

Optimizing Innovation for Global Commercialization



Optimizing Innovation for Global Commercialization



Copyright © 2013
Division of Research,
Industrial Linkages & Alumni (PJI&A)
Universiti Teknologi MARA Melaka

Email: riid2013@melaka.uitm.edu.my
Web: www.riidmelaka2013.com

Optimizing Innovation for Global Commercialization

Research, Invention, Innovation Design

Published by

Division of Research, Industrial Linkages & Alumni (PJI&A)
Universiti Teknologi MARA Melaka

Tel 606 - 5582313
Email riid2013@melaka.uitm.edu.my
Website www.riidmelaka2013.com

Chairman

Assoc. Prof. Dr Roaimah Hj Omar

Chief Editor

Shafezah Abdul Wahab

Writers

Siti Najah Raihan Sakrani
Shahril Anuar Abd Ghalim

Abstracts

Sulaiman Mahzan
Mohd Ab Malek Md Shah
Nur Syuhada Mohamad
Mohd Fajil Abdul Batau
Khalilah Ibrahim

Design

Anith Liyana Amin Nudin
Norsharina Samsuri

Copyright 2013

Division of Research, Industrial Linkages & Alumni (PJI&A)
Universiti Teknologi MARA Melaka, Km 26 Jalan Lendu,
78000 Alor Gajah, Melaka

All Rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without permission of the copyright holder.

ISBN 978-967-0637-02-0



BACKGROUND	4
of Research, Industrial Linkages & Alumni	
RIID 2013	5
objectives	
CHRONOLOGY	5
of RIID	
FOREWORD	6
message by Chief Minister Melaka	
FOREWORD	7
by Rector of UiTM Melaka	
FOREWORD	8
by Director of AKEPT	
PROGRAMME	9
Tentative	
RIID COMMITTEE	10
member	

ABSTRACTS	
Invention: Staff Category	12
Invention: Student Category	38
Innovation: Staff Category	50
Innovation: Student Category	133
Design: Staff Category	174
Design: Student Category	184

LIST OF	193
acknowledgement	

SPONSORS	194
-----------------	------------



to
n
to
n
n
n
n

background of RESEARCH, INDUSTRIAL LINKAGES & ALUMNI

Objectives

- To promote world-class research.
- To administer, coordinate and provide service for research development, consultation and research publication.
- To provide assistance in exploring new subjects and identify niche area of interest.
- To disseminate information and provide ample training in research, consultation and publication of research.
- To ensure innovation, quality research, consultation and publication are maintained.
- To assist in research publication for high impact journals.

Vision

To become the leading administrative centre for research, development, consultation and world-class research publication.

Mision

To enrich the academia, creative ability and innovation through quality service.

Division of Research, Industrial Linkages and Alumni or known as PJI&A started as the Research Management Unit (RMU) or IRDC and was formerly known as Planning, Research and Development Centre which was established in April 1980. However in September 1987, IRDC was restructured with its heightened importance in research and consultation in UiTM and was divided into two units, Research and Consultancy Centre (RACC) and Planning and Evaluation Unit. This centre was then renamed to Research and Consultancy Bureau in 1994 and went through another name change to become Institute of Research, Development and Commercialisation (IRDC) on 15 July 2003.

With the mooted of the post of Deputy Vice Chancellor in March 2008 to take over the intellectual property and commercialisation portfolio, IRDC was given the responsibility to maximise innovation and increase the number of research which will later be published in high impact journals. Ensuing this, on 31 July 2008 IRDC was changed to Research Management Institute (RMI) to synchronise with UiTM's aspiration to become a Research University that will develop innovation activities and new research. It was only in 2011, that RMI became the Research, Industrial Linkages and Alumni Division (PJI&A), headed by its Deputy Rector, Associate Professor Dr. Roaimah Omar. Under her tutelage, Invention, Innovation and Design (IID) was born in 2009.

The different divisions or units in PJI&A are responsible to manage, monitor and conduct research in science and technology, management and social sciences, consultation, financial assistance for consultation, innovation, publication and Information for Research and Consultancy (INFORAC). PJI&A also conducts seminars, workshops and roadshows to encourage, motivate and train the academic and non-academic staffs in research and consultation, securing research grants and projects, to manage good financing and publish research in a responsible and ethical manner.

RIID2013 OBJECTIVES

General Objective

To display research, invention, and design from various institutions (IPTA/IPTS) that can be commercialised for global benefit

To culturalise research and innovation through the sharing of expertise and commercialised, creative and innovative ideas

To instill interest and encouragement to the public towards research, invention and innovation that poses as a medium for the nation's development.

