**Submitted to:
Institution of Engineers, Malaysia
for Professional Interview**

2001-2011

**Report on
Training & Experience**

**Dr. Abu Bakar Sulong**

**Senior Lecturer
Dept. of Mechanical & Materials Engineering
Faculty of Engineering & Built Environment
Universiti Kebangsaan Malaysia
43600 UKM Bangi, Selangor**

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 **Appendix: Sample of technical journals**

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| **Prepared by:****………………………………………****Dr. Abu Bakar Sulong****Dept. of Mechanical & Materials Engineering****Faculty of Engineering & Built Environment****Universiti Kebangsaan Malaysia** | **Certified by:****…………………………………****Prof. Ir. Dr. Yusoff Ali****Dept. of Mechanical & Materials Engineering****Faculty of Engineering & Built Environment****Universiti Kebangsaan Malaysia** |

# ****Introduction****

Dr. Abu Bakar Sulong is applying for a professional interview with the Institution of Engineers Malaysia (IEM) under the Mechanical Engineering discipline. This report contains the candidate’s Mechanical Engineering training and experience. It is presented to conform to the requirement of “The Professional Interview Regulations for Entry and Submission of Documents”.

The candidate experience and training can be summarised as follows. He graduated from Gifu University, Gifu, Japan with a Bachelor of Engineering degree (B. Eng) in Mechanical and System Engineering in 24th March 2001. After graduation, he was employed by SMK Corporation (Japan) serve as a Training Engineer at the Department of Research and Development at Ibaraki Branch from April 2001 until November 2001. He continued as a Research & Development Engineer at SMK Electronics (M) Sdn Bhd, Selangor from Dec 2001 until Dec 2002. Then, he moved to Promaxus Sdn Bhd, Selangor as a Logistic Engineer from Jan 2003 until December 2003. Due to his high interest in advanced research and continuos life-long learning, he was employed by Universiti Kebangsaan Malaysia (UKM) serve as a tutor at Department of Mechanical and Materials Engineering, Bangi campus from Dec 2003 until March 2004. In order to be appointed as a university lecturer which required a postgraduate degree, he was offered a scholarship to pursue graduate study at the Department of Mechanical Engineering, Sejong University, Seoul, South Korea. He graduated from Sejong University in February 2008 with a Doctor of Engineering degree (D.Eng) in Mechanical Engineering. In him D.Eng works, his focused on functionalized carbon nanotubes reinforced polymeric composites by development of manufacturing process, alignment and material characterization. He returned to UKM where he was appointed to be a senior lecturer in March 2008. As a research university’s lecturer, he highly involve in research and engineering education. He also been appoint as research fellow at Cell Fuel Institute in UKM from May 2008. Till date he been heading of four research grants and co-reseacher of ten research grant which worth more than RM4.5 million. He has published more than 70 papers in international and national mechanical engineering journals and conferences.

Out of the total of 127 months as reported in the Application for Election as Member (from April 2001 to Oct 2011), the candidate engineering experience and training after graduation, consists of 95 months on teaching, research and administration in academic institution, 21 months for design and 11 months for planning/management.

# ****Summary of Training and Experience****

## Academic Experience

|  |  |  |
| --- | --- | --- |
| **Date** | **Description of Academic Training** | **Duration(months)** |
| April 1997 - March 2001 | Dept. of Mechanical and System,Gifu University, Gifu, JapanBachelor of Engineering (Mechanical and System Engineering) | 47 |
| April 2004 – Feb 2008 | Department of Mechanical EngineringSejong University, Seoul, South KoreaDoctor of Engineering (Mechanical Engineering) | 46 |
| **TOTAL TIME OF ACADEMIC TRAINING** | **93 months** |

## Positions and Administrations

### Academic Positions

|  |  |
| --- | --- |
| **Date** | **Position** |
| Dec 2003 - March 2004 | Tutor at Dept. of Mechanical & Materials Engineering, Faculty of Engineering & Built Environment, UKM |
| March 2008 – present | Senior Lecturer at Dept. of Mechanical & Materials Engineering, Faculty of Engineering & Built Environment, UKM |

### Administration Positions

|  |  |
| --- | --- |
| **Date** | **Position** |
| August 2011 - present | * Coordinator for Manufacturing program of Undergraduate student in Dept of Mechanical & Materials Engineering
 |
| March 2008 – August 2011 | * Coordinator for Undergraduate student’s academic and co-curiculum development
 |
| June 2010 – present | * Coordinator for Flight Science course at Camp for PERMATAPintar Negara, UKM
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## Professional Experience

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Description of Professional Training** | **Report To** | **Duration(months)** |
| **Apr 2001-Nov 2001** | **Training Engineer (R&D Department)**SMK Corporation, JapanIbaraki BranchWork scope :R&D training of products which manufactured in SMK Electronics (M) Sdn Bhd, focused on pin jacks and connectors. It covers from requirement from * discussion with customer (SONY,SHARP etc) either can use existing products, minor/major modification or new develop products
* research & development for minor/major modification or newly develop products by using 2D CAD facilities. Parts assembly and Design for Manufacturing are considered. Main parts are from polymer injection molding and metal stamping. Dimension and tolerance will given based on fitting condition.
* testing for quality approval. Every parts and its assembly need to qualify specifications. Examples of tests are push test, drop test, short circuit test, screw fitting test and environment test.
* Monitoring fabrication of jig, fixture and pakayoke for assembly. Then monitoring pilot manufacturing by given input from Quality Control dept.
 | Mr Sakuragi (Senior Engineer, Ibaraki branch of SMK Corporation, Japan) | 8 |
| **Dec 2001-Dec 2002** | **R&D Engineer** SMK Eelectronis (M) Sdn Bhd, Beranang, SelangorWork scope :R&D of products manufacturing for SMK Electronics (M) Sdn Bhd. It covers from * discussion with customer (SONY,SHARP etc) either can use existing products, minor/major modification or new develop products
* research & development for minor/major modification or newly develop products by using 2D CAD facilities. Parts assembly and Design for Manufacturing are considered. Main parts are from polymer injection molding and metal stamping. Dimension and tolerance will given based on fitting condition.
* testing for quality approval. Every parts and its assembly need to qualify specifications. Examples of tests are push test, drop test, short circuit test, screw fitting test and environment test.
* Monitoring fabrication of jig, fixture and pakayoke for assembly. Then monitoring pilot manufacturing by given input from Quality Control dept.
* response to any problems relate to design defect at quality assurance stage.
 | Mr Wong (Senior Engineer, SMK Electronics Sdn Bhd, Selangor) | 13 |
| **Jan 2003-****Nov 2003**  | **Logistic Engineer**Promaxus Sdn Bhd, Shah Alam, SelangorWork scope :Planning mass production of intake and exhaust engine valve for Perodua OEM market. Based on production quantity, * purchasing of raw materials, main material is specialized steel rod only can be imported from Japan.
* main manufacturing processes are machining (turning, grinding), forging and heat treatment. Therefore, all required jigs and fixtures are purchased
* planning for production capacity based on machine performance and condition
* Manage and control delivery schedule to customer.
* Planning of lot production for replacement market
 | En Mohd Hidzir Yahaya (Managing Director, Promaxus Sdn Bhd) | 11 |
| **Dec 2003-March 2004** | **Tutor** Dept. Mechanical and Materiala Engineering Universiti Kebangsaan Malaysia , SelangorWork scope :Helping student on tutorial and work lab in Dept of Mechanical and Materials Engineering, UKM | Prