Science In The Muslim World: Contribution of UTM Scientist

[1]Norlin Arsad, [2]Norul Aina Alias and [3]Aminuddin Ruskam
[1,2]Faculty of Chemical Engineering, [3]Faculty of Islamic Civilization
Universiti Teknologi Malaysia

Abstract

Nowadays, there are many products and technologies that have been contributed by scientists all over the world. Thus, this paper is emphasized more on the contribution of the Muslim scientists in Universiti Teknologi Malaysia (UTM) which an innovation-led and graduate- focused Research University. UTM is the oldest public engineering and technological university in Malaysia. The university specializes in technical studies, with separate faculties as Civil, Mechanical, Electrical, Chemical and Biomedical engineering. UTM also has faculties in Islamic civilization, education, pure sciences, management and human resources development. Mostly, each faculty has its own contribution of products and research. Therefore, focus has narrowed down to choose one of the faculties which Faculty of Chemical Engineering (FChe). FChe was established on the 1st June 2010. FChe can be divided into three departments which are Department of Chemical Engineering, Department of Polymer Engineering and Department of Bioprocess Engineering. This case study is to emphasize the contribution of scientists in each department in FChe toward community nowadays and their current products. The focus has given to three excellent scientists (researchers) in each department. In Department of Chemical Engineering, Prof. Dr. Zainuddin Bin Abd Manan, Prof. Dr. Arshad Bin Ahmad and Associate Prof. Ramlan Bin Aziz. In Department of Polymer Engineering, attention will give to Prof. Dr. Azman Bin Hassan, Dr. Agus Bin Arsad and Assoc Prof Dr Wan Aizan while in Department of Bioprocess Engineering, Prof. Dr. Mohamad Roji Sarmidi, Prof. Dr. Ani Idris and Prof. Dr. Rosli Md Alias.

Keywords: contribution, Muslim scientists, Universiti Teknologi Malaysia, Chemical Engineering, Polymer Engineering and Bioprocess Engineering

BACKGROUND OF UTM

Universiti Teknologi Malaysia (UTM) is known as Institut Teknologi Kebangsaan (ITK) since established on March 14, 1972. From starting of the ITK, it had three main faculties which are Engineering (department of civil, mechanical and electrical), Architecture and Surveying and Science and Humanities Centre. On April 1, 1975, ITK is officially declared as UTM.

As the name is changed, there was some changes have done such as Rector's position was upgraded to Vice-Chancellor position and new position was appointed to take responsible for demands and welfare of increasing number of students named, Deputy Vice-Chancellor.

UTM is located which are in Skudai, Johor and Jalan Semarak, Kuala Lumpur. In 2011, UTM have 3,654 Academic Staff, 1,440, full time International Academic Staff, 288 Visiting International Academic Staff, 235 Outbound Visiting Academic Staff, 1,244 Academic staff with PhD, 13,780 Postgraduate consists of Master and PhD students, 11,392 Undergraduate Students which make in total of 25,172 students and 5,175 International Students. In addition, UTM has been appointed as Research University starting from 2010 and Vice Chancellor is Prof. Datuk Ir. Dr. Wahid bin Omar.

The philosophy of UTM is 'The divine law of Allah is the foundation for science and technology. UTM strives with total and unified effort to attain excellence in science and technology for universal peace and prosperity in accordance with His will'. The vision, mission, strategic thrusts and institutional goals of UTM can be seen in figure 1.

Figure 1 The vision, mission, strategic thrusts and institutional goals of UTM

QUALITY POLICY AND OBJECTIVE

While for the quality policy of UTM is committed to excellence in the development of human resource as well as science and technology through innovation to meet the expectations and hopes of its customers. Objective of the policy is the university will strive to achieve quality of the highest level through continuous improvement. Emphasis is given to innovation, creativity & 'zero defect' processes.

