

R&D
PRODUCTS
OF PUBLIC
UNIVERSITIES
IN MALAYSIA
2011





R&D
PRODUCTS
OF PUBLIC
UNIVERSITIES
IN MALAYSIA
2011

ISBN 978-967-0334-38-7

Information compiled by
Institute of Higher Education
Excellence Planning Division,
Department of Higher Education,
Ministry of Higher Education
(Bahagian Perancangan
Kecemerlangan IPT, Jabatan
Pengajian Tinggi, Kementerian
Pengajian Tinggi)

Editor-in-Chief

Prof. Madya Engr. Dr. Janatul Islah
Mohammad

Editors

Norhazimah Che Hassan
Yamini A/P Jayabalan
Wee Eng Fui
Wan Ab. Rahman Wan Ismail
Rohaya Mohamad Amin

Manuscript design prepared by
UKM Technology Sdn Bhd

Graphics + Layout Design

Muhamad Adian Akmar
Mohd Fadzly Ariffin

Copywriting + Proofreading

Mohd Fadli Shah Khaidzir

© Ministry of Higher Education,
Malaysia, First Edition 2012

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any forms or by any means, electronic, mechanical, photocopying, recording, and/or otherwise without the prior written permission from the Secretary General, Ministry of Higher Education, Malaysia.

Whilst every effort has been made to ensure the accuracy of the information contained in this publication, the authors and publisher accept no responsibility for any errors it may contain, or for any loss, financial or otherwise, sustained by any person using this publication.

R&D
PRODUCTS
OF PUBLIC
UNIVERSITIES
IN MALAYSIA
2011

Executive Summary

For its fourth year of publication, “R&D Products of Public Universities in Malaysia” continues to offer one great platform for the local universities to promote their inventions and products to public.

Published by the Ministry of Higher Education, the book helps to bring closer the new products to the commercial sales as the products have the potential to be profitable to the growth of nation's economy. With the latest breakthrough that may become of importance to the society and global, it is an opportunity not to be missed by the researchers all around Malaysia to introduce their own products and to encourage them to become more innovative in the future.

Thus it is hoped that with this book there will be a good source of reference for the development of manufacturing growth of local universities and also the medium for the orientation of the products to developers of many industries, also to enhance the research and innovation ventures from nation's university scholars.

The objective of this book is to promote the products and discoveries from local universities to public, especially to local developers and industrialists. It is also to support universities' research projects and inventions to a level where they can be commercialised to the public.

The book also promotes the universities that are involved with the publication of the book as the universities are the producers of the products to be commercialized.



Y.B. Dato' Seri Mohamed Khaled bin Nordin Minister of Higher Education

I would like to take this opportunity to congratulate the Department of Higher Education, especially the Institutions of Higher Education Excellence Planning Division for successfully producing the "R&D Products of Public Universities in Malaysia 2011". I believe the book signifies our never-ending drive and determination in promoting Malaysia's best research products into the innovation-hungry market.

2012 has been chosen as the Year of National Innovation, where one of the key agenda is to boost the commercialisation of our R&D products to a wider segment of the society and even better - to go global. After years of Ministry's support and grants funded to the universities, we are now starting to see results, based on the gross sales generated by these researches, but we still have a long way to go.

At the same time, to maximise their R&D products commercialisation potential, local universities should step up their game in establishing collaborative networks with industry players and game changers - local and international. These networks of know-how intellectuals and market savvy minds should work closely together to form an industry driven research that would envision a market-ready product.

Together we can achieve this, thank you.



Y.Bhg. Datuk Ab. Rahim
bin Md Noor
Secretary General,
Ministry of Higher Education

The Ministry of Higher Education has put into place a strong foundation for building the country's capacity for knowledge and innovation by pulling all the stops in order to ensure the National Higher Education Strategic Plan's success by the year 2020. Four types of grant schemes, namely - Fundamental Research Grant Scheme (FRGS), Exploratory Research Grant Scheme (ERGS), Long Term Research Grant Scheme (LRGS) and Prototype Development Research Grant Scheme (PRGS) - has been consistently given out over the years to help developing the researcher's idea into a success story - and successful product.

This is in line with the Economic Transformation Plan (ETP), where Education (and Higher Education) has been tapped as one of 12 National Key Economic Areas (NKEA) to lead Malaysia's transformation into a high-income nation by 2020. To achieve this, we would be really appreciative if the industry could lend a helping hand. By channeling funds to our brilliant researchers for joint-research, I think a win-win situation is up for grabs to both parties when we struck upon a breakthrough discovery.

Congratulations to the Institutions of Higher Education Excellence Planning Division, Department of Higher Education for their initiative and commitment in producing this publication and to all those who have directly or indirectly involved to make this publication a success.

Keep striving for excellence, thank you.



Y.Bhg. Dato' Prof.
Dr. Rujhan bin Mustafa
Director General,
Department of Higher Education

Congratulations to the Institutions of Higher Education Excellence Planning Division, Department of Higher Education, for their continuous effort in producing the 2011 edition of our "R&D Products of Public Universities in Malaysia". It is my hope that this publication can help bridge the gap between the universities and the industry in order to push our products into the marketplace.

The universities management should inculcate 'pioneer mindset' to the minds of researchers, focusing on innovative researches in line with the nation's needs, translating fundamental breakthroughs into end products or commercially viable technological platforms which leads to the enrichment of national's knowledge repository.

I'm happy to report that the cumulative gross sales for IPTA's Intellectual Property and services is at RM52.2 million, RM12.4 million of which is from 2011. Whereas the Intellectual Properties files by the IPTA so far stands at 1411, which comprised of patents, trademarks, copyrights and others. While this is huge numbers, we should not be at ease with the figures as I believe there's still a tremendous amount of untapped "blockbusters" in the pipeline, waiting to be discovered and turned into financial success.

These great products will mean nothing without the support from the industry and allied partners. We welcome real collaborations, that go beyond the sharing of facilities and appliances, where the industry and researchers would actively engaged in perfecting the product into a market-ready blockbuster.

Let's turn this into reality, thank you.



DIE CUT

DIE CUT

DIE CUT

DIE CUT

DIE CUT

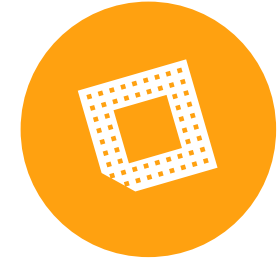
DIE CUT

DIE CUT

DIE CUT



EDUCATION



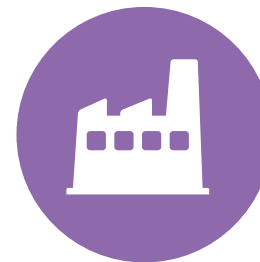
ELECTRONIC



CONSUMER
GOODS



MEDICAL+
HEALTH



INDUSTRY
EQUIPMENT



ICT



AGRICULTURE

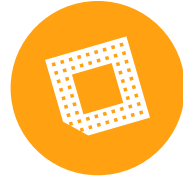


OTHERS



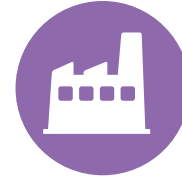
Education 01

- 03 Toxicology in the Classroom Teaching Courseware
- 04 SSTAR - Simple Steps to Academic Research
- 05 An Introduction to Object-Oriented Programming with UML Using Borland C++
- 06 Traditional Malay Children's Songs Karaoke VCD for Pre-School
- 07 Preschool Multimedia Interactive Courseware (Object Classification)
- 08 FLeTO (Fun Learning Through Origami)
- 09 Prodigy Counsellor Kit
- 10 EM -01



Electronic 11

- 13 Portable Solar Generator
- 14 Solar Charge Controller
- 15 Plastic Optical Coupler (POF) for Fibre in the Home and Automobile System Applications
- 16 Carbon Monoxide Sensor
- 17 Potentiometric Biosensor (Formaldehyde & Ammonia)
- 18 Automotive Simulator for Driver's Behaviour and Competency Analysis (ASIS)
- 19 Greenfinity Solar Charger
- 20 PVCottage®
- 21 EPC Class 1 GEN 2 UHF RFID (Radio Frequency Identification) Reader & Writer
- 22 Temperature Controller For Heated Glass



Industry Equipment 57

- 59 Advanced Solar Dryer
- 60 Automatic Thermocycling Dipping Machine
- 61 Precast Composite Wall System
- 62 Eco Clay
- 63 Solar Cell Electrical Tester
- 64 Coconut Auto Squeezer Machine
- 65 Cookies Forming Machine
- 66 Ezy Cooker
- 67 Fruit Grading Machine
- 68 Nata De Coco Dicing Machine / Multi-Ezy Cutter
- 69 Jatropa Fruit Shelling Machine
- 70 Pineapple Multi-Peeler Machine
- 71 Rolled Tart Machine
- 72 Halal Test Kit
- 73 Ohmic Heated Pasteurizer
- 74 Real Time Oil Palm Fruit Grading System
- 75 Turamesin / Stone Mastic
- 76 Fresh Fruit Bunch (FFB) Hyperspectral Scanner



ICT 77

- 79 Instrumen Indeks Keusahawanan Remaja Ehsan (IIKRM)
- 80 Malaysian Emotional Quotient Inventory (MEQI)
- 81 Sistem MyMohes, Sistem Kajian Pengesanan Graduan 2011 (Fasa 1&2)
- 82 MyCPD System
- 83 NLTVC Crystalview HD 9100
- 84 ClearView Telepresence System
- 85 MyOBE
- 86 Phonic Software and Tutor for Visual Dyslexia Children



Consumer Goods 23

- 25 Shintook Body Soap & Hair Tonic
- 26 Mechanised Jacquard Songket
- 27 Le Miel™ Probiotic Chocolate and Confectionery
- 28 Hydroxycitric from Roselle
- 29 Seagold Liquid
- 30 Tongkat Ali Phyto Plus
- 31 Kacip Fatimah Phyto Plus
- 32 Virgin Coconut Oil & Virgin Coconut Oil Softgel
- 33 PalmVico
- 34 Body Shampoo Series
- 35 Virgin Coconut Oil (Hair Cream)
- 36 Herbal Chocolate Series
- 37 Labicea Series
- 38 Aromatherapy Therapeutic Massage Oil Series
- 40 Aromatherapy Perfume Series
- 41 Wisderm Series
- 42 Wisderm Hand & Body Lotion
- 43 Kardi Mind Palm Tea Sachet
- 44 Cardio Mate Seasoning from Seaweed
- 45 Therapeutic Herbal Bath (Putra Aromatic)
- 46 Specialty Rice Bran Oil (RIBO) Hypercholesterolemic



Medical + Health 47

- 49 KULITKU - Tissue Engineered Human Skin
- 50 A1 BOD™
- 51 Nata de Coco-based Hydrogel
- 52 PlasmoNex - ONE STEP Multiplex PCR Detection System for Malaria Parasites
- 53 ONE STEP Multiplex PCR Detection System for Salmonella Typhi and Thypi A
- 54 Agent For Liver Cancer (Vitaberry Supplements)
- 55 Thymoquinone Rich Fraction as Cardioprotective and Neuroprotective Agents



Agriculture 87

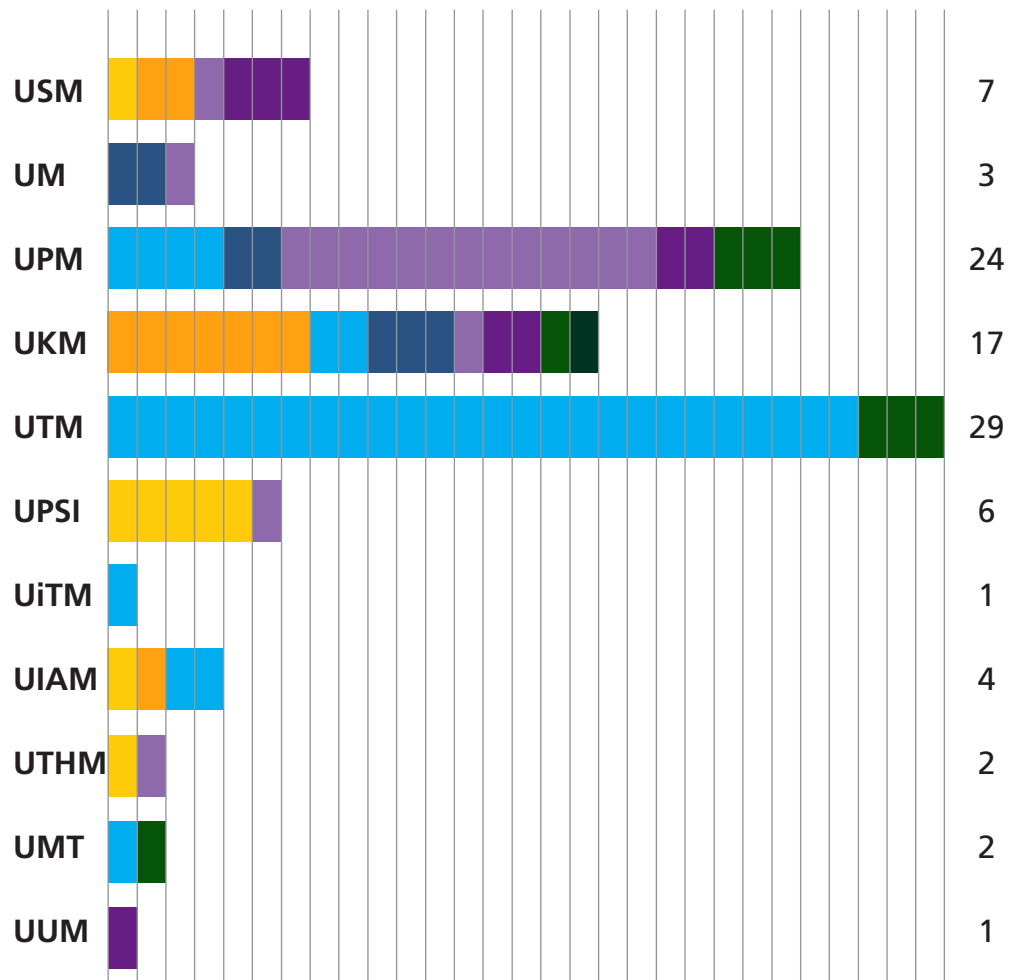
- 89 Cilibangi
- 90 HEME-1 - Culture Media for Fastidious Aquatic and Marine Microbes
- 91 EM Fertilizer
- 92 Bioorganic Fertilizer Series
- 94 Bacto-10 Liquid Bio-Fertilizer
- 95 Production Of GBR (Germinated Brown Rice) As Nutraceutical and Functional Food



Others 97

- 99 escCUBE: A Smart City Kiosk

STATISTICS



Total 96

EDUCATION



Toxicology in the Classroom Teaching Courseware

Pesticides are widely used in farming economies, where harmful effects caused by weeds, diseases and pests are of greater concern.

It is essential to avoid exposures that pose risks of adverse effects to human's health and the environment. The aim of 'Toxicology in Classroom' is to introduce the natural sciences education which covers topics of chemistry, toxicology and risk assessment. Rather than addressing the users and the parents, this educational material aims at raising the awareness among children by providing basic educational information and material in environmental chemistry and health and toxicology. Thus chemistry / science teachers in the early years of secondary school can teach their students aged 9-13 to understand the action of toxic chemicals/ pesticides, and the principles of safe handling, and to protect themselves and the environment from harmful effects.

The 'Toxicology in Classroom' educational material features various formats to cater the different needs of schools and countries. These formats are Interactive multimedia in CD-ROM, a booklet of content for teachers, a Teacher's guidance for teaching activities, a student's workbook, a teacher's Flip Charts for teaching and a book relating to the understanding of chemicals, risks to human health and environment for children.

The development of the products are based on sound teaching and learning theories and models presented in text, animations, games, pictorial story telling.

