

A solid foundation on which UTAR Perak Campus rests





*Serving Mankind
through R & D and
Commercialisation*

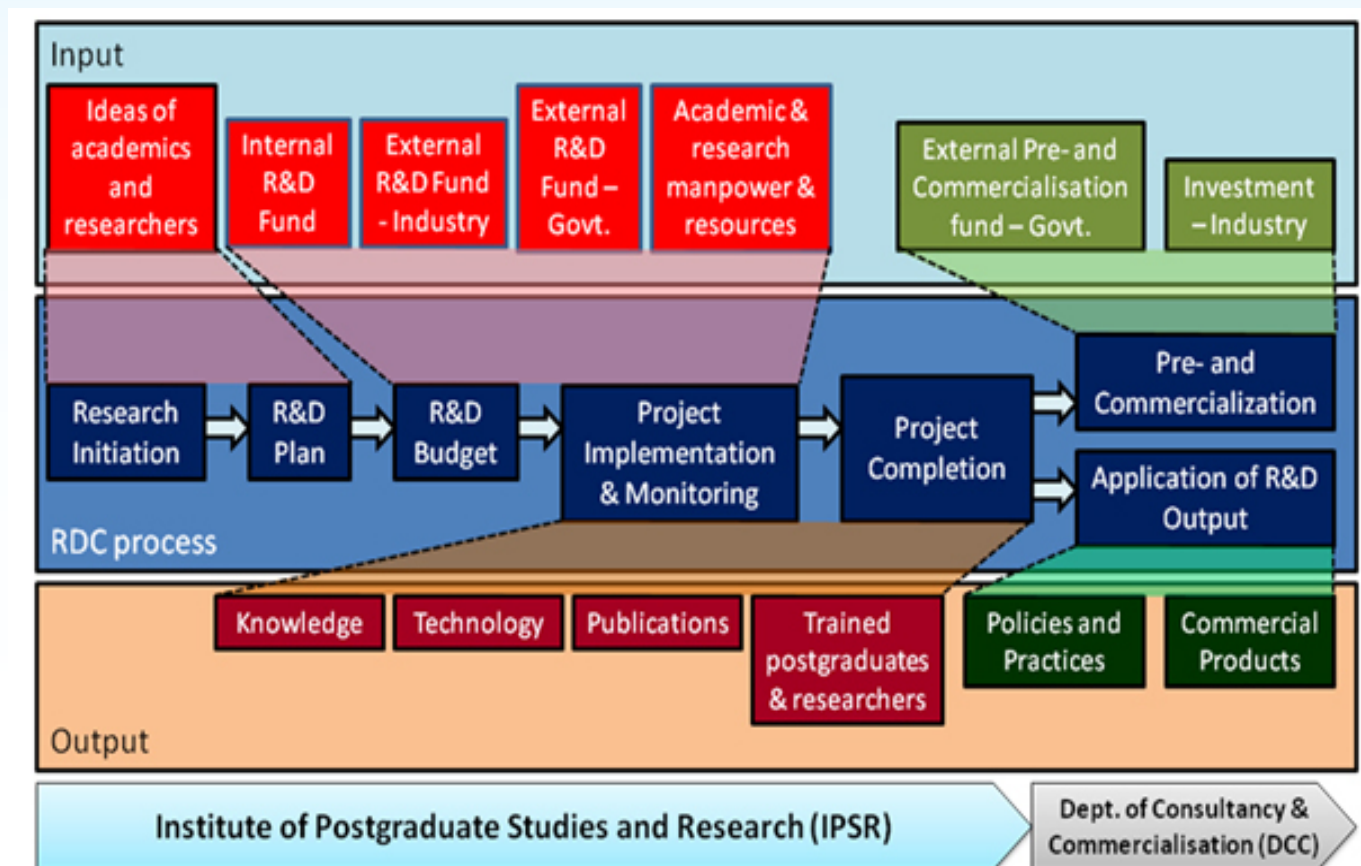
Serving Mankind through R & D and Commercialisation

Research is the lifeblood of UTAR. In pursuing its goal to be a premier university, UTAR places strong and equal emphasis on research excellence and quality of education. The University believes that it is important to synergise research and teaching to scale the heights of academic excellence.

UTAR Research Roadmap

To achieve worldwide recognition, it is imperative that UTAR focus and excel in research, development and commercialisation (RDC) activities. The UTAR Research Roadmap research is an outline of the important outcomes and the corresponding key performance indicators (KPIs), the recommended approaches and steps for UTAR to pursue in order to achieve Research University (RU) status as defined by the Ministry of Higher Education (MOHE) of Malaysia. The roadmap has been

formulated with the outcome-based approach in which important outcomes and the corresponding KPIs are first set. Approaches and steps needed to be taken towards the achievement of the outcomes are in turn identified and outlined in the roadmap. This roadmap covers a period of five years from 2010 to 2014. Thus far, significant progress and achievement have been made as planned.



Research Centres

To enhance and synergise research activities for higher relevance and effectiveness, larger scale and scope, UTAR has set up research centres to host and encourage cooperations among researchers of related or different disciplines to achieve common goals of addressing certain scientific and socio-economic issues or problems. Since 2008 Utar has set up 24 research centres as follows:

Business, Arts and Humanities

- Centre for Accounting, Banking and Finance
- Centre for Business and Management
- Centre for Chinese Studies Research
- Centre for Creativity in Technology, Games and Design
- Centre for Economic Studies
- Centre for International Studies
- Centre for Learning and Teaching
- Centre for Media and Creative Communication
- Centre for Modern Languages and Literature
- Centre for Social Change and Trends
- Centre for Sustainable Development and Corporate Social Responsibility in Business



Science and Technology

- Centre for Biodiversity Research
- Centre for Computing and Intelligent Systems
- Centre for Cancer Research
- Centre for Communication Systems and Networks
- Centre for Environment and Green Technology Research
- Centre for Healthcare Science and Technology
- Centre for Mathematical Sciences
- Centre for Photonics and Advanced Materials Research
- Centre for Stem Cell Research
- Centre for Vehicular Technology
- Centre for VLSI Design
- Centre for Information Systems and Software Technologies
- Centre for Research in Traditional Chinese Medicine

UTAR Global Research Network

The UTAR Global Research Network is a network that links academics, researchers, scientists and technologists at the forefront of research and technology development who aspire to be or are already involved or associated with the education and research activities of UTAR.

This serves as a premier avenue for the formation of research relationship and collaboration among academics, researchers and technologists with the aim of knowledge creation and technology innovation.

Among the goals of the UTAR Global Research Network are as follows.

- To link up prominent academics, scientists, researchers and technologists such that research relationships and collaboration can be created and further enhanced.
- To facilitate UTAR academics and researchers to set up various types of academic and research relationships (e.g. joint research, advice and consultancy, postgraduate supervision, etc.) with prominent academics, researchers and technologists worldwide.
- To leverage on the expertise and experience of the members of the UTAR Global Research Network to enhance the scale and standard of UTAR's academic and research activities, and thus be part of Brain Gain initiative of Malaysia.
- To assist UTAR in forming strategic partnerships with other established education and research institutions worldwide.

Research Highlights

To date, UTAR has appointed more than 30 academics, researchers and technologists as UTAR Global Research Network International Collaboration Partners. The vibrant research culture has blazed new trails of discovery in various fields. Thus far, UTAR has embarked on many research projects with many of them funded either internally and externally, by industry, NGOs or the government.

In Medicine our research areas include stem cells, cancer, family medicine, herbal extracts and traditional Chinese medicine; in Engineering, waste water treatment, mobile communication, satellite remote sensing, solar and renewable energy, Information security, electronic technology, and building construction technology; in ICT, internet TV, cloud computing, multimedia education, and computer vision; in Science, Chikungunya virus research, environmental health, and food chemistry; and in Economics and Management, social capital and globalisation. Other fields of research such as Social Sciences, Chinese Studies, Creative Industries, Agricultural Science and Mathematical Sciences are also actively pursued by UTAR researchers. UTAR academic staff members from 24 research centres are also working on a wide range of research topics as well as in interdisciplinary research projects. Collaborations with the industry and universities, both local and global are also pursued with joint research and funding, joint publication, commercialisation and joint supervision of postgraduate students.



These are some of the highlights of the projects by UTAR researchers. Some of these projects are carried out in collaboration with other universities and organisations.

Cancer Chemoprevention

Research Team : Dr Lim Yang Mooi, Dr Khoo Kong Soo, Dr Lim Saw Hoon, Dr Yeo Cew Cheing, Dr Anthony Ho and Dr Paul Lim

Funded by : UTAR Research Fund

Chemo-preventive properties of maslinic acid play an important role in regulating cancer-signalling pathways, which has been demonstrated via 2D-gel electrophoresis. With this project, the chemo-preventive properties of maslinic acid can then be confirmed. The findings of this project have highlighted the chemo-preventive properties of maslinic acid. UTAR researchers' findings on maslinic acid have been successfully published in two international journals, presented in one international conference, one regional conference and four national conferences, and also won the Best Poster Award at the 35th MSBMB annual conference.

New knowledge on the chemo-preventive activities of maslinic acid can be generated, and identifying the wider range of dysfunctional or cancer-signalling pathways can be regulated by maslinic acid. The new knowledge generated from this study can serve as crucial fundamental information which can drive future fundamental research.



Stem Cell Development for Disease Modelling and Cancer Therapy

Research Team : Dr Alan Ong, Prof. Emeritus Dr. Cheong Soon Keng (Datuk and Datin Tan Kim Leong Professor of Medicine) and Dr Gan Seng Chew

Funded by : UTAR Research Fund

With this project, it is hoped that prostate cancer cells can be reprogrammed towards becoming stem-like phenotypes for research purposes. The properties of these reprogrammed prostate cancer cells can then be determined.

The expected final outcome is to establish a method of producing cancer-specific stem cells from prostate cancer cell lines, and to display proof of concept from the derived cancer stem cells through molecular and cellular characterisation studies. Ultimately, UTAR researchers can produce disease-specific stem cells for the purposes of disease modelling and cancer therapy.

It is hoped that with the development of prostate cancer-specific induced pluripotent stem cells (iPSCs), and by characterising their molecular profiles, potential prostate cancer drug screenings and DNA markers can be established to provide early detection and more effective management of prostate cancer.



In Vitro Hair Follicle Cloning

Research Team : Dr Gan Seng Chew and Dr Tan Kian Lee

Funded by : UTAR Research Fund

The In Vitro Hair Follicle Cloning project aims to isolate human hair follicle keratinocytes (HFKTs) from plucked human hair follicles. This is to determine cell surface markers and pluripotent markers of stem cells.

So far, no research on generating hairs in vitro has been published. Many tissues have been induced using stem cells from plucked hairs, but in vitro induced hair follicles from plucked hairs can be directed, this will save patients from the time-consuming procedure of trying to obtain donor grafts and also transplanting hair follicles.

In UTAR, stem cell-based therapies are being developed to make a great impact on medicine in the 21st century. When stem cells are up-scaled and differentiated into more hair follicles, this can facilitate the process of direct hair transplantation. This can also facilitate the setting-up of a dedicated laboratory service to induce the growth and development of in vitro hair follicle cloning, and be counted as part of the burgeoning field of aesthetic medicine.



Space and Subjecthood in Asian Art

Research Team : Prof Dr William Ray Langenbach
(Star Foundation Professor of Creative Industries), Jay Koh and Shoji Kato

Funded by : Star Foundation, Suomen Akatemia, Finland,

The Asian Art and Performance Consortium (AAPC) is a research consortium, initiated by Dr. Anna Thuring and Dr. Ray Langenbach, that brings together scholars from the Theatre Academy Helsinki, the Finnish Academy of Fine Arts, and Helsinki University. When Langenbach came to the Faculty of Creative Industries (FCI) this year, UTAR became linked to this group of Finnish universities through the project. The AAPC is funded under a four-year grant from the Finnish Research Council for Culture and Society, with in-kind support from the four universities. Dr. Langenbach leads the Finnish Academy of Fine Arts Sub-Project: Contesting the Cultural Ground: Space and Subjecthood in Asian Art, which also includes research by two doctoral students.

