

2012

RESEARCH  
INVENTION  
INNOVATION &  
DESIGN

7 - 8 NOVEMBER 2012  
DEWAN TAMING SARI  
UNIVERSITI TEKNOLOGI MARA  
KAMPUS ALOR GAJAH  
MELAKA

# innovation for sustainable growth



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## Abstracts

- Invention Category
- Innovation Category
- Design Category

Exhibition Concept

Sponsorship

Supported Institution

Acknowledgement



## WELCOME MESSAGE

Assalamualaikum wbkt and Salam One Malaysia

First of all, I would like to congratulate the Research, Industrial Linkages and Alumni Melaka for yet another successful organization of the Research, Invention, Innovation and Design (RIID) exhibition 2012.

This competition and exhibition is the fourth effort by the Research, Industrial Linkages and Alumni in exhibiting the outcomes of research, invention and innovation by our own versatile lecturers and students and also participation from other IPTAs, IPTS and Schools. I believe that 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 Research, Industrial Linkages and Alumni in the Melaka campus will continue to address the various challenges that we are constantly facing with a view towards multidisciplinary solutions. Hence, the present exhibition with the theme 'Innovation for Sustainable Growth' is appropriate, 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 organizing committee of Research, Invention, Innovation and Design (RIID) 2012 and each and everyone who has made this exhibition a reality. 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 for a job well done.

Yours sincerely,  
Y.Bhg.Prof Madya Dr Mohd Adnan Hashim  
Rector  
Universiti Teknologi MARA Melaka  
November 2012

# **BACKGROUND OF PENYELIDIKAN, JARINGAN INDUSTRI & ALUMNI (PJI&A)**

PJI&A established in April 1980, started as the Research Management Unit (RMU) or IRDC and was formerly known as the Planning, Research and Development Centre. 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 Research and Consultancy Bureau in 1994 and on 15 July 2003 it became Institute of Research, Development and Commercialisation (IRDC).

With the mooring of the 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 became the Research Management Institute (RMI) to synchronise with UiTM's aspiration to become a Research University that will develop innovation activities and new research. In branch campuses RMI is known as RMU. The department of PJI was officially established in 2009 headed by its Deputy Director, Associate Professor Dr. Roaimah Omar. Under her guidance, Invention, Innovation and Design (IID) started with the RIID showcase in August 2009 and this was followed by the first IID exhibition and competition in October 2009.

PJI&A is mainly responsible to manage, monitor and facilitate researchers in conducting their research in the area of science and technology, management and social sciences. It also provides consultation services to researchers and assisting them in their research claims. PJI&A also conducts seminars and workshops to encourage, motivate and train the academic and non-academic staff in research and consultation, securing research grants and projects, to manage good financing and also manages entrepreneurial and alumni activities.

## **Objectives**

- To promote world-class research.
- To administer, coordinate and provide service for research development, consultation and research publications.
- 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 disseminate information and provide ample training in research, consultation and publication of research.
- To provide related service through the latest technology.
- To assist in research publications for high impact journals.

## **Vision**

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

## **Mission**

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



# INTRODUCTION TO RIID 2012

Innovation activities can be considered as an important mechanism for the nation's progress. RIID2012 Melaka anchors on the objective to produce individuals who are capable of formulating creative ideas and be highly competitive. UiTM is an institution which primarily puts emphasis on an innovative culture among its staff and students to form a critical thinking society, possessing creativity skills and elevated knowledge. Aligned with the government's aspiration to cultivate innovation, UiTM Melaka has taken the initiative to organise RIID2012 Melaka Innovation Festival.

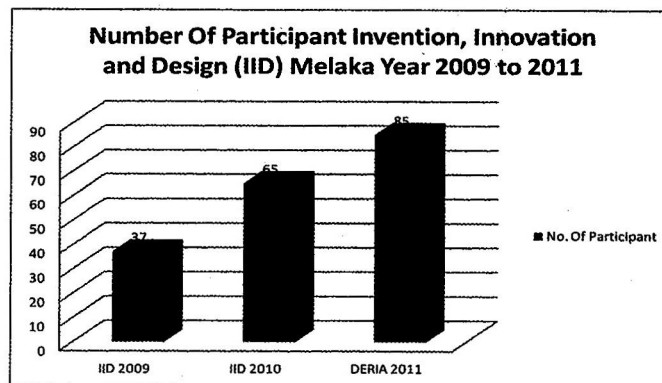
To raise the status of local universities globally or among the KPI which has been determined by the Ministry of Higher Education (MoHE) and to achieve the status of Research University, the total number of innovation being produced by a university is of utmost importance. Innovation is a vital catalyst to attain the status of a developed nation in the year 2020. Parallel to this, UiTM Melaka is carrying the nation's aspiration through innovation programmes wherein the staff and students' creativity and innovative abilities could be brought to greater heights through competitions and innovation exhibitions held every year.

To consistently produce innovation, IID competitions can act as one of the ideal channels or medium to ensure students, lecturers, administrative officers and the public to exhibit or display their products or prototype as well as new ideas that contain commercial values. The first IID held at UiTM Melaka level took place in 2009. It successfully exhibited more than 37 products. To continue the innovation culture within the campus community, IID competitions should be maintained.

The number of participation showed an encouraging response with 45 products being exhibited in the following year. The third IID known as DERIA 2011 was given a new facelift with an estimation of nearly 100 products that competed. Therefore, the Research, Industrial Linkages and Alumni Division (PJ&A) suggested organising the 4th IID in 2012. The IID competition this year is known as RIID2012 with the theme 'Innovation for Sustainable Growth'. The theme is chosen as innovation is believed to be the main impetus for growth that would spearhead the nation towards becoming a high income developed nation.

Therefore, the Research, Industrial Linkages and Alumni Division (PJ&A) has suggested to organise the 4th IID in 2012. The IID competition this year is known as RiID2012 with the theme '*Innovation for sustainable growth*'.

R= research, I = invention, I= innovation, D= design = RIID



# 1st IID: LET'S IID 2009

## Gold Medal

1. Asmaradana (Video clip) by FSKM
2. Pinggan Rasmi Istana Melaka by FSSR
3. Rekabentuk Maskot dan Logo SUKMA 2010 Melaka by FSSR
4. eXtention-C by FPN
5. CD Interactive Cartoons on Sexual Education for Young Children by FSSR
6. Grammar Mania – A Game For The Language Classroom by FPEND
7. Dara Pujaan (Short Film) by FKPM
8. Kalkulator Zakat Mudah Alih @zakatfon by IKAZ
9. Smart Easel by FSSR
10. Dhobi Wallah – The Last Laundrette Mohican (Documentary) by FKPM
11. e-Inventori ICT System by FSKM

## Silver Medal

1. Teguh 11 by FSSR
2. Songket Rasmi Negeri Melaka by FSSR
3. Workout with English by FSKM
4. Smart Drawing Board by FSSR
5. i-Masjid by IKAZ
6. Photo Gallery 2009, The Good, The Bad and The Ugly: Journey of Emotions (Sweats of Heart;s Desire) by FKPM
7. Dulang Bekas Kuih Raya 1 by FSSR
8. MyPJI-Portal by FSKM
9. Academic Predication Model Neural Network for Computer Sciences Students in UiTM by FSKM
10. Mobile Archery Scoring System by FSKM
11. e-Aduan ICT System by FSKM

## Bronze Medal

1. Sistem e- GL Staf by FSKM
2. Postcards as Affective Image Makers for Melaka Tourism by FSSR
3. Impact of Economic Growth on Air and Water Pollution in Malaysia by FPP
4. Snakes and Ladders (Literature) by FPEND
5. Reka Bentuk Komunikasi dalam Penjenamaan Semula Identiti dan Imej Lokasi Pelancongan di Negeri Melaka (Melaka River Cruise) by FSSR
6. Photo Gallery 2008, The Good, The Bad, The Ugly: Journey of Emotions (Life) by FKPM
7. Malaysian MotoGP 2009 Booklet by FFPM
8. Penghasilan Functional Sculpture/Decorative Objects/Design Object (Terendak Lampu Hiasan) daripada Logam Terpakai/Terbuang dengan Teknik Kimpalan Beracuan by FSSR
9. The Sale and Purchase Agreement: Creating and Innovative Glossary to Make It More Comprehensive
10. KOMIK: Catatan SI MAHASITUA by FSSR

