

CURRICULUM VITAE

PERSONAL INFORMATION

Name: **Zulkifli Mohamad Ariff**

Office Address: **School of Materials and Mineral Resources Engineering
Engineering Campus,
Universiti Sains Malaysia,
Seri Ampangan, 14300 Nibong Tebal
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Citizenship: **Malaysian**



EDUCATION

Degree: Ph.D. / Universiti Sains Malaysia
Area: Polymer Technology
Specialisation: Polymer Melt Rheology
Thesis: Melt Rheology and Injection Moulding of Acrylonitrile-Butadiene-Styrene (ABS) Using A Capillary Rheometer

Degree: M.Sc. / University of Manchester Institute of Science and Technology (UMIST), UK
Area: Polymer Science and Technology
Specialisation: Polymeric Foams
Dissertation: Foaming Behaviour Dependence on Base Polymer Parameters

Degree: B. Tech / Universiti Sains Malaysia
Area: Polymer Technology
Specialisation: Polymer Composite
Dissertation: Study on the Potential of Sago Starch as Filler for Polyethylene

ACADEMIC PARTICULARS

Lecturer (2004 – 2008)
Senior Lecturer (2008 – 2010)
Associate Professor (2010 – 2017)
Professor (2017 – to date)

Field: Polymer Engineering
Department: School of Materials and Mineral Resources Engineering, Universiti Sains Malaysia

ADMINISTRATIVE APPOINTMENT

- Programme chairman for Polymer Engineering Programme
 - 2 terms (2010-2012 and 2013-2015)
- Deputy Dean (Academic, Career and International)
 - School Materials & Mineral Resources (2019-2021)

RESEARCH INTERESTS

Preparation and characterisation of various polymeric foams
Polymer melt rheology
Real-time measurement of parameter changes during polymer processing
Simple software and instrumentation development as an aid for polymer processing

EDITORIAL BOARD MEMBER

Journal Title: Malaysian Polymer Journal (Online journal - <http://www.fkkksa.utm.my/mpi/>)
Level: National (peer reviewed)
Publisher: Plastics and Rubber Institute of Malaysia (2008 – 2015)

Journal Title: Journal of Cellular Plastics (Webpage - <http://www.sagepub.com/journals/Journal201577>)
Level: International (peer reviewed, ISI-indexed)
Publisher: SAGE Publications (2013 – to date)

PROFESSIONAL BODY MEMBERSHIP

Plastic and Rubber Institute of Malaysia – 2005 to date
Polymer Processing Society (USA) – 2008 to 2015
Society of Plastic Engineers (USA) – 2016 to date

RESEARCH GRANT

- 1. A Study on Production and Optimisation of Rubber Foam from Natural Rubber**
 - USM's Short Term Grant
 - Amount: RM 16, 843.00
 - Status: Completed
- 2. Development of Natural Rubber Foams and Characterisation of Its Structure-Properties Relationship for Sound Proofing and Shock Absorbing Applications**
 - Science Fund from Malaysian Ministry of Science, Technology & Innovation
 - Amount: RM 139,995.00
 - Status: Completed
- 3. Modelling and Characterization of Mechanical Response of Polyolefin Foams**
 - Fundamental Research Grant Scheme (FRGS), Malaysian Ministry of Higher Education
 - Amount: RM 86,600.00
 - Status: Completed
- 4. Innovative Approach for Production of Epoxy Syntactic Foams Consisting Epoxy Hollow Spheres**
 - Science Fund from Malaysian Ministry of Science, Technology & Innovation
 - Amount: RM 126,900.00
 - Status: Completed
- 5. Plastic Product Failure Associated with Polymer Flow Behaviour in Complex Geometries**
 - Fundamental Research Grant Scheme (FRGS), Malaysian Ministry of Education
 - Amount: RM 104,000.00
 - Status: Completed
- 6. Development of Water Blown Natural Rubber Foam Through Microwave Processing Approach**
 - Research University (RUI) Grant, Universiti Sains Malaysia
 - Amount: RM 82,700.00
 - Status: Ongoing

RESEARCH COLLABORATION

Project Title: PRODUCTION AND CHARACTERIZATION OF WATER-BASED EPOXY FOAM

- As co-researcher for AUN/SEED - NET research project:
- Project Level :International
- Project Leader: Assoc. Prof. Dr. Azhar Abu Bakar
- Amount: RM RM10,198.00
- Status: Completed