In order to achieve the objective, approaches that is suitable include enhancing scholarship, nurturing outstanding personality & developing individual potential; pioneering the frontiers of knowledge that contribute to inventions in new technologies; diversifying student-access to higher education to increase opportunities for education through a broad-based education system; increasing the variety of continuous education programmes; increasing research according to stipulated specifications & producing findings that can be commercialised; increasing consulting work on a contractual basis; increasing publication to meet market needs; enhancing quality of teaching through assessment on teaching; and enhancing the university management system to ensure efficiency, efficacy and adaptability.

ACHIEVEMENT

For information, UTM achievements include in area of Autonomous University (first public university to be announced as autonomous university by the ministry of higher education, Malaysia), Self-Accreditation status (conferred the self-accreditation status by the Malaysian qualifications agency in recognition of it wells established internal quality assurance mechanisms), Graduate-focused university (highest percentage of postgraduate student enrolment in Malaysia, 56%, highest number of phd students among all higher institution in Malaysia, 5,308), Four time winner of national intellectual property award (organization category 2006, 2009, 2010 and 2012), Top university ranking (top 3 malaysian institutions in 2012 Quacquarelli Symonds (QS) World University Rankings), Top 1% in Engineering and Technology University Ranking (Quacquarelli Symonds (QS) World University Rankings), Top Ranking Web of University (First Place : Ranking Web of World Repositories, Malaysia in 2014, First Place : Ranking Web of Malaysian universities in 2014, Second Place : 4ICU World University Ranking, Malaysia in 2014), 3-Star ASEAN Energy Management Gold Standard Certification (The first institution to be awarded by ASEAN Energy Management Accreditation Scheme (AEMAS)), Wireless Communication Center, Higher Education Centre of Excellence (HiCOE) recognition by Ministry of Education, Malaysia, 6 Bionexus Partner (NBP) Status Laboratories recognition by Malaysian Biotechnology Corporation (BiotechCorp), Malaysia, NanoMalaysia Centre of Excellence recognition by Ministry of Science, Technology and Innovation, Malaysia (MOSTI), 2013 National Robot Competition (Ninth time champion since 2002, 'Best Design Award' at ABU Asia-Pacific Robot Contest 2012) and Eduniversal Malaysia's Excellent Business School Award (UTM IBS

awarded 2nd place for Malaysia's Excellent Business School under Eduniversal 3 Palmes Award in 2012).

FACULTY AND SCHOOL

In UTM, there are faculties and schools include Faculty of Built Environment (FAB), Faculty of Biosciences and Bioengineering (FBB), Faculty of Civil Engineering (FKA), Faculty of Biomedical Engineering and Health Science (FKBSK), Faculty of Computer Science and Information System (FSKSM), Faculty of Electrical Engineering (FKE), Faculty of Chemical Engineering (FChE), Faculty of Mechanincal Engineering (FKM), Faculty of Geoinformation and Real Estate (FKSG), Faculty of Education (FP), Faculty of Management and Human Resources Development (FPPSM), Faculty of Science (FS), Faculty of Islamic Civilization (FTI), Faculty of Petroleum and Renewable Energy Engineering (FPREE), UTM Perdana School of Science Technology and Innovation Policy, Languange Academy, Graduate Studies, School of Graduate Studies (SPS), UTM International Business School (IBS), Advanced Information School (AIS), Razak School of Engineering and Technology and School of Professional and Continuing Education (SPACE).

FACULTY OF CHEMICAL ENGINEERING (FChE)

Faculty of Chemical engineering was established on 1st June 2010 consists of three department which are Chemical, Polymer and Bioprocess Engineering. Previously, these departments were joined together Department of Petroleum Engineering to establish Faculty of Chemical and Natural Resources Engineering (FKKKSA) ON 15th March 1983 in Kuala Lumpur branch. Since university's policy is change to focus on the fast growing chemical engineering industries, these departments were combined to form new faculty.

The programmes offered by FChE are highly regarded worldwide (second best engineering school in Malaysia and top 150 in world ranking in 2012).

VISION AND MISSION

The vision of the FChE is to be a world-class centre of academic and technological excellence in chemical engineering while the mission is to lead the development of human capital and innovative technologies in chemical engineering.

In addition, there are three objectives which are to produce graduates who are trained in Chemical, Polymer and Bioprocess Engineering and trained to be responsible professionals that are able to face challenges; to develop and contribute to the industry, locally and abroad; and to be the centre of research and consultancy in the fields related to chemical engineering.

CENTRES OF EXCELLENCES (COEs)

In Asia, the FChE is a brand that has been established in collaboration with its five world class institutes and centre of excellences (COEs) in research and education to develop human capitals with innovative, entrepreneurial and global mind set for the universal prosperity and well-being. The COEs include biotechnology and natural products under the Institute of Bioproduct Department or IBD (formerly Chemical Engineering Pilot Plant (CEPP), process systems engineering under Process Systems Engineering Centre (PROSPECT), hydrogen economy and HSE under the Institute of Hydrogen Economy, oil and fats under the Centre for Lipid Engineering and Applied Sciences (CLEAR) and engineering education under the Regional Centre on Engineering Education (RCEE).

STAFFS

In the FChE, staffs can be divided into academic and non-academic staffs and there are more than 91 academic staffs that have been assigned into separate departments (i.e. the Department of Chemical Engineering, Department of Bioprocess Engineering or Department of Polymer Engineering) according to their expertise area. For the non-academic staffs, it can be grouped into technical and non-technical staffs.

DEPARTMENTS

Department Of Chemical Engineering

The department was established in 15th March 1983 before emerge with the department of polymer and bioprocess engineering under a faculty and has 25 years history of innovation and creativity in teaching, learning and research. The mission is to educate students and to discover and disseminate knowledge through research.

The Head of Department is Associate Professor Dr. Haslenda Hashim and 54 academic staff while more than 200 postgraduates students in this department. More than 276p graduates have been produced by this department.

Department Of Polymer Engineering

Since plastics materials become one of essential of daily life thus it make the members of this department commit in the education, research and consultation activities specifically on polymer materials. The goal is that by the synergized efforts from all the members, graduates of the department are those of skillful, intelligent and ethical human capitals who are able to contribute to the development of the nation and the whole world. Besides, we strive to produce research outputs which are useful in advancing human civilization.

The Head of Department is Associate Professor Dr. Aznizam Abu Bakar and the two research groups under the department, namely Enhanced Polymer Research Group (EnPRO) led by Prof. Dr. Azman Hassan and Biopolymer Research Group (BRG) led by Assoc. Prof. Dr. Wan Aizan Wan Abdul Rahman are the main platform for the department's members to explore the mysterious yet rewarding world of research. While

BRG seeks to expand the current applications of biopolymers and cross-linked polymers, EnPRO commits in developing different range of polymer nano-composites based on different polymer matrixes for various applications.

Department of Bioprocess Engineering

The department of Bioprocess Engineering is currently lead by Associate Professor Dr. Roslina Rashid as Head of Department and 27 staffs. Significant efforts have also been done to boost the research activity of the department. Main focus research area thus far has been on four distinctive areas in bioprocess engineering i.e. microbiology and fermentation technology, bioseparation, food & bioproduct development and advance bioprocessing.

It is also worth mentioning here that serious attention has been placed to support our students activities –mostly organized by the Bioprocess Engineering Student Society (BIOSS)– and the UTM newly formed program, the Global Innovation Outreach or simply GInO. GInO is a technology based community program specifically designed as one of UTM alternatives to fulfill our social responsibility. Successful GInO destinations lead by our department in 2012 includes CO2 Footprint Project@Maldives, Trans Java-Bali Biodiesel Expedition, Indonesia, Absolute Expedition in Melbourne and Outreach Program in Gold Coast, and Brisbane, Australia.

MUSLIM SCIENTIST IN UTM

For the Muslim scientist in UTM, focus has given to scientists in three departments under Faculty of Chemical Engineering. The Muslim scientists that will be discussed are Prof. Dr. Zainuddin Bin Abd Manan, Prof. Dr. Arshad Bin Ahmad, Associate Prof. Ramlan Bin Aziz and Ir. Dr. Sharifah Rafidah binti Wan Alwi from Department of Chemical Engineering. For Department of Polymer Engineering, the scientists are Prof. Dr. Azman Bin Hassan and Associate Prof Dr Wan Aizan binti Wan Abdul Rahman while for Department of Bioprocess Engineering are Prof. Dr. Mohamad Roji Sarmidi, Prof. Dr. Ani Idris and Prof. Dr. Rosli Md Illias.

Muslim scientists

Dr. Zainuddin Abd. Manan

Professor, Dean of FChE, Founder of Process Systems Engineering Centre (PROSPECT)
Department of Chemical Engineering

Research Interests :

- Sustainable Product and Process Design: Design of Tailor-Made Green Fuels
- Process Integration for Emissions Planning and Resource Conservation
- Sustainable Energy Management System

Latest/Selected Publication :

- SANI, S. M.; MANAN, Z. A.; WAN ALWI, S. R., "Optimization of thermochemical disintegration of sewage sludge for enhanced biogas yield. ",Bioresource Technology Journal. 2012. 114:69-74. (IF: 4.365).

- ABBOOD, N.; MANAN, Z. A.; WAN ALWI, S. R., " A Combined Numerical And Visualization Tool For Utility Targeting And Heat Exchanger Network Retrofitting. ",Journal of Cleaner Production. 2012. 23: 1-7. ISSN 09596526. (IF=2.425).

- KASHINATH, S. A. A.; MANAN, Z. A.; HASHIM, H.; WAN ALWI, S. R., " Design of Green Diesel from Biofuels Using Computer-Aided Technique. ",Computers and Chemical Engineering. 2012, Vol. 41: 88-92. (IF:2.072).

- LAWAL M., WAN ALWI, S. R., MANAN, Z. A., " A Systematic Method for Cost-Effective Carbon Emission Reductions in Buildings. ", DOI 10.3923/JAS 2012. ISSN 1812-5654.

- MUNIR, S. M.; MANAN, Z. A.; WAN ALWI, S. R., " Holistic Carbon Planning For Industrial Parks: A Waste-To-Resources Process Integration Approach . ", Journal of Cleaner Production. 2012. 33:74-85. (IF=2.425).

Dr. Arshad Bin Ahmad

Professor of Process Control and Safety, Director of the Institute of Hydrogen Economy, Consultant

Department of Chemical Engineering

Research Interests :

- Accident modeling and risk assessment
- Process modeling, control and optimization
- Process safety
- Process intensification
- Hydrogen and fuel cell

Latest/Selected Publication :

Ahmad, A., Hassan, S.A., Ripin, A., Ali, M.W., Haron, S. (2013). A Risk-based Method for Determining Passive Fire Protection Adequacy. Fire Safety Journal. In Press. 10.1016/j.firesaf.2013.01.020.

Sadighi, S., Ahmad, A. (2012). An Optimization Approach for Increasing the Profit of a Commercial VGO Hydrocracking Process. Canadian J. Chem. Eng. Available on-line.

Nasef, M.M., Shamsaei, E., Saidi, H., Ahmad, A., Dahlan, K.Z.M. (2013). Preparation and characterization of phosphoric acid composite membrane by radiation induced

grafting of 4-vinylpyridine onto poly(ethylene-co-tetrafluoroethylene) followed by phosphoric acid doping. J. Appl. Polym. Sci. 128(1), 549-557. DOI: 10.1002/APP.38157.

Ahmad, A., Yeoh, P.L. , Ali, M.W., Ripin, A., Haron, S. (2013). Human Factor in Equipment Safety of Hard Disk Manufacturing, J. Teknologi, 60, 9-14.

Mohamad, M., Ali, M.W., Ripin, A., Ahmad, A. (2013). Effect of Extraction Process Parameters on the Yield of Bioactive Compounds from the Roots of Eurycoma Longifolia J. Teknologi, 60, 51-57.

Ramlan Aziz
Professor, Director of IBD,
Department of Chemical Engineering

Research Interests :

- Process Development and Intesification and Scalling-Up Studies
- Herbal and Phytochemical Processing
- Techno-Entrepreneur-Development

Latest/Selected Publication :

Joseph S. H. Lim, Dominic C. Y. Foo, Denny K. S. Ng, Raymond R. Tan, Ramlan Aziz. (2013). Production Planning for the Manufacturing Industries, Chemical Engineering, August

Norul Liza A-Rahaman, Lee Suan Chua*, Mohamad Roji Sarmidi, Ramlan Aziz (2013). Physicochemical and radical scavenging activities of honey samples from Malaysia. Agriculture Science, Vol.4, No.5B, 46-51 (2013)

Aishatur Radhiah Mohd Razi, Azila Abdul-Aziz, Sharifah Shahrul Bariah Syed Alwee &Ramlan Aziz (2013). Relationships between Malaysians Cultivars of Tongkat Ali (Eurycoma longifolia Jack) Obtained through RAPD Analysis. International Journal of Biotechnology for Wellness Industries, 2(1): 45-50.

Kien-Hui Chua, Ting-Hun Lee, Kamini Nagandran, Nor Hamdan Md Yahaya, Chew-Tin Lee, Eddie Tan Ti Tjih and Ramlan Abdul Aziz (2013). Edible Bird's nest extract as a chondro-protective agent for human chondrocytes isolated from osteoarthritic knee: in vitro study.BMC Complementary and Alternative Medicine 2013, 13-19.

Mohd-Setapar, Siti Hamidah; Abd-Talib, Norfahana &Aziz, Ramlan (2013). Silage from Malaysian Rice Straw Treated with Rice Bran, Coconut Pulp, Molasses and Effective Microorganism. Journal of Biobased Material and Bioenergy, 7(2):295-299.

Ir. Dr. Sharifah Rafidah binti Wan Alwi
Associate Professor, Director of Process Systems Engineering Centre (PROSPECT)
Department of Chemical Engineering

Research Interests :

- Resource Conservation
- Process Integration
- Process Design and Simulation
- Water and wastewater Minimisation, Energy Management

Latest/Selected Publication :

Wan Alwi, S. R., Misman, M., Manan, Z. A. and Chuah, W. S. (2013). SePTA – A New Numerical Tool For Simultaneous Targeting And Design Of Heat Exchanger Networks. Computers and Chemical Engineering, 57: 30– 47. Impact factor: 2.091.

Wan Alwi, S. R., Mohammad Rozali, N. E., Manan, Z. A., Klemeš, J. J. (2012). A Process Integration Targeting Method for Hybrid Power Systems. Energy. 44 (1): 6-10. DOI:10.1016/j.energy.2012.01.005. Impact factor: 3.651.

S. R. Wan Alwi, Manan, Z. A. and J. J. Klemes (2011). Recent Advanced in Resource Conservation and Planning – A review, Special Issue: Resource Conservation, Asia Pacific Chemical Engineering Journal (APJ). 6: 689–695. Impact factor: 0.797.

S. R. Wan Alwi, Manan. Z. A. (2010). STEP – A New Graphical Tool for Simulataneous Targeting and Design of Heat Exchanger Network, Chemical Engineering Journal. 162 (2010) 106–121. Impact factor: 3.473.

Wan Alwi, S. R. and Manan, Z. A. (2008). A new holistic framework for cost effective minimum water network in industrial and urban sector . Journal of Environmental Management. 88: 219-252. Impact factor: 3.057.

Dr. Mohamad Roji bin Sarmidi

Professor of Bioprocess Engineering, Research Dean , Research Alliance (Biotechnology), Deputy Director of IBD
Department of Bioprocess Engineering

Research Interests :

- Bioproduct Development and Validation

Latest/Selected Publication :

Hyun-Kyung Choi, Dong-Hyun Kim, Jin Wook Kim, Sulaiman Ngadiran, Mohamad Roji Sarmidi and Chang Seo Park (2010). Labisia pumila Extract Protects Skin Cells From Photoaging Caused By UVB Irradiation. Journal of Bioscience and Bioengineering, 109(3): 291–296, 2010.

Sarmidi, M.R.; El Enshasy, H.A. and Abdul Hamid, M. (2009). Oil Palm: The rich mine for pharma, food, feed and fuel industries. American-Euroasian J. Agric. Environm. Sci. 5(6): 767-776, 2009.

Yin Hoon Chew, Loke Lin Shia, Chew Tin Lee, Fadzilah Adibah Abdul Majid, Lee Suan Chua, Mohamad Roji Sarmidi, Ramlan Abdul Aziz. Modeling of Oscillatory Bursting Acitivity of Pancreatic Beta-Cells Under Regulated Glucose Stimulation. Journal Molecular and Cellular Endocrinology, Volume 307, (2009), pages 57-67.

Yin Hoon Chew, Loke Lin Shia, Chew Tin Lee, Fadzilah Adibah Abdul Majid, Lee Suan Chua, Mohamad Roji Sarmidi, Ramlan Abdul Aziz. Modeling of glucose regulation and insulin-signaling pathways. Journal Molecular and Cellular Endocrinology, Volume 303, (2009), pages 13-24.

Norzalina Othman, Hesham A. El-Enshasy, Roslinda Abdul Malek, Mohamad Roji Sarmidi and Ramlan A. Aziz (2009). Kinetics of Cell Growth and Functional Characterization of Probiotic Strain Lactobacillus delbrueckii and Lactobacillus paracasel isolated from Breast Milk. Deutsche Lebensmittel-Rundschau (DLR) 105 (7): 444-450, July 2009)

Dr. Ani Idris
Professor, Academic Manager (Research) – SPS, Head of Downstream Processing Lab, Head of Bioprocess Engineering Panel, Secretary of Chemical-Biotechnology cluster
Department of Bioprocess Engineering

Research Interests :

- Membrane Technology
- Fermentation and Downstream Processing
- Microalgae Cultivation and Processing

Latest/Selected Publication :

Chee Loong Teo, Madiha Atta, Attaullah Bukhari, Mohamad Taisir, Afendi M. Yusuf, Ani Idris. Enhancing growth and lipid production of marine microalgae for biodiesel production via the use of different LED wavelengths. (2014) Bioresource Technology, (2014) 162, 38-44 (IF 4.75)

Akhtar, J., Idris, A.,Abd. Aziz, R. (2014) Recent advances in production of succinic acid from lignocellulosic biomass Applied Microbiology and Biotechnology 98(3) 987-1000. (IF 3.68)

Teo, C.L., Jamaluddin, H., Zain, N.A.M., Idris, A. Biodiesel production via lipase catalysed transesterification of microalgae lipids from Tetraselmis sp. (2014) Renewable Energy 68 1 – 5 (IF 2.989)

Madiha Atta, Ani Idris, Ataullah Bukhari, Suzana Wahidin,(Accepted for publication) Intensity of blue LED light: A potential stimulus for biomass and lipid content in fresh water microalgae Chlorella vulgaris. Bioresource Technology. (IF 4.98)

Suzana Wahidin, Ani Idris , Sitt Raehnnah Salleh The influence of light intensity and photoperiod on the growth and lipid content of microalgae Nannochloropsis sp. Bioresource Technology. 2013(129) 7-11. (IF 4.98)

Dr. Rosli bin Illias
Professor
Department of Bioprocess Engineering

Research Interests :

- Molecular Biology, Enzyme Biotechnology

Latest/Selected Publication :
Wan Salwanis Wan Md. Zain, Rosli Md Illias, Madihah Md Salleh, Osman Hassan, Roshanida A. Rahman, Aidil Abd Hamid, (2007). Production of Cyclodextrin Glucanotransferase from alkalophilic Bacillus sp. TS1-1: Optimization of Carbon and Nitrogen Concentration in the Feed Medium Using Central Composite Design. Biochemical Engineering Journal. 33: 26-33

A.M. Mimi Sakinah, A.F. Ismail, Rosli Md Illias, Osman Hassan, (2007). Fouling Characteristics and Autopsy of a PES Ultrafiltration Membrane in Cyclodextrins Separation. Desalination. 207: 227-242.