Test-run of the "Toxicology in the Classroom" courseware took place in Malaysia, Argentina and Ghana. A total of 17 schools (7 in Malaysia, 4 in Argentina and 6 in Ghana) included both primary and secondary schools, and urban and rural areas targeting at 9 to 13 year old children. Results from the test-run done on the teachers revealed that the level of infrastructure of the schools differed not only between the pilot countries but between the schools in the same country. Regardless of the level of sophistication of schools, course material was found useful and teachers used story-telling, games, experiments which were prepared as auxiliary subjects for the course in all 3 countries. The test runs were very well received both by the school children and their teachers and the creativity shown was overall impressive. The detail of the test-run is documented in the test-run summary report.

The courseware and print materials have been circulated by the United Nation Environmental Program (UNEP) in various international conferences and meetings and were very well received and the target is more towards developing countries with farming economics.

RESEARCHER	Prof. Dr. Rahmat Awang
PHONE	04 570099
EMAIL	rahmat@usm.my
GROSS INCOME	RM 55,748 (WHO) RM 195,668 (UNESCO)



SSTAR - Simple Steps to Academic Research

This product is designed to assist in handling training materials in the field of research. The Simple Steps to Academic Research (SSTAR) will be used as a trademark and necessity for researchers thus using this product in their basic research training.

The SSTAR is suitable for academicians and educators which include both IPTA and IPTS Academic staffs, teachers and researchers. This product is also targeted for post graduate students in assisting them in their researches.

RESEARCHER Prof. Dr. Moha Asri Abdullah
PHONE 03 61965021
EMAIL maizirwan@iiuim.edu.my
GROSS INCOME RM 1,100



An Introduction to Object-Oriented Programming with UML Using Borland C++

An Introduction to Object-Oriented Programming with UML Using Borland C++ is a book written using research-based knowledge. The purpose of this book is to introduce students at an early stage on the process and steps of producing and creating object oriented programs. Besides that, this book also exposes readers to the manners of using programming language C++

The book is composed to motivate students in producing and creating better and quality programs in a modular approach by using functions and classes. Therefore this book is highly suitable and aimed at first year students majoring in computer science and related disciplines as well as to IT course students and lecturers.



RESEARCHER Prof. Dr. Rosziati Ibrahim
PHONE 07 4533601
EMAIL rosziati@uthm.edu.my
GROSS INCOME RM 12,750



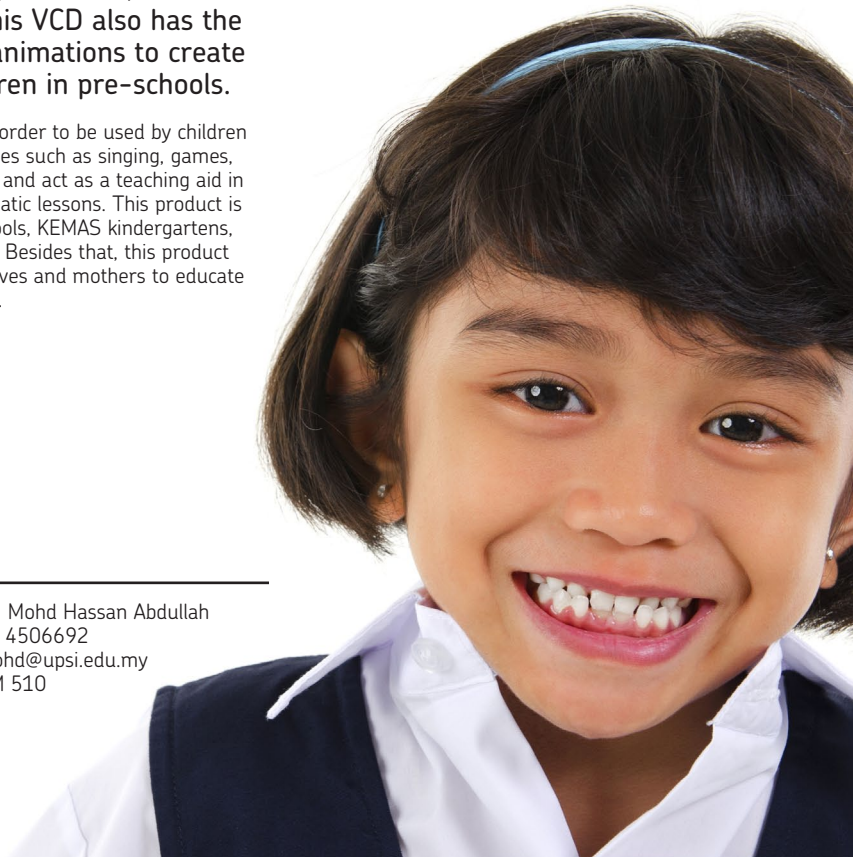
Traditional Malay Children's Songs Karaoke VCD for Pre-School

This product is a collection of traditional Malay children songs made in a form of karaoke VCD. These songs are analyzed from the aspects of music elements, functions, and texts of the songs. This VCD also has the element of 2D animations to create interest in children in pre-schools.

The VCD is created in order to be used by children and students in activities such as singing, games, psychomotor activities and act as a teaching aid in language and mathematic lessons. This product is marketed for pre-schools, KEMAS kindergartens, and children daycares. Besides that, this product is suitable for housewives and mothers to educate their children at home.



RESEARCHER Dr. Mohd Hassan Abdullah
PHONE 05 4506692
EMAIL mohd@upsi.edu.my
GROSS INCOME RM 510



Preschool Multimedia Interactive Courseware (Object Classification)



The Preschool Multimedia Interactive Courseware (Object Classification) PMICMO, is a multimedia application product which requires a detailed and systematic plan in ensuring a high quality product that is acceptable by the targeted audience (preschoolers).

This courseware development consist of many crucial decision-making stages such as analysis, design, development, implementation and evaluation (AD-DIE model). Within analyzing phase, the instructional problem was clarified, the goals and objectives were established, and the learning environment and learner characteristics were identified. The design phase was where the instructional strategies were designed and media choices were made. In the develop phase, materials were produced according to decisions made during the design phase. The implement phase included the testing of prototypes (with targeted audience) and putting the product in full production. Formative evaluation was present in each stage whilst summative evaluation covers criterion-related referenced items test and providing opportunities for user's feedback.

The courseware may be used as a teaching & learning material for preschools in developing cognitive, psychomotor and problem solving skills among students. This PMICMO courseware is marketed to preschools, education institutions, and also parents and teachers in educating the students.

RESEARCHER Dr. Nor Azah Abdul Aziz
PHONE 05 4505172
EMAIL azah@ftmk.upsi.edu.my
GROSS INCOME RM 4,560



FLeTO (Fun Learning Through Origami)

This product is designed to educate children on how to fold papers into animated 3D and 2D creations. The lessons are presented in the forms of animation, audio and narration to ensure that children are able to follow the correct steps to creating origami.

With the introduction of FLeTO, it is hoped to enhance the cognitive, psychomotor skills and creative inventions of the children. This product is marketed for pre schools, parents and children between the age of 5 to 6 years old.



RESEARCHER Nur Saadah Fathil
PHONE 05 4505079
EMAIL nursaadah@ftmk.upsi.edu.my
GROSS INCOME RM 4,770



Prodigy Counsellor Kit



The product is an interactive based module that offers counselling and guidance lessons to counsellors to become efficient and knowledgeable in doing their tasks. The Prodigy Counsellor Kit covers the aspects of cognitive, affective, behaviours and manners to assist counsellors in handling activities and lessons with all kinds of students from the poor and average students to the high achievers.

This multiple award-winning product is hoped to be of help for counsellors and schools and reduce the presence of external consultants. The product provides lessons on research works and learning and counselling modules which enable counsellors to become more efficient, knowledgeable and more persistent in dealing with students. Besides that, counsellors are able to enhance their working performances towards the students and the school as this product helps to make documentation works easier. This product is also created as an alternative in dealing with the discipline of the students instead of the traditional way still practiced today. The Prodigy Counsellor Kit is marketed towards schools, public and private education institutes, education departments and NGOs that promotes educational awareness.

RESEARCHER Ab. Aziz Mohd Yatim
PHONE 05 4506029
EMAIL abaziz@upsi.edu.my
GROSS INCOME RM 50,000





EM -01

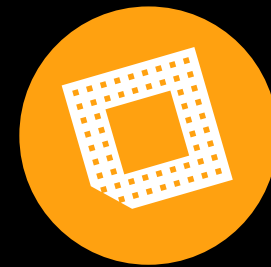
Experiments are essential to improve students' in-depth understanding in particular physics topics. Currently, however, some educators have begun to question the approach and effectiveness of the Earth's Magnetic field experiment in schools and colleges. The approach is inaccurate, difficult in data collection and adapts a wrong concept. Thus, the kit known as EM-01 is developed from PVC pipes, insulated copper coil and compass as an alternative approach to the Earth's magnetic field experiment.

The kit will be used with several other instruments including ammeter, rheostat and battery. This experimental set-up provides enough exposure to students in understanding topics related to vector and electromagnetism. The result obtained using EM-01 has smaller deviation from theoretical value.

The EM-01 kit is developed from PVC pipes, insulated copper coil and compass. The package which includes a laboratory manual is light weight, easy to operate portable and cost efficient. Besides that, the Em-01 produces more accurate results and straight forward data collection which enable students to understand several concepts in the related topic. Apart from that, the kit which is specially designed for experimental purposes in laboratory, can also be utilized in classroom as demonstration kit. The EM-01 is suitable to be marketed to schools, universities and colleges as well as engineering and physics related industries.

RESEARCHER Prof. Dr. Rosly Jaafar
PHONE 05 4506450
EMAIL zaiham_izwan@upsi.edu.my
GROSS INCOME RM 24,614

ELECTRONIC



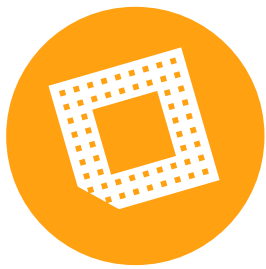
Portable Solar Generator

This Portable Solar Generator is a new product in the market which is lighter than most petrol generators (15kg). The product which is both portable and compact has a battery that lasts for 90 hours and has low maintenance.

It is suitable to be used by night markets, hawkers and camping travelers because of its lack in air and sound pollution making the product a friendly user for everyone. Because of the long-lasting battery used, the product is suitable in assisting polices, doctors, fire fighters and soldiers in emergency situations that require power supply.



RESEARCHER	Dr. Zafri Azran Abd. Majid
PHONE	09 5713338
EMAIL	amzafri@iiu.edu.my
GROSS INCOME	RM 20,000



Solar Charge Controller

An intelligent and cost efficient invention, Solar Charge Controller is a stand-alone solar powered intended for rural and remote areas. It is used together with the green-energy-producer solar photovoltaic panels, with the function to disconnect and reconnect the battery and also to load during battery overcharged or undercharged.

It is an important stand-alone photovoltaic system device that prevents the battery from being damaged due to over-charging it. Besides that, the unstable voltage from the photovoltaic systems may spoil the load. A microcontroller is used as a central controller in coordinating all the system's activities. This smart charge controller is developed to reduce the current market price of charge controller to an affordable level.

RESEARCHER Assoc. Prof. Dr. Nowshad Amin
PHONE 03 89216325
EMAIL nowshad@eng.ukm.my
GROSS INCOME RM 10,000



The Solar Charge Controller has a Multi-state PWM battery charging and stage of charge (SOC) indicator, boost charging and float charging which make it useful in remote areas. Besides that, there are other functions that makes this product better compared to those in the market. This includes an automatic charge equalisation and load reconnection, manual load short-circuit reconnection switch, automatic battery voltage detection and temperature compensation charging, and proper PCB design with low electronic interference (EMC). This invention is made user friendly with LCDs displaying battery voltage, current PV, temperature and others indicators. Besides that, the product offers over temperature and reverse current protection to ensure the safety of the users.

The Solar Charge Controller is a Malaysian made product that promotes green energy and environmental friendly at an affordable price. This product is marketed to all stand alone solar photovoltaic solution and system providers in Malaysia and other parts of the world. It is also suitable to be used at all electronic and telecommunication companies and distributors.

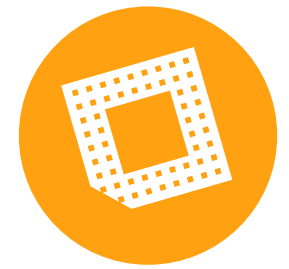
Plastic Optical Coupler (POF) for Fibre in the Home and Automobile System Applications

A simple 1X2 Y-branch Plastic Optical Fibre (POF) coupler is invented to be used in various POF applications including home network, vehicle network, optical sensors, optical security access card, fibre-to-the-home, multimedia system, in-flight entertainment system and in the industrial control sector.

The 1x2 POF coupler has been designed using a simple metallic mould insert. The mould insert has been fabricated using CNC machine process with a groove opening of 1 mm which allows 1 mm step index (SI) POF fibres to be slotted into the mould insert. These products are optical devices based on low cost plastic optical fibre (POF) technology that are used for routing, splitting and combining optical light signals in many fibre optics technology applications.

The Plastic Optical Fibre (POF) Coupler is based on a waveguide technology and has a unique feature of hollow structured design, utilizing low cost POF fibres and simple mould insert material, easy assembling and device packaging, simple Y-branch and N:M coupling ratio designs, variable POF coupler design, specifications up-to commercial standards, multi-applications. Besides that, it is also based on a new and unique structure - metal hollow structure, combine with plastic optical fibre (POF) technology. The Plastic Optical Fibre (POF) Coupler is hoped to be well-accepted for both its functions, cost-effective products (equipments and materials) with specifications that are up to the commercial standard.

RESEARCHER Abang Annuar Ehsan
PHONE 03 89217110
EMAIL aaehsan@eng.ukm.my
GROSS INCOME RM 10,000



Carbon Monoxide Sensor



The Carbon Monoxide Sensor is invented to detect the concentration of carbon monoxide present in the atmosphere which is poisonous, colourless, odourless, and tasteless. The sensor consists of a gas detection portion for detecting carbon monoxide. A carbon monoxide sensor consists of a gas detection portion for detecting carbon monoxide.

A light transmission and measurement system are placed adjacent to the gas detecting portion to detect a change in the optical characterizing of the transmitted light. The emerging light from the gas detecting portion consists of hematin whereby the gas detecting portion should at least be a layer of Langmuir-Blodgett film of hematin mixed with volatile organic solvent – a colourless fatty acid or its derivatives which is selected from arachidic acid, stearic acid, palmitic acid or oleic acid.

RESEARCHER Prof. Emeritus Dato' Dr. Muhammad Yahaya
PHONE 03 89215900
EMAIL myahya@ukm.my
GROSS INCOME RM 10,000

Unlike most competing technology available in the market which is not sensitive, less accurate, immobile and costly, the carbon monoxide sensor is selective, accurate, cheap and portable to be used anywhere. The product is invented to ensure that the atmosphere at workplaces are clean and safe by ensuring that the cleaner air is not polluted with carbon monoxide which is mostly produced from vehicles. The product is marketed for the Malaysian Road Transport Department (JPJ) and also suitable for manufacturers and industries related to promoting cleaner air.

Potentiometric Biosensor (Formaldehyde & Ammonia)

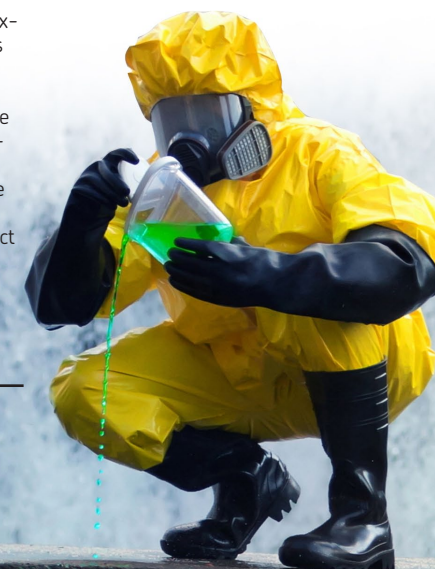
The product is designed to monitor the quality of food and environmental pollution or clinical analyses which traditionally employed the chemical methods performed in centralized laboratories. However, this can now be decentralized with the use of biosensors. Biosensors are portable devices that utilize the specificity of various bio-molecules, e.g. enzymes, whole cells and DNA as recognition elements in the process of sensing the presence of some chemicals in a sample.