Project Title: Formation of Crosslinked Polyolefins Foams by Using Waste Polymer and Agricultural Waste

- As co-researcher for ScienceFund research project:
- Project Level: National
- Project Leader: Assoc. Prof. Dr. Coswald Stephen Sipaut
- Amount: RM 118,500.00
- Status: Completed

Project Title: Development of a Modified, Cost Effective Kaolin Filled Thermoplastic Composites for Automotive Applications

- As co-researcher for ScienceFund research project:
- Project Level: National
- Project Leader: Prof. Dr. Azlan Ariffin
- Amount: RM 183,760.00
- Status: Completed

Project Title: Development of New Thermoplastic Elastomers (TPE's) Based on Ethylene Vinyl Acetate (EVA) / Natural Rubber (SMR L) Blends

- As co-researcher for ScienceFund research project:
- Project Level: National
- Project Head: Prof. Dr. Hanafi Ismail
- Amount: RM 124,472.00
- Status: Completed

Project Title: Preparation and Characterization of Epoxy Nanocomposites Reinforced with Glass Fiber and Montmorillonite

- As co-researcher for USM's Short Term Grant research project:
- Project Level: University
- Project Head: Assoc. Prof. Dr. Chow Wen Shyang
- Amount: RM 29,886.00
- Status: Completed

Project Title: Development of an Affordable Oscillating Rheometer to Monitor Cure Characteristics and Rheological Behaviour of Thermoset Polymers.

- As co-researcher for USM's Short Term Grant research project:
- Project Level: University
- Project Head: Mr. Mohamad Azwan Mad Naser
- Amount: RM 36,824.00
- Status: Completed

Project Title: Improvement of Quality Characteristics of an Injection Moulding Product Made from Recycle Plastic by Optimising the Injection Moulding Parameters using Taguchi Method

- As co-researcher for USM's Short Term Grant research project
- Project Level: University
- Project Head: Assoc. Prof. Dr. Shahrul Kamaruddin
- Amount: RM 38,878.00
- Status: Completed

Project Title: Development of Rhizobial Inoculant of Leguminous Cover Crop *Mucuna Bracteata* Using Local Kaolin and Rice Husks as Carriers

- As co-researcher for USM's Research University Grant research project
- Project Level: University
- Project Head: Dr. Amir Hamzah Ahmad Ghazali
- Amount: RM 96,949.00
- Status: Completed

Project Title: Production, Characterization and Utilization of Hollow Epoxy Particles

- As co-researcher for USM's Short Term Grant research project:
- Project Level: University
- Project Head: Assoc. Prof. Dr. Azhar Abu Bakar
- Amount: RM 37,900.00

- Status: Completed

Project Title: Study of Corrosion Activities Using Conductive Paint in Malaysian Seawater

- As co-researcher for Exxon-Mobil Grant research project:
- Project Level: International
- Project Head: Assoc. Prof. Dr. Ahmad Azmin Mohamad
- Amount: RM 30,000.00
- Status: Completed

Project Title: Laminated Flooring Composite with High Chemical and Physical Resistance made from Polyolefin Waste Blends and Oil Palm Empty Fruit Bunch

- As co-researcher for USM's Short Term Grant research project
- Project Level: University
- Project Head: Assoc. Prof Dr. Mohamad Nasir Mohamad Ibrahim
- Amount: RM38,721.00
- Status: Completed

Project Title: Compatibilization & Orientation Studies of Biodegradable Packaging Materials Based on Poly (Butylene Succinate)/ Organo-Montmorillonite Nanocomposites

- As co-researcher for USM Research University Grant research project:
- Project Level: University
- Project Head: Prof. Zainal Arifin Bin Mohd Ishak
- Amount: RM 249,450.00
- Status: Completed

Project Title: Investigation of Chitosan - NH₄NO₃-EC-GA Membranes for Proton Batteries Application

- As co-researcher for ERGS research project:
- Project Level: National
- Project Head: Assoc. Prof. Dr. Ahmad Azmin Mohamad
- Amount: RM 139,000.00
- Status: Completed

Project Title: Wrinkle Resistant Finish with Flame Resistant Properties on Cotton Fabric

- As co-researcher for USAINS-Industry research project:
- Project Level: National
- Project Head: Assoc. Prof. Dr. Mas Rosemal Mas Hakim
- Amount: RM 284,400.00
- Status: Completed

Project Title: Interaction Mechanism of Banana Stem Fibres Filled Agar Green Composites

- As co-researcher for FRGS research project:
- Project Level: National
- Project Head: Assoc. Prof. Dr. Azhar Abu Bakar
- Amount: RM 74,000.00
- Status: Ongoing

Project Title: Flow-ability enhancement of pour point depressant based polyacrylates by emulsion polymerization: Correlation between particles and rheological properties.