Langenbach's 'Artistic Research Project : Space and Subjecthood in Asian Art' includes performances, various writings, a monograph, multi-screen moving-image production and website. It dovetails with his long-standing filming of Asian performance, his concern with immersive experience and the politics of interpellation, the Asian avant-garde, and Socialist Realist aesthetics. This project "provides a model of Practice-led Research and has the added benefit of linking UTAR FCI to research institutions in Europe. Ultimately, Artistic Research of this sort aims to produce new knowledge at the interface of the creative arts and society.



Advanced Metal-Forming Technology

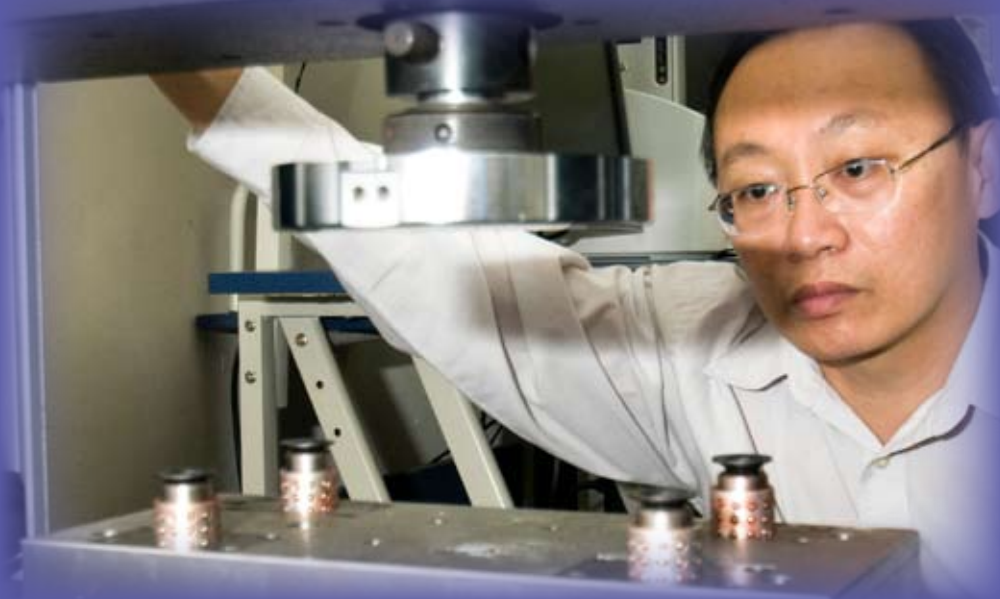
Research Team : Dr Wang Chan Chin, Dr Lim Ying Pio,
Kam Heng Keong and Cheong Wen Chiet

Funded by : Japanese Government Grant

Advanced metal-forming technology involves novel processes to shape metal work-pieces into complicated high-precision geometrical forms as finished products of desired quality and high durable strength.

The applications of the technology are commonly found in automobile industry, where fine mechanical passenger car parts are produced. These parts are such as differential gears, drive-shafts, constant-velocity joints, and transmission and chassis components. To design a process to manufacture high-precision products always poses a tough challenge in the industry and it involves the state-of-the-art technology and a holistic approach to applying Engineering knowledge.

In UTAR, the research on advanced metal-forming technology is directed towards facilitating the development of better local products, particularly, automobile parts. The University has always been collaborating closely with the local industry to produce capable human capital including engineers who can contribute to the nation's economy.



Bioinformatics

Research Team : Dr Goh Yong Kheng and Lim Foo Weng

Funded by : Fundamental Research Grant Scheme (FRGS),
Malaysian Ministry of Higher Education

Bioinformatics is a relatively abstract field that uses information technology to study phylogenetics – the taxonomy of genomes. On its own, Bioinformatics may not really have any practical applications; it is used as a data-base resource for helping us to understand the ancestral or evolutionary relationships between organisms. Such relationships are established through matching for similarities in the phylogenetic trees, which are derived from DNA structures, of the different organisms.

At the moment, most researchers measure phylogenetic trees by using only the so-called coding regions of genomes. The research in UTAR aims to apply new and more effective whole-genome phylogeny methods to measure phylogenetic trees. The research project also intends to develop a theory that can ascertain how robust certain phylogenetic trees are and how susceptible they are to deviations, to formulate new guidelines in computational taxonomy that have positive implications on the genome research field, and to provide deeper understanding of existing biological purposes of different organisms.



Biological Markers for Schizophrenia

Research Team : Dr Loh Han Chern, Dr Tang Pek Yee, Tee Shiau Foon and Chow Tze Jen

Funded by : UTAR Research Fund; Fundamental Research Grant Scheme (FRGS), Malaysian Ministry of Higher Education

Schizophrenia, a complex multi-factorial mental disorder that causes psychiatric morbidity, affects about one percent of the world's population; and there is a rising trend of registered cases in Malaysia. As inheritance is one of the risk factors for schizophrenia, it is important to investigate the genetic susceptibility to the disorder based on gender and ethnicity.

Contradictory results have been published from studies in both European and Asian populations. Since Malaysia has a multiethnic population, there is a need to examine the association of schizophrenia with the genetic polymorphisms of different ethnicities in Malaysia. The data generated can contribute significantly to the population-specific genome database.

UTAR researchers are actively involved in identifying potential chemical markers of schizophrenia. Their project aims to investigate the glutamate neurotransmitter gene, whose presence may cause a person to be susceptible to schizophrenia. UTAR's team is the first to research in this area in Malaysia. They have published their findings on the significant association of alleles, genotypes and haplotypes with schizophrenia. Currently, the team is looking into other genes such as NRGI, AKTI and DTNBP 1.

Bioprocess, Fermentation Technology, Bioenergy and Environment Protection

Research Team : Dr Hii Siew Ling, Dr Low Chong Yu, Kho Soon Hang and Leong Lai Ching

Funded by : UTAR Research Fund

Today, fossil fuels make up to 80 percent of the primary energy consumed in the world, of which 58 percent is consumed in the transport sector alone. Due to the high demand, the sources of fossil fuels are depleting at an alarming rate and may run out in the near future. The urgency of the situation has called for more intense research for alternative, sustainable, renewable, efficient and cost-effective energy sources with lesser greenhouse gas emission. This is where biomass as a renewable energy mix comes in. Energy sources from Biomass can be in gaseous form for generating heat and electricity and in liquid form as transport fuels such as bioethanol.

The research project on bioprocess, fermentation technology, bioenergy and environment protection in UTAR focuses on using bioethanol as an alternative fuel. Ethanol can be made synthetically from petroleum or by microbial conversion of biomass materials through fermentation. The project aims to assess the potential of using agriculture wastes and macroalgae as feedstock for bioethanol production and sustainable energy generation. It also investigates the exhaust emission performance of an internal-combustion engine running on bioethanol-blended fuels, and works on mathematical models that describe the growth of ethanol-fermenting culture and compiling baseline data on bioethanol fermentation technology, which will be useful to researchers who are interested in simulating initiations for exploration in this field.



Brain Computer Interface System

Research Team : Prof Dr Goh Sing Yau, Tan Lee Fan, Vincent Ng

Funded by : Ministry of Science Technology and Innovation (MOSTI)

Strokes and neurodegenerative diseases such as amyotrophic lateral sclerosis (ALS) can lead to complete motor paralysis. If the sensory and cognitive brain functions are intact, Brain-Computer Interface (BCI) systems may be used to improve the quality of life of such patients.

In UTAR, the research project entitled 'A Brain Computer Interface System with an Intelligent Distributed Controller for a Wheelchair' was completed on 30 June 2009. The objective of the project was to develop a BCI system with intelligent distributed controller for wheelchair that would navigate the subject to the desired location in an indoor environment. Changes in EEG signals from electrodes placed on the sensorimotor areas of the scalp are used to select predefined locations in a room. The output of the selection is then transmitted to the wheelchair distributed controlled system, hence freeing the brain for other functions such as observing the surroundings and planning the next move. UTAR was one of the earliest to introduce a BCI system with such brain-freeing ability.

UTAR is now working on developing BCI for communication which is due to complete in August 2013.



Greener Industrial Catalysts

Research Team : Dr Leong Loong Kong, Dr Sumathi Sethupathi, Loh Pei Xuan, Kang Jo Yee, Ling Kuan Hoe, Teng Lee Yein, Wong Chung Shing

Funded by : UTAR Research Fund

An industrial catalyst is basically a substance that can increase the rate of chemical reaction in an industrial process.

Contemporary industrial catalysts typically perform at only about 70 percent capacity, are costly, have short lifespan, and are not recyclable and therefore less environmentally friendly.

The ongoing research on industrial catalysts in UTAR focuses on developing a high-performance catalyst for petrochemical production processes. The catalyst to be developed will be used in the processes of converting natural gas substances to petrochemical products and these petrochemical products to plastic consumer products. UTAR's researchers aim that the new and improved catalyst, with higher active and selective properties and a longer lifespan than most conventional industrial catalysts, will be able to perform at 80 percent capacity. While the high-performance catalyst will enable manufacturers to save costs, it being recyclable will also be greener for the environment.



Computer Vision and Image Processing

Research Team : Dr Khor Siak Wang, Choo Chee Yon,
See Hui Qing and Kelvin Lo

Funded by : UTAR Research Fund; Fundamental Research Grant Scheme (FRGS), Malaysian Ministry of Higher Education

Video scene analysis is a relatively new revolutionary approach used in surveillance technology. The approach has great potential because it enables automatic analysis of contents of scenes captured through CCTV systems and hence avoiding human errors of the presently common manned surveillance systems. Using such approach, UTAR researchers are developing a head-and-pose monitoring system.

The research project aims to build into a CCTV system the capability to analyse captured human images to determine what a person on screen has spent time looking at and whether he is exhibiting suspicious behaviours, which are important information for crime prevention. The built-in capability will enable the automation of tracking of human figures through a surveillance system.

With further development, UTAR targets to achieve an accuracy of more than 90 percent and produces a working prototype that can detect and track human movements in any given setting within the capturing scope of a CCTV system with every scene captured being recorded for playback whenever necessary. The prototype will serve as a progenitor for future security systems with head-and-pose monitoring capability that enables better crime prevention, and UTAR will be recognised as an originator of the technology.



Dual-Camera Systems for Surveillance Applications

Research Team : Dr Goi Bok Min, Ng Mow Song, Low Yi Qian

Funded by : Archtron Research and Development Sdn Bhd

Video surveillance such as CCTV is vital in crime prevention, however there are drawbacks in the use of a traditional video camera, as it delivers low resolution images and lacks flexibility to observe the complete scene. Therefore, UTAR proposes a dual-camera system which uses two different types of cameras, a static wide angle camera and an active pan-tilt-zoom (PTZ) camera. The static camera is used to provide a global view and detect targets, while the PTZ camera, on command, turns to zoom on a selected target for greater detail.

For a dual-camera system to function properly, the two cameras must communicate effectively. They need to be calibrated precisely, which is a complex process as it involves different types of camera. UTAR's research is to produce a low-cost functional dual-camera system whose two cameras are fine tuned to communicate effectively. Such a system can be used in a video surveillance system for indoor and outdoor real-time human tracking, behaviour and gesture analysis, biometric security (2D/3D face recognition), and healthcare monitoring.



Electric Car

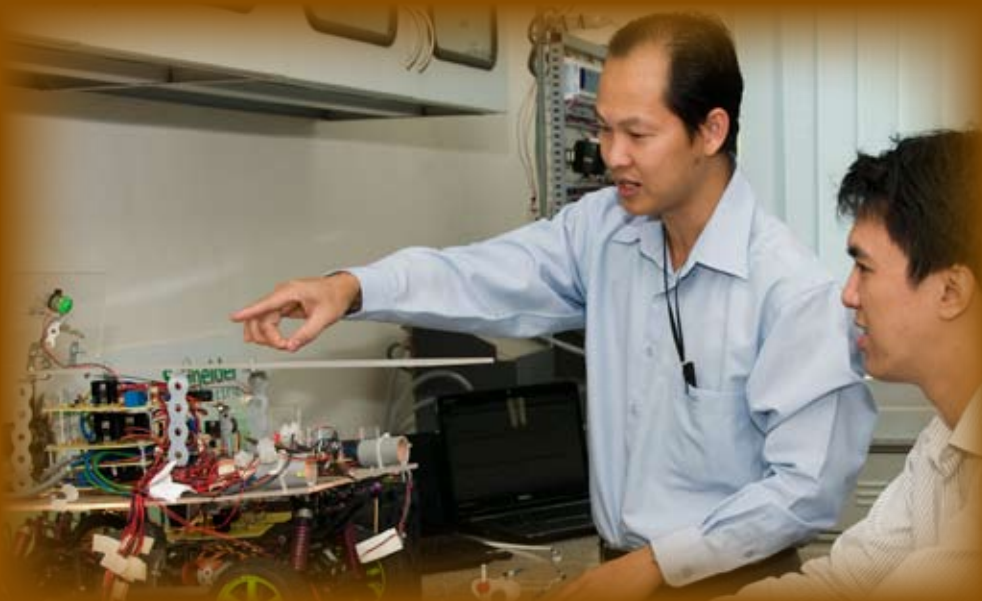
Research Team : Dr Chew Kuew Wai, Gan Yu Han

Funded by : UTAR Research Fund; Yokohama Industries Bhd; Tan Chong Motors Sdn Bhd

Today, we frequently look for petrol stations to refuel our cars, but one day this may change and we look for charging stations instead to power up our cars.

Preparing for this future trend, researchers in UTAR has been developing electric cars since May 2010. Their efforts paid off on 11 June 2011 when they won the Innovate Malaysia Award in the Innovate Malaysia Design Competition organised by the Malaysian Ministry of Science, Technology and Innovation.

The research project aims to develop cars powered by lithium batteries and lead acid batteries. It has successfully introduced the contour positioning system (CPS) and electrical vehicle intelligent control system (EVICS) to enable electric cars to run more efficiently. The CPS provides accurate estimation of the amount of battery energy needed for the car to reach a desired destination. The EVICS is a 2-in-1 smart system, monitoring system for the driver in front and infotainment system for rear-seat passenger. The two systems developed will benefit the car industry because problems of the electric vehicle system can be accessed remotely and stored as a log file ready to be shared among trouble-shooters worldwide.



Green Building

Research Team : Ir Dr Low Kaw Sai, Ng Soon Ching

Funded by : Putra Perdana Construction; Cradle Fund Sdn Bhd

The green technology project in UTAR involves air-entrained, lightweight concrete with additional membrane such as old newspapers, leaf, attap or rock-wool to provide an extra physical barrier to shield off solar heat. It provides a condition of living in a concrete building while enjoying the coolness of an attap house.

Started in 2007, the ongoing project researches into developing green materials such as building envelop wall and roof materials for energy-efficient construction. The use of energy-efficient materials in construction reduces building heat load and hence the energy cost for cooling. While the technology has been patented, the researchers involved are working towards patenting and commercialising various energy-efficient building materials, publishing their findings in reputable and frequently cited journals and presenting them in local and international conferences.



High Concentration Solar Energy

Research Team : Dr Chong Kok Keong, Wong Chee Woon

Funded by : Akaun Amanah Industri Bekalan Elektrik
(Malaysian Electricity Supply Industries Trust Account)

The need to reduce the dependency on fossil fuels and carbon emissions due to their use has made solar energy as a sustainable green alternative increasingly attractive. But there is an obstacle preventing large scale implementation of solar electricity production – the high cost of the photovoltaic modules.

UTAR has been actively involved in research and development work to concentrate sunlight with the newly invented non-imaging planar concentrator. The non-imaging planar concentrator is much more cost-effective compared to the present parabolic dish that is widely used in America, Australia and Europe for harvesting solar energy. Its project, completed on 31 July 2010, aimed to confirm the efficiency of new concentrator photovoltaic in achieving 25 to 30 percent energy conversion efficiency under local conditions, especially in Kuala Lumpur, and to compare energy conservation efficiency per installation cost with conventional photovoltaic.

It should be noted that UTAR's system uses all locally manufactured components of the non-imaging planar concentrator. The researchers' next step is to develop the technology of assembling a densely packed CPV module. Once this technology is commercialised, more than 80 percent of the whole system can be fabricated in Malaysia.



Carbon dioxide emission, exports and economic performance in Malaysia: The Role of Institutional Innovations

Research Team : Dr Eng Yoke Kee, Dr Choong Chee Keong and Lau Lin Sea

Funded by : Fundamental Research Grant Scheme (FRGS) Malaysian Ministry of Higher Education

In view of the accelerating carbon dioxide emissions in Malaysia, it is important for the country to be concerned about the evaluation and application of feasible measures to reduce its CO₂ emissions without sacrificing its economic growth.

This UTAR research project aims to examine the effect of exports on the relationship between CO₂ emission and economic growth and investigate the role of the institutional quality plays in enhancing the relationship between CO₂ and economic growth in Malaysia. This study will benefit the various parties in understanding the nature and behaviour among carbon dioxide emission, exports, institutional quality and economic performance.



Luminescent Solar Concentrator

Research Team : Dr Lim Yun Seng, Prof Faidz Abdul Rahman, Dr Ramesh Subramaniam and Lo Chin Kim

Funded by : Ministry of Science, Technology and Innovation (MOSTI) Science Fund

In order to encourage the use of alternative systems in Malaysia to reduce greenhouse gas emissions and overdependence on fossil fuels for electricity generation, research and development into highly efficient and durable luminescent solar concentrators for building integrated photovoltaic systems was conducted by the team led by Dr Lim Yun Seng.

The research project, which won the International Energy Globe Award, was started in April 2009 and completed in April 2011. Funded by Esience Funding, the research finding showed that the power output of PV cells with the use of luminescent solar concentrator can be increased by 40 % and thus the yield of PV cell.

This luminescent solar concentrator works well under diffuse sunlight, and this means that the luminescent solar concentrators can be used as walls, windows or roofs for capturing diffuse sunlight. This can make the whole building to be a solar power plant generating electricity for local consumption.



Min-Nan Studies Research

Research Team : UTAR Centre of Chinese Studies Research (CCSR)

Funded by : YTL Corporation Berhad

The Min-Nan Studies Research involves the study of Min-Nan or the Southern Min languages or dialects (broadly known as Hokkien), its variants and the communities speaking the dialects in South Fujian Province of China, Taiwan and other parts of the world.

The Min-Nan Studies research involves not only UTAR but also three other regional universities. They are Xiamen University, a key university in China; and National Cheng Kung University and National Quemoy University, both are leading institutions in Taiwan, all with the aim of advancing the studies and research on Min-Nan – the people, their languages or dialects, culture and achievements.

The research sponsored by Tan Sri Dato' Seri Dr. Yeoh Tiong Lay, Executive Chairman of YTL Group is conducted by UTAR Centre of Chinese Studies Research (CCSR) under the Institute of Chinese Studies (ICS) of the university.



Aesthetic Evaluation

Research Team : Dr Somnuk Phon-Amnuaisuk and Lee Lih Su

Funded by : UTAR Research Fund

The objective of this project is to investigate appropriate aesthetic measures that can reflect concepts employed by human graphic designers when they criticise graphic design. It is expected that effective aesthetic measures that correlates with human aesthetic judgement can be formulated from this project. The obtained knowledge from this project can also be applied to automate the graphic design process for generating aesthetically pleasing backgrounds for various tasks.

Two communities have carried out research in aesthetic evaluation; one is from the social science side, which emphasizes cognitive psychology, while the other is from the computer science side, which emphasises information theory. This project has an intentional skew towards computing, though more traditional concepts can be brought into existing evaluation criteria. This will be quite different from the current mainstream information-theory base.



Leadership, Commitment to Change and the Mediating Role of Change Readiness

Research Team : Dr Santhidran Sinnappan, Prof Horacio Borromeo, and V.G.R. Chandran

Funded by : Asian Institute of Management; Ateneo Centre for Organisational Research and Development, Ateneo de Manila University

The objective of this project is to examine employees' perceptions on readiness to change, commitment and leadership during transformation initiatives. This study examines the fit between leadership, readiness and commitment to change, and attempts to address the following issues: the effect of transformational leadership on change readiness, the relationship between change readiness and commitment to change, and the effect of leadership on commitment to change directly or indirectly.

Results of the study suggest that leadership positively and significantly affect change readiness but not commitment to change. Consequently, change readiness is found to significantly affect commitment to change. This study also provides insights for managers on the interrelationship between leadership, change readiness and commitment to change. It has also made theoretical as well as new contributions in the sense that it may direct future research in these areas.



Consumption, Spending and Investment Behaviours of Generation Y in Malaysia

Research Team : Dr Lim Chee Seong, Dr Kevin Low, and Amirtha Ganesan

Funded by : UTAR Research Fund

This project aims to analyse how members of Generation Y in Malaysia behave in terms of financial prudence. It will determine the consumption and spending patterns of Generation Y, determine the level of saving and the forms of saving performed by Generation Y, and study the method of investments (such as equities, real estate, unit trusts and others) practised by Generation Y.

Generally, the knowledge of Malaysian members of Generation Y on financial products and services are limited, if they do not come from a business or finance background. It is hoped that by understanding the spending, saving, investment and risk profiles of Generation Y, businesses like unit trust funds can structure appropriate products and marketing strategies in capturing the demand of this group. University curriculums can also be varied to cultivate an investing culture amongst members of Generation Y.



Arc-Induced Long Period Fibre Grating

Research Team : Yong Yun Thung, Dr Lee Sheng Chyan, and Prof Faidz Abd Rahman

Funded by : Fundamental Research Grant Scheme (FRGS), Malaysian Ministry of Higher Education

This project studies low wavelength response for Long Period Fibre Grating (LPG) to determine the feasibility of using it for fibre sensing purposes. Most of the LPG was studied on the long wavelength as the period of the grating for the optical fibre can be fabricated with good repeatability and high resolution of sensitivity.

The objectives of the project are to investigate the various fabrication methods of LPG available and to focus on how the characteristics of arc-induced LPG behaviour, and the effects of fabrication setup process on LPG properties; to study the response of arc-induced LPG between wavelength range of 800nm to 900nm; and to evaluate the performance of arc-induced LPG with commercial LPG.

This project has the potential to improve the performance of arc-induced LPG through the fundamental behaviour study and help researchers further understand the response of arc-induced long period grating and better integration with coating for fibre optic sensing.



Betting on the rise of China: Beneficial or detrimental to Malaysia?

Research Team : Wong Chin Yoong and Dr Eng Yoke Kee

Funded by : Fundamental Research Grant Scheme (FRGS)
Malaysian Ministry of Higher Education

Current research projects on the implications of the rise of China on regional and world economy are numerous. However, detailed analysis on the macroeconomic interdependence between China and East or Southeast Asia has been seriously lacking.

This research project carried out by UTAR researchers is to understand the macroeconomic interdependence between Malaysia and China in general, and between East or Southeast Asia and China in general in order to shed new lights on the matter of the rise of China in regional and world economy and create more informed policy making procedures.



Hybrid Membrane Bioreactors

Research Team : Dr Ng Choon Aun, Wong Ling Yong,
and Leong Siew Yoong

Funded by : UTAR Research Fund

Membrane bioreactor technology has become a well-known process, especially in filtration process for wastewater treatment. However, membrane fouling poses a great challenge to the filtration process. Therefore, researchers in UTAR are investigating on the conditions necessary for membranes to prolong the filtration progress. Through identification of the optimum conditions, the membrane can perform longer and better, which lower the operation costs in any application.

The research on hybrid membrane bioreactors focuses on identifying the parameters which can enhance the membrane performance, especially in waste-water treatment application. The research involves preliminary observations and comparisons of two submerged membrane bioreactors (MBRs), one with powdered activated carbon (PAC) and the other with another absorbent such as zeolite. The investigation compares the performances of the two MBRs during start-up, and operating at steady state and at a sludge retention time of 30 days and longer. It is aimed to evaluate the performance of the hybrid MBRs and to identify the mechanisms involved in these systems for optimum operation.



Cognitive Wireless Sensor Networks

Research Team : Dr Liew Soung Yue, Goh Hock Guan, Kuek Chian Shiun, Leong Chun Farn, and Lim Khong Leng

Funded by : UTAR Research Fund

This project proposes design and analysis of self-healing multi-hop wireless sensor network (WSN) for precision agriculture, specifically for use in the paddy field.

Through this project, the design and development of self-healing wireless sensor devices using solar power supply can be implemented. The study and formulation of multi-hop wireless communication in the agriculture field can also be carried out, as well as the identification of the next agriculture field that can deploy wireless sensor networks.

There have been some research projects on WSN for paddy field monitoring done by other institutions, however, those are still in initial stages, and without any tangible deployment results. The UTAR research team aims to take things further by conducting field tests and in-depth studies on wireless multi-hop communication.

