROOM	
(Time shown includes Paper Presentation, and Question and Answer)	
Time	Paper Title
1430 - 1445	B8. Synthesis of Mesoporous Silica Nanoparticles for The Ibuprofen Delivery. <i>N. H. N. Kamarudin, A. A. Jalil, S. Triwahyono, A.H. Karim, N.F.M. Salleh, and H. D. Setiabudi.</i>
1445 - 1500	B9. Thermodynamic and Equilibrium Adsorption Isotherm of CO ₂ and CH ₄ in Potassium and Lithium Ion Exchanged Na-SAPO-34 Zeolite. <i>M. U. Baba and K. S. N. Kamarudin.</i>
1500 - 1515	D4. Effect of Processing Conditions on Product Characteristics of Spray Dried Fruit Juice. <i>Aliyu A. Bello, Arshad Ahmad, and Adnan Ripin.</i>
1515 - 1530	D5. Reduction Time Transesterification of Jatropha Oil with Alcohol into Biodiesel using Ultrasound-assisted. <i>Muh. Irwan, Hamdani Saidi, and Mahyudin Abdul Rachman.</i>
1530 - 1545	Refreshment

**** Each presenter will be given 10 minutes presentations and 5 minutes Q&A**



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Day 1

5th December 2012 (Wednesday)

Venue: SUNFLOWER ROOM

(Time shown includes Paper Presentation, and Question and Answer)

Time	Paper Title
1545 - 1600	B10. Amine - Grafted on Kenaf Core Fiber for Capturing CO ₂ in Pressure Swing Adsorption (PSA) System. <i>N. Zaini and K. S. N. Kamarudin.</i>
1600 - 1615	B11. The effect of viscosity on morphological properties of electrospun nylon-6,6 nanofibers. <i>Mohamed Mahmoud Nasef, Ali Abbasi, Reza Faridi-Majidi, and Matsuura Takeshi.</i>
1615 - 1630	B12. Effect of voltage, distance and solution concentration on the electrospinning of PVDF nanofibres. <i>MadanaNallappan, Mohamed Mahmoud Nasef, and Arshad Ahmad.</i>
1630 - 1645	B13. Preparation of blended Chitosan/Poly(glycidylmethacrylate) nanofiber adsorbent precursors. <i>Mohamed Mahmoud Nasef, and Nadiah Khairul Zaman.</i>
1645 - 1700	B14. Preparation of Crosslinked Membrane Precursor by Radiation Grafting of 4-Vinylpyridine/Divinylbenzene Mixtures onto ETFE Films. <i>Mohamed Mahmoud Nasef, and PaveswariSithambaranathan.</i>
1700 - 1715	B15. Carbon Dioxide Removal Using N- Methyl-diethanolamine Promoted By Piperazine In Emulsion Liquid Membrane. <i>N. Dolmat and K.S.N. Kamarudin.</i>
1715 - 1730	B16. CO ₂ Removal Using Mea-Amp As Extractant In Emulsion Liquid Membrane System. <i>S. N. Suahadahand and K. S. N. Kamarudin.</i>
1930 - 2200	Dinner (FUN PUB)

** Each presenter will be given 10 minutes presentations and 5 minutes Q&A



Conference on
Emerging Energy & Process Technology
CONCEPT 2012

Day 1	
5 th December 2012 (Wednesday)	
Venue: LILY 3 ROOM	
(Time shown includes Paper Presentation, and Question and Answer)	
Time	Paper Title
1545 - 1600	C1. A Framework in Accident Modeling of Chemical Process Industries. <i>Ali Hasan Al-shanini, Arshad Ahmad, and Faisal Khan.</i>
1600 - 1615	C2. Modeling and Simulation of Heat Exchanger System Using Multilevel Flow Modeling <i>Mohamed Abdul Rahim Khalil, and Arshad Ahmad.</i>
1615 - 1630	C3. Review of Health Hazard and Risk Assessment of Chemical Batch Process. <i>Nik N.N.A. Aziz, and Mimi H. Hassim.</i>
1630 - 1645	C4. Correction Study of Safety and Health Properties at Inherent Level: Benzene Synthesis Routes. <i>Yousef A. Ali, and Mimi H. Hassim.</i>
1645 - 1700	C5. Experimental Study on Premixed Flame Acceleration in Closed Pipe. <i>M.H. Mat Kiah and R.M. Kasmani.</i>
1700 - 1715	C6. Explosibility and Physical Characteristics of Philippine Coal Dust. <i>W.Z. Wan Sulaiman and R.M Kasmani.</i>
1715 - 1730	C7. Learning From Accident: Current Issues and Challenges in Loss Prevention. <i>Kamarizankidam and onn Hassan.</i>
1730 - 1745	C8. Inherent Safety Index for Hydrogen Fuel Cell System at Early Design Stage. <i>N.N. Nordin, S.M. Puzi, M.W. Ali.</i>
1930 - 2200	Dinner (FUN PUB)

To be
Contacted*

** Each presenter will be given 10 minutes presentations and 5 minutes Q&A



POSTER PRESENTATION

TRACK 1 - SUSTAINABLE ENERGY

- A1. Hydrogen Production from CO₂ Reforming of Methane over Ni-Based Catalysts.
S.M. Sidik, A.A. Jalil, and S.Triwahyono.