Po Kim Lo, Osman Hassan, Arshad Ahmad, Nor Muhammad Mahadi, Rosli Md Illias, (2007). Excretory Over-Expression of Bacillus sp. G1 Cyclodextrin Glucanotransferase (CGTase) in Escherichia Coli: Optimization of the Cultivation Conditions by Response Surface Methodology. Enzyme and Microbial Technology. 40: 1256-1263

A. M. Mimi Sakinah, A. F. Ismail, Rosli Md Illias and Osman Hassan, (2007)Development of enzymatic membrane reactor (EMR) for cyclodextrin production. Journal of Applied Sciences. 7 (15) : 2028-2032.

Kian Mau Goh, Nor Muhammad Mahadi, Osman Hassan, Raja Nor Zaliha Raja Abdul Rahman and Rosli Md Illias, (2007). The effect reaction conditions on the production of γ-cyclodextrin from tapioca starch by using a novel recombinant engineered CGTase. Journal of Molecular Catalysis B: Enzymatic. 49: 118-126.

Dr. Azman Hassan
Professor of Polymer Engineering, Deputy Director of Research Management Center
Department of Polymer Engineering

Research Interests :

- PVC technology, polymer blend, rubber toughened polymer, polymer nanocomposites

Latest/Selected Publication :

Azman Hassan, Mat Uzir Wahit and Ching Yern Chee. Mechanical and Morphological Properties of PP/LLDPE/NR ternary Blend – Effect of HVA-2. Polymer Testing 22 281-290. 2003.

Aznizam Abu Bakar, Azman Hassan and Ahmad Fuad Mohd Yusof. Mechanical and thermal properties of oil palm empty fruit bunch filled unplasticised PVC composites. Polymer and Polymer Composites. 13 (6) 607-618. 2005

Sani Amril Shamsudin, Azman Hassan, Munirah Mokhtar and Syed Mustafa. Effect of SEBS on the Mechanical Properties and Miscibility of Polystyrene Rich Polystyrene/Polypropylene Blends, Plastics Rubber and Recycling Progress. 21 (4) 261-276. 2005

Aznizam Abu Bakar, Azman Hassan and Ahmad Fuad Mohd Yusof. Effect of Oil Palm Empty Fruit Bunch and acrylic impact modifier on Mechanical Properties and Processability of Unplasticised Poly (Vinyl Chloride) Composites, Polymer-Plastics Technology and Engineering 44 (6) 1125 – 1137. 2005

Azman Hassan, Mat Uzir Wahit and Ching Yern Chee.. Mechanical and Morphological Properties of PP/LLDPE/NR ternary Blend – Effect of Polyoctenamer. Polymer-Plastics Technology and Engineering. 44 1245-1256. 2005

Dr. Wan Aizan binti Wan Abdul Rahman
Associate Professor
Department of Polymer Engineering

Research Interests :

- Polymer Blends
- Grafting
- Biopolymers

Latest/Selected Publication :

Lee Tin Sin & Wan Aizan W.A.R., Injection molding simulation analysis of natural fiber composite window frame. Journal of Materials Processing Technology 2007, Elsevier. 2007

R. Rasit Ali, W.A. Wan Abdul Rahman & N. Zakaria . Biodegradable Low Density (LDPE)/ Starch Packaging Films, International Conference on Advancement of materials and nanotechnology, 2007

R. Rasit Ali, and W.A. Wan Abdul Rahman, Biodegradable Low Density Polyethylene / Tapioca starch Packaging Films, 9th International Symposium on Polymers for Advanced Technologies, 2007

Nurnadia, A., Dayangku Intan, M., Wan Aizan, W. A. R., Roshafima, R. A. and Hanizam, S., Characterization of HDPE/Rice Straw Biocomposite for Injection Mould Process, National Symposium Polymeric Material 2007

Roshafima R. A. and Wan Aizan W. A. R., Effect of Palm Oil as Processing Aids in Biodegradable Low Density Polyethylene (LDPE)/Tapioca Starch via Blown Film Extrusion, 7th National Conference on Oil Tree Utilisation: Strategizing for Commercial Exploitation, 2007