An important outcome from the project is the development of a self-healing wireless sensor network. The agriculture field will benefit from this project, and there is high potential for consultancy and commercialisation purposes.



Cyber Entrepreneurship in Higher Education in Malaysia

Research Team : Nizam Badaruddin

Funded by : Fundamental Research Grant Scheme (FRGS), Malaysian Ministry of Higher Education

Entrepreneurship is getting wider attention with increasing globalization and also the recent downturn in the world economies. Malaysia also emphasises on the development of more entrepreneurs and more focus on cyber entrepreneurs' development towards accelerating the economic growth.

Therefore, cyber entrepreneur development is one of the fundamental solutions to economic development and globalization. Developing necessary resources in developing cyber entrepreneurs which tend to have great impact on economies growth is imperative in this aspect.

This ongoing research project in UTAR examines the extent to which entrepreneurs are important for career development and the role of the higher education in developing cyber entrepreneurs. It also explores and identifies action plans in building entrepreneurship in Malaysia higher education.



Image Processing and Mobile Application

Research Team : Tou Jing Yi, Teoh Shen Khang, and Tee Wei Long

Funded by : UTAR Research Fund

Image processing and computer vision techniques are often computationally expensive, as mobile devices are designed to have less processing power than a normal personal computer. Thus, it is challenging to provide better image processing and computer vision for mobile applications.

The main purpose of this project is to design and develop efficient image processing algorithms for mobile applications by optimising the use of processing power and system resources of mobile devices. The project includes experiments on complicated and time-oriented processing of images and video. It is expected that with the growing processing power of mobile devices, more complicated applications that need high speed and real-time image and video processing will be developed. The project will study improved ways and algorithms in meeting these technical and application requirements.



Chinese Studies Research

Research Team : Prof Dr Ho Khai Leong, members of the CCSR, and academic staff from ICS and other faculties.

Funded by : UTAR Research Fund, Institute of Strategic Analysis and Policy Research (INSAP), Yayasan Karyawan, Pejati Research Fund, NV Multi Corporation Bhd, and other funding organisations and individuals

Chinese Studies Research in UTAR is carried out by the Centre for Chinese Studies Research (CCSR) at the Institute of Chinese Studies (ICS) which is currently led by Prof Dr Ho Khai Leong.

The research done by the centre covers Chinese related topics in the area of Education, Economy, Ethnicity, Women, Literature, History, Culture and Religion. Examples of studies of the centre include the Guangdong people in Malaysia and their dialects; Malaysian Chinese Writers in Taiwan; Malaysian Chinese Personalities; History of Bukit Cina and Cheng Hoon Teng in Melaka; and Thian Hock Keng Temple, Chinese Community in Early History of Singapore and Min-Nan Studies Research, the most recent study involving three other regional universities, one in China and two in Taiwan.

The centre has collaborated with local and regional scholars and experts within Asia to pool resources and share ideas on Chinese studies through academic conferences and seminars. The centre has worked with the Institute of Nanyang Studies of Xiamen University, China; the Federation of Alumni Associations of Taiwan in Malaysia, Singapore Asian Studies Society and many others. The centre has also published books related to its members' research areas and organised academic conferences as well as non-academic events to promote Chinese culture and civilization in the country such as Chinese calligraphy and painting exhibition by different artists.



Power Optimisation for Video Application using FPGA

Research Team : Kenneth Wong

Funded by : UTAR Research Fund

The main objective of the project is to study power optimisation for embedded system application. The platform of investigation is a video surveillance system for facial tracking. The project will study and contrast the power utilisation and performance of implementing the system using a programmable array (FPGA) and using hardcore micro-controller.

The project will make a comparison report on power saving model of the video surveillance system. A more power efficient model or architecture for facial tracking application can then be presented.

The project should be able to benefit future research in the field of video surveillance.

The outcome of this research has the potential to help the video surveillance system industry in producing more efficient surveillance systems in terms of power and performance.



The Sociocultural Significance of Semaq Beri Food Classification

Research Team : Lim Chan Ing

Funded by : Institute of Research Management and Monitoring, University of Malaya

It is apparent that the study on socioeconomic and political changes to the lives of Orang Asli is now well under way. Definitely, there are urgent issues, since these aboriginal people are, indeed, confronting a series of national political and economic forces. To comprehend the real factors and to understand the phenomena observed, more holistic research is needed, particularly in terms of their social and cultural perspectives as well as their own motivation and intention in selecting food. However, the efforts to understand the meaning of food in cultural and symbolic terms still remain poor.

This study will provide a general ethnographic description of Semaq Beri food culture. There are two objectives in the study. The first objective is to debate some theoretical concerns in the anthropology of food, mainly the relationship between food, the senses and embodiment. This study analyses the embodiment of the social and cultural structure via food practices which underlie the structure of food classification. The second objective is to contribute to the body of knowledge regarding Semaq Beri culture, one of the lesser known people in peninsular Malaysia. It focuses on the Semaq Beri's explanation of their food concepts.



Business Intelligence

Research Team : Dr Siew Pei Hwa, Dr Wong Siew Fan,
Dr William Yeoh and Ong In Lih

Funded by : Fundamental Research Grant Scheme (FRGS),
Malaysian Ministry of Higher Education

This project aims to define and develop an Enterprise Business Intelligence-specific maturity model to provide a useful guideline for enterprises which are planning, assessing or undertaking large-scale EBI initiatives. It has two definitive outcomes: to identify the key dimensions and associated factors that impact on BI systems implementation, so as to enable stakeholders to better use their scarce resources; and to develop an EBI-specific maturity model (and associated guidelines to achieve a higher maturity level) that can readily be used by stakeholders in planning, managing and assessing the implementation of their respective EBI systems.

This research represents the first attempt in investigating and defining an EBI-specific maturity model (along with the key dimensions and associated factors for each maturity level). It provides comprehensive guidance and systematic steps for firms that are planning to implement EBI systems, or in the process to improve their EBI maturity to next higher level. Furthermore, the research findings can assist organisations in optimising their scarce resources by focusing on critical dimensions that are most likely to have a greater impact.



Wastewater Management

Research Team : Prof Dr Show Kuan Yew
(SP Setia Professor of Environmental
Engineering and Green Technology)

Funded by : SP Setia Berhad, UTAR Research Fund; Cradle
Fund Sdn Bhd

Prof Dr Show has undertaken five different projects in waste water treatments.

He collaborated with the National Taiwan University on the project titled 'Biogranulation for Wastewater Treatment'; and with the Singapore National Research Foundation on 'A pilot plant study on a new combined upflow anaerobic sludge blanket/membrane bioreactor process for treating Municipal wastewater in warm climatic conditions.

Prof Dr Show also participated in the MOHE Exploratory Research Grant Scheme on two research projects impacting palm oil mill effluent and green manufacturing based risk management of palm oil products.

More significantly, he worked with SP Setia from March to August 2010 on various projects involving silty water treatment, remediation of waste water, exploring eco-township planning and township system. He also initiated the recruitment and internship arrangements with SP Setia.

Prof Dr Show also serves the community by providing consultancy and reviews to both government organizations as well as private companies on waste water management and green technology.



Diaspora, Brain Circulation and International Talent Networking

Research Team : Prof Dr Cheng Ming Yu (Mr and Mrs Chua Chai Leng Professor of Economics), Dr Tan Hoi Piew and Mr Fok Kuk Fai

Funded by : **Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education Malaysia**

The conventional view always associates migration with “brain drain”. While talent outflow may be devastating to the economic development of the home country, the reversed flow may not be necessary good to the home country. If the home country is not able to provide conducive environment for the talents to perform, they will be wasted at home. Instead, it may be more productive if they work abroad but transfer the benefits back to the home country via various channels such as the sharing of skills and ideas and linking locals to international talents.

This project aims to examine the diaspora effect and the nature as well as consequences of international knowledge networking for academics in Malaysia. This project addresses issues such as how such international knowledge networks are formed, how effective are government programmes such as Brain Gain and institutional's internationalisation effort to facilitate knowledge networking, how significant is the diaspora effect and how productive are knowledge networking in innovation. The findings are expected to provide insightful information to develop strategies in tapping the much needed talents for innovation.



Agricultural Science Research

Research Team : Prof Ooi Aun-Chuan
(Tan Sri Dato' Philip Kuok Professorial Chair
in Agricultural Science)

Funded by : **Kouk Foundation**

Professor Ooi had done various researches on rice pests that included the rice stem borers, pests like the coconut leaf moth, and other parasitoids of the oriental fruit fly, the diamondback moth and etc. He developed the rice pest surveillance system after his experiences at the Muda rice scheme in Kedah. He also did his research on coca pod borer at Sulawesi, Papua New Guinea and Sri Lanka; and travelled widely on various assignments to Guam, China and Australia and did various researches on pest management.

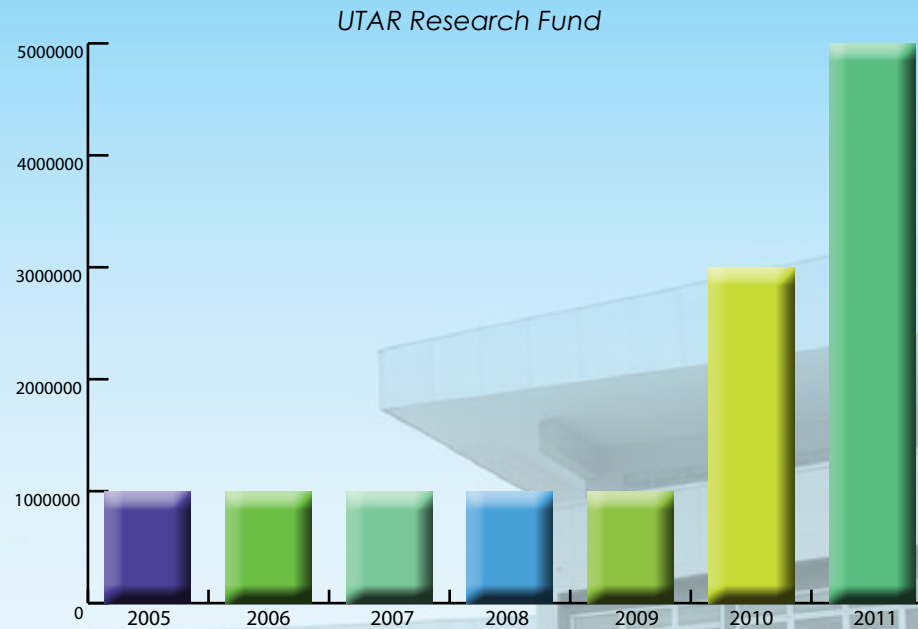
Professor Ooi brings with him a wealth of experience in his work with Jabatan Pertanian of the Ministry of Agriculture, the CAB International (formerly Commonwealth Agricultural Bureaux), the Food and Agriculture Organization (FAO) of United Nations and the Asian Vegetable Research and Development Center (AVRDC). His vast experiences on rice, coconut, cotton, vegetables, oil palm, fruits and cocoa covering about 40 years, place in the best position to promote the rich agro-biodiversity present in the wet tropics (exemplified by Malaysia).

He has been active in exposing scientific knowledge to farmers, helping them better understand scientific concepts and hence sustain interest in Integrated Pest Management (IPM). His current research focus is on sustainable agro-biodiversity.



UTAR Research Fund

R&D activities require substantial funds. To encourage research activities among academic staff, the University established UTAR Research Fund (UTARRF) as an internal research grant scheme designed to provide seed funding to support UTAR researchers particularly those who are in the embryonic stages of building up their experience to secure external research grants. The University started the UTAR Research Fund in 2005 with an annual allocation of RM1 million. The allocation was increased to RM3 million in 2010 and RM5 million in 2011. By November 2011, the fund has accumulated to over RM11 million and sponsoring 220 projects.



External Funding

UTAR's progressive research drive has been affirmed by a winning record in securing competitive research grants. The continuous effort by UTAR has solicited funds totalling over RM18 million from external sources. The University has been receiving funds from various government and non-governmental agencies, foundations, corporate companies and industrial organisations and partner universities.