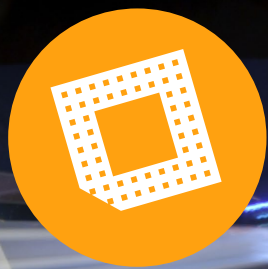
The device is compact and includes a transducer that transforms the signal into quantitative information. Besides being compatible with common manufacturing technology such as photolithography technology, this product is able to produce different types of biosensors which can be produced from the same technology.

The Potentiometric Biosensor is designed to be flexible and miniature in size with a possibility of mass production which cost lower in terms of production. The product is a rapid manufacturing and production of biosensor devices that has acceptable analytical performance. With the use of the Potentiometric Biosensor, it helps to improve the environmental monitoring, the quality of food, evaluate the toxicity of water and also improves the clinical analyses in the process. The market for this product includes the Ministry of Health (in monitoring the

RESEARCHER Prof. Dr. Lee Yook Heng
PHONE 03 89213356
EMAIL yhl1000@ukm.my
GROSS INCOME RM 50,000

formaldehyde in seafood products in Malaysia), seafood marketing, export and import companies. Besides that, the biosensor is suitable to be used in indoor air quality monitoring by the Department of Environment and Department of Occupational Health and Safety, water plants, processing facilities and concessionaires





Automotive Simulator for Driver's Behaviour and Competency Analysis (ASIS)

ASIS stands for Automotive Simulator for Driver's Behaviour Analysis. It is a system with two integrated modules that must be installed and run together to achieve the objectives of evaluating and training drivers for better driving competency.

The stimulator consists of a tailor-made driving environment with automated training and testing for drivers. It is also equipped with an automated evaluation of drivers' driving competency and behaviour and is able to log and track the driving data produced. The results from the stimulator is an integration with psychological data measurement.

With the use of ASIS, it is able to provide a safe training environment for drivers and can also be used as a profiling tool towards drivers in identifying their driving behaviours. This stimulator is marketed for the Road and Transport Enforcement department (JPJ), driving schools and also for all ground fleet transport companies.

RESEARCHER Prof. Ir. Dr. Mohd Jailani Mohd Nor
PHONE 03 89215144
EMAIL jai@mohe.gov.my
GROSS INCOME RM 50,000



Greenfinity Solar Charger

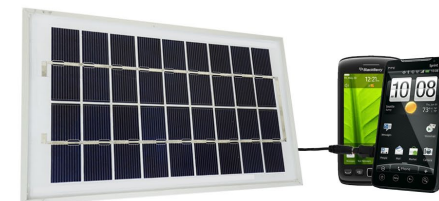
Greenfinity™ is a portable solar charger that uses the advantage of the sunlight to charge phones and small electronic appliances including batteries. This portable solar charger has several advantages, such as it can directly charge two mobile phones at the same time, it takes approximately one hour to fully-charge a phone and only ten minutes is needed to regain 10% of the battery life.

The features of the 36.5 cm x 19 cm x 1.6 cm solar charger include a TUV certified 5Wp solar panel, two 5V outputs for mobile phones and an output for any rechargeable storage batteries under 6V. The solar charger comes together with a package of accessories consist of a solar panel with electronic controller, wired connectors with 3.5mm female header, mini USP HP header, wired connectors with crocodile clips, and a plastic casing of the controller with a temperature resistance of approximately 70°C.

RESEARCHER Assoc. Prof. Dr. Nowshad Amin
PHONE 03 89216325
EMAIL nowshad@eng.ukm.my
GROSS INCOME RM 3,365



The solar charger is not only made complete with accessories but the product is easy accessible for places and situations without or limited electricity and helpful for electronic appliance usage in remote areas. The solar charger is marketed to military forces, household products companies, campers and travellers, and also can be used as teaching aids in schools and universities.





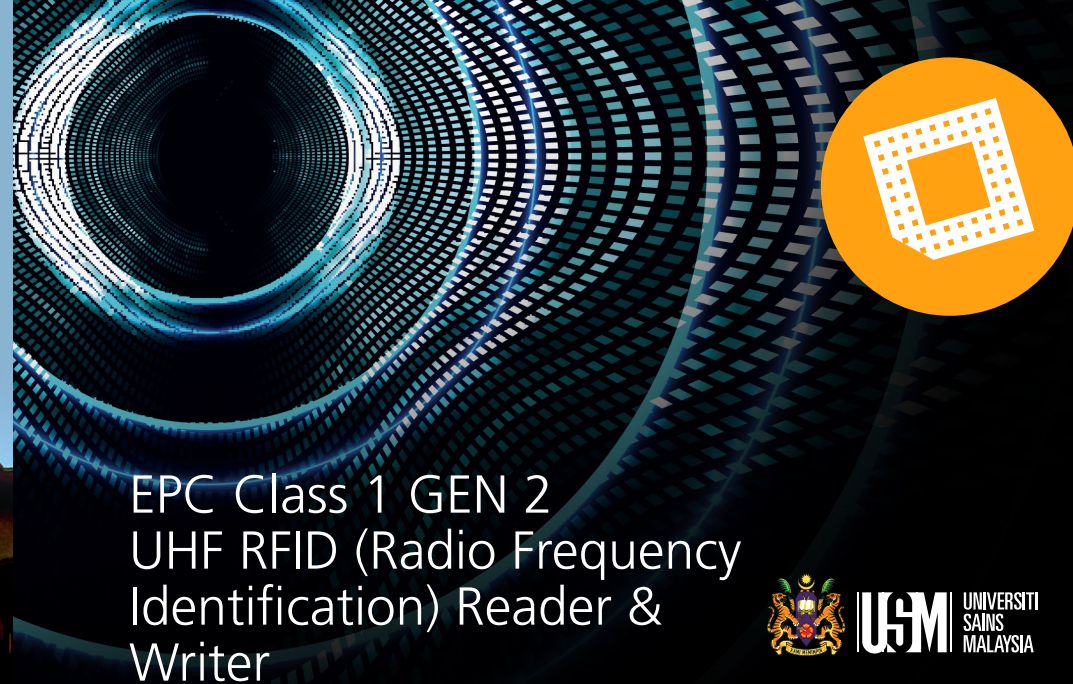
PVCottage®

PVCottage® is an alternative approach aimed at solar photovoltaic (PV) cost reduction by tailoring the technology to the socio-economic culture of the society. This approach stresses on the development of photovoltaic-based cottage industry. The entire equipment and manufacturing processes were developed, similar to any automated operations. Hence, through this approach, many customized PV panels can be produced at a very low cost and provide job opportunities for the local population.

PVCottage® is an alternative approach to a fully automated manufacturing line for (PV) photovoltaic modules. Hence, it is a low cost method of manufacturing process that can be tailored to the socio-economic culture of villages. This approach is aimed at making an introduction to a green technology economic based product in Malaysia that reduces the cost of production and at the same time offers more job opportunities to Malaysians. The PVCottage® is marketed to Photovoltaic (PV) manufacturers.



RESEARCHER Prof. Dato' Dr. Kamaruzzaman Sopian
PHONE 03 89214592
EMAIL ksopian@eng.ukm.my
GROSS INCOME RM 292,100



EPC Class 1 GEN 2 UHF RFID (Radio Frequency Identification) Reader & Writer

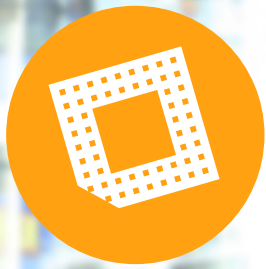


The EPC Class 1 GEN 2 UHF RFID (Radio Frequency Identification) Reader and Writer is a method of port configuration for the second generation passive RFID reader which provides obscure and unexpected results compared to other related invention which is the diversity that the present invention can be customized in order to fit the application needs.

The invention has industrial application in which the present invention can be applied in library book management, car park system to manage parking space and student attendance systems for academic facilities such as universities and colleges where customisation to existing ICT infrastructures can be optimised. Therefore the invention is marketed to the education sectors (library management, convocation and students attendance) and the manufacturing sectors including human resource management, machine to machine communication, production line monitoring, and assets tracking.

The product is considered to be a true contactless solution with multiple ranges (< 7 metres). The product uses simple and effective GUI and low power consumption. Besides that, the method of processing data for this product has been streamlined which makes it easier to customize to fit the purity of needs and also simplify the connection over multiple networks. Another feature of this product is the RFID reader that can rotate effectively in each angle until 360° besides having a database to store information and data.

RESEARCHER Assoc. Prof. Widad Ismail
PHONE 04 5995999 (ext 6050)
EMAIL eewidad@eng.usm.my
GROSS INCOME RM 228,700



Temperature Controller For Heated Glass



The invention aims to provide a control circuit programmed to proportionally regulate supplied voltage to heated glass pane in a refrigerator. More specifically, the disclosed invention employs a Triode for Alternating Current (TRIAC) to carry out the voltage stepping down process in the refrigerator coupling to the programmable control circuit.

Besides that, the invention is also able to control circuit, possessing voltage stepping-down capabilities for heated glass panes, which can be manufactured at relatively lower price without using transformers. Other than that, the invention can also be functioned as a simple voltage stepping-down mechanisms facilitating the line voltage to be regulated to a much smaller range fitting glass panes prepared in different sizes without using transformers.

Heated glass panes have been used in commercial refrigeration doors to avoid formation of fog on the glass surface. Therefore the glass surface has to be coated with a layer of conductive and resistive material in order to avoid vapor condensation. With recent advances in glass coatings and electronic control technology, numerous approaches have been

described in attempt to bring down the cost to fabricate the voltage step-down circuit and improve energy efficiency of the refrigerator. Therefore the TRIAC is a product that is able to control the circuit to supply proportionally the electrical current from an alternate current power supplied to the glass pane coated with transparent conductive oxides. The features include a micro-controller configured to fire an electrical pulse to the TRIAC once the zero crossing of each phase of the alternate current is detected.

Apart from that, this product can also be used for different sizes of refrigerator door by setting the selector jumper to the predetermined location. Furthermore, the program has a programmable interface controller (PIC) that will automatically detect the frequency of the AC voltage (for a different country) and will supply the required voltage level accordingly, making it a suitable and usable at all places.

The product has been designed for Schottglass (M) Sdn. Bhd. based on the requirement of the company. Schottglass (located in Prai industrial area) is the main player in the manufacturing of the glass door for drink display refrigerator which is widely used in worldwide supermarkets such as TESCO, Wal-Mart, and Giant.

The product which have been used in many commercial refrigeration doors, is marketed towards refrigerator glass pane that are used for displaying drinks and cabin manufacturers worldwide.

RESEARCHER Assoc. Prof. Dr Mohd Fadzil Ain
PHONE 04 5995815
EMAIL mfadzil@eng.usm.my
GROSS INCOME RM 79,800

CONSUMER GOODS



Shintook Body Soap & Hair Tonic

This premium soap is formulated from natural botanical ingredients such as Entada which has natural wonderful lather that helps to gently purify the skin and Zeolite, a powder K2-ZEO that contains Oxides of Aluminium, Calcium, Ferro, Potassium, Magnesium, Natrium, Silica, Titanium and other herbs help to soothe the itchiness of the skin, remove dead skin cells and dirt from the skin.

The essential oils of Lemon grass and Peppermint in the soap will create a freshness and relaxing effect after use. The Shintook Body Soap is marketed for herbal lovers and for Spa and Beauty centres. This soap is not only to enhance the beauty of the skin but is also suitable for those with skin problems.

The Shintook Hair Tonic is another product using the new method of extraction of sintok based especially used for hair. This hair tonic is designed to help strengthen and nourish both the hair and scalp and reduces agitated cuticles at the same time.

This hair tonic is designed to help strengthen, nourish scalp, hair and reduce agitated cuticles. Although there are already many hair products in the market, this sintok based product uses unique method of extraction to ensure better and healthier hair results. The market for this hair tonic is specially focused to the herbal lovers and consumers with hair problems.

RESEARCHER	Dr. Siti Zaiton Mat So'at
PHONE	09 5713100
EMAIL	dszaiton@iiu.edu.my
GROSS INCOME	Body Soap RM 801.40 Hair Tonic RM 236



Mechanised Jacquard Songket



This product focuses on the use of mechanised jacquard in the production of the traditional Malay ware songket. The modification of jacquard makes the production of songket easier, neat and beautiful by various designs using modern techniques of loom and software.

Through the use of the mechanised jacquard, the songket are not only produced double sided but also helps in the incensement of songket productivity compared to traditional produced songket. (10 days needed per songket). This product is marketed for industries related to textile, apparel fashion and cottage with the hope of promoting songket at a larger scale.



RESEARCHER Prof. Dr. Jamil Salleh
PHONE 016 2245542
EMAIL jamisal@salam.uitm.edu.my
GROSS INCOME RM 32,155.91



Le Miel™ Probiotic Chocolate and Confectionery



Le Meil™ Probiotic Chocolate and Confectionery is a company that produces and supplies chocolates and confectionery that are both low calorie and halal in order to cater the ever increasing demand of the global market especially to chocolate lovers

The product is a healthy and Halal high quality Malaysian made chocolate and cocoa products. The chocolate filling used in the product is fortified by adding probiotic bacteria that has been isolated during cocoa bean fermentation. Besides that, proline is used to reduce the usage of skimmed milk powder in the compound milk chocolate, thus making the product a low calorie chocolate which has an anti-blooming ingredient in it.

The Le Meil™ Probiotic Chocolate and Confectionery is invented to promote Halal chocolates and confectionaries in Malaysia and other parts of the world. The product promotes the use of palm oil by using it in the product as a substitute for cocoa butter and also creates a healthy digestive system for chocolate lovers. Besides chocolate lovers, this product is aimed for the local and international confectionary manufacturer companies, primary and secondary schools and those with gastro-intestinal problems.



RESEARCHER Assoc. Prof. Dr. Nazaruddin Ramli
PHONE 03 89213817
EMAIL naza@ukm.my
GROSS INCOME RM 10,000



Hydroxycitric from Roselle

Roselle is relatively a new crop in Malaysia. Roselle is well known for its rich contents of vitamin C and anthocyanin and is mainly used for making pro-health drinks. Recent findings have shown that Roselle also contains relatively high contents of hydroxycitric acid (HCA) discovered particularly in a natural mutant from Acc.12.

This natural mutant has been identified as having 28% of HCA which is extracted from dried calyces in the form of potassium hydroxycitrate which is stable and biologically active. HCA is now widely used as one of the main ingredients of many HCA-containing products available in the market such as in weight-loss supplements and medicines.

These special Roselle varieties are developed using an innovative breeding method and later the dried calyces is extracted in order to get a chemical compound that is later converted into active and chemically suitable forms to be used as a new diet ingredient for body weight loss. The Roselle can be used as a new diet ingredient and anti obesity because it acts as an alternative ad substitute for vitamin C such as blackcurrant and orange. This product is targeted towards health supplements companies and beverages manufacturers

RESEARCHER Prof. Dr. Mohamad Osman
PHONE 012 3865724
EMAIL mbopar2004@yahoo.com
GROSS INCOME RM 10,000



Seagold Liquid

The product is a nutritious drink extracted from the golden sea cucumber (*Sticophus horrens*), which is blended with inulin (*oligosaccharides*) and has a melon aromatic flavour to discard the bad odour of the extract.