TRACK 2 - EMERGING MATERIALS

- B1. Decomposition of 2-chlorophenol employing α -FeOOH as photo-Fenton-like catalyst: Effects of irradiation source and reaction temperature.
R. Jusoh, A.A. Jalil, and S. Triwahyono.
- B2. Rapid electrosynthesis of zinc oxide nanoflowers for degradation of methyl orange.
N.W.C. Jusoh, A.A. Jalil, S. Triwahyono, M.A.H. Satar, A. Karimand and N. Sapawe.
- B3. Adsorption of Phenol from Aqueous Solution onto Mesostructured Silica Nanoparticles.
N. F. M. Salleh, A. A. Jalil, S. Triwahyono and N.H. N. Kamarudin.
- B4. Synthesis of Ag/TiO₂ Catalyst for Photodegradation of 2-Chlorophenol.
N.F. Jaafar, A.A. Jalil, S. Triwahyono, and N. Sapawe.
- B5. Removal of arsenic from aqueous solution using zirconium-mesostructured silica nanoparticles.
N. Salamun, A.A. Jalil, and S. Triwahyono.
- B6. Conversion of linear to di-branched alkane over modified mesostructured silica nanoparticles.
N.A.A. Fatah, A.A. Jalil, and S. Triwahyono.
- B7. Effect of Molybdenum Loading on HZSM5 for Isomerization of n-Heptane.
T.L. Peng, A.A. Jalil, S. Triwahyono, H. D. Setiabudi, and R.R. Mukti.

TRACK 3 - PROCESS SAFETY

- C1. Application of Fault Detection and Diagnosis in Chemical Process Industries
Ali H. Shatri and Arshad Ahmad.

TRACK 4 - PROCESS INTENSIFICATION

- D1. Modeling of a Biomass (*ImperataCylindrica*) Fast Pyrolysis in a Modified Fixed Bed Reactor.
Olagoke A.J. Oladokun, Arshad Ahmad and Tuan Amran Tuan Abdullah.



ABSTRACTS



A5

**MEMBRANES FROM RADIATION GRAFTED POLY-(VINYL IMIDAZOLES)-POLY
(ETHYLENE-ALT-TETRAFLUOROETHYLENE) DOPED WITH HETEROPOLY-ACIDS FOR
HIGH-TEMPERATURE FUEL-CELL**

Habibu Uthman, Hamdani Saidi
Institute of Hydrogen Economy (IHE), Department of Chemical Engineering,
Universiti Teknologi Malaysia, 81310 Skudai, Johor Bahru, Malaysia.

Abstract

Composite membranes containing heteropoly acids (HPAs) phosphoric acid (PA) for possible use in fuel cell were to be prepared by radiation grafting of 1-vinylimidazole (1-VIm) and 2-methyl-1-vinylimidazole (2-M-1-VIm) crosslinked during grafting reaction with various percentages of triallyl cyanurate (TAC) and diisopropenylbenzene (DIPB) onto poly (ethylene-*alt*-tetrafluoroethylene) (ETFE). Improvement in the chemical and mechanical stability of membrane is often ensured by crosslinking. Protonation with PA doping followed. HPAs are proposes for doping of the grafted precursors as an alternative to PA doping as a way of creating more robust proton network because due to the fact that HPAs have larger molecular size they are believe to be more leaching resistant than PA molecules. A comparative study based on proton conduction at elevated temperature (above 100°C) of both dopants (HPAs and PA) is proposed in which the effects of doping reaction on the doping level will be study, optimize and model. Optimization of reaction parameters of radiation induced grafting of 1-VIm and 2-M-1-VIm onto ETFE using response surface method is also proposed. Preparation procedure involve three steps: (i) ETFE films has been irradiated by an electron beam at Nuclear Malaysian Agency (NMA), (ii) grafting of 1-VIm and 2-M-1-VIm onto irradiated ETFE films under selected conditions is ongoing and (iii) doping of the grafted ETFE film with HPAs and PA. Membrane characterization: composition, thermal properties, thermal stability and surface properties of the membranes will be evaluated using Fourier-transformed infrared spectroscopy, thermogravimetric analysis, differential scanning calorimetry, X-ray photoelectron spectroscopy, small-angle neutron scattering, small-angle X-ray scattering, wide-angle X-ray diffraction and atomic force microscopy respectively. Overall results to be obtained is expected to suggest that the produced membranes possess a promising combination of physicochemical properties appealing for possible application in polymer electrolyte fuel cell above 100°C with less humidification.