Year	Total External Funding Received
2005	297,000
2006	1,582,053
2007	3,256,220
2008	2,183,555
2009	2,278,335
2010	1,507,875
2011	7,294,555
Total	18,339,593

Funding Agencies, Corporations, and Organisations

- Academy of Sciences Malaysia



- Alliance Bank Berhad



- ARCHTRON Research & Development Sdn Bhd



- England Optical Group (M) Sdn Bhd



- Eu Yan Sang Group



- Great Marge Corporation Sdn Bhd

Great Marge Corporation Sdn. Bhd.

- International Foundation for Science



- Majlis Kanser Nasional (MAKNA – National Cancer Council)



- Malaysia Toray Science Foundation



- MIMOS Berhad



- Ministry of Energy, Green Technology and Water



- JobStreet.com



- Kakolp Sdn. Bhd

Kajiko Sdn. Bhd.

- Multimedia Development Corporation (MDeC)



- Ministry of Higher Education (MOHE)
 - Fundamental Research Grant Scheme
 - Exploratory Research Grant Scheme
 - Long-term Research Grant Scheme



- Ministry of Science, Technology and Innovation - Science Fund



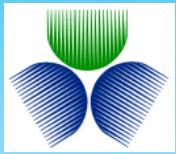
- Malaysian Communications and Multimedia Commission



- NV Multi Corporation Berhad



- Putra Perdana Construction Sdn Bhd



- Resource Alliance



- Sumitomo Foundation Grant



- Scientific Advancement Grant Allocation (SAGA)



- Virtual Tech Consulting Sdn Bhd

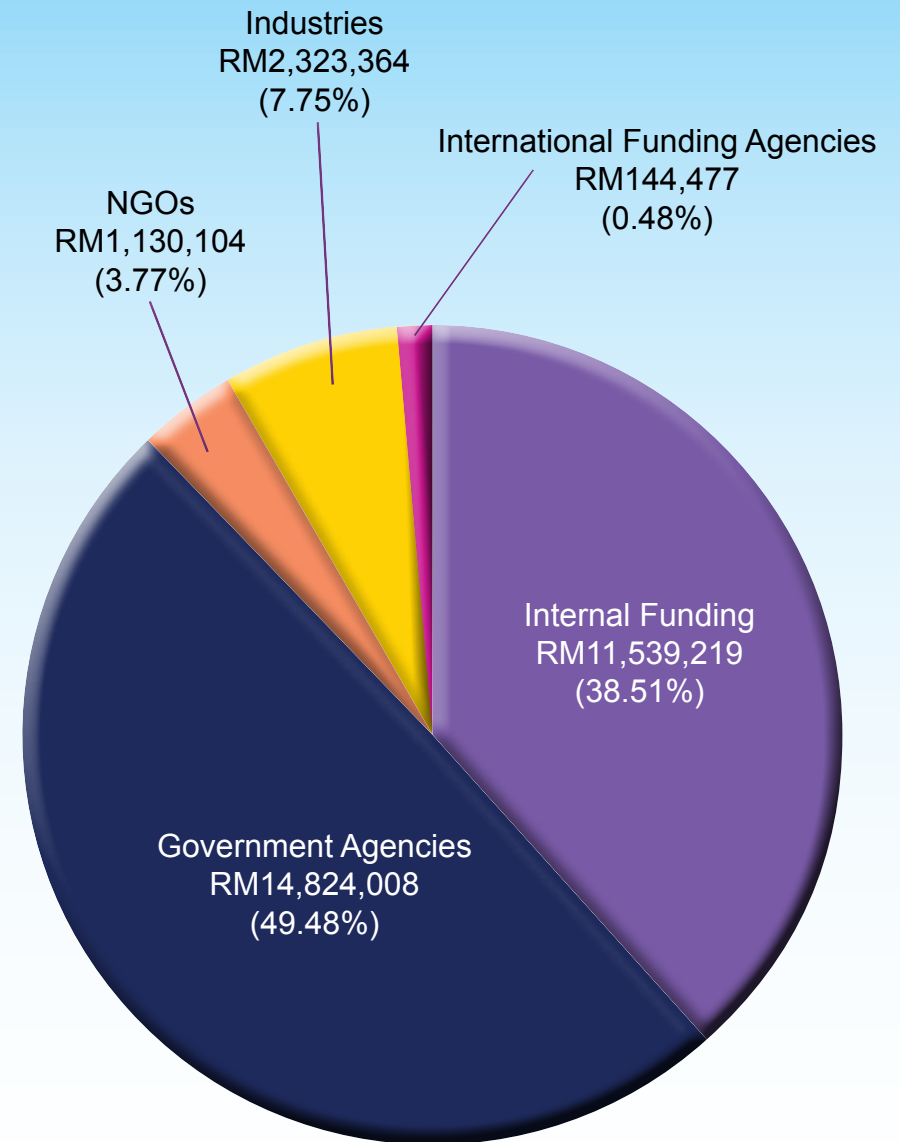


- YTL Corporation Berhad



R&D Projects

Research funding from different sources



Endowed Professorial Chairs

The University is committed to promote research and scholastic development in diverse fields and has initiated the establishment of endowed professorial chairs in 2009. This initiative has received great support from individuals and partners in industry through the generous provision of endowments for the establishment of professorial chairs.

Since 2009, eight chairs have been established and the total contribution received was RM12.5 million. The endowed professorial chairs have enabled the appointment of Professors to develop and achieve excellence in research, development, education and training in the respective fields of specialisation. The eight endowed chairs in chronological order of establishment are:

- Tan Sri Dato' Sri Dr Teh Hong Piow Professor of Banking and Finance
- SP Setia Professor of Environmental Engineering and Green Technology
- The STAR Foundation Professor of Creative Industries
- SHL Professor of Construction Management
- Datuk and Datin Tan Kim Leong Professor of Medicine
- Brunsfield Professor of Civil Engineering
- Mr and Mrs Chua Chai Leng Professor of Economics
- Tan Sri Dato' Philip Kuok Professorial Chair in Agricultural Science



Research Achievement

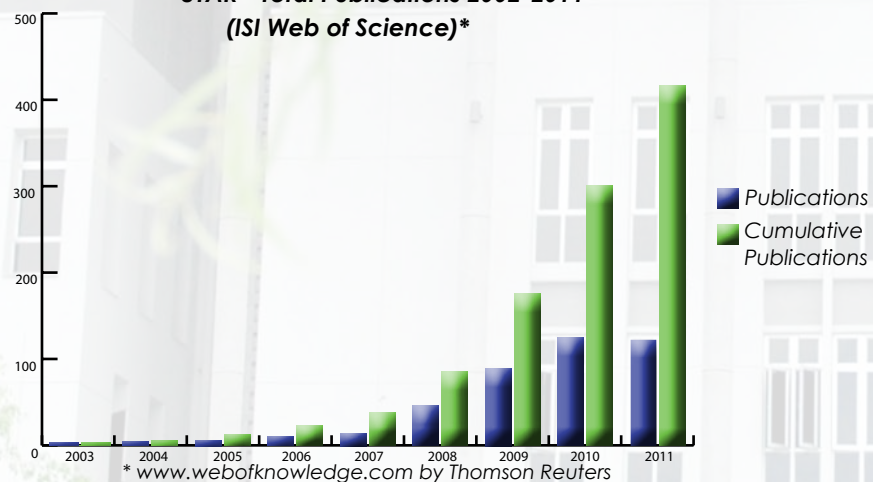
Today, UTAR's core mission encompasses a virtuous circle of creating, preserving, imparting and applying knowledge. More specifically, the University is creating knowledge through research; preserving knowledge through publication of books and journals; imparting knowledge through teaching, seminars and workshops; and applying knowledge through the commercialisation of research output.

Research Publications

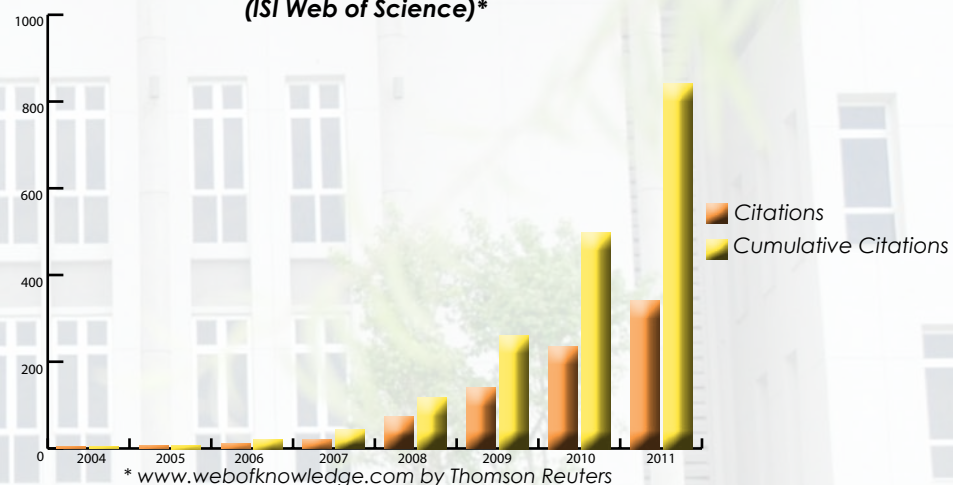
Also worth noting is the fact that publications by UTAR staff accepted by Scopus, the largest abstract and citation database of peer-reviewed literature and quality web sources, have continued to increase significantly since 2008. In addition, great improvements can also be seen in the number of publications indexed in Thomson Reuters (ISI Web of Science).

The number of research publications especially in reputable journals reflects the capability of a research community. The UTAR research community is active in publishing their findings. The number of publications has been steadily increasing since 2003.

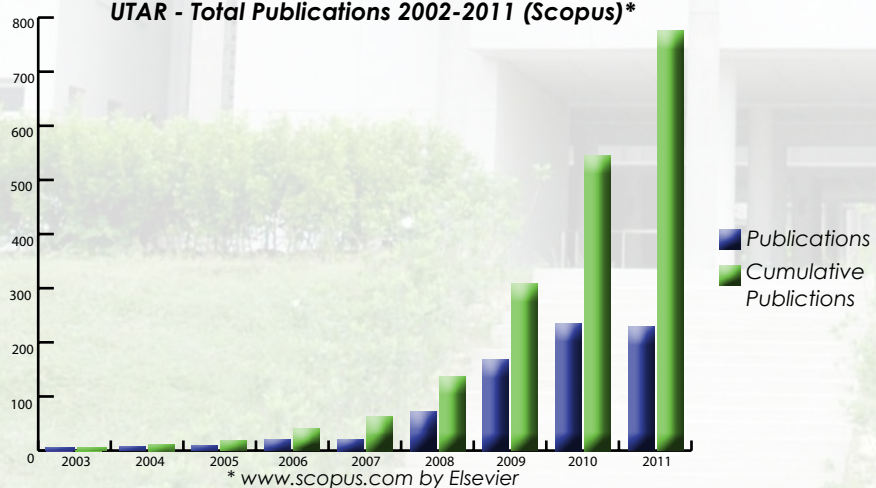
UTAR - Total Publications 2002-2011 (ISI Web of Science)*



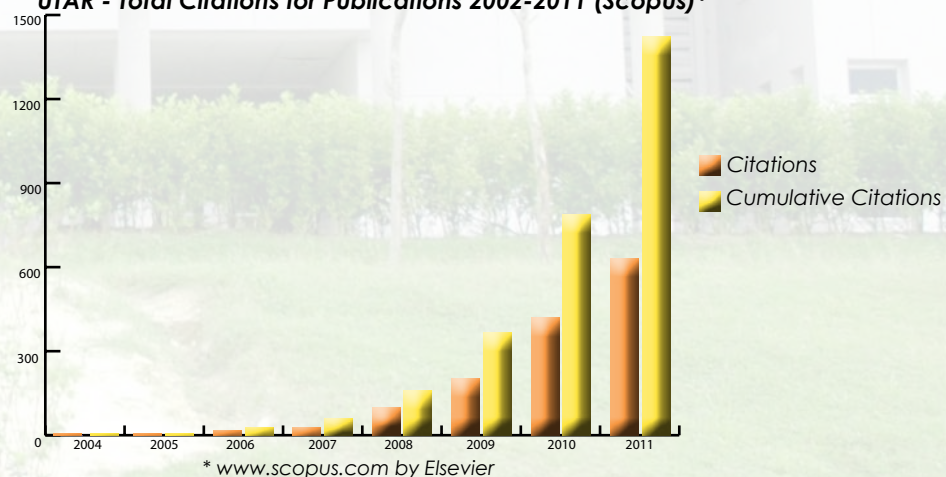
UTAR - Total Citations for Publications 2002-2011 (ISI Web of Science)*