- As co-researcher for FRGS research project:
- Project Level: National
- Project Head: Prof. Dr. Azlan Ariffin
- Amount: RM 104,000.00
- Status: Ongoing

Undergraduate Teaching

EBP 202/3 – Polymer Structure (2004 – to date)
EBP 207/2 – Transport Phenomena in Polymers (2007 – 2013)
EBP 303/3 – Plastic Materials (2004 – 2006)
EBP 307/2 – Polymer Rheology (2004 – 2012)
EBP 311/3 – Polymer Analytical Methods and Failure Analysis (2016 – to date)
EBP 400/3 – Product Design and Failure Analysis (2006 – 2015)
EBP 402/3 – Mould and Die Design (2006 – to date)
EBP 400/3 – Product Design and Development (2016 – to date)

Postgraduate Supervision

MSc

Yong Mun Kong (Co-Supervisor) - status: completed
Project Title: Preparation and Characterisation ENR/EVA Blends

Zunaida Zakaria (mixed-mode) – status: completed
Project Title: Characterisation of Polyethylene Foam and Its Structure-Properties Relationship in Shock Absorbing Applications

Nor Azura Abd. Rahim – status: completed
Project Title: Flow Behaviour and Viscoelasticity of Polypropylene-Koalin Composites

Mohamad Azwan Mad Naser – status: completed
Project Title: Development of an Affordable Oscillating Rheometer to monitor cure Characteristics and Rheological Behaviour of Thermosets Polymers

Lim Su Rong (Co-Supervisor) - status: completed
Project Title: Preparation, Characterization and Re-Processing Ability of Poly(Ethylene Terephthalate) Clay Nanocomposites.

Thai Hong Khang – status: completed
Project Title: Simulation of Filling and Curing Phases In Injection Moulding Process of Natural Rubber Compound

Siti Salmi Samsudin – status: completed
Project Title: Development and Characterization of Epoxy Syntactic Foams Filled Epoxy Hollow Spheres

Mohammad Shahrulhafiz Basir Ahmad (Co-Supervisor) – status: completed
Project Title: Development of Recycled Crosslinked Polyethylene/High Density Polyethylene Composites for Subsurface Drainage Pollutant Trap

Tan Yizong – status: completed
Project Title: Development and Characterization of Moisture-Blown Natural Rubber Foam Using Microwave Foaming Technique.

Nor Azaniza Abdul Mutalib – status: completed
Project Title: Innovative Approach for Production of Epoxy Syntactic Foams Consisting Epoxy Hollow Sphere

PhD

Suzi Salwah Jikan (Co-supervisor) – status: completed
Project Title: Rheological Behaviour of Multicomponent Filled Polypropylene

Du Ngoc Uy Lan (Co-supervisor) – status: completed
Project Title: Production and Utilization of Epoxy Particles as An Advanced Filler

Zunaida Zakaria – status: completed
Project Title: Modelling and Characterization of The Mechanical Response of Polyolefin Foams

Norwanis Hasan (Co-supervisor) – status: completed
Project Title: Development of Polymer-Cement Foam and Characterisations of Its Properties for Insulation Applications

Siti Salwa Alias (Co-supervisor) – status: completed
Project Title: Proton batteries based on chitosan-NH₄NO₃-EC-GA membranes

Mohd Shamsul Farid Samsudin – status: ongoing
Project Title: The formation of microcellular structure from dry natural rubber (NR) and its response towards mechanical deformation.