This product has been tested in healing wounds and improving blood circulation, reduce fatigue and it is packed in sachet form, making them suitable for frequent travellers. The product is suitable for Diabetic type II patient, small children, and people that need to improve their health.

The product consists of sachets whereby each individual sachet contains 15mL of the aromatic nutritious drink, easy to be carried by frequent travellers, and is not easily oxidize. The product has been tested in institute labs, for toxicity as well as for wound healing study and is ready to be commercialized with Halal certificate, KKM and product under GMP plant. Consumers of Seagold Liquid can expect improvement of blood circulation and energy boost. This product is marketed as drink supplement for children, women and diabetic patients. Besides that, the product is also marketed for multi-level marketing companies.

RESEARCHER Prof. Dr. Mohd Effendy Abd Wahid
PHONE 09 6683104
EMAIL effendy@umt.edu.my



Tongkat Ali Phyto Plus

Tongkat Ali Phyto Plus formulated at IBD contains high quality of standardized and purified water soluble extract of Tongkat Ali. Tongkat Ali water soluble extract is processed under stringent condition to ensure high quality product of Tongkat Ali extract using the latest technology in extraction with the state of art equipment conducted by skilled manpower.

Tongkat Ali Phyto Plus does not contain sawdust grounded root or any other part of the plant and 99% soluble in water hence it is very safe to consume. Each capsule contains standardized amount of active ingredient which has been formulated based on the best scientific knowledge available to enhance the beneficial effects of the tongkat Ali extract. Research has shown that Eurycoma longifolia contains several phytochemicals (plant chemicals) that support healthy testosterone levels (the sex hormone) required for male sexual functions and alertness.



RESEARCHER	Sulaiman Ngadiran
PHONE	07 5531568
EMAIL	sulaiman@ibd.utm.my
GROSS INCOME	Tongkat Ali RM 25,162.10
	Kacip Fatimah RM 15,922.75



Kacip Fatimah Phyto Plus

Kacip Fatimah Phyto Plus formulated at IBD contains the highest quality of standardized and purified extract of Kacip Fatimah water soluble extract. The Kacip Fatimah extract is extracted from the whole plant of Kacip Fatimah (*Labisia Pumilla*) and processed under a very stringent condition from the pre-processing to the final product to ensure the highest quality of the product

The Kacip Fatimah extract is prepared using the latest extraction technology with the state of art equipment for extraction which resulted in the product free from having sawdust grounded root or any other part of the plants and is also 99% soluble in water thus making it very safe to consume. Each capsule contains standardized amount of active ingredients which has been formulated based on the best scientific knowledge available in order to enhance the beneficial effects of the Kacip Fatimah extract.





Virgin Coconut Oil & Virgin Coconut Oil Softgel

Virgin coconut oil is obtained from fresh coconut milk using integrated wet process without any heat or chemical application involved. This clear colourless liquid with a pleasant aroma and slightly sweet taste is highly stable and does not turn rancid into storage. The virgin coconut oil consists of 92% saturated fatty acid which promotes health and weight loss associated due to the length of the fatty acids chains in the coconut oil.

Coconut oil contains what is called medium chain fatty acids or medium chain triglycerides (MCTs) such as caprylic (C-8) capric (C-10) and lauric (C-12) acids. Besides that, monolaurin derived from these triglycerides assist in strengthening the body immune system.

Natural coconut oil is a functional food that benefits the overall wellness of the body and is suitable to be used by the whole family. The virgin coconut oil soft gel is a functional food that benefits the body and is suitable to be used by everyone.

RESEARCHER Mariani Abd Hamid
PHONE 07 5531568
EMAIL mariani@ibd.utm.my
GROSS INCOME Virgin Coconut Oil
 RM 37,011.65
 Virgin Coconut Oil Softgel
 RM 19,558.60



PalmVico

Palmvico is a virgin coconut oil (VCO) that is enriched with palm oil extract. The product captures the best of VCO and palm oil phytochemicals in a single formula intended to provide Medium Chains Fatty Acids (McFAs) Tocopherol & Tocotrienols, Phytosterols and Polyphenols which are always lacking in most diet plan opted by men today.

Palmvico comes in a form of soft gel capsule which acts as a wholesome natural food supplement to provide medium chain fatty acids and cofactors for cellular metabolisms in ensuring a proper diet for people.



RESEARCHER Mariani Abd Hamid
PHONE 07 5531568
EMAIL mariani@ibd.utm.my
GROSS INCOME RM 1,328.25



Body Shampoo Series



Refreshing

Refreshing body shampoo is enriched with virgin coconut oil and vitamin E and comes with a variety selection of essential oils which includes rosemary, grapefruit, lemongrass and ylang ylang. This product will leave the body feeling rejuvenated and refreshing after each use.

Relaxing

Relaxing Body Shampoo contains coconut oil and vitamin E with different essential oils to choose from ranging from lavender, geranium and patchouli. The relaxing body shampoo helps to meditate the body leaving the body feeling relaxed after each use.



RESEARCHER	Norhayati Mohamed Noor
PHONE	07 5531568
EMAIL	norhayati@ibd.utm.my
GROSS INCOME	Refreshing RM 1,511.20
	Relaxing RM 1,130.45



Virgin Coconut Oil (Hair Cream)



Virgin coconut oil (VCO) based hair cream is a natural cosmetic enriched with various types of nutrients. VCO Hair Cream prevents the scalp from dryness, nourishes the hair and promotes healthier hair for all types of hair.

The basic ingredient for this hair cream is Virgin coconut oil which contains high amount of lauric acid and has antimicrobial properties. VCO also acts as an emollient which penetrate through the hair scalp and into the deeper layer of the cells. It is free from paraben derivatives, synthetic fragrances and toxic materials. With a non greasy formula, the product contains blended essential oils ranging from orange, sandalwood and patchouli that is suitable for everyone.



RESEARCHER	Zairani Mat Taher
PHONE	07 5531568
EMAIL	zairani@ibd.utm.my
GROSS INCOME	RM 13,695.80



Herbal Chocolate Series

Tongkat Ali

Chocolate is made from cocoa (Theobroma Cacao L.) and is the most powerful antioxidant food. The antioxidant can protect the body from radical which may damage cell and lead to heart disease. Important minerals such as magnesium, calcium, and potassium as well as vitamins are also found in chocolate and is linked to the lower cardiovascular mortality

It has the capability to reduce the risk of blood clots, strokes, and coronary heart disease from happening. In addition it contains natural compounds which promote the feeling of pleasure and anti-depression. The integration of chocolate with the Tongkat Ali herbal offers added value to the chocolate and promotes synergy beneficial impact to human's health. Tongkat Ali (Eurycoma Longifolia) extract is traditionally used for men's health and vitality, making this product called Tongkat Ali Dark Chocolate not only delicious but also beneficial to the consumers.

Kacip Fatimah

Similar to the Tongkat Ali Dark Chocolate, this product also uses chocolate as its main ingredient which is known to be one of the most powerful antioxidant food and is able to protect the body from radical attacks.

The chocolate is integrated with the extracted herbal Kacip Fatimah (Labisia Pumila) which is traditionally used for women's health and vitality. Therefore this product is targeted for women in enhancing the reduction of blood clots, strokes, coronary heart disease and protect women from the common diseases faced by women.



RESEARCHER Mailin Misson
PHONE 07 5531568
EMAIL mailin@ibd.utm.my
GROSS INCOME Tongkat Ali RM 4,023.90
Kacip Fatimah RM 4,910.05



Labicea Series

Moisturizer

Labicea Revitalizing Moisturizer is a product designed to help increase the firmness, elasticity and vital hydration of the skin and leaving it feeling smooth with no oily residue. The product is formulated from Kacip Fatimah (Labisia Pumila) extract which is suitable and effective for women. The Labicea Revitalizing Moisturizer helps to protect the skin from premature aging, and makes the skin radiant and youthful.

Face Serum

This Labicea™ Regenerating Face Serum formulation is based on a cellular nutrition concept using liposome as the delivery platform. The formulation attempts to provide a complete nutrient for the skin cells especially the skin fibroblast and keratinocytes. The formulation is intended to facilitate the skin's physiological maintenance and regeneration targeted at middle age group. The formulation includes skin physiological lipid such as ceramide, fatty acids, hydrolyzed protein and amino acids and other co-factors including vitamin A, C and E. Other major ingredients that are included in this product are hyaluronic acid and Kacip Fatimah (Labisia Pumila) extracts. The water base texture of Regenerating Face Serum by Labicea™ intends to leave the skin feeling soft, smooth and elastic. This rich face serum visibly reduces the appearance of fine lines and wrinkles on the skin as well as helps to prevent premature signs of aging by moisturizes, rejuvenates and protects the skin at all time.

RESEARCHER Norhayati Mohamed Noor
PHONE 07 5531568
EMAIL norhayati@ibd.utm.my
GROSS INCOME Moisturizer RM 15,401.35
Face Serum RM 7,345.80



Aromatherapy Therapeutic Massage Oil Series



Balance

This massage oil product is renowned for its balancing effects on the nervous system. Sandalwood and lavender are among the main ingredients blend into the oil. With the added calming and soothing effects of geranium, ylang ylang and lavender, the aroma of this massage oil will give users an experience of a certain feel of balance for both the mind and body.

Refreshing

This Refreshing series of aromatherapy massage oil is formulated from a number of essential oils including Basil and Rosemary. It promotes a refreshing effect once applied to the skin. Besides that, this particular massage oil is suitable to be used for those who lack in energy and are derived from fatigue. After using this product, one will experience a refreshing after effect and can sense the differences in terms of the energy level.

Relief Muscle

The combination of essential oils used in this formula are valuable in reducing and overcoming strained muscles and joints. This series of massage oil is designed especially for relief muscle and has a soothing yet spicy fragrance of ginger and black pepper. One is able to notice a slight warming effect on the area of skin applied which is most effective on aching muscles but may regarded as an uneasy feeling to those with hyper sensitive skin.

Soothing

This Soothing series of aromatherapy massage oil is based on the formulation of chamomile and cedar wood in extracting the essential oil. The product is capable of soothing the body muscles and leaves a calming effect on the mind and body after use.

RESEARCHER	Rosnani Hisam@Hasham
PHONE	07 5531568
EMAIL	rosnani@ibd.utm.my
GROSS INCOME	
	Balance RM 1,802.85
	Relief Muscle RM 2,751.10
	Refreshing RM 1,195.50
	Soothing RM 947.60





Aromatherapy Perfume Series

Insomnia

This series of aromatherapy fragrance is called Insomnia which is formulated from a number of essential oils including chamomile and lavender. As the product is called, the perfume is capable of assisting those with difficulties in sleeping and at the same time promotes a better quality and peaceful sleep for normal people.

Rejuvenate

This Rejuvenate series of aromatherapy fragrance uses rosemary and bergamot as the two main ingredients in the formulation of the fragrant. This product produces a refreshing smell that is beneficial to the spirit and mind in making a person feeling rejuvenated and motivated.

Sensual

The Sensual series of aromatherapy perfume is formulated from a number of essential oils including rose and jasmine. This perfume is able to improve the sense of smell and taste for individuals.



RESEARCHER	Rosnani Hisam@Hasham
PHONE	07 5531568
EMAIL	rosnani@ibd.utm.my
GROSS INCOME	
	Balance RM 1,802.85
	Relief Muscle RM 2,751.10
	Refreshing RM 1,195.50
	Soothing RM 947.60



Wisderm Series



Cleanser

The Wisderm Cleanser is an ideal light texture face cleanser that is designed to suit all types of skin. It gently removes all impurities while protecting the skin with its moisture-rich formulation based on virgin coconut oil and plant extracts. The product is derived from a plant that is free from any agent of SLS, SLES, ALS, and ALES which makes it suitable for everyone with all types of skin.

Toner

The Wisderm Toner is an alcohol free product that is both refreshing purifying. The product helps to purify, refresh, and replenish the lost of moisture of the skin instantly and effectively once applied. The natural virgin coconut oil (VCO) and botanical extracts contained in the product acts as an astringent that soothe and comfort the dry and sensitized skin as well as maintaining the skin natural PH balance at the same time.

Day Moisturizer

The wisderm Day Moisturizer is a product based on the natural virgin coconut oil that is formulated to instantly protect, comfort and calm all types of skin. Besides that, the moisturizer helps to enhance the natural balance of the skin and promotes youthful radiance at the same time. Wisderm products are made to easily absorbs, hydrates and moisturizes the skin, leaving it feeling soft, smooth and soothing. The Wisderm Day Moisturizer includes SPF 15 that acts as a sun block and protects the skin from extreme exposure of the sun (UVA/UVB).

Night Moisturizer

This product is a rich night cream moisturizer that comforts and calms the skin while we are sleeping and acts as moisturizers barriers at the same time. The cream helps to replenish the skin with the use of natural virgin coconut oil, 7 amino acids, Vitamin E and botanical extracts. The Wisderm Night Moisturizer is rich in its texture and is aimed at dry and sensitive skin types in order to nourish and hydrate these skins. With the use of this product, it restores the moisture balance of the complexion and promotes a brighter healthy skin with the help of a natural whitening agent extracted from the root of Morus Alba contained in the moisturizer.

RESEARCHER	Rosnani Hisam@Hasham
PHONE	07 5531568
EMAIL	rosnani@ibd.utm.my
GROSS INCOME	
	Cleanser RM 2,804.25
	Toner RM 1,206.70
	Day Mosturizer RM 1,766.10
	Night Mosturizer RM 1,823.85
	Travel Pack RM 3,868.20



Wisderm Hand & Body Lotion



The Wisderm Hand & Body Lotion is blended and formulated using pure virgin coconut oil that results in skin feeling moisturized and soft upon frequent application.

The lotion is able to prevent destructive free radical formation such as the development of liver spots and other blemishes caused by aging and overexposure to sunrays. The absorption of the oil into the skin will result in tightening the connective tissues and avoid premature sagging and wrinkling of the skin making the skin younger and smoother.



RESEARCHER Zairani Mat Taher
PHONE 07 5531568
EMAIL zairani@ibd.utm.my
GROSS INCOME RM 920.30



Kardi Mind Palm Tea Sachet



The Kardi Mind Palm Tea Sachet is a comestible composition with phytoestrogenic property against stress and hormone related cancer, enhance infertility.

Besides that, this product is effective in enhancing fertility, to hinder ailments, reduces endogenous estrogen including: reproductive organ ailments, cardiovascular disease and osteoporosis, prevent from loss of cognitive function, urinary incontinence, incensement of body fat, post menopausal syndromes and vasomotor symptoms. The Kardi Mind Palm Tea Sachet which contains extract from palm leaf is suitable for everyone and is marketed towards the food industry.



RESEARCHER Prof. Dr. Suhaila Mohamed
PHONE 03 89468391
EMAIL mohamed.suhaila@gmail.com
GROSS INCOME RM 100,000



Cardio Mate Seasoning from Seaweed

The Cardio Mate Seasoning from Seaweed is a product designed as a method for preparing seaweed based flavor seasoning that promotes cardiovascular health, prevents degenerative diseases and protect organs.

The product is formed by the steps of pre-treating seaweeds which involve pulverisation or extracting the pre-treated seaweeds using solvent; with or without the addition of polyphenol rich plants/extracts and other food additives. Therefore this product is suitable to be used by everyone and is marketed to the food industry.