UTAR - Total Publications 2002-2011 (Scopus)*



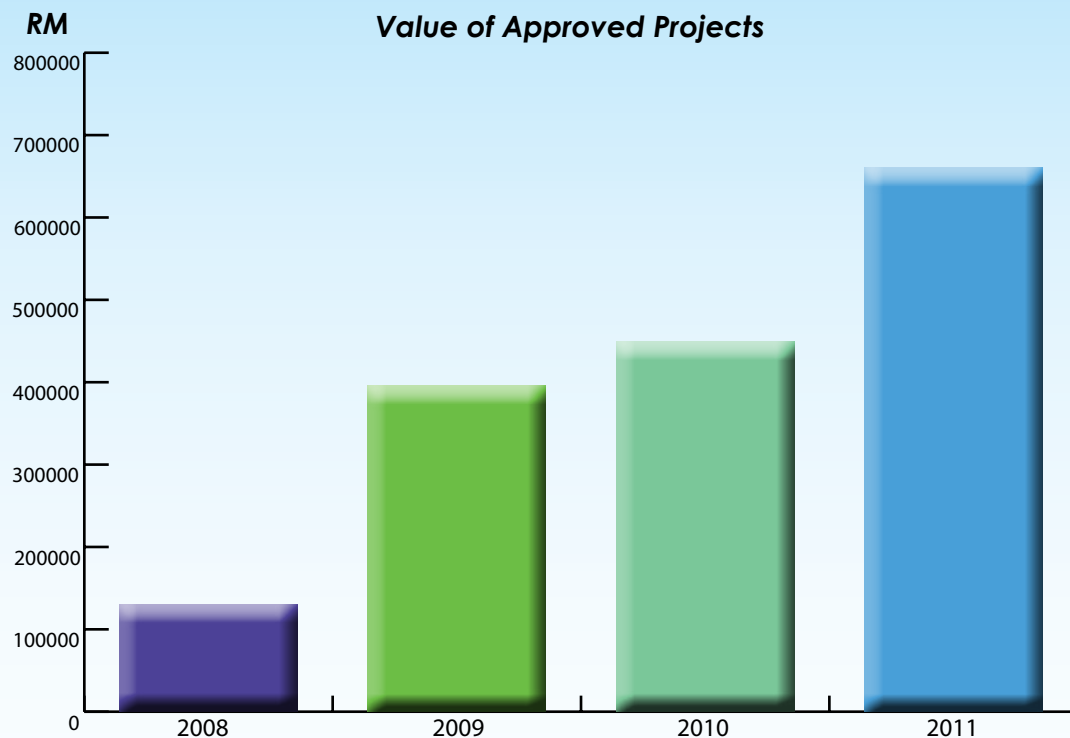
UTAR - Total Citations for Publications 2002-2011 (Scopus)*



Consultancy and Commercialisation

UTAR is committed to maximizing the commercial application of its research to benefit the national, regional and local economies. UTAR spearhead this mission through consulting, patenting, licensing and creating spin-off companies.

The consultancy revenue has been gradually increasing since 2008. Despite the gloomy global economy forecast the University has secured more than RM1.5 million worth of consultancy, advisory and training projects to date. Much of this growth can be attributed to the strategic plans in place to encourage staff to participate in consultancy/advisory and training works. The University's 3-year strategic Plan for 2009 – 2011 was drawn up to outline the strategies to be adopted for achieving the milestones in consultancy and commercialization. Since 2008, a total of 295 projects were completed accumulating a net consultancy revenue from RM130,844.26 (2008) to RM650,000.00 (2011). To date the University has four patents filed and one spin-off company.



In the pipeline is the establishment of a business incubation cluster under the Student Entrepreneurial Programme where students are encouraged and assisted to be entrepreneurs. The Department of Consultancy and Commercialisation (DCC) was formed in 2008 to oversee the entire implementation and management of the consultancy and commercialization initiatives. UTAR Flea markets and UTAR Entrepreneurial Talk Series have been held in this connection.

Commercialisation

UTAR Microalgae Sdn. Bhd.

The University's most successful example of its commercialization project is the incorporation of a spin-off company, "UTAR Microalgae Sdn Bhd" (UMSB) in January 2010. UTAR Microalgae Sdn Bhd is a biotechnology based company which involves in multi-disciplinary R&D and commercial activities ranging from agriculture, aquaculture, food science, health care, pharmaceutical, waste water treatment, feed meal manufacturing, biofuel, and environmental engineering. UMSB also provides expertise in R&D in microalgae biotechnology to researchers, entrepreneurs and investors to ensure that its R&D and commercialization activities bring benefits to all.

Started in 2007, the microalgae research with merely two flasks of microalgae and a research funding of around RM38,000 (USD12,000). The lab was equipped with test tubes, flasks, and a few research benches

only. In less than 3 years, the team has cultivated more than 20,000 liters of valuable microalgae using the patented cultivation system using the highly productive and energy efficient multi-level microalgae cultivation system. UMSB is currently building a commercial microalgae facility in Perak Campus and upon its completion, UMSB hopes to make further progress in its business.

UTAR Microalgae Sdn. Bhd. intends to be an outstanding international corporation aspiring to achieve excellence in the advancement of microalgae biotechnology and dissemination of microalgae-related knowledge and expertise, emphasizing on the research, development, and commercialization of microalgae products for the benefits of human kinds and the mother nature.



Patent

A Photobioreactor

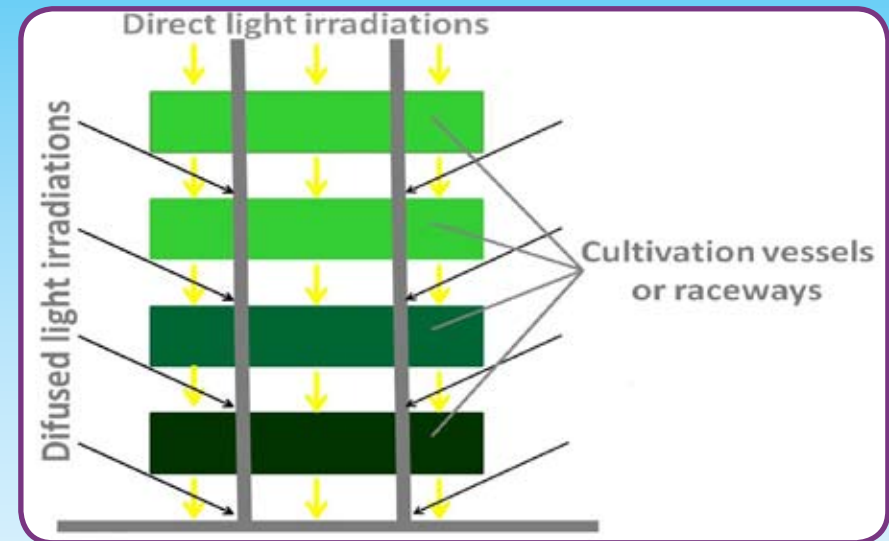
Inventors:

1. Mr Lim Kian Wee @ Tian Kian Wee, Lecturer, Faculty of Science
2. Dr Choo Peng Yin, Associate Professor, Faculty of Information and Communication Technology

Countries where a patent has been filed: Malaysia, USA and China

The invention relates to a photobioreactor (Figure 1) which is to be used for cultivation of algae in a closed, semi-closed, or open system to produce algae culture. In more specific term, the photobioreactor employs a trays-stacking method to cultivate phototrophic microorganisms by utilizing carbon dioxide and light energy effectively and efficiently within limited land. In addition to producing high purity mono-specific algal culture, this photobioreactor is able to grow almost every type of algae under most of the environmental conditions without incurring extra energy and land usage and thus lowering the microalgae production cost.

Figure 1: A Photobioreactor



Lightweight Concrete Infill Buoyant System

Inventors:

1. Ir Dr Low Kaw Sai, Associate Professor, Faculty of Engineering & Science
2. Mr Ng Soon Ching, Lecturer, Faculty of Engineering & Science
3. Dr Tioh Ngee Heng, Associate Professor, Faculty of Engineering & Science

The Patent has been filed in Malaysia.

The invention relates to a lightweight concrete infill buoyant system (Figure 2a & 2b) and its method thereof to support an external load over soft ground or afloat in water. It has a core element that comprises a plurality of interconnected used tyres, plastic mineral water bottles, plastic bags, polystyrene products and other light waste materials. This core element will be supported on an array of small spacing blocks to prevent direct contact of its core element with the ground surface. Fibre-reinforced lightweight concrete material is then used to fill the inside of the entire volume of the platform with core element at its centre. A concrete platform will be formed upon solidifying of the lightweight concrete. This will result in the emergence of a lightweight platform, having an area that is larger than the base area of the supporting structure and at the same time making available the useful buoyancy effect which together will reduce significantly the magnitude of vertical stress caused by the structure constructed above the platform.

This invention enhances the soft ground bearing capacity with minimal total settlement and differential settlement shown in the soft subsoil. It is evidently an innovative, green and sustainable method of construction that afford a useful and smarter way of disposing the used tyres and other wastes produced in our society and elsewhere.



At the Shell Inter-Varsity Student Paper Presentation Contest
From left : Dr Tioh, Ir Dr Low and Mr Ng

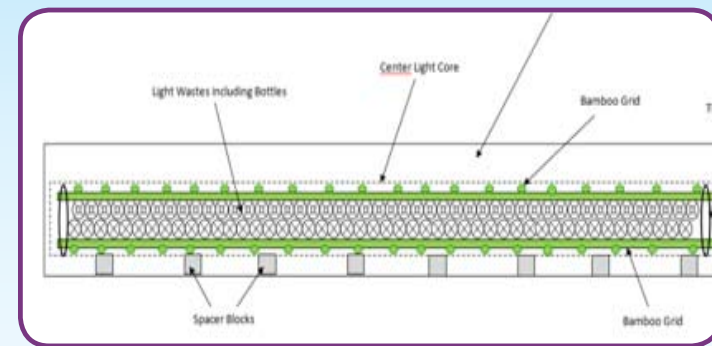


Fig 2(a) - Typical cross-section of lightweight concrete infill buoyant platform as floating structure in water

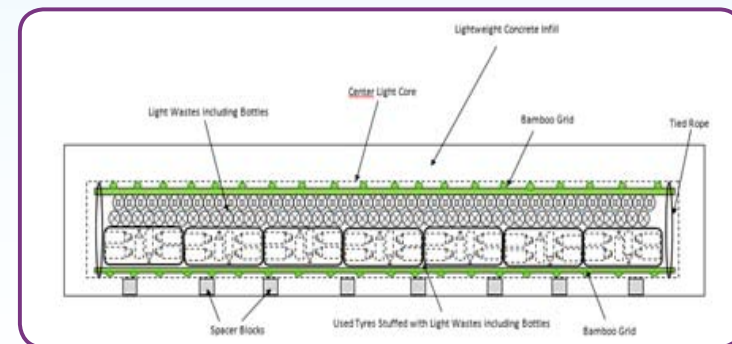


Fig 2(b) - Typical cross-section of lightweight concrete infill buoyant platform over soft ground

Membrane Encased Lightweight Concrete or Mortar Panel and Block

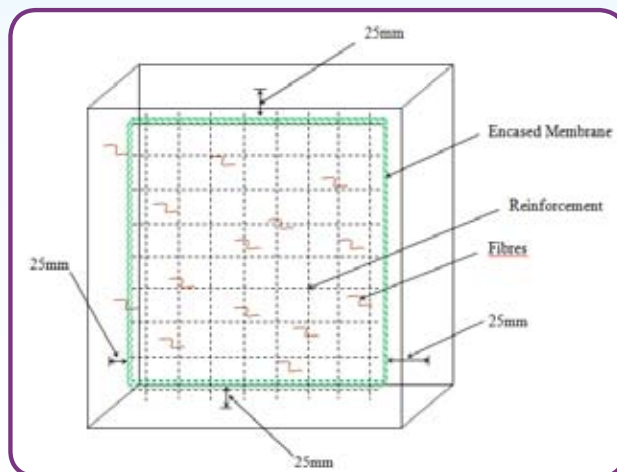
Inventors:

1. Ir Dr Low Kaw Sai , Associate Professor, Faculty of Engineering & Science
2. Mr Ng Soon Ching, Lecturer, Faculty of Engineering & Science
3. Dr Tioh Ngee Heng, Associate Professor, Faculty of Engineering & Science

The Patent has been filed in Malaysia.