Specific Objective

To identify and promote new and inventive discoveries that are commercialised, creative, and innovative from various institutions (IPTA/IPTS) all over Malaysia.

To select discoveries and new invention to be contested in the national and international level.

To uphold the reputation and image of UiTM as a well-known pioneer in innovation and invention in the national and international level.

CHRONOLOGY OF RIID

RIID Showcase

7 August 2009,
Dewan Kuliah 2,
UiTM Melaka.



1st IID LET'S IID

13 August 2009,
Dewan Bendahara,
UiTM Melaka.



2nd IID Enculturation Of Research & Innovation

5 October 2010,
Dewan Bendahara,
UiTM Melaka.



RIID 2013 Optimizing Innovation For Global Commercialization

16 - 17 December 2013,
Dewan Taming Sari,
UiTM Melaka.



RIID 2012 Innovation for Sustainable Growth

7 - 8 November 2012,
Dewan Taming Sari,
UiTM Melaka.



DERIA 2011 Sound, Image & Object

21 - 22 July 2011,
Mini Stadium Bistari,
Ayer Keroh, Melaka.

foreword message by

CHIEF MINISTER MELAKA



YAB Datuk Seri Ir. Haji Idris Haron

*Chief Minister Melaka
December 2013*

***Assalamualaikum wbk and
best greetings Salam 1Malaysia,***

And foremost, I would like to congratulate Research, Industrial
Parks and Alumni Centre (PIAC), Universiti Teknologi MARA
(UiTM) Melaka for yet another successful organisation of this
rich, Invention, Innovation and Design Exhibition 2013 (RIID

In the era of globalisation, the Malaysian government is stepping
up its efforts in developing the country and its people, be
ing by launching a holistic socioeconomic development programme.
Our Prime Minister Datuk Seri Mohd Najib Tun Abdul Razak
has introduced a massive transformation agenda in implementing the
programme with its approach and philosophy. The Prime Minister has
also outlined five-key strategic thrusts under the 10th Malaysia
Plan (10MP) to enable Malaysia to become a high-income and
developed nation by 2020.

Therefore, the National Key Results Area (NKRA) and the Key
Performance Index (KPI) were introduced towards achieving vision
2020. While moving towards achieving a developed country status,
Malaysia needs to draw up a new approach which emphasises on
quality human capital, innovation and creativity. The government in
addition has to operate as competitive corporation.

I would like to congratulate UiTM Melaka for supporting the
country's vision by hosting RIID2013 competition and exhibition.
With its theme Innovation for Sustainable Growth, this event is a
positive initiative to encourage professionals and academicians
alike to enhance their knowledge and practical skills and these are
parts of their contribution for the nation's building.

When research activities are conducted continuously, it is expected
that more innovations will be generated. UiTM Melaka's initiative
is highly commendable as it manages to attract 340 products to
be displayed and competed at this event. It is hoped that this event
will serve as a catalyst in enhancing the roles of professionals in
various industries.

***Assalamualaikum wbkt, Salam 1Malaysia
and Salam UiTM Sentiasa Di Hatiku.,***

I would like to welcome our honourable guests, professionals, and academicians from schools, colleges and universities to the 5th Research, Invention, Innovation and Design 2013 (RIID 2013) competition proudly organised by the Research, Industry Linkage and Alumni Division (PJI A) Centre Universiti Teknologi MARA (UiTM) Melaka.

In line with the government's aspiration to nurture and cultivate innovation, UiTM Melaka has taken the initiative to organise RIID 2013 Melaka Innovation Festival. One of the main objectives of the event is to raise the status of local universities globally. To achieve the status of a Research University (RU), one of the criteria is to emphasise on high impact innovation research which leads to invention of new business models, or innovative processes. This would result in an improved efficiency of the organisation and contributes towards better quality of life.

Since innovation is a vital catalyst to attain the status of developed nation in the year 2020, UiTM Melaka is heading the nation's call to attain aspiration through innovative programmes with staff and students. These creative and innovative abilities could be brought to greater heights through competitions and innovation exhibitions held annually. During this two-day event, a talk on innovation will also be held. Innovation is one of the key factors that could push the economy forward. In line with the strategic thrusts, the RIID 2013 competition will serve as a platform for researchers to expand their researches into innovations while becoming a venue for them to showcase their products, prototypes and new ideas.

This competition also serves as a platform for students, lecturer's administrative officers and the public to demonstrate their products or prototypes as well as sharing new ideas for commercial value. Therefore, PJI A decided the Optimizing Innovation for Global Commercialization as our theme for this year 5th Research, Invention, Innovation and Design 2013.