Faculty with the Highest Number of Participation Category: FSSR

Best Booth Category: Asmaradana (Video Clip) by FSKM

Best Poster Category: Kalkulator Zakat Mudah Alih @zakatfon by IKAZ

Smart Ampoule Breaker  
Amiruddin bin Mohd Yusuf (L),Hospital Segam

# PROGRAMME TENTATIVE

**Date : 7 November 2012 (Wednesday)**

TIME	TENTATIVE
8.15am	Registration
9.00am	Exhibition and Judging (Session
11.30am	Cultural Presentation
12.00pm	Lucky Draw I
1.00pm	Rehat / Makan Tengahari
2.30pm	Pameran & Perjurian (Sesi II)
3.00pm	Mind Challenging Game
4.00pm	Lucky Draw II
5.00pm	Adjournment
5.10pm	Registration for Tour of Melaka City
5.30pm -	Optional : River Cruise Melaka/
11.00pm	Jonker Street/Taming Sari

**Date : 8 November 2012 (Thursday)**

TIME	TENTATIVE
8.15am	Registration
8.30am	Arrival of Guest Speaker
8.35am	Breakfast
9.00am	Genovasi Briefing
10.00am	RIID 2012 Exhibition
11.00am	Lucky Draw 3
12.30pm	Break/ Lunch
2.00pm	Innovation Talk by Animosta Studios S/B
3.00pm	Arrival of PM Zulkifli Abdul Majid (Director of RIBU)
3.20pm	Welcome Prosession for VVIP, Rector and Deputy Rector UiTM Melaka
3.25pm	National Anthem and Wawasan Setia UiTM
3.30pm	Doa Recital
3.40pm	Opening Presentation
3.45pm	Speech by Chairperson of RIID 2012, UiTM Melaka
3.50pm	Speech by Rector
	Official Opening and Closing bby PM Zulkifli Abdul Majid ( Representing Assistant Vice Chancellor (Research) , RMI UiTM Shah Alam)
4.00pm	
4.20pm	Launching Gimmicks – Multimedia Presentation
4.25pm	Visit to Exhibition Booths
4.40pm	Press Conference
5.00pm	Award Presentation
5.35pm	Closing Ceremony
5.40pm	Photograph Session
5.45pm	Tea Break



# COMMITTEE RIID 2012

## ■ Certificate

Ustz Husnul Rita bt Aris  
Pn Siti Hajar Abd Aziz  
Noofazreen Binti Mohd Aris  
Mariam Farhana  
Adibah Binti Bahori  
Pn Zaiton Hasan  
Cik Rabiah Ibrahim

## ■ Audio Visual and ICT Equipment

Puan Rohayu Hj. Ramli

## ■ Refreshment

Ustazah Noraini Ismail  
Vani a/p Tanggamani  
Siti Anis Nadia binti Abu Bakar  
Puan Siti Rohana binti Daud

## ■ Event Manager

Saloma Emang  
Zarina Begum Ebrahim  
Nurul Ain Mustakim  
Muna Kameelah Saud  
En. Mohd Hatta Mohd Yatim

## ■ Logistic and Tour

Akmal Adanan  
Tania Maria Tangit  
Noor ibtisam Abdul Karim  
Abu Zaireen Abu Hassan  
Norfaezah Khalet

## ■ Montage

YM Tengku Shahril Norzaimi Tg. Hariffazillah

## ■ Video and Photographer

Shahril Anuar Abdul Ghalim

## ■ Innovation Talk

Pn Ilya Yasnorizar Ilyas  
Nadia bte Abdullah

## ■ Food Stall

Prof Madya Zaihan Abd. Latif  
Puan Nor Hamiza Mohd Noor

## ■ Judges

Prof Madya Dr Maheran Katan  
Dr. Shafinar Ismail  
Pn Alisa Ibrahim  
Pn Suhailah Kassim  
Ainaa Idayu binti Iskandar  
Azlin Zanariah binti Bahtar  
Nur Hidayah binti Zaini  
Nurhaslinda Hashim  
Ahmad Syaifullizan Zulkeefly  
Sulaiman Mahzan