The invention relates to an aerated lightweight concrete blocks and panels with membrane encasement in between (Figure 3). The membrane can be made of old newspaper, rock wool, aluminum foil, plastic sheets, leaves etc. The membrane acts as a physical barrier to shield and reduce the heat incident on building wall from being transferred across the lightweight concrete panels and blocks and entered into the interior of the building. For hot climate countries such as Malaysia, the membrane that is encased inside the aerated lightweight blocks and panels is to impede the heat from outdoor entering into the building. This would ensure a relatively cool indoor ambience thus reducing its reliance on air-conditioning system and subsequently reducing the total energy consumption of the building required for comfortable living. In cold climate countries, it works similarly though in a reverse manner by reducing the heat of the warm air inside the building that might escape and transfer out of the building. At the same time the same lightweight aerated block/panel wall will retard if not prevent the ingress of cold air (outside the building) into the interior part of the building.

Figure 3



Lightweight Segmental Concrete Barrier Unit

Inventors:

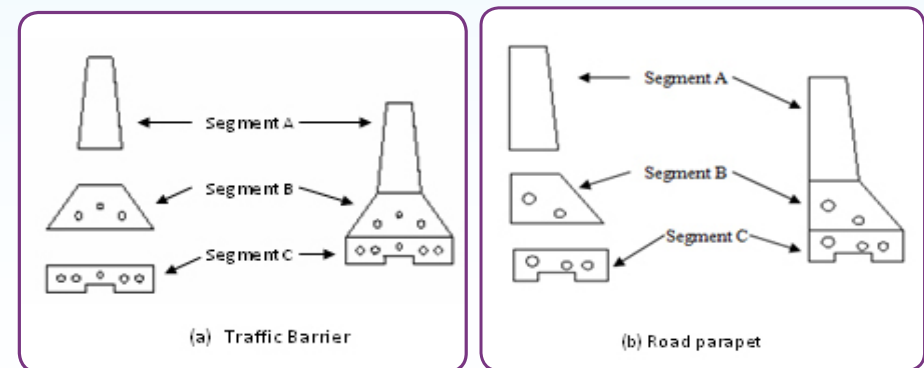
1. Ir Dr Low Kaw Sai , Associate Professor, Faculty of Engineering & Science
2. Mr Ng Soon Ching, Lecturer, Faculty of Engineering & Science
3. Dr Tioh Ngee Heng, Associate Professor, Faculty of Engineering & Science

The Patent has been filed in Malaysia.

This invention relates to a lightweight segmental concrete barrier intended for use on roadways, pavements, highways, bridges or structures of the likes. This newly invented lightweight segmental concrete barrier (Figure 4a & 4b) shall consist of three segments where the first segment will serve as a base segment providing support for the second and top segments. The segments may be joined to one another by inserting connecting materials or means into the holes provided on the bottom surface of the top segment thus ensuring the segments are secured and in mutual alignment with each other.

The primary objective of this invention is to provide improvement to the existing barrier systems and devices in terms of its assembling method, showing considerable amendability and having a robust but lightweight features.

Figure 4



Research Awards

UTAR is reputed for its efforts in seeking innovative advancement through its education, academics, research and development despite the fact that it has been established for only ten years. This is evidenced by the numerous grants that UTAR researchers have been receiving from local as well as international organisations and the numerous national and international accolades won by them for their works. Here are highlights of some of the recent achievements of the faculty members and students of the university, some of which were achieved through academic and research work done in collaborations with researchers of other universities and organisations.

Year 2005

- **Online Buying Behaviors and Attitudes: An Empirical Study**
Dr Lim Yet Mee and Mr Tan Luen Peng
Best Paper Award
Asia Pacific Marketing Conference 2005, Universiti Malaysia Sarawak
- **Foreign Direct Investment in the South Pacific Island Countries: A Case Study of Fiji**
Dr Choong Chee Keong and his co-author Assoc Prof Dr T. K. Jayaraman (University of South Pacific, Fiji)
Best Paper Award
Second WASD Conference on Globalisation, Technology and Development held at University of Arab Emirates, Al-Ain, UAE
- **Monetary Services Index and Economic Activity in Malaysia**
Ms Eng Yoke Kee and Prof Dr Muzafar Shah Habibullah
Silver Medal
Invention & Research Innovation Exhibition 2005, Universiti Putra Malaysia
- **International Capital Mobility and the OCA Criteria: An Empirical Testing**
Ms Eng Yoke Kee, Prof Dr Muzafar Shah Habibullah and Dr Sarinder Kumari
Bronze Medal
Invention & Research Innovation Exhibition 2005, Universiti Putra Malaysia

Year 2006

- **Determinants of Strategic Alliance Outcomes in Supply Chain Environment**
Ms Loke Siew Phaik
Best Paper Award
4th International Conference on Supply Chain Management and Information Systems,
National Chung Hsing University, Taiwan

Staff Achievement



Dr Lee (left) receiving the Award from the Australian High Commissioner to Malaysia H.E. Ms Penny Williams.

UTAR staff won prestigious Aussie Award

Assistant Professor Dr Lee Sheng Chyan, Deputy Dean (R&D and Postgraduate Programmes) of the Faculty of Engineering and Green Technology in UTAR Perak Campus, did the University proud with his outstanding achievement in securing the Endeavour Research Fellowship under the Australia-Asia Endeavour Awards programme. Through this fellowship, Dr Lee undertakes postdoctoral research in Communication Technologies at the University of Melbourne.

The Endeavour Research Fellowships provide financial support of AUD\$23,500 for postgraduate students and postdoctoral fellows from participating countries to undertake short-term research up to six months in any field of study in Australia. Dr Lee is currently conducting research towards a converged optical and wireless network for broadband access services that is suitable for Malaysia. Part of the research will utilise the highly sophisticated photonic instruments at the University of Melbourne.

- **Studies Of Sol-Gel Derived Barium Ferrite Nanoparticles, BaCoXTiXFe12-2XO19 (0.2 " X " 1)**

Dr Teh Geok Bee, Dr Saravanan Nagalingam and co-workers from Cambridge University

Best Poster Award

NanoEurope 2006 Conference, St. Gallen, Switzerland

Year 2007

- **An Examination of Online Consumer Search, Purchase Intention, and Online Purchase**

Dr Lim Yet Mee and Mr Yap Ching Seng

Best Paper Award

International Conference on Internet-Business: Business Trends, Systems, and Education (iBiz2007), Port Dickson, Malaysia , organised by Aoyama Gakuin in association with Multimedia University Malaysia and Singapore Management University

- **Private Capital Flows, Financial Development and Economic Development: The Cross-National Evidence**

Dr Choong Chee Keong, Assoc Prof Dr Zulkornain Yusop, Dr Law Siong Hook

Silver Medal

UPM Invention & Research Exhibition 2007

- **Private Capital Flows, Stock Market and Economic Growth in OECD and Developing Countries: A Comparative Analysis**

Dr Choong Chee Keong, Assoc Prof Dr Zulkornain Yusop, Prof Dr Muzafar Shah Habillah and Prof Dr Ahmad Zubaidi Baharumshah

Bronze Medal

UPM Invention & Research Exhibition 2007

- **Foreign Direct Investment Volatility and Economic Growth: The Case of ASEAN-Five Economies**

Dr Choong Chee Keong, Assoc Prof Dr Zulkornain Yusop, Dr Law Siong Hook

Bronze Medal

UPM Invention & Research Exhibition 2007

- **Export-led Growth Hypothesis: New Evidence from Verdoorn's Law**

Dr Choong Chee Keong, Assoc Prof Dr Zulkornain Yusop, Dr Law Siong Hook

Bronze Medal

UPM Invention & Research Exhibition 2007

Staff Achievement



UTAR staff receives ACU Fellowship

Associate Professor Dr Rajkumar Durairaj of UTAR was awarded the Wighton Titular Fellowship of the Association of Commonwealth Universities (ACU).

The award afforded Dr Rajkumar to work together with Prof Samjid Mannan, a one of the foremost researchers in the UK with 15 years' experience in electronics manufacturing, from the Department of Physics, King's College, London, the United Kingdom from October to December 2010.

On 15 September 2011, he received the Young Members of the Year Award from the Institution of Mechanical Engineers (IMechE, UK) for his outstanding contribution to raising the profile of the IMechE.

The award is an international recognition by the IMechE, UK for volunteer members who have shown exemplary leadership quality.

- **Crime and Underground Economy in Malaysia**
Ms Eng Yoke Kee and Prof Dr Muzafar Shah Habibullah
Silver Medal
UPM Invention & Research Exhibition 2007
- **International Capital Mobility in East Asia: Panel Error-Correction Model**
Ms Eng Yoke Kee and Prof Dr Muzafar Shah Habibullah
Silver Medal
UPM Invention & Research Exhibition 2007

Year 2008

- **Assessing the Determinants of Online Brand Trust: An Empirical Study**
Ms Siew Shir Way and co-authors were Syed S.A., Ahsan, N. , Abdullah, Z.
Best Paper Award
2008 International Joint Conference on E-CASE, Bangkok, Thailand
- **Bank Efficiency and Problem Loans in Malaysia and Singapore**
Mohd. Zaini Abdul Karim (UUM) and Chan Sok Gee
Outstanding Paper Award (Bronze)
Applied International Business Conference 2008
- **Kinetic modelling on sorption of reactive blue 4 by using red seaweed**
Dr Hii Siew Ling, Dr Wong Ching Lee and Ms Lesley Leeann Estrop
1st runner-up (Best Poster Presentation)
19th Intervarsity Biochemistry Seminar
- **Gabor Filters as Feature Images for Covariance Matrix on Texture Classification Problem**
Dr Tay Yong Haur (Leader), Dr Lau Phooi Yee and Tou Jing Yi
Best APNNA Poster Award
15th International Conference on Neural Information Processing
- **PicSecureID**
Dr Victor Tan Hock Kim
Asia Pacific ICT Awards (APICTA) R&D Merit Award
APICTA 2008

Staff Achievement



UTAR professor honoured as Young Global Leader

Professor Dr Cheng Ming Yu, Chair of Mr and Mrs Chua Chai Leng Professor of Economics, Universiti Tunku Abdul Rahman (UTAR), was honoured as a Young Global Leader by the World Economic Forum on 9 March 2011.

The World Economic Forum is an independent international organisation committed to improving the state of the world by engaging business, political, academic and other leaders of society to shape global, regional and industry agendas. The organisation bestows the honour each year to recognise the most distinguished young leaders below the age of 40 from around the world. The selection committee, chaired by Queen Rania Al Abdullah of Jordan, meticulously screens through profiles of thousands of young leaders from numerous disciplines and sectors from every region of the world.

Professor Cheng was selected based on her record of professional accomplishments, commitment to society and potential to contribute to shaping the future of the world through her inspiring leadership. She is the only Malaysian in the list of 190 young global leaders from 65 economies for 2011.