Tan Yizong – status: ongoing
Project Title: Flow of Polymer in a Closed Cavity Evaluated by Utilization of Computer-aided Simulation and the Relationship with Failure of Polymer Parts

Komethi Muniandy – status: ongoing
Project Title: Shear modification during blown film extrusion and its influence towards rheological and crystallization behaviour of semicrystalline polymers

Ahmad Fikri Abdul Karim (Co-supervisor) – completed
Project title: Kenaf-filled natural rubber latex foam

List of Publication

JOURNAL PAPERS

International

- 1) A. Ariffin, S.S. Jikan, M.S.F. Samsudin, Z.M. Ariff and Z.A.M. Ishak, “**Melt Elasticity Phenomenon of Multicomponent (Talc and Calcium Carbonate) Filled Polypropylene**”, Journal of Reinforced Plastics and Composites, Vol. 25 (9), (2006).
- 2) M.S.F. Samsudin, Z.A. Mohd Ishak, S.S. Jikan, Z.M. Ariff, A. Ariffin, “**Effect of Filler Treatments on Rheological Behaviour of Calcium Carbonate and Talc-Filled Polypropylene Hybrid Composites**”, Journal of Applied Polymer Science, Vol. 102, 5421 – 5426, (2006).
- 3) M. Khalil Abdullah, M.Z. Abdullah, S. Kamarudin and Z.M. Ariff, “**Study on Flow Visualization in Stacked-Chip Scale Packages (S-CSP)**”, International Communication in Heat and Mass Transfer, 34, 820 – 828, (2007).
- 4) M. K. Yong, H. Ismail, and Z. M. Ariff, “**Comparison Properties of Natural Rubber (SMR L)/Ethylene Vinyl Acetate (EVA) Copolymer Blends and Epoxidized Natural Rubber (ENR-50)/Ethylene Vinyl Acetate (EVA) Copolymer Blends**”, Polymer-Plastics Technology and Engineering, 46: 361–366, (2007)
- 5) M. K. Yong, H. Ismail, and Z. M. Ariff, “**The effect of epoxidized natural rubber (ENR-50) or polyethylene acrylic acid (PEA) as compatibilizer on properties of ethylene vinyl acetate**”

- (EVA)/Natural rubber (SMR L) blends**", Polymer-Plastics Technology and Engineering, 46: p 1001-1009, (2007)
- 6) Z. M. Ariff, Z. Zakaria, L. H. Tay, S. Y. Lee, "**Effect of Foaming Temperature and Rubber Grades on Properties of Natural Rubber Foams**", Journal of Applied Polymer Science Vol. 107(4), 2531 – 2538, (2008)
 - 7) C.S. Sipaut, G.L.A. Sims and Z. M. Ariff, "**Crosslinking of Polyolefin Foam II. Applicability of Parameters to Assess Crosslinking/Foam Density Relationship**", Cellular Polymers Vol. 27(1), 11 – 25, (2008)
 - 8) M. Khalil Abdullah, M.Z. Abdullah, M.A. Mujeebu, S. Kamarudin and Z.M. Ariff, "**Study on the Effect of Stack Thickness During Encapsulation of Stacked-Chip Scale Packages (S-CSP)**", Journal of Microelectronics and Electronic Packaging, 5, 62-67, (2008).
 - 9) A. Abu Bakar, Du Ngoc Uy Lan, B. Azahari, Z.M. Ariff, "**Production of novel epoxy micro-balloons**", Materials Letters, 63, 827–829, (2009).
 - 10) Z. Zakaria, Z.M. Ariff, C.S. Sipaut, "**Effect of Parameter Changes on Structure-Properties of Low Density Polyethylene (LDPE) Foam**", Journal of Vinyl and Additive Technology, 15(2), 120-128, (2009).
 - 11) M. Khalil Abdullah, M.Z. Abdullah, M.A. Mujeebu, S. Kamarudin and Z.M. Ariff, "**A Study on the Effect of Epoxy Molding Compound (EMC) Rheology During Encapsulation of Stacked-Chip Scale Packages (S-CSP)**", Journal of Reinforced Plastics and Composites, Vol 28 (20), 2527-2538,(2009)
 - 12) S.S. Jikan, M.S.F. Samsudin, Z.M. Ariff, Z.A. Mohd Ishak, A. Ariffin, "**Relationship of Rheological Study with Morphological Characteristics of Multicomponent (Talc and Calcium Carbonate) Filled Polypropylene Hybrid Composites**", Journal of Reinforced Plastics and Composites, Vol 28 (21), 2577-2587, (2009)
 - 13) C.Y. Khor, Z.M. Ariff, F. Che Ani, M. Abdul Mujeebu, M.K. Abdullah, M.Z. Abdullah and M.A. Joseph, "**Three-dimensional numerical and experimental investigations on polymer rheology in meso-scale injection molding**", International Communication in Heat and Mass Transfer, Vol 37, 131-139, (2010)
 - 14) M.K. Abdullah, M.Z. Abdullah, M. A. Mujeebu, H. Gitano, Z.M. Ariff, R. Razali and K.A. Ahmad, "**Three-Dimensional Modelling of Mould Filling in Microchip Encapsulation Process with Matrix Array Arrangement**", Journal of Electronic Packaging, Vol. 132, Article Number: 014502, (2010).
 - 15) M. Khalil Abdullah, M. Z. Abdullah, M. Abdul Mujeebu, Z. M. Ariff, and K. A. Ahmad "**Three-Dimensional Modelling to Study the Effect of Die-Stacking Shape on Mould Filling During Encapsulation of Microelectronic Chips**" , IEEE Transactions On Advanced Packaging, Vol. 33 (2), 438-446, (2010)
 - 16) S. S. Jikan, Z. M. Ariff, A. Ariffin, "**Influence of filler content and processing parameter on the crystallization behaviour of PP/kaolin composites**", Journal of Thermal Analysis and Calorimetry, Vol. 102, 1011–1017, (2010)
 - 17) A. Ariffin, Z.M. Ariff and S.S. Jikan "**Effects of kaolin and maleic anhydride contents on melt elasticity and flexural behaviour of polypropylene/kaolin and unplasticised poly(vinyl chloride)/kaolin composites**", e-Polymers, Article No. 095, (2010)
 - 18) C. Y. Khor , M. K. Abdullah, M. Z. Abdullah, M. Abdul Mujeebu, D. Ramdan, M. F. M. A. Majid, Z. M. Ariff, "**Effect of vertical stacking dies on flow behavior of epoxy molding compound**