I am proud to announce that the number of participants in this event has increased to more than 300 participants compared to the previous year event. I would like to extend my sincere thanks and gratitude to the committee members who have persistently given their full commitment to this event.

I wish all the participants all the best in the competition.

foreword by
RECTOR



Associate Professor Dr. Adnan bin Hashim

*Rector
Universiti Teknologi MARA Melaka
December 2013*

foreword by
**DIRECTOR OF
 AKEPT**



Prof. Dr. Mohd Majid Konting

*Director
 Higher Education on Leadership Academy (AKEPT)
 December 2013*

Assalamualaikum wbkt and Salam 1Malaysia

First of all, I would like to congratulate the Research, Industry Linkage and Alumni Division (PJIA) Centre Universiti Teknologi MARA (UiTM) Melaka for yet another successful organisation of the Research, Invention, Innovation and Design Exhibition 2013 (RIID 2013).

This competition and exhibition is the fifth effort by the Research, Industrial Linkages and Alumni Centre in exhibiting the outcomes of research, invention and innovation by our versatile lecturers and students. It's encouraging to see that the competition has also attracted participation from other IPTAs, IPTS and schools. I believe this exhibition is definitely a good avenue for them to participate actively and progress collaboratively in the field of innovation and research. I am confident that the PJIA UiTM Melaka will continue to address the various challenges that we are constantly facing with a view towards multidisciplinary solutions. This year's theme of Innovation for Sustainable Growth is appropriate timely and I am certain that this exhibition will bring about more collaborative research and publication.

I therefore would like to take this opportunity to extend a big 'Thank You' to the RIID 2013 organising committees and those who have contributed directly or indirectly in making this exhibition a big success. I wish all researchers, lecturers and students a meaningful and enriching experience in coming up with new and innovative inventions. I wish to end with a note of thanks to the Research, Industrial Linkages and Alumni Centre for a job well done.

Electrochemical Studies of Blend Polymer Electrolytes Based on PVDF-HFP/PEMA for Proton Battery

Siti Rudhziah Bt Che Balian; Aida Fazliza Bt Mat Fadzil; Fadiatul Hasinah Muhammad; Norhafiza Binti Muda; Prof. Dr. Nor Sabirin Binti Mohamed

*Center of Foundation Studies, Universiti Teknologi MARA;
Center for Foundation Studies in Science, University of Malaya*

Blend polymer electrolytes system composed of PVDF-HFP, PEMA, NH₄CF₃SO₃ and TiO₂ have been prepared and characterized. The system containing 5 wt. % of TiO₂ exhibited the highest room temperature conductivity of $\sim 1.32 \times 10^{-3}$ S cm⁻¹. This system was used as an electrolyte for the fabrication proton battery with the configurations (Zn + ZnSO₄·7H₂O + C +PTFE)/PVDF-HFP/PEMA-NH₄CF₃SO₃-(5 wt %) TiO₂/(MnO₂ + C +PTFE) in order to investigate the performance of PVDF-HFP/PEMA blend based electrolytes in electrochemical cells. The result shows that the proton battery discharged at higher load has the longest time of stable performance. This indicates that the electrolyte is more suitable for low current density battery application.

Studies On Structural And Electrical Properties On Lini0.5mg0.5vo4 For Li-Ion Batteries.

Aida Fazliza Mat Fadzil; Siti Irma Yuana Sheikh Mohd Saaid; Siti Rudhziah Che Balian; Marwinny Mohamed;

*Centre for Foundation Studies,
Universiti Teknologi MARA Shah Alam*

In this work, cathode material of LiNi_{0.5}Mg_{0.5}VO₄ was synthesized in a pure state by organic synthetic procedure known as sol-gel method. The annealing temperature was defined at 550°C for 5 hours for this sample. The structural properties of the compound were characterized by X-ray diffraction. It shows that this cathode material produced crystallinity sample. The electrochemical characterization was carried out by Solartron Impedance Spectroscopy where the conductivities of the compound were measured at various temperature (250°C, 350°C, 450°C, 550°C and 650°C). The relationship of the temperature is inversely proportional to the electrical conductivity of solid LiNi_{0.5}Mg_{0.5}VO₄. The highest conductivity is 1.40×10^{-4} S cm⁻¹. Cyclic voltammetry were carried out and it shows the intercalation-deintercalation process for this material. Therefore, LiNi_{0.5}Mg_{0.5}VO₄ is a potential cathode material for lithium-ion batteries.