RESEARCHER Prof. Dr. Suhaila Mohamed
PHONE 03 89468391
EMAIL mohamed.suhaila@gmail.com
GROSS INCOME RM 100,000

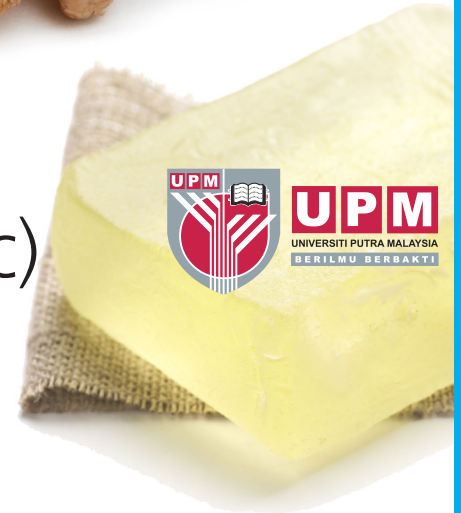
Therapeutic Herbal Bath (Putra Aromatic)

The product comes in a variety of choices and is developed from novel essential oils extracted in house. The source of the plants used for the products are from our local rainforest whereby the essentials oils are analysed for its antimicrobial and antioxidant properties.

The product is halal because they do not contain synthetic essential oils and furthermore has been tested and was responded positively by the in-house customers. The Therapeutic Herbal Bath has a variety of aromas which are extracted from various plants to cater the needs of customers.

The product is suitable for everyone because the fragrance of the oils can be detected by the cells in the nose which are closely linked to the mood centres located in the brain. Therefore, the product is capable of providing a feeling of wellbeing to its users. Among the variety of choices available include, Torch ginger, Nutmeg, Lengkuas padi, Lempoyang, Patchouli, Eucalyptus, Basil, Lemongrass, Citronella, Spices, Herbal bath, and Floral bath.

RESEARCHER Assoc. Prof. Faridah Qamaruz Zaman
PHONE 03 89471413
EMAIL faridahqz@gmail.com
GROSS INCOME RM 100,000





Specialty Rice Bran Oil (RIBO) Hypercholestromic



This invention relates to an edible oil with excellent fatty acid profile which improves antioxidants contents and stability. The edible oil is a healthy oil that contains hypocholestromic and nutraceutical potential as it improves the total antioxidant status, enhances lipid peroxidation, and reduces LDL/HDL ratio and decreases the risk of coronary heart disease (CHD).

The nutraceutical oil in the product's ingredient is a mixture of rice bran oil and palm oil that is mixed in an appropriate portion that has an end-result of 70-80% of fatty acids; about 900-1200ppm of any one or combination of tocopherol and tocotrienol; about 900-1200ppm of Vitamin E; and about 10000-10400ppm of oryzanol. The product is marketed towards both food and health industries.

RESEARCHER Prof. Maznah Ismail
PHONE 03 89472115
EMAIL maznah@medic.upm.edu.my
GROSS INCOME RM 100,000

MEDICAL + HEALTH



KULITKU - Tissue Engineered Human Skin



The invention relates to a method for producing tissue engineered skin, specifically for producing autologous bilayer tissue engineered skin in order to be used for skin grafting and cell therapy for various kinds of tissue reconstruction or regenerative medicine. KULITKU is an advance 3D autograft skin substitute to repair the thinning of skin. The substitution of the skin is not only able to replace the traditional skin graft but also have been proven to enhance the healing of wounds.

KULITKU is an Autologous product which does not use any synthetic biomaterial that can cause acute or delayed rejection. Besides that, it reduces morbidity by requiring small donor site and helps the process of reproducing for recurrent diabetic ulcers and other large areas that are defected. This product is suitable in tissue treatment because of its high cell viability in reducing scars and possible colloid formation

With the introduction of KULITKU to patients, it helps to enhance the procedures and shortens the length of stay for the patients at the hospitals. The product acts as an alternative for amputation procedure in diabetic cases and reduces the chances of amputation. This product is especially targeted for the use in government and private hospitals specializing in skin grafting and cell therapy, besides introducing it to health organisation industry with the hope of offering a new technology in medical services.

RESEARCHER	Prof. Dr. Ruszymah Hj Idrus
PHONE	03 91457670
EMAIL	ruszy@medic.ukm.my
GROSS INCOME	RM 10,000



A1 BOD™

The A1 BOD is an innovation inspired from the hardship of patients in hospitals. It is designed to transfer patients in a sitting-position. This is important not only for the comfort and safety of the patients, but also to ensure the safety of the employees during the process.

The device offers a complete Patient Transfer line to provide multiple options for transferring the patients. The ultra smooth patient transfer boards and Medical mover board both offer all-around dependability and safety throughout the process. The patient slider with roller board creates a support surface beneath the patient, allowing the patients to move by themselves and thus minimize back strain of hospitals staffs due to its lightweight design. It is also very useful for people at home who are paralysed and patients suffering from stroke.

A1 BOD is equipped with portable and easy handling functions which reduce the risk of back pain among hospital staffs to ensure that better care is given during the transfer of the patients besides teaching them to become independent by allowing the patients to move by themselves. This invention is marketed towards all government and private hospitals, clinics and home nursing institutions and aimed at helping both the staffs and patients dealing with movement disabilities.

RESEARCHER Tan Ai Ai
PHONE 03 91455742
EMAIL aiaitan2@gmail.com
GROSS INCOME RM 10,000



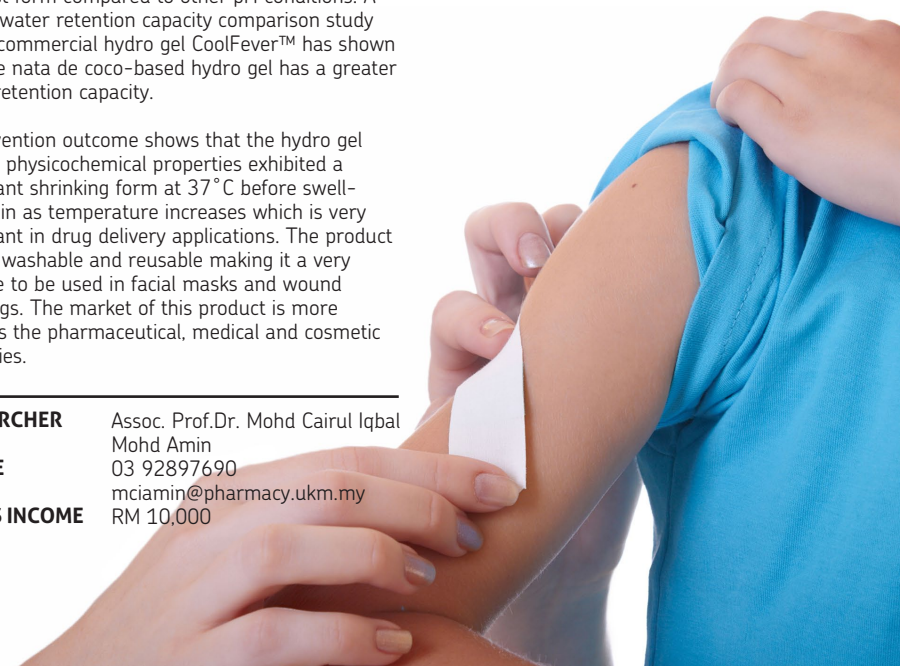
Nata de Coco-based Hydrogel

Nata de coco-based hydro gel is developed by a group of researchers from the Faculty of Pharmacy, UKM. The product uses a common nata de coco as its basic material before a more dynamic and multipurpose hydro gel is produced.

A mixture of colloidal suspension containing nata de coco and acrylic acid is used and charged with electron beam at 35 and 50 kGy. The final product is obtained and its physicochemical properties were investigated. Current studies have shown that the hydro gel has a swelling capability of up to 8000% from its own original size at pH 7 which is the greatest form compared to other pH conditions. A simple water retention capacity comparison study with a commercial hydro gel CoolFever™ has shown that the nata de coco-based hydro gel has a greater water retention capacity.

The invention outcome shows that the hydro gel with its physicochemical properties exhibited a significant shrinking form at 37°C before swelling again as temperature increases which is very important in drug delivery applications. The product is both washable and reusable making it a very suitable to be used in facial masks and wound dressings. The market of this product is more towards the pharmaceutical, medical and cosmetic industries.

RESEARCHER Assoc. Prof.Dr. Mohd Cairul Iqbal Mohd Amin
PHONE 03 92897690
EMAIL mciamin@pharmacy.ukm.my
GROSS INCOME RM 10,000





PlasmoNex - ONE STEP Multiplex PCR Detection System for Malaria Parasites



PlasmoNex - ONE STEP Multiplex PCR Detection System for Malaria Parasites (PlasmoNex) is a PCR based detection system which allows detection of all human Plasmodium (malaria parasites) in a single procedure both with positive and internal controls.

High sensitivity of the PlasmoNex allows the parasites to be detected at a level which is difficult to be identified by peripheral blood film using the microscopy approach. The detector is also useful in assisting medical diagnostic services. The PlasmoNex - ONE STEP Multiplex PCR Detection System for Malaria Parasites is marketed for hospitals, clinics, healthcare centres, and medical labs.

RESEARCHER Assoc. Prof. Dr. Chua Kek Heng
PHONE 03 79676607
EMAIL khchua@um.edu.my
GROSS INCOME RM 10,000



ONE STEP Multiplex PCR Detection System for Salmonella Typhi and Thyphi A



Multiplex PCR Detection System for Salmonella Typhi and Thyphi A is an invention that provides methods for detecting the presence of *S. Typhi* in pure cultures and in clinical samples, and acts as primers in the manual of PCRs.

The detector consists of PCR reagents for *Salmonella* sp detection and a kit for simultaneous detection of *Salmonella Typhi*, *Salmonella Paratyphi A* and *Salmonella* serovars. Besides that, there is a kit for detection of *Salmonella* in human carriers and detection of food borne outbreaks due to *Salmonella* sp.

The detector also comes with a pair of primers used in the application of PCR under specific conditions of PCR reaction mixture and cycling temperature. There is also a DNA Dipstick assay used for direct visualisation of PCR products in real time and the detector is able to produced a 332 bp band with only *S. Typhi* strains. Despite the many functions of the detector, the diagnostic kit is still easy, portable and simple to use especially to detect *S. Typhi* in application of diagnostic laboratories and medical centres. The product is targeted to be used in medical and diagnostic labs and in hospitals.

RESEARCHER Prof. Dr. Thong Kwai Lin
PHONE 03 79674437 / 5836
EMAIL thongkl@um.edu.my
GROSS INCOME RM 10,000



Agent For Liver Cancer (Vitaberry Supplements)

The VITABERRY™ is a supplement product that has been proven scientifically to contain high antioxidant, carotene and vitamin C which is capable of stimulating the immune system.

VITABERRY™ is also proven to suppress alpha feto-protein, a biological indicator for liver cancer and, thus, VITABERRY™ has a great potential for the prevention of liver cancer.

The main element of this product is the Barberrry which is one of the best remedies for correcting liver function and promoting the flow of bile. Barberrry is known for containing Berberine, a potent agent which has numerous usages in controlling different illnesses (stimulates digestion and reduces the gastrointestinal pains).

Berberis Vulgaris is a plant found growing throughout Asia and Europe where all parts of the plant have been reported to be used as tonic, antimicrobial, antiemetic, antipyretic and antipruritic actions. The bark contains a large number of alkaloids (berberine, berbamine, oxyacantha) and tanines while the Barberrry fruits contain glucose, fructose, malic acid, pectine, vitamin C. The herbs on the other hands contain active substances that are useful in haemostatic, diuretic, vasodilator, hypertensive, antibacterial (kills bacteria and parasites), and anti-inflammatory. Vitaberry supplements is a product that not only has many functions in promoting healthier way of life but is also seen as a great potential towards the prevention of liver cancer and therefore is suitable to be is marketed towards the health related industries.



RESEARCHER Prof. Dr. Fauziah Othman
PHONE 03 89472315
EMAIL fauziah@medic.upm.edu.my
GROSS INCOME RM 100,000



Thymoquinone Rich Fraction as Cardioprotective and Neuroprotective Agents

The development of Thymoquinone Rich Fraction (TQRF) has begun years ago and is still an on-going process which is primarily done to discover the potential of Thymoquinone from habbatus sauda (Nigella sativa). The yield extracted through this green platform technology called the supercritical fluid extraction has been seen very potential in treating ailments such as cardiovascular disease (CVD), Alzheimer's disease, and cancers.

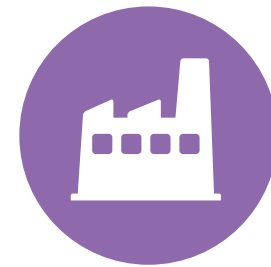
TQRF has the capability in slowing down ageing process, reducing post-menopausal syndrome, and treating high-cholesterol in blood which makes it a very powerful product to be used in various fields.

TQRF comes in a form of soft gels and two kind of oils namely; Oxativa™ and OxativaOil™ and they are positioned as high-end supplements product with competitive prices. The product will make consumers experience the healing effect of TQRF with satisfactory guaranteed feeling. The product shall be marketed to the healthcare industries market with all the benefits that the consumers are able to gain. TGRF in the forms of Oxativa™ and OxativaOil™ will be sold in retails whereby the TQRF health products are sold through online marketing, agents, and also by cooperative agreements with leading healthcare products companies.



RESEARCHER Prof. Maznah Ismail
PHONE 03 89472115
EMAIL maznah@medic.upm.edu.my
GROSS INCOME RM 10,000

INDUSTRY EQUIPMENT



Advanced Solar Dryer

The advanced solar dryer is a Malaysian made solar product that is designed to collect solar radiation and convert it into useful industrial process heat applications. There are four types of solar collectors which have been developed, namely; V-Groove solar collector, Double-Pass Solar Collector and the Photovoltaic Thermal Solar Collector.

The product is mostly based from air based and water based invention which includes an air based PVT collector, air based PVT System which are the Solar Drying System and Building Integrated PVT, Water based PVT collector, Water based PVT System that includes the Heat Pump and Domestic Hot Water System. The product also uses solar dryers for agricultural and marine products and a solar system for simultaneous production of heat and electricity.

The advanced solar dryer supports and encourages the green energy and environmental friendly usage due to the fact that it depends less on electricity and therefore save costs. The product is marketed for the agricultural and agro business sectors and also including the industrial process heat.



RESEARCHER Prof. Dato' Dr. Kamaruzzaman Sopian
PHONE 03 89214592
EMAIL ksopian@eng.ukm.my
GROSS INCOME RM 10,000



Automatic Thermocycling Dipping Machine (ATDM)



This device is designed for laboratory testing of micro leakage phase of composite filling and adhesive bonding materials in tooth structures. Test specimens are submerged into hot and cold baths for a specified time period and undergo numbers of test cycles.

The temperatures are accurately controlled and monitored with electronic microprocessors and refrigerator baths to analyse research studies. The working mechanism of the device is modifiable for various applications involving continuous and controlled dipping cycles. The ATDM machine consists of a Programmable Logic Controller (PLC), a variable temperature tank and a touch screen interface.

The machine which is constructed in linear position operation and used in laboratory related to dental institutions, coating and electroplating processes. Therefore, the machine is marketed to dental schools in universities and colleges, and is also useful in the coating and electroplating industries

RESEARCHER Prof. Dr. Hamdi Abd Shukur
PHONE 03 79675231
EMAIL hamdi@um.edu.my
GROSS INCOME RM 30,000



Precast Composite Wall System



The Precast Composite Wall System is a fully integrated, comprehensive, multi purpose and cost efficient technology. Currently, there is no other technology available that is comparable to this invented technology.

The Precast Composite Wall system uses foaming chemicals that go through automated foaming and mixer machine and moulds. It is also equipped with an online mixer technology for in situ casting and special work form.

With the invention of this product, it is hoped to help reduce building cost, assist in the contribution and success of Malaysian IBS, reduces foreign workers and remittance drain, promote innovative use of biomass silica for technical, environmental and economical advantages. The Precast Composite Wall System is suitable to be marketed as an IBS requirement for government projects, consultant, contractors and developers.



RESEARCHER Assoc. Prof. Dr. Lee Yee Loon
PHONE 07 4537448
EMAIL ahloong@uthm.edu.my
GROSS INCOME RM 90,000





Eco Clay

This innovation uses eco clay, a new clay composite as an alternative material for ceramic works, which is cost effective and has an excellent workability at any stage of ceramic process compared to other conventional clay.