- during encapsulation of stacked-chip scale packages”, Heat Mass Transfer Vol 46, 1315–1325, (2010)
- 19) N. A. Abdul Rahim, Z. M. Ariff, A. Ariffin, S.S. Jikan, “**Study on Effect of Filler Loading on the Flow and Swelling Behaviors of Polypropylene-Kaolin Composites Using Single-Screw Extruder**”, Journal of Applied Polymer Science, Vol. 119, 73-83, (2011)
 - 20) N.N. Najib, Z.M. Ariff, A.A. Bakar, C.S. Sipaut, “**Correlation between the acoustic and dynamic mechanical properties of natural rubber foam: Effect of foaming temperature**”, Materials and Design, Vol. 32, 505–511, (2011)
 - 21) A. Ariffin, Z. M. Ariff, S. S. Jikan, “**Evaluation on nonisothermal crystallization kinetics of polypropylene/kaolin composites by employing Dobreva and Kissinger methods**”, Journal of Thermal Analysis and Calorimetry, 103, 171–177, (2011)
 - 22) C.Y. Khor, M.Z. Abdullah, M.K. Abdullah, M.A. Mujeebu, D. Ramdan, M.F.M.A. Majid, Z.M. Ariff, M.R. Abdul Rahman, “**Numerical analysis on the effects of different inlet gates and gap heights in TQFP encapsulation process**”, International Journal of Heat and Mass Transfer, 54, 1861–1870, (2011)
 - 23) A. Ariffin, Z.M. Ariff and S.S. Jikan, “**Evaluation on extrudate swell and melt fracture of polypropylene/kaolin composites at high shear**” Journal of Reinforced Plastics and Composites, 30(7) 609–619, (2011)
 - 24) Du Ngoc Uy Lan, A. Abu Bakar, B. Azahari, Z.M. Ariff and Y. Chujo, “**Porous epoxy microparticles prepared by an advanced aqueous method**”, Materials Letters, 65, 1655–1658, (2011)
 - 25) S. S. Samsudin, Z. M. Ariff, Z. Zakaria, A. A. Bakar, “**Development and characterization of epoxy syntactic foam filled with epoxy hollow spheres**”, eXPRESS Polymer Letters, Vol.5 No.7, 653–660, (2011)
 - 26) Du Ngoc Uy Lan, Shingo Hadano, A. Abu Bakar, B. Azahari, Z.M. Ariff, Yoshiki Chujo, “**Preparation of poly(methyl methacrylate) and polystyrene-composite filled porous epoxy microparticles via in-situ suspension polymerization**”, Polymer Testing, 30, 841–847, (2011)
 - 27) Du Ngoc Uy Lan, A. Abu Bakar, Baharin Azahari, Z.M. Ariff, Yoshiki Chujo “**Effect of interlocking between porous epoxy microparticles and elastomer on mechanical properties and deformation modes**”, Polymer Testing, 31, 931-937, (2012)
 - 28) C.Y. Khor, M.Z. Abdullah, Z.M. Ariff, W.C. Leong, “**Effect of stacking chips and inlet positions on void formation in the encapsulation of 3D stacked flip-chip package**”, International Communications in Heat and Mass Transfer, 39, 670–680, (2012)
 - 29) C.S. Sipaut, R.F. Mansa, A.R. Yugis, M.N.M. Ibrahim, Z.M. Ariff, A.A. Abdullah, “**The Effect of Different Peroxide on LDPE Foam Properties in The Presence of Polyfunctional Monomers**”, Cellular Polymers Vol. 31(3), 145 – 164, (2012)
 - 30) Muhammad Bisyrul Hafi Othman, Rafiza Ramli , Zulkifli Mohamad Ariff, Hazizan Md Akil , Zulkifli Ahmad, “**Thermal properties of polyimide system containing silicone segments**”, Journal of Thermal Analysis and Calorimetry, 109, 1515-1523, (2012)
 - 31) T.H. Khang and Z.M. Ariff, “**Vulcanization kinetics study of natural rubber compounds having different formulation variables**”, Journal of Thermal Analysis and Calorimetry, 109, 1545-1553, (2012)