- **Voice Recognition Browser and Marking System for Visually Impaired Learners (Mg Sys-VISI)**

Dr Choo Wou Onn

WIPO Award from World Intellectual Property Organization

Gold Prize from Korea Invention Promotion Association

Seoul International Invention Fair 2008 (SIIF 2008) Seoul

- **A Web Collaborative Multimedia Content Creation and Management Automation System (CMAS)**

Dr Choo Wou Onn

Bronze Prize from Korea Invention Promotion Association

Seoul International Invention Fair 2008 (SIIF 2008) Seoul, Korea

Bronze Medal from Malaysian Invention and Design Society (MINDS)

19th International Invention, Innovation and Technology Exhibition (ITEX'08)

2008. Kuala Lumpur Convention Center (KLCC), Malaysia.

- **Voice Recognition Browser and Marking System (Mg Sys-VISI)**

Dr Choo Wou Onn

Bronze Medal from Malaysian Invention and Design Society (MINDS)

19th International Invention, Innovation and Technology Exhibition (ITEX'08)

Year 2009

- **Removal of Reactive Red 120 using Chemically Modified Seaweeds, Sargassum binderi**

Dr Hii Siew Ling (Project Leader), Chang YT and Wong CL

Champion for Poster Presentation

Malaysian Society for Biochemistry and Molecular Biology

The 20th Intersarsity Biochemistry Seminar

- **Bioactive Bisindole Alkaloids From Tabernaemontana Corymbosa**

Dr Sim Kooi Mow (Project Leader), Dr Kam Toh Seok (University of Malaya)

42nd IUPAC Young Chemist Award of USD 1,000.00

The Royal Society of Chemistry, Cambridge, UK

42nd IUPAC Congress

Scottish Exhibition and Conference Center (SECC), Glasgow, UK

Staff Achievement



Dr Chong (right) with his Solar Energy Project
Beside him is Prof Dr Lee Sze Wei, UTAR Vice President
(R&D and Commercialisation)

UTAR researcher is TWAS young affiliate

Associate Professor Dr Chong Kok Keong was appointed on 4 August 2011 as one of the five TWAS young affiliates from the South and Southeast Asia and the Pacific region. Dr Chong from the Department of Electrical and Electronic Engineering of the Faculty of Engineering and Science was selected by TWAS regional office at the Chinese Academy of Sciences, Beijing, China as one of the five TWAS young affiliates for the Pacific Asia region. He has been actively publishing about his research works which include areas such as concentrating solar power, high concentration photovoltaic system, sun-tracking system, solar thermal energy, non-imaging optics, and laser optics.

Every year, the five TWAS regional offices in Brazil, China, Egypt, India and Kenya, each select up to five scientists under the age of 40 from its region to be the TWAS young affiliates for a period of five years.

- Universal Sun Tracking System**
Dr Chong Kok Keong (Project Leader), Wong Chee Woon, Siaw Fei Lu and Yew Tiong Keat
Silver Award
 20th International Invention, Innovation & Technology Exhibition
 ITEX 2009, Kuala Lumpur, Malaysia
- Multi-Agents Deforestation Monitoring System**
Dr Tan Ching Seong (Project Leader), Julian Tan Kok Ping, Cheng Chia Loon, Ban Sau Keong, Chia Ming Jin, Lim Yu Hung, Chia Kok Siang, Chong Siong Ming, Cheong Fong Euh, Ng Chin Son and Mok Chee Chuan
Gold Award
 20th International Invention, Innovation & Technology Exhibition
 ITEX 2009, Kuala Lumpur, Malaysia
- System's Perspective towards Last Level-Cache Architecture of CMP, Micro-processors**
J.W. Lam (MMU), I.K.T. Tan (MMU), H.T. Ewe(UTAR), B.L. Ong (Intel) and C.K. Tan (Intel)
Best Paper Award
 High-Performance Computing Asia 09 (HPCAsia09)
- An Ice Parameter Retrieval Method with Radiative Transfer Model and Levenberg Marquardt Optimization**
Y.J.Lee (MMU), W.K.Lim (MMU), Prof Dr H.T.Ewe and Prof Dr H.T.Chuah
Best Oral Paper Presentation (3rd Prize, Physical Science Category)
 4th Malaysian International Seminar on Antarctic (MISA4)
- Neural Network and Genetic Algorithm Inversion for Sea Ice Thickness Using Passive Microwave Remote Sensing**
H.J. Yap (MMU), W.K.Lim (MMU), Prof Dr H.T.Ewe and Prof Dr H.T.Chuah
Best Poster Paper (2nd Prize)
 4th Malaysian International Seminar on Antarctic (MISA4)
- Algae and Its Applications**
Lim Kian Wee @ Tian Kian Wee
Consolation Prize
 Science Education Award
 Malaysia Toray Science Foundation

Staff Achievement



Dr Loh (third from left) with her research team

UTAR young scientist recognised

Assistant Professor Dr Loh Han Chern received the Young Scientist Scholarship Award and then the Early Career Investigator Award in 2010.

In July 2011, she was one of the five Malaysians selected by Academy of Sciences Malaysia (ASM) to attend the 61st Meeting of Nobel Laureates with Young Scientists in Lindau, Germany.

In the meeting, which was an informal forum organised under the ASM Lindau Programme, the five Malaysians were among about 570 young scientists in the physiology and medical fields across the globe who had the privilege to rub shoulders with 24 Nobel laureates.

Attached with the Department of Chemical Engineering, Dr Loh is actively involved in Neuroscience studies on identifying potential chemical markers of Schizophrenia, a complex multi-factorial mental disorder that causes psychiatric morbidity.

- **HiCORE (Holistic Islamic Banking System) SOA Parameter-based Semantic Multimedia Approach**

Prof Dato' Dr Halimah Zaman (From UKM) (Project Leader) and Dr Choo Wou Onn (from UTAR, collaborator)

Gold Prize from Malaysian Invention and Design Society
20th International Invention, Innovation & Technology Exhibition
ITEX 2009, Kuala Lumpur, Malaysia

- **HiCORE (Holistic Islamic Banking System) SOA Parameter-based Semantic Multimedia Approach**

Prof Dato' D. Halimah Zaman (From UKM) (Project Leader) and Dr Choo Wou Onn (from UTAR, collaborator)

Special Award - Ram Rais - Best Invention in Information and Communication Technology (ICT)
21st International Invention, Innovation & Technology Exhibition
ITEX'09, Kuala Lumpur, Malaysia

Year 2010

- **Use of nano dot luminescent solar concentrators for building integrated photovoltaic systems**

Dr Lim Yun Seng, Prof Dr aidz bin Abd Rahman, Dr Teh Geok Bee, Mr Tan Seng Gee and Mr Lo Chin Kim

National Winner of Energy Globe Award
The World Awards for Sustainability
World Environment Day in Africa

- **Low Temperature Sintering of Cu and Ag Nanoparticles**

Dr Rajkumar Durairaj (Project Leader) and Professor Samjid Mannan

42nd Wighton Titular Fellowship in Engineering
The Association of Commonwealth Universities

- **A Case-Control Study of Catechol-O-Methyltransferase Polymorphisms and Schizophrenia in the Malaysian Population**

Dr Loh Han Chern

Early Career Investigator Award
Schizophrenia Research Institute, New South Wales, Australia
11th Biennial Australasian Schizophrenia Congress, ASC 2010
Molecules to Mind in Australia

Staff Achievement



Assistant Professor Dr. Sim Kooi Mow

Young Chemist Award for UTAR's Lecturer

Assistant Professor Dr Sim Kooi Mow, from the Faculty of Engineering and Science, has been awarded a 42nd International Union of Pure and Applied Chemistry (IUPAC) Young Chemist Award (Programme A) by the Royal Society of Chemistry (RSC), UK, in conjunction with the 42nd IUPAC Congress in Glasgow, Scotland, and UK.

This is the second chemistry award for Dr Sim as he received the Tan Sri Datuk Ong Kee Hui Postgraduate Chemistry Award 2001 from Institute Kimia Malaysia (IKM) for the best chemistry postgraduate thesis in 2001. Dr Sim is active in the research of natural products chemistry. He has isolated about 130 natural products from *Alstonia*, *Holarrhena*, *Kopsia*, *Tabernaemontana*, *Piper*, *Garcinia*, *Murraya* and *Artocarpus* and has to date published 23 papers in international refereed journals.

- Novel Apolipoproteins as Biological Markers in Schizophrenia**
Dr Loh Han Chern
Young Scientist Scholarship Award
 SIEMENS and Asia Pacific Federation of Clinical Biochemistry (member of International Federation of Clinical Biochemistry and Laboratory Medicine, Milano, Italy)
 The 12th Asian-Pacific Congress of Clinical Biochemistry in Korea
- An Evaluation of Redocumentation Approaches and Tools Using Knowledge Representation Criteria**
Sugumaran Nallusamy
Best Session Presentation
 International Conference on Advanced Computer Science and Information System, Aston Kuta, Bali
- The Impact of E-Service Quality and Customer Satisfaction on Purchase Intention: Examining the Airlines Industry E-Ticketing Service**
Mr. Lau Teck Chai, Dr Kwek Choon Ling, and Dr Tan Hoi Piew.
Best Paper - 2nd Place
 The International Conference on Marketing 2010 (ICMAR2010) (Kuala Lumpur, Malaysia, June 23-24, 2010). Organized by International Islamic University Malaysia (IIUM).
- An Exploratory Study of Human Resource Management Practices In An Overseas Japanese Firm. Are There Any Barriers to Adopting the Japanese HRM Practices?**
Garry Tan Wei Han (Project Leader), Chua Beng Hui , Lee Eng Heng and Dr Lim Yong Hooi
Best Paper Award
 Technology Innovation and Industrial Management (TIIM) Conference 2010, The Royal Cliff Beach Resort, Pattaya, Thailand.
- An Investigation on the regulatory effects of DMCG, MNQ, β -Amyrin towards the PKC and NF- κ B signalling pathways in human Burkitt's Lymphoma cell line (Raji cells)**
Kitson Liew, Wong Teck Yew, Yap Wei Hsum, Lim Chan Kiang, Dr Anthony Ho Siong Hock, and Dr Lim Yang Mooi
Outstanding Poster Presentation
 35th annual Conference of the MSBMB, Equatorial Hotel, Bangi, Selangor

Staff Achievement



UTAR professor bags MTSF Award

Professor Dr Ewe Hong Tat, a Professor at the Faculty of Engineering and Science, received the 2011 Science and Technology Award at the 18th Malaysia Toray Science Foundation (MTSF) Prize Presentation Ceremony on 21 December 2011. The Foundation recognises Prof Ewe's work in Microwave Remote Sensing, Satellite Image Processing, Sensor Network and Intelligent Computing, which he has been involved in since the early 1990s.

He developed scattering models that study how microwave interacts with earth terrain. For dense vegetation, the formulations of near field Fresnel correction for the scattering of basic scatterers were developed and incorporated in multilayer vegetation (such as forest, paddy field, oil palm plantation) models. The theoretical predictions matched well with the measurement data from USA, Japan and Europe research teams for different crops and vegetation. The remote sensing applications implemented provide good early predictions of paddy yield in Kedah and Selangor.

Year 2011

- **2-Methoxy-1,4- Naphthoquinone (MNQ) Cytotoxicity On Non-Small Lung Carcinoma (NSCLC) Cell Line A549**
Ong Yee Hoong, Phelim Yong Voon Chen, Dr Lim Yang Mooi and Dr Anthony Ho Siong Hock
Best Paper Award
36th Annual Conference of the Malaysian Society for Biochemistry & Molecular Biology, Eastin Hotel, Petaling Jaya, Selangor, Malaysia
- **Young Members of the Year Award 2011**
Dr Rajkumar Durairaj
Institution of Mechanical Engineers (IMechE, UK)
- **'Cash, Credit Card or Mobile Phone' Exploring the Intention to Adopt Mobile Credit Card: a Conceptual Model**
Garry Tan Wei Han
Young Service Award
Second International Research Symposium in Service Management in Yogyakarta, Indonesia
- **2011 Young Global Leader**
Prof Dr Cheng Ming Yu
2011 Young Global Leader
World Economic Forum, Geneva, Switzerland
- **'Interconnected Used-Tyres with Lightweight Concrete Infill Buoyant System to Support Heavy Construction over Soft Ground'**
Dr Ir Low Kaw Sai (Project Leader), Dr Tioh Ngee Hing and Ng Soon Chin
Silver Prize
22nd International Invention, Innovation and Technology Exhibition (ITEX), Kuala Lumpur.
- **'Microwave Remote Sensing, Satellite Image Processing, Sensor Network and Intelligent Computing**
Prof Dr Ewe Hong Tat
Science and Technology Award
Malaysia Toray Science Foundation, Kuala Lumpur

Staff Achievement



HE Masahiko Horie presenting the "Certificate of the Order of the Rising Sun, Gold Rays with Rosette" to Dr Leong (right)



HE Masahiko Horie pinning the medal on Dr Leong's suit lapel (right)

UTAR's staff honoured by Japanese Emperor

Dr Stephen Leong Mun Yoon, Director of UTAR Centre for International Studies, has been conferred "The Order of the Rising Sun, Gold Rays with Rosette" by His Majesty the Emperor of Japan. His Excellency Mr Masahiko Horie, Japan's Ambassador to Malaysia, presented the award in a ceremony held at His Excellency's residence in Kuala Lumpur on 15 July 2009. Dr Leong was honoured for his outstanding contribution to the promotion of mutual understanding and academic exchanges between Japan and Malaysia.