The mixture of two nature sources; fibre and clay can become efficient in making good clay. The normal clay body has disadvantages such as less plasticity, heavy, low workability and costly. This eco clay material can be used for artworks and has been tested and evaluated scientifically as accordance to SIRIM test standard.

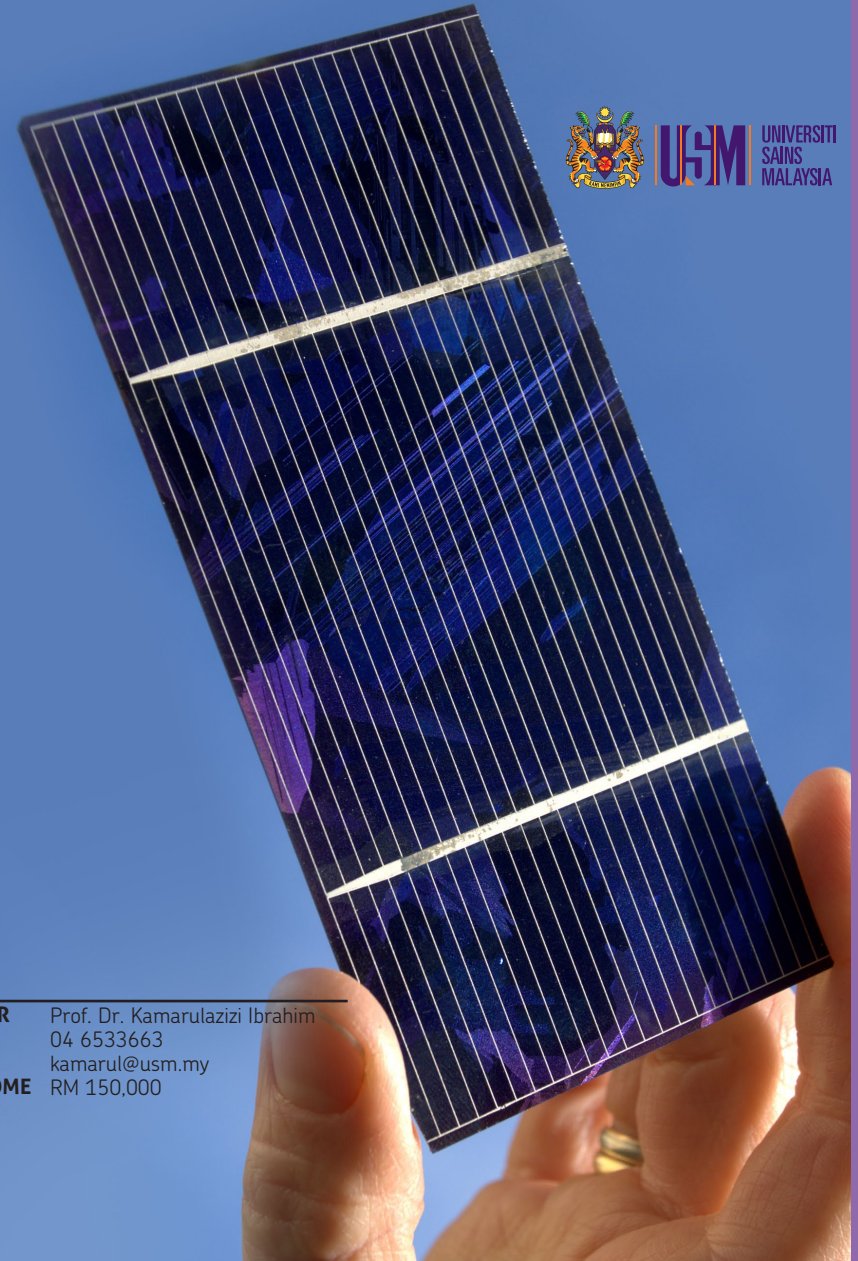
The Eco Clay has a better strength which is categorised as excellent and light weight which offers better functions at any stage of ceramic process. Despite the advantages of the new clay compared to the normal clay in today's market, the new clay composite is an economical, functional and a decorative ceramic product that is uniform, non toxic, non hazardous material and complies with nation regulation. The Eco Clay can be used as raw material for ceramic industries as well as materials for art courses in kindergartens, schools, colleges and universities. Therefore the product is not only marketed to the interior design and home decoration industries but also art companies and educational institutions.



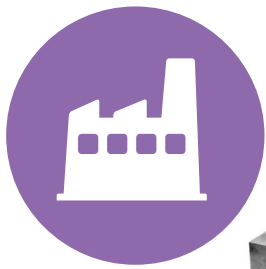
RESEARCHER Dr.Tajul Shuhaizam Said
PHONE 05 4506753
EMAIL tajul@upsi.edu.my



Solar Cell Electrical Tester



RESEARCHER Prof. Dr. Kamarulazizi Ibrahim
PHONE 04 6533663
EMAIL kamarul@usm.my
GROSS INCOME RM 150,000



Coconut Auto Squeezer Machine

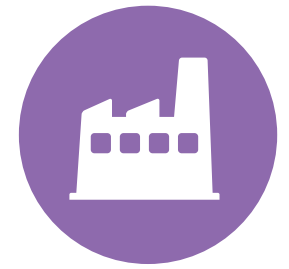
The Coconut Auto Squeezer is a machine designed to grate and extract coconut milk from coconuts that have been removed from its shell. It is designed to achieve an efficient, hygienic, safe and easily handled operation.

The end product from this machine produces higher volume of more hygiene and more concentrated coconut milk compared to normal machines.

Traditionally, coconut milk is produced by squeezing grated coconut using hand which is not only time consuming, but the quantity and quality of coconut milk produced are low. However, the Coconut Auto Squeezer takes only 20 seconds to process one coconut into coconut milk and has no limits in the capacity of coconut that can be processed. Therefore the machine is created to save time and energy especially for the SME industry. The machine is marketed towards small scale entrepreneurs such as housewives, restaurant owners, and SMEs industries.



RESEARCHER Dr. Rosnah Shamsudin
PHONE 03 89466366 / 6363
EMAIL rosnahs@eng.upm.edu.my



Cookies Forming Machine

The present invention is a cookie forming machine which is designed to produce cookies especially the Koye Kacang biscuits. Koye Kacang or Putu Kacang biscuit is a mixture of green bean, sugar and some water. This machine is designed to be simple, practical and produce more hygienic results.

Besides that, the machine also saves the cost of production and labor energy encountered by the producers of Koye Kacang producers.

The machine comprises of 3 main processing parts; the feeding unit, the compression unit and the knocking unit. The mixture of the powdery dough is placed inside the feeder tank which then a pneumatic pusher will push the feeder tank forward along the guiding rail for subsequent filling process. After that, the Koye Kacang dough mixture fills the molding plate below the guiding rail via gravitational force. After the filling process is completed, a pneumatic compressor will push the presser head downwards on the filled dough for the compression process. Next, a pneumatic lifter will rotate the

molding block downwards, causing the compressed dough to be extracted out from the molding plate. The high performance of this machine will reduce the labor cost and time of processing as well as improve the productivity of the Koye Kacang. This machine is suitable to be marketed towards the food industry, which includes the manufacturers and companies at a small scale.



RESEARCHER Dr. Rosnah Shamsudin
PHONE 03 89466366 / 6363
EMAIL rosnahs@eng.upm.edu.my



Ezy Cooker

The EZY COOKER provides an economic solution for new entrepreneurs in the food industry. This machine is economic in cost and high efficient in its productivity. The machine is easy to operate and requires a low maintenance cost. This unit fits conveniently into any corners of a room including small spaces.

With the help of EZY COOKER, it encourages entrepreneurs to be more creative in exploring new recipes without having to worry about the risks involved.

EZY COOKER is a multifunctional machine that is suitable for cooking jam, chili sauce, tomato ketchup, kaya (coconut jam) and other sauces. The machine consists of an automatic paddles used for mixing, a digital temperature controller, a product discharger through an outlet valve, and an insulated mixing bowl to reduce heat losses, hence saving time and energy. The cooker has a capacity up to 20 liters and the cooking process is controlled by a motor of 40 W with 230 V and 50/60 Hz. The performance of the machine is 8 kg/hr for the final product to be done. The capacity of the machine can be designed in the range of 2 litres and above. With these advantages, the EZY COOKER is marketed for small scale entrepreneurs of the food industry, bakers, restaurant owners and also housewives.



RESEARCHER Dr. Rosnah Shamsudin
PHONE 03 89466366 / 6363
EMAIL rosnahs@eng.upm.edu.my



Fruit Grading Machine

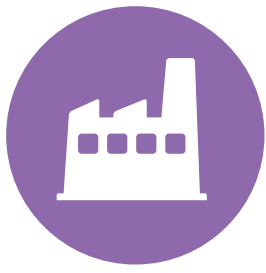
The Fruit Grading Machine is designed in a continuous process. This machine is easy to operate, safe, hygiene, save cost and time, and promotes low labor consumption. This machine is created to minimize the damages and injuries of fruit.

The machine uses the weight as the sizing parameter to determine the most accurate way for automatic sizing of fresh products. The machine consists of a series of mechanical weighing units. Each of the weighing unit has a mechanical sensor to measure the weight of a fruit that is being conveyed along a weighing conveyor. When a fruit reaches a weighing unit, the weighing plate will be pressed down due to the fruit's weight. If the weight of the fruit falls in the range of a specified weight of the sensor attached to the weighing unit, the weighing plate will trigger the sensor's indicator to which activates the pneumatic cylinder to push the fruit to the storage section. If the weight of the fruit is not within the specified weight of the sensor, the fruit will be conveyed into the next weighing unit where the same action takes place.

The grading of fruits produced by the machine follows the FAMA's specifications and standard and is marketed to the food industry at a small scale.

RESEARCHER Dr. Rosnah Shamsudin
PHONE 03 89466366 / 6363
EMAIL rosnahs@eng.upm.edu.my





Nata De Coco Dicing Machine / Multi-Ezy Cutter

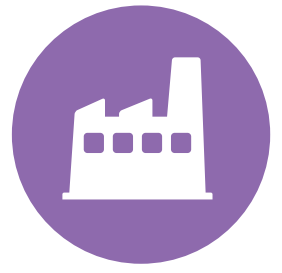
Nata De Coco Dicing Machine is designed to cut the raw Nata De Coco into uniformly diced product. The machine is designed and developed to overcome the problems faced by the Nata De Coco industry which currently the Nata De Coco is cut using multiple rotating blades with a low production rate.

The machine consists of three parts; the pressing, the cutter and the main structure. The machine uses automatic operation system with the capacity of 80pieces / hour of Nata De Coco. During the process, the excess milk from the raw Nata De Coco is scrapped before being placed on the cutter and later will be uniformly diced by the blades.

This high efficiency machine is designed to increase the quality and market value of Nata De Coca. Due to its simple concept of design, the machine is able to produce variety of shapes including circle, star and triangle shaped Nata De Coco. Besides Nata De Coca, the machine can be used on fruits, vegetables, and also Malaysia's traditional cookies. The machine is marketed for the companies and manufacturers in the food industry at a small scale.



RESEARCHER Dr. Rosnah Shamsudin
PHONE 03 89466366 / 6363
EMAIL rosnahs@eng.upm.edu.my



Jatropha Fruit Shelling Machine

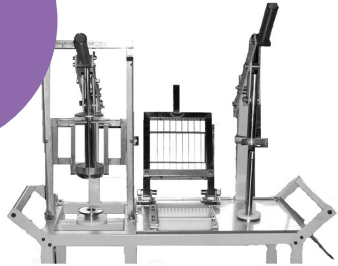
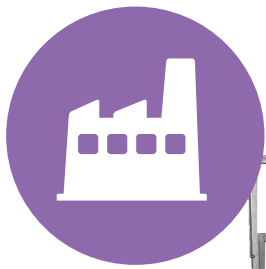
Jatropha Fruit Shelling Machine is designed to remove jatropha fruit shell and to obtain the broken seed for further oil extraction process. The machine was developed to overcome the problem faced in traditional fruit shelling method which is usually done manually.

The machine comprises of two main parts which are cracking of jatropha and separation of the fruit shells from the seeds. The desired output obtained from the machine is the broken seeds and unwanted fruit shells are removed. The capacity of this machine is approximately 40 Kg/hr. The dried jatropha which are loaded to the hopper manually will be cracked in the cruncher. The cracked jatropha is a mixture of fruit shells and broken seeds which will fall down to the screening table for separation process. The broken seeds will pass through the holes of the sifter and will be collected in a collection unit while the fruit shells will be conveyed to the end of the screening table and later removed. The machine yields 99% efficiency in cracking process and 91% in separation process.

Based on the high performance of the machine, it would definitely simplify the jatropha fruit shelling and separation step in oil extraction process for biodiesel production and stimulate the growth of biodiesel industry in our country.



RESEARCHER Dr. Rosnah Shamsudin
PHONE 03 89466366 / 6363
EMAIL rosnahs@eng.upm.edu.my



Pineapple Multi-Peeler Machine

The PINEAPPLE MULTI- PEELER PLUS machine is designed and constructed based on three major functions which are peeling and coring, slicing, and dicing. This machine is both affordable and suitable for domestic use, especially in the pineapple processing industry. The machine is not only capable of saving energy and time but also ensures a hygienic environment through out the process.

The pineapple fruit is placed at the peeler and corer section to remove both the skin and core to obtain the pineapple's flesh. The pineapple is then sliced using the slicer and finally diced using the pineapple dicer. Depending on the industrialists' preferences, the Pineapple 3 in 1 machine which is made from stainless steel can be operated either manually or automatically. The invention of the machine is designed to overcome the issues faced by the current pineapple machine used today. The blades are detachable for easy maintenance and user friendly. The machine is marketed towards the food industry on a small scale.

RESEARCHER Dr. Rosnah Shamsudin
PHONE 03 89466366 / 6363
EMAIL rosnaht@eng.upm.edu.my

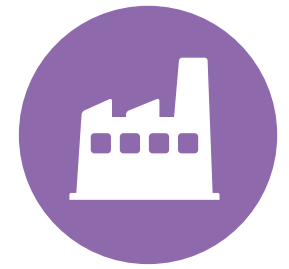


Rolled Tart Machine

The invention designed is a machine used in preparing rolled jam tarts. The machine comprises of mechanism for compressing the dough and the jam, and the filing of the rolled compressed dough.

The machine uses a co-extrusion mechanism and can also be used in cutting tarts automatically and uniformly with the help of a sensor blade. The machine is marketed towards the food industries as well as small scale entrepreneurs.

RESEARCHER Dr. Rosnah Shamsudin
PHONE 03 89466366 / 6363
EMAIL rosnaht@eng.upm.edu.my





Halal Test Kit

The invention is created as a method to design primers for the identification of food ingredients especially in meat-based processed food. Besides that, the Halal Test Kit is also a method to identify the presence of pork (*Sus scrofa*) in the processed food in order to determine the Halal authentication of the food.

The Halal Test Kit uses the method that includes the steps of extracting deoxyribonucleic acid (DNA) from a sample of pork and creates a forward primer and a reverse primer based on the ND5 mitochondrial gene of the pork by conducting a polymerase chain reaction (PCR) test on the forward and reverse primers characterized in that. The sequence of the forward primer is SUS-FWD:5'-AGC TGC ACT ACA AGC AAT CC-3')- and the sequence of the reverse primer is SUS-RVS:5'-ATG CGT TTG AGT GGG TTA GG-3'.

With the introduction of the Halal Test kit, it is able to eliminate the feeling of doubt towards food produced in Malaysia and anywhere around the world. Besides that, this kit ensures a better Halal food environment as well as increases the credibility of Malaysia as a world halal hub. This product is marketed towards consumers and the society at large, JAKIM, and also to those in charge of the screening of pork adulteration in food products.