- 32) Norwanis Hasan Syed Fuad Saiyid Hashim and Zulkifli Mohamad Ariff, "**The Influence Wall Thickness of Cement Hollow Spheres towards Compressive Properties of Cement Syntactic Foam**", *Advanced Materials Research* Vol. 701, 291-295, (2013)
- 33) Norwanis Hasan, Syed Fuad Saiyid Hashim and Zulkifli Mohamad Ariff, "**Low-Frequency Sound Proof Cement-Based Syntactic Foam**", *International Journal of Materials, Mechanics and Manufacturing*, Vol. 1, No. 4, 385-387, (2013)
- 34) Z. M. Ariff and T. H. Khang, "**Evaluation of Cadmould Software to Simulate the Filling Phase of a Natural Rubber Compound in Injection Moulding Process**", *Advanced Materials Research* Vol. 746, 571-574 (2013)
- 35) Z.A. Ghaleb, M. Mariatti, Z.M. Ariff, "**Properties of graphene nanopowder and multi-walled carbon nanotube-filled epoxy thin-film nanocomposites for electronic applications: The effect of sonication time and filler loading**", *Composites: Part A*, Vol. 58, 77–83 (2014)
- 36) S.R. Lim, Z.M. Ariff, W.S. Chow, "**Reprocessability of poly (ethylene terephthalate) nanocomposites: Effects of maleic anhydride grafted styrene–ethylene/butylene–styrene and N, N'-ethylenebis (stearamide)**", *Journal of Thermoplastic Composite Materials*, Vol 27(8), 1097-1111 (2014)
- 37) T. H. Khang and Z. M. Ariff. "**Mold Filling Simulation Dependence on Material Data Input for Injection Molding Process of Natural Rubber Compound.**" *International Polymer Processing*, Vol. 29(3) 325-331. (2014)
- 38) N.A.A. Rahim, Z.M. Ariff, A. Ariffin, Z. Zakaria, H. Osman, and H.C. Metselaar, "**Viscosity analysis of polypropylene-kaolin composites measured using single-screw extruder**", *Journal of Vinyl and Additive Technology*, 20(4), 275-283, (2014)
- 39) Siti Salwa Alias , Zulkifli Mohamad Ariff and Ahmad Azmin Mohamad. "**Porous membrane based on chitosan–SiO₂ for coin cell proton battery**" *Ceramics International*, 41(4), 5484-5491, (2015)
- 40) M. F. Hamid, M. K. Abdullah, H. Yusoff, Sheikh Mohd Firdaus, M. Z. Abdullah, Z. M. Ariff, and M. A. Azmi, "**Numerical Study of Mold Filling during Encapsulation Process**", *Applied Mechanics and Materials*, vol. 786, 318-322, (2015).
- 41) Ahmad Fikri Abdul Karim, Hanafi Ismail and Zulkifli Mohamad Ariff, "**Properties and Characterization of Kenaf-Filled Natural Rubber Latex Foam**", *BioResources*, 11(1), 1080-1091, (2015)
- 42) Zulkifli Mohamad Ariff, Zunaida Zakaria, Aazhar Abu Bakar and Mohamad Azwan Mad Naser. "**Effectiveness of A Simple Image Enhancement Method in Characterizing Polyethylene Foam Morphology using Optical Microscopy**", *Procedia Chemistry*, 19, 477-484, (2016)
- 43) A. Baharin, N. Abdul Fattah, A. Abu Bakar, and Z.M. Ariff. "**Production of Laminated Natural Fibre Board from Banana Tree Wastes**", *Procedia Chemistry*, 19, 999-1006, (2016)
- 44) Ahmad Fikri Abdul Karim, Ismail Hanafi, Zulkifli Mohamad Ariff, "**Effects of Hydrocolloid on Compression and Morphological Properties of Kenaf Filled Natural Rubber Latex Foam**" *Key Engineering Materials*, Vol. 694, 50-53, (2016)
- 45) M.S. Rusdi, M.Z. Abdullah, A.S. Mahmud, C.Y. Khor, M.S. Abdul Aziz, Z.M. Ariff, M.K. Abdullah "**Numerical Investigation on the Effect of Pressure and Temperature on the Melt Filling During Injection Molding Process**", *Arabian Journal for Science & Engineering*, 41, 5, (2016)
- 46) L.O. Salmazo, A. Lopez-Gil, Z.M. Ariff, A.E. Job, M.A. Rodriguez-Perez, "**Influence of the irradiation dose in the cellular structure of natural rubber foams cross-linked by electron beam irradiation**", *Industrial Crops and Products*, 89, 339–349, (2016)