## ■ Facility and Equipment

Puan Norliyah Munjat  
En. Izwan Sham Izhar  
En. Saiful Hamzah Abd Rahim  
En. Alias Tompong  
En. Mohd Radzie Mohd Ramli  
En. Mohd Hazrie Tahar  
En. Mohd Nor Rajian  
En. Mohd Suhaimi Abdul Rahman  
En. Razul Sharif  
En. Mohd Sufian Md Ali  
En. Faizul Ab. Razak  
En. Ahmad Nasrin Mansor  
En. Yahya Abdul  
Pn. Murni Abu  
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En. Nor Azizan Abdullah  
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Nurul Huda Mohamad Saad

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sustainable growth**



## **Acknowledgement**

Research Innovation And Business Unit (RIBU) UiTM Shah Alam  
Research Management Institute (RMI) UiTM Shah Alam  
Division of Administration, UiTM Melaka  
Division Of Academic Affairs (HEA), UiTM Melaka  
Division Of Student Affairs (HEP), UiTM Melaka  
Division Of Facility and Infrastructure Developement (BPF) UiTM Melaka  
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Security Unit, UiTM Melaka  
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Innovation For Sustainable Growth  
An Innovative Exhibition Of Higher Learning Research

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## ***Removal of Heavy Metal From Industrial Wastewater by Adsorption Onto Activated Carbon Prepared From Fruit Waste***

Fakulti kejuruteraan Kimia  
UiTM Shah Alam

Norhayati Talib, Nor Halaliza Alias, Tengku Amran Tengku Mohd, Nurul Asyikin Md Zaki,  
Dr. Noor Fitrah Abu Bakar

### ***Abstract***

Activated carbon without a doubt has been the most popular and broadly used adsorbent in wastewater treatment throughout the world. This research will be conducted to produce the low cost alternatives activated carbon to adsorb heavy metal in waste water. Mangosteen and longan peels have been chosen as the source of the activated carbon due to its low cost, simple processing method, abundant in nature and it is a by product or waste material from fruit. The production of activated carbon was carried out by using chemical activation method. The activated carbons were characterized using Brunauer-Emmett-Teller (BET) and Fourier Transform Infrared (FTIR) Spectroscopy Analysis to analyse the ash, moisture content and surface functional group. Finally, the activated carbon adsorption activities were tested onto water containing heavy metal prepared in lab and industrial wastewater. The alternative source of the activated carbon from fruit waste provided a low cost treatment of heavy metal. It is a transformation towards a renewable energy source of waste treatment since the fruit waste used in this investigation are freely, abundantly and locally available. The resulting carbons are expected to be economically viable for wastewater treatment. Thus, it will promote the safer environment since the small scale industry will be afford to use the activated carbon for their waste water treatment rather than discharge the untreated heavy metal waste into the water source.

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## ***Rice Bag***

Fakulti Sains Sukan & Rekreasi  
Fakulti Sains Gunaan  
UiTM Shah Alam

Rahmat Hj Adnan, Prof. Madya Dr. Norirham Abdullah, Dr. Zaiton bte Mohd Noor, Prof. Madya Siti Marsinah Tumin,  
En Norasrudin Sulaiman

### ***Abstract***

Name of this product is Rice Bag. This bag is invented specifically for people who need in treatment of soft tissue or muscle injuries. Usually Ice and Heat (gel, cream, electromodalities based) was been used in managing soft tissue or muscle injury. There are many disadvantageous in using these tools which main reason why this rice bag been invented. Rice bag is 100% used the rice grains as raw material that covered by special rib fabric that can sustain similar strength of ice and heat simultaneously. This rice material is clinically produced and tested by biotechnology laboratory from faculty of applied sciences in uitm. The test has shown, after special treatment by lab protocol the rice profound with an equal temperature effect between different temperatures after treatment. Thus, this rice bag proven that can surrogate the using of current tools with better outcome. Moreover, this rice bag is highly potential in supplying to all type of individual and population who are more concern in treating and managing musculoskeletal injuries such as hospital based: physiotherapist, occupational therapist etc, clinics, workplace and home. Furthermore, this rice bag have high potential in domestic and international trade which currently many developed countries such as UK, US, Australia etc were using wheat bag for this treatment. The researchers believe this rice bag can give business opportunity to Malaysia in replacing the wheat bag.