RESEARCHER Prof. Dato' Dr. Yaakob Che Man
PHONE 03 89430405
EMAIL yaakobcm@gmail.com
GROSS INCOME RM 100,000



Ohmic Heated Pasteurizer

Food Pasteurizer uses a relatively new method for the thermal process of food which is known as pasteurizer; very simple, practical and relatively cheap process whereby an alternative current flows through a liquid food product, the liquid acts as an electrical resistance which is converted to heat energy and an internal heat generation occurs. Food pasteurizer is more efficient because it makes the heating process faster and the food is heated rapidly at the same rate.

Food pasteurizer is currently being used for the production of syrup fruit-salad and fruit juices. Pasteurisation is a thermal process by inactivating the spoilage microorganisms that is practiced in the food, dairy and beverages industry. Pasteurisation is commonly combined with rapid cooling and re-refrigeration after the heat treatment to ensure the destruction of all pathogenic microorganisms, time and temperature combinations of the pasteurisation are regulated. For milk and low acid products, the pasteurisation temperature is at 63°C for not less than 30 minutes, and 72°C for not least than 15 seconds. The objective of using food Pasteurizer is to conserve the excessive usage of energy in food processing industry by the implementation of advance electrical energy. The invention is marketed for the food industry especially in the use of Nata De Coco products.



RESEARCHER Prof. Ir. Dr. Norman Mariun
PHONE 03 89466321
EMAIL norman@eng.upm.edu.my
GROSS INCOME RM 100,000



Real Time Oil Palm Fruit Grading System



A fruit ripeness grading system is an invention which uses computer vision application in the process of agricultural quality inspection to ensure ripeness of the fruits especially oil palm.

The system includes an enclosure for scanning process, optical lens illumination filter at the enclosure, a camera provided at top portion of the enclosure, a feeding device for conveying fruit samples to the enclosure, a conveyer speed inverter, a processing unit process and fruit sample image analyzer, and a data acquisition interface provided in between the camera and the processing unit. Besides that, the device is also equipped with a USB controller and supported by a compressor for controlling and separating the fruit samples and a disk top computational unit serves to transfer data to a computer.

The grading system contains two stages; hardware and software. The software system uses the Matlab Graphical User Interface (GUI) in transferring data acquisition to the hardware system. The FFB is

transferred by the conveyer belt to the enclosure to have its image captured and later to the high speed computer through the frame grabber. The specific image is processed using the Matlab and Labview software and Windows operating system to analyze the fruit parameters and properties such as colour, texture, thorns and natural environmental to get its ripeness class before sending a signal to the USB controller and to the separator system to separate the fruit to its category box.

The Real Time Oil Palm Fresh Fruit Bunches Grading System provides a fast, easy and accurate grading mechanism of oil palms in terms of its ripeness which is certainly an important task especially when dealing with large amount of oil palms FFB and in producing high quality oil palms. The user friendly machine system is marketed in Malaysia with the focus given to companies and industries related to the production of oil palm.

RESEARCHER Assoc. Prof. Abdul Rashid Mohamed Shariff
PHONE 03 89466414 / 7543
EMAIL rashid@eng.upm.edu.my
GROSS INCOME RM 100,000



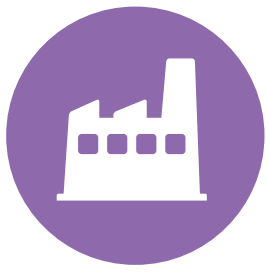
Turamesin / Stone Mastic



The present invention uses stone mastic asphalt compounds which are produced using a new technique and process. The process utilizes a specific aggregate gradation and matrix for a higher stability result.

A specially formulated fiber mastic asphalt is used to hold the aggregate in place while providing extended durability. This formulation is able to handle heavy loading from commercial vehicles and thus minimizes pavement surface distresses. The use of this invention is expected to reduce the cost of materials by about 15 to 20 percent, thus making it a better choice compared to other similar inventions in the market today. The Turamesin / Stone Mastic is suitable to be marketed towards the construction industries.

RESEARCHER Assoc. Prof. Dr. Ratnasamy Muniandy
PHONE 03 89466373
EMAIL ratnas@eng.upm.edu.my
GROSS INCOME RM 100,000



Fresh Fruit Bunch (FFB) Hyperspectral Scanner



The Fresh Fruit Bunch (FFB) Hyperspectral Scanner is designed to analyze the oil palm FFB images based on the fruit parameters and properties such as wavelength, colours, texture, thorns and their natural environment. The objective of this design is to help users in grading the ripeness of their fruits more accurate than the current practice.

The scanner system involves two main items which are hardware and software. The grading system begins through the handling of the software. The specific hyperspectral technique using Envi software and operating system (OS) of computers are required in the production of this system. For the interface, users will use the user friendly Matlab Graphical User Interface (MGUI) in assisting users to control the system's hardware when data has passed the system verification. After the success of the verification, the hydraulic system starts to move the oil palm FFB to the controlled illumination fruit housing. Then, in this area, the image is captured using hyperspectral camera and data is passed to the high speed computer through the frame grabber. A measuring light reflected from the object to the hyperspectral scanner is an important portion

in the analysis process in order for the radiation reflected from the target to the camera passes through the lens of the device and the filter to purify the light.

The FFB Scanner system is an automatic system that helps to reduce the time consumption as well as the total number of workers, provide non bias decision, and non-contact grading system. Presently, there are no other similar products which offer this kind of technology. By taking serious consideration on the product design and the quality materials needed, this product has an advantage to be used as a similar application for different agriculture materials with different weight, size and shape. This scanner is targeted at all Malaysian oil palm companies.



RESEARCHER Assoc. Dr. Abdul Rashid
Mohamed Shariff
PHONE 03 89466414 / 7543
EMAIL rashid@eng.upm.edu.my
GROSS INCOME RM 100,000



Instrumen Indeks Keusahawanan Remaja Ehsan (IKRM)

The Instrumen Indeks Keusahawanan Remaja Ehsan (IKRM) is an instrument designed to measure the entrepreneurial behaviour in students aged between 16-24. This instrument measures two aspects of entrepreneurial behaviours, namely the cognitive entrepreneurial behaviour and non-cognitive entrepreneurial behaviour.

The cognitive entrepreneurial behaviour consists of four dimensions, i.e. the individual's knowledge on career function, the form of information, planning and problem-solving. On the other hand, the non-cognitive entrepreneurial behaviour consists of five dimensions, i.e. external control factors, internal self-control, tolerance towards ambiguity, controllable factors and self-assessment. The readings from this instrument can be used to indicate the entrepreneurial index and the entrepreneurial traits possessed by the students. Students who possess such traits are encouraged to go into entrepreneurship, while those who do not, are discouraged from doing so.

With the help of this instrument, the business sector in Malaysia can be further expanded with the existence of potential entrepreneurs that are recognised through the IKRM instrument. This instrument is suitable to be marketed to students ranging between 16 to 24 years old, and also to be used in assisting the ministry of human resources and entrepreneurial fund provider in producing better entrepreneurs in the future.

RESEARCHER Assoc. Prof. Dr. Norasmah Othman
PHONE 03 89216276
EMAIL lin@ukm.my
GROSS INCOME RM 1,460





Malaysian Emotional Quotient Inventory (MEQI)



This invention is a method fused in measuring the emotional quotient (EQ) of an individual and also used as a psychometric instrument when interviewing a person, analyzing the person's responses, and validating said responses according to the emotional intelligence domains.

As a psychometric instrument, a set of questionnaires is developed consisting of a plurality of questions that measures the domains of perceived emotional intelligence and emotional performance.

MEQI is a psychometric instrument that measures both performance and perception of Emotional Quotient (EQ) from seven different domains and sub-domains. The domains are self-awareness, self-regulation, self motivation, empathy, social skills, spirituality and maturity. It has 183 items. The performance based items are in the form of pictures, facial expression, open-ended questions, and drawing of mazes. The instrument can be applied and marketed to the corporate human capital development tools, recruitment and training departments and also in the educational sectors.

RESEARCHER Prof. Dr. Noriah Mohd Ishak
PHONE 03 89216292
EMAIL norwmu@ukm.my
GROSS INCOME RM 786,750



Sistem MyMohes, Sistem Kajian Pengesanan Graduan 2011 (Fasa 1&2)



RESEARCHER Assoc. Prof. Abd. Ghani Golamdin
PHONE 04 9199441
EMAIL ghani@uum.edu.my
GROSS INCOME RM 3,000,000



MyCPD System



MyCPD (Continuous Professional Development) is a lifelong learning process to develop and improve an individual's competency and at the same time strengthen the talent pool focusing in Universiti Sains Malaysia (USM). From 2008 to present, USM has used the MyCPD program not only as an alternative system to the PTK, but as a handy tool for appraisals.

MyCPD is considered as an innovative element in human resource development. The program is also used to educate and encourage all USM staffs to enrich themselves with attitude, knowledge and other skills. MyCPD uses the merit points system where every hour of training attended will be allocated a specific point. Since 2008, all staffs who have attended the competency development programs were awarded with MyCPD merit points according to their grade of service. By using MyCPD System, the supervisor can easily monitor and plan their staffs' professional development program or training for the said year.

In general, the MyCPD program recognises the competency development of a staff in understanding the application of new knowledge and skills learned towards their respective field and position. It also helps them in facing the changes and challenges in their career development besides encouraging and enhancing the self development and characteristics in them. Through the use of MyCPD system, staffs are able to acknowledge their moral values and positive attitude in order to strengthen the organisation and to inculcate the organisational learning culture in the university. Currently the MyCPD system is being used by other education institutions including Universiti Pendidikan Sultan Idris, (UPSI), Universiti Teknologi Malaysia (UTM) Melaka, Universiti Malaysia Sabah (UMS), and Dewan Bahasa dan Pustaka (DBP). All these institutions have reported beneficial improvement in work competency using the MyCPD system.



RESEARCHER Musa Ali
PHONE 04 6532762
EMAIL musa@usm.my
GROSS INCOME RM 269,500



NLTV Crystalview HD 9100



NLTV Crystalview HD 9100 is a unified communication platform based entirely on HD video conference software. The product can be synchronized with document conference suitable for presentations and uses low bandwidth requirement for multiple sites.

The NLTV Crystalview HD 9100 is suitable to be used with Skype, H.323 and NLTV-HD since the product supports multiple VVOIP application which is also useful in multipoint-to-multipoint video conference. Besides equipped with HD Pan-Tilt-Zoom (PTZ) Camera with 10x zoom, it uses mouse driven user interface making it easier and more efficient in its use.

The product uses low cost telepresence, video telepresence and video conference unit compared to other products in today's market and reduces both operation and travel costs. At the same time, this product helps to increase productivity by cutting down the transit time, eliminate fatigues, exposure to epidemic and environmental disasters. By opting to use this product, it helps to reduce carbon footprint of both individuals and organisations and has better access to resources which may be impossible to obtain using other means. This product is marketed to colleges and universities which offer long-distance education, organisations including government, MNC, education institutions with offices and campuses that are geographically separated.



RESEARCHER Prof. Dr. Sureswaran Ramadass
PHONE 04 6533004
EMAIL sures@nav6.usm.my
GROSS INCOME RM 37,012.63



ClearView Telepresence System



The ClearView Telepresence System is a hardware based on High Definition (HD) multipoint point telepresence endpoint system using embedded technology. It uses low bandwidth requirement for multipoint telepresence conference and has HD document sharing.

The product is considered to be a proprietary NAT traversal unit and has integrated telepresence network infrastructures including integrated gatekeeper and authentication system. The system supports H.264, H.261, H.263, G.711 AV codecs and compatible call signaling with H.323

The ClearView Telepresence System is cost effective in terms of its infrastructure and is widely interoperability with other commercial videoconference in the market. This product is marketed towards universities, government agencies, large and medium sized corporations, as well as third world countries that offer moderate bandwidth size

RESEARCHER Prof. Dr. Sureswaran Ramadass
PHONE 04 6533004
EMAIL sures@nav6.usm.my
GROSS INCOME RM65,010



MyOBE

The Outcome Based Education (OBE) approach is an accreditation system by the Engineering Accreditation as required by the Malaysian Qualification Agency (MQA) with Washington Accord which Malaysia is assigned to together with other countries like Canada and United Kingdom.

MyOBE is a system constructed to implement OBE at public universities and is considered to be environmentally friendly. The system is made to reduce paperwork, generate documents/reports and provide real-time monitoring of the OBE implementation's view of the documentations needed for accreditation audits. At the same time, the system is generic to support all fields including engineering, technology, pure sciences and social sciences.

The MyOBE consists some of the features that are easy and suitable to be used by everyone including students, teachers and people who are in charge of the course and program assessments. Among the features included in the system which focuses on the teaching and learning process are, course outcome assessment, mapping between courses and program outcomes, reports for various academic planning and harmonisation and also reports for continual quality improvement. With these options featured in the MyOBE system, the invention is hoped to reduce cost and time, is easy accessible and user friendly, facilitates accreditation exercises and generate automated reports as well as providing a generic system for all. This system is marketed for the public universities and in fact, the MyOBE is already being applied at universities such as UPM, UPNM and UNISEL.

RESEARCHER Prof. Dr. Mohd Saleh Jaafar
PHONE 03 89466272
EMAIL msj@eng.upm.edu.my
GROSS INCOME RM 35,000





Phonic Software and Tutor for Visual Dyslexia Children



This product aims to introduce multi-sensory methods with the focus given towards the activity of spelling for visual dyslexia students. This software is hope to able to produce a Phonic Tutor software in Malay Language for the visual dyslexia students.

The software comprises four phases which includes exercise, sample section, administering phonic tutor software in Malay language and selection of real sample and real research.

This software is designed to assist the visual dyslexic students. Through proper teaching and learning skills, dyslexia children are able to master their basic skills such as reading, writing, and arithmetic. With the use of this software, children with dyslexia problem, will be able to acquire these basic skills and therefore are better prepared to interact with the school environment and the immediate society. This software is marketed towards schools, kindergartens and also parents.

RESEARCHER Assoc. Prof. Dr. Vijayaletchumy
A/P Subramaniam
PHONE 03 89468769
EMAIL letchumy@fbmk.upm.edu.my
GROSS INCOME RM100,000.00



AGRICULTURE



Cilibangi

Cilibangi varieties were intentionally designed to facilitate mechanically the fruit harvest based on the formulation of plant architectural ratio (3 main stem : 6 plant height : 4 canopy diameter) and plant biomass ratio (7 fruit weight : 1 leaf weight : 2 skeleton weight).

Both of these ideal ratios would prevent plant lodging due to the weight of the fruit. After going through intensive evaluation on the chilli accessions with disease symptom screenings, parental selection, hybridisation and local verification trials, six resistant Cilibangi varieties were successfully developed and are ready to be pre-commercialized. With different special morphoagronomic traits for each variety, small farmers and commercial companies throughout Malaysia will have choices to suit their needs.

The chillies used in this process feature disease resistance, superior morphoagronomic traits that include early flowering (+ 70 days), synchronized fruit maturity, ideal plant height (60–90 cm), and high yielding. Besides that, the product is synchronized maturity which additionally facilitates mechanized harvesting. With the introduction of Cilibangi, it is hoped that it will help to reduce the numbers of chilli imports into Malaysia and instead create more job opportunities for people with the existence of more local chilli nursery franchises. This invention is marketed for the agriculture agencies and licensors, farmers and breeders and also to conventional stores and supermarkets in Malaysia.