- 47) Z.A. Ghaleb, M. Mariatti, Z.M. Ariff, **“Effect of Amino-functionalized on Tensile and Electrical Properties of Graphene Nanopowder Filled Epoxy Thin Film Nanocomposite”**, Journal of Polymer Materials, 33(1), 155-164, (2016)
- 48) Z.A. Ghaleb, M. Mariatti, Z.M. Ariff, **“Graphene nanoparticle dispersion in epoxy thin film composites for electronic applications: effect on tensile, electrical and thermal properties”**, Journal of Materials Science: Materials in Electronics, 28(1), 808-817, (2017)
- 49) Tan Yizong, Zulkifli Mohamad Ariff, Abdullah Muhammad Khalil, **“Influence of Processing Parameters on Injection Molded Polystyrene using Taguchi Method as Design of Experiment”**, Procedia Engineering, 184, 350 – 359, (2017)
- 50) Z.A. Ghaleb, M. Mariatti, Z.M. Ariff, **“Synergy effects of graphene and multiwalled carbon nanotubes hybrid system on properties of epoxy nanocomposites”** Journal of Reinforced Plastics and Composites, 36(9), 685-695, (2017)
- 51) Muniandy, K., Ariff, Z.M. and Bakar, A.A., **“Online Strain Measurement during Blown Film Extrusion using Digital Image Correlation.”** Journal of Mechanical Engineering SI(5), 154-165, (2018)
- 52) Ghaleb, Z.A., Mariatti, M., Ariff, Z.M. and Ervina, J., **“Preparation and properties of amine functionalized graphene filled epoxy thin film nano composites for electrically conductive adhesive”**. Journal of Materials Science: Materials in Electronics, 29(4), 3160-3169, (2018)
- 53) A.S.A. Razak, N.F. Gafri, M.A.A. Razali, Z M. Ariff, Z.A.A. Hamid & A. Ariffin, **“The impact of monomer loading on poly(methyl methacrylate) nano-emulsion as pour point depressant”**, Petroleum Science and Technology, 36:11, 793-800 (2018)
- 54) Karim, A.F.A., Ismail, H. and Ariff, Z.M., **“Effects of Kenaf Loading and Alkaline Treatment on Properties of Kenaf Filled Natural Rubber Latex Foam”**. Sains Malaysiana, 47(9), 2163-2169, (2018)
- 55) Zakaria, Z. Ariff, Z.M., Bakar, A.A., **“Monitoring deformation mechanism of foam cells in polyethylene foams via optical microscopy: Effect of density and microstructure”**. Journal of Cellular Plastics 54 (6), 957-976, (2018)
- 56) Salmazo, L.O. López-Gil, A., Ariff, Z.M., Rodriguez-Mendez, M.L. Job, A.E., Rodriguez-Perez, M.A., **“Study of the Foaming Kinetics in Epoxidized Natural Rubber Foams Crosslinked by Electron Beam Irradiation**, Macromolecular Chemistry and Physics 219 (21), 1800295, (2018)
- 57) Muniandy, K., Ariff, Z.M. and Bakar, A.A., **“Digital image correlation utilization in measuring displacement and strain during plastic film blowing process: A feasibility study”**. Measurement, 136, 487-500, (2019)
- 58) Afolabi, L.O., Ariff, Z.M., Megat-Yusoff, P.S.M. Al-Kayiem, H.H. Arogundade, A.I., Afolabi-Owolabi, O.T. **“Red-mud geopolymers composite encapsulated phase change material for thermal comfort in built-sector”**. Solar Energy 181, 464-474, (2019)
- 59) LO Afolabi, L.O., Megat-Yusoff, P.S.M., Ariff, Z.M., Hamizol, M.S. **“Fabrication of pandanus tectorius (screw-pine) natural fiber using vacuum resin infusion for polymer composite application”**. Journal of Materials Research and Technology 8 (3), 3102-3113, (2019)
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2. **Pernec Advanced Network Sdn. Bhd.**
 - a. TGA of Rubber Keypad (18/10/2004)