RESEARCHER Dr. Ahmed Mahir Mohamed Mokhtar Bakri
PHONE 03 89216448
EMAIL ahmedmahir@yahoo.com
GROSS INCOME RM 41,000

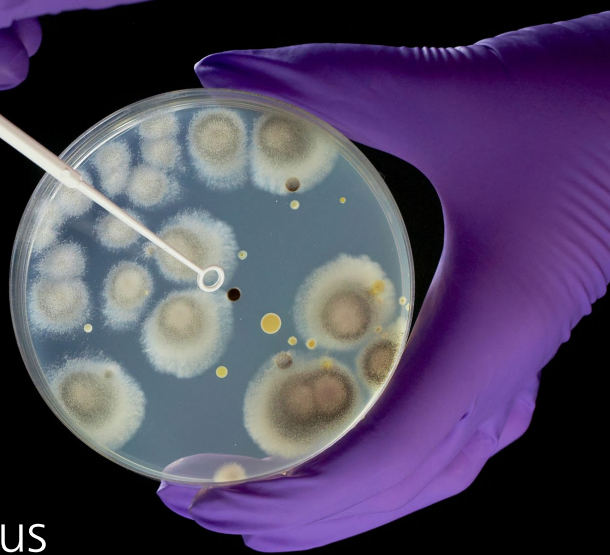


HEME-1 - Culture Media for Fastidious Aquatic and Marine Microbes

The technical application of this invention of HEME-1 media formulation employs a better yield of marine microbes that allows cultivation of wide range of marine bacteria with higher recovery rate. The accumulation of total number of colonies from single plating exceeds existing commercially available media.

The cultivability and survivability of marine bacteria is enhanced while reducing the duration of lag phase which is the key to promote slow growing marine bacteria.

The product has been tested and used at the Institute of Marine Biotechnology for the past 2 and the half years to date. Primary isolations of



marine microbes after every sampling conducted by the institute have been cultivated on HEME-1 marine microbe media before transferring the colonies to other commercially available enriched media for best performance. The product is prepared by using empty agar available from the market and incorporated with a specialized formulation which was obtained throughout the studies. The product can be presented in a air tight bottle in a form of formulated agar, or in the form of liquid additive as a supplement for plain agar.

The product acts as a primary cultivation of fastidious aquatic and marine microbes (solid agar) and can also be a secondary cultivation of the microbes (broth agar) besides being a cultivation of selected marine fungi. This product is therefore produced to market the need of marine-based institution involved in microbiology research, aquaculture research institutions, universities and marine-based industries, hospitals and private clinics, and also is good in assisting marine researchers.

RESEARCHER Prof. Dr. Mohd Effendy Abd Wahid
PHONE 09 6683104
EMAIL effendy@umt.edu.my



EM Fertilizer

The EM Fertilizer is created to improve tilth, condition of the aeration and the structure of the soil. The fertilizer also acts as a support for living soil organisms and improves the ability of soil to contain water and nutrients.

The EM Fertilizer is a product that helps to buffer soil from chemical imbalances and ensure a steady maintenance of the nutrients in the plant. With the introduction of this fertilizer, it contributes to the biological control of certain soil pests in the farming sectors.



RESEARCHER Aidee Kamal Khamis
PHONE 07 5531568
EMAIL aidee@ibd.utm.my
GROSS INCOME RM 949.40



Bioorganic Fertilizer - Flower And Fruit

Bio-Organic fertilizer is a specially formulated with 100% organic materials which include sources from Nitrogen, Potassium, phosphorus and minerals. This formulation is specially designed for plants that promote flower & fruits production.

The application of effective microorganisms in this product is extremely beneficial in enriching the health of the soil and at the same time helps combat diseases. The fertilizer is suitable for cultivation of ornamental plants and fruit plants.

Bioorganic Fertilizer - Root And Trunks

Bio-Organic fertilizer is specially formulated with 100% organic materials such as Nitrogen, Potassium, phosphorus, and other minerals. This fertilizer is made especially focusing on roots and trunks type plants which help in maintain sufficient nutrients for the plants' development.

The application of effective microorganisms in this product is extremely beneficial in enriching the condition of the soil and to avoid combat diseases. The Bio-Organic fertilizer is suitable for the cultivation of yam, sweet potato, ginger, onion, turmeric and other plants.

Bioorganic Fertilizer - Leaves

This Bio-organic fertilizer is formulated using 100% organic materials that include Nitrogen, Potassium, phosphorus and mineral. The formulation used is specially designed for plants with leaves and ensure sufficient nutrient for leaves development and promote healthier, greener leaves

The application of effective microorganisms in this product is extremely beneficial in enriching the condition of soil and help to combat disease. The fertilizer is suitable for cultivation of all type of vegetables that have leaves.

Bioorganic Fertilizer Series

RESEARCHER	Siti Zulaiha Mohd Hanafi	
PHONE	07 5531568	
EMAIL	zulaiha@ibd.utm.my	
GROSS INCOME	Flower & Fruit	RM 1,234.75
	Root & Trunks	RM 300.15
	Leaves	RM 370.65



Bacto-10 Liquid Bio-Fertilizer

Bacto-10 liquid bio-fertilizer contains nitrogen-fixing Plant Growth Promoting Bacteria that has been isolated from local plant and herbal roots. This non-pathogenic liquid bio-fertilizer is not only safe to be used but is also capable of producing phytohormones when applied to plant roots which enhances the development of the root and increases water and nutrient intakes.

Inoculated plants are more tolerant to experience drought condition and produce equivalent high yield but with 65% less fertilizer-N input, it is able to save the cost of fertilizers. Besides that, plants derive benefits from the endophytes contains in

plant roots that are biologically fix 'free' nitrogen from the atmosphere. The endophyte is protected from adverse soil and has an environmental sustainable organic farming impact on crop production with minimal repeated application.

Chemical fertilizer is based on petroleum product and was widely used throughout most of agricultural activities in Asia since the beginning of the "Green Revolution" in the early 1970's. However, it is now realized that in most agricultural lands under intensive monoculture system, including paddy rice, the more chemical fertilizers are being applied, the result of productivity is slower and the quality of the environment is deteriorating too. As a result, the introduction of organic fertilizers, bio-fertilizers, and other microbial products are seen as crucial in the current attempt to make the agriculture industry a viable component of a healthy and pleasant ecosystem. The product is specially marketed towards the bioorganic fertilizer industry.

RESEARCHER Prof. Dr. Zulkifli Shamsuddin
PHONE 03 89476990
EMAIL zulsham@agri.upm.edu.my
GROSS INCOME RM 100,000



Production Of GBR (Germinated Brown Rice) As Nutraceutical and Functional Food

GBR is a new marketable rice product produced by using the process of germination which is an important technology for producing a variety of sprouted seeds and grains used in the food, health and cosmetics industries. During the process of germination, saccharification softens the endosperm and dormant enzymes are activated, which results in the incensement in the amount of digestible vitamins, minerals, amino acids and other antioxidants.

In addition, the process of germination softens the outer layer of rice, thus making it more digestible and easier to cook. Besides that, GBR can be applied as bio-factories that produce these important compounds for nutraceutical and cosmeceutical products. Rice in the form of GBR can be used as a mean to modify Malaysian's diets to avoid prevalent chronic diseases such as diabetes mellitua, hypercholesterolemia and obesity.

GBR is produced through a patented and innovative process by means of germinating the brown rice. The most important aspect in the germination process relies on the specified parameters such as temperature, soaking period and quantity of water applied. Generally, the whole process involved in the production of GBR covers the procurement of raw material, germination process, drying process, grinding process and GBR powder. With the latest technology and better functions provided by this invention, it is marketed towards the food, health and cosmetics industries.



RESEARCHER Prof. Maznah Ismail
PHONE 03 89472115
EMAIL maznah@medic.upm.edu.my
GROSS INCOME RM 100,000.00

OTHERS



escCUBE: A Smart City Kiosk

escCUBE™ is a street urban kiosk that is sustainable, equipped with expandable stand alone energy, and uses green technology. It is an innovative street mobile cubicle that acts as a solution for inflexibility module, poor thermal comfort, poor ventilation, vandalism, nondurable materials, non-hygiene & high energy consumptions on the existing street kiosk or vendors in today's market.

The mobile system for street hawkers in the city is structurally designed with futuristic and aesthetic values and uses low energy system which promotes economical friendly. Besides that, escCUBE is invented using micro-architecture which uses zero energy, free maintenance and promotes a cool lifestyle environment. This product is specially designed and marketed for street hawkers, resorts and tourist attraction centres, and also can be used by the development and building industries.

RESEARCHER Dr. Azimin Samsul Tazilan
PHONE 03 89216595
EMAIL azimintazilan@gmail.com
GROSS INCOME RM 10,000

Institutions of Higher Education Excellence Planning Division, Department of Higher Education, Ministry of Higher Education

The division is tasked to undertake several Ministry Key Result Areas in managing and coordinating the recognition process, implementation and impact evaluation of Research University. Secondly, the Division is also task to manage government grant in funding fundamental research (FRGS) undertaken by Institutions of Higher Education. The award of the research grant is being done through stringent evaluation process, appropriately monitored before approval is given to the Institutions of Higher Education. The Division frequently monitored the progress of the research progress of the research project in order to meet the objective of the Ministry's R&D initiatives. In addition, the Division is also managing and coordinating the recognition process, implementation and impact evaluation of the Ministry Higher Education Centre of Excellence (HiCOE). The aim of HiCOE is to conduct high impact research, promotes consultancy and advisory to industry and encourages the development of creativity and innovation in human capital development. The division fourth task is to manage and coordinate the commercialisation of R&D products from research output undertaken by the Institutions of Higher Education. The R&D products are divided to R&D products that are commercialised and which have high possibility to be commercialised. The aim is to generate appropriately returns to the Institutions of Higher Education for their research efforts.

Vision

To transform Institutions of Higher Education as a world class research centre of excellence.

Mission

To strengthen Institutions of Higher Education in Research, Development and Commercialisation (R&D&C) towards producing human capital in science, technology and innovation and competitive research outputs in local and international level.

The Division consists of five Units that performed the task to accomplish the vision and mission of the Division.

1. Research University Unit
2. Research Coordination Unit
3. Centre of Excellence Unit
4. Commercialisation Unit
5. Support Services Unit

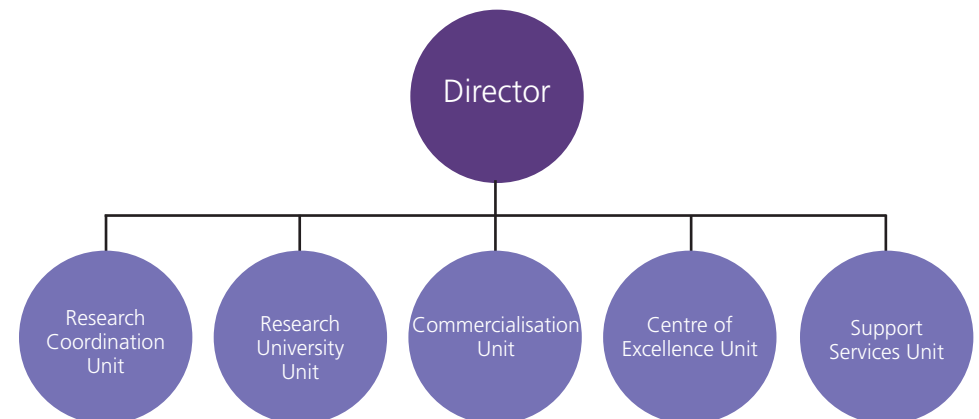


Image Credits

All the images (original or manipulated thereof) used in this publication are licensed / used with permission from their respective copyright holders

Cover: violetkaipa, sowar online / Shutterstock.com
Executive Summary: jannoon028 / Shutterstock.com
Page 3: USM
Page 4: Gustavo Toledo / Shutterstock.com
Page 5: violetkaipa / Shutterstock.com
Page 6: szefei / Shutterstock.com
Page 7: AJP / Shutterstock.com
Page 8: Jules_Kitano / Shutterstock.com
Page 9: wong sze yuen / Shutterstock.com
Page 10: sweetok / Shutterstock.com
Page 13: Jun Mu / Shutterstock.com
Page 14: Quang Ho / Shutterstock.com
Page 15: ikostudio / Depositphotos.com
Page 16: Dmitrijs Bindemanis / Shutterstock.com
Page 17: Marcin Balcerzak / Shutterstock.com
Page 18: Sergey Mironov / Shutterstock.com
Page 19: Tungphoto / Shutterstock.com, UKM
Page 20: C. Cheah / Shutterstock.com
Page 21: HAKKI ARSLAN / Shutterstock.com
Page 22: fred goldstein / Shutterstock.com
Page 26: Igor Klimov / Shutterstock.com
Page 27: Aaron Amat / Shutterstock.com
Page 28: Swapan / Shutterstock.com
Page 29: daksun / Shutterstock.com
Page 30-33: UTM
Page 34: Viktor Malyshchys / Shutterstock.com, UTM
Page 35: Volosina / Shutterstock.com, UTM
Page 36: UTM
Page 37: Africa Studio, leedsn / Shutterstock.com, UTM
Page 39: Subbotina Anna / Shutterstock.com, UTM
Page 40: Panachai Cherdchuchee, Scisetti Alfio, Rozaliya / Shutterstock.com
Page 41: UTM
Page 42: Lana K / Shutterstock.com, UTM
Page 43: haveseen / Shutterstock.com
Page 44: Sergiy Telesh, Aaron Amat / Shutterstock.com
Page 45: Svetlana Lukienko, Andreea Szekely / Shutterstock.com
Page 46: Aaron Amat / Shutterstock.com
Page 49: dundanim / Shutterstock.com
Page 50: Alexander Raths, NMorozova / Shutterstock.com
Page 51: sergei telegin / Shutterstock.com
Page 52: AlessandroZocc / Shutterstock.com
Page 54: Zinatova Olga / Shutterstock.com
Page 55: Ninell / Shutterstock.com
Page 59: Iakov Filimonov, Cico / Shutterstock.com
Page 60: Khotenko Volodymyr / Shutterstock.com
Page 61: shalunts / Shutterstock.com
Page 62: Marie C Fields / Shutterstock.com
Page 63: ason / Shutterstock.com
Page 64: Goncharuk / Shutterstock.com, UPM
Page 65: UPM
Page 66: SunnyS, Africa Studio / Shutterstock.com, UPM
Page 67: Only Fabrizio, Jini Hera / Shutterstock.com, UPM
Page 68: UPM
Page 69: akkaradech / Shutterstock.com
Page 70: Anteromite / Shutterstock.com, UPM
Page 71: Andrew L. / Shutterstock.com, UPM
Page 72: Fotofermer / Shutterstock.com
Page 73: Sergey Mironov / Shutterstock.com
Page 74: nui7711 / Shutterstock.com
Page 75: Blazej Lyjak / Shutterstock.com
Page 76: tristan tan / Shutterstock.com
Page 79: szefei / Shutterstock.com
Page 80: Ronen / Shutterstock.com
Page 81: Shamleen / Shutterstock.com
Page 82: olly / Shutterstock.com
Page 83: DVARG / Shutterstock.com
Page 84: Vera Handoyo / Shutterstock.com
Page 85: Suslik1983 / Shutterstock.com
Page 86: Tom Wang / Shutterstock.com
Page 89: Africa Studio / Shutterstock.com
Page 90: Michal Kowalski / Shutterstock.com
Page 91: UPM
Page 92-93: UPM
Page 94: yuris / Shutterstock.com
Page 95: Imageman / Shutterstock.com
Page 99: JPL Designs / Shutterstock.com, UKM

R&D
PRODUCTS
OF PUBLIC
UNIVERSITIES
IN MALAYSIA
2011

Institute of Higher Education Excellence Planning Division,
Department of Higher Education,
Ministry of Higher Education
(Bahagian Perancangan Kecemerlangan IPT,
Jabatan Pengajian Tinggi,
Kementerian Pengajian Tinggi)
Aras 7, No. 2, Menara 2, Jalan P5/6, Presint 5,
62200 Wilayah Persekutuan Putrajaya

Tel: 03-88704070
Faks: 03-88706867

ISBN 978-967-0334-38-7



9 789670 334387