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 - a. Technical Short Course –Lecture in Polymer Technology (8 – 15 July 2004)
23. **Intel (M) Sdn. Bhd.**
 - a. Title: Polymer Testing and Characterisation (specifically for electronic packaging) - USM Polymer Short Course for Intel Materials Engineers (19 - 20 June 2007)
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- 34. BARD Sdn. Bhd.**
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 - a. Gel Content Measurement for PP Sample (19/11/2010)
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 - a. FTIR Analysis of Plastic Product (04/05/2011)
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- 49. Escatech Electronics Sdn. Bhd..**
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- 50. SAM Precision (M) Sdn. Bhd..**
 - a. DSC & TGA Analysis of Plastics Product (10/06/2011)
- 51. Silitech Technology Corp. Sdn. Bhd.**
 - a. Material Degradation Test for Polyamide Product (15/06/2011)
 - b. Material Degradation Test (VN Analysis) (1/11/2011)
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- 52. Dragon Frontier Sdn. Bhd.,**
 - a. Lab Test of PPGF 30% Broken Moulded Part, (1/11/2011)
- 53. B.Braun Medical Industries Sdn. Bhd.**
 - a. Analysis of crack moulded part (17/7/2012)
- 54. B.Braun Medical Industries Sdn. Bhd.**
 - a. Analysis of PUR Tubing (3/8/2012)
- 55. Det Norske Veritas Sdn. Bhd**
 - a. Analysis of Electrical Cable Insulation (10/5/2012)
 - b. Analysis of Electrical Cable Insulation (11/9/2012)
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 - a. Rheological behaviour assessment and filler content determination for 30% GF PBT (11/5/2012)
- 57. Philips Lumileds Lighting Company Sdn. Bhd.**
 - a. Assessment of cure cycle for silicone material (DSC test) (13/7/2012)
- 58. Silitech Technology Corp. Sdn. Bhd.**
 - a. Intrinsic viscosity test for PBT moulding (11/5/2012)
- 59. Kedah Industrial Skills and Management Development Centre (KISMEC)**
 - a. Train The Trainer on Plastic Testing and Advance Injection Moulding Technique – Lecture Title: Plastic Materials Application and Properties (30/9/2013)
- 60. Malaysian Human Resource Department**

- a. Technical Advisor for Advance Material Technology (Polymer) course in Advance Technology Centre, Perak, Malaysia (2012 -2016)

61. CPI (Penang) Sdn. Bhd.

- a. Long term technical consultation activity (1/7/2014 – 30/6/2015)

62. Politeknik Education Department

- a. External Curriculum Evaluator for Plastic Technology course at Politeknik Sultan Mizan Zainal Abidin, Terengganu, Malaysia (2015 – 2018)

63. CPI (Penang) Sdn. Bhd.

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64. Malaysian Human Resource Department

- a. Technical Advisor for Advance Material Technology (Polymer) course in Advance Technology Centre, Perak, Malaysia (2016 -2018)

65. SMT Technologies Sdn. Bhd.

- a. Fourier Transform Infrared Spectroscopy and Thermogravimetric Analysis (17/8/2016)

66. Hiyori Industries Sdn. Bhd.

- a. Fourier Transform Infrared and Thermogravimetric Analysis for HDPE Plastic Component (11/11/2016)

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- a. Technical Advisor for Advance Material Technology (Polymer) course in Advance Technology Centre, Perak, Malaysia (2018 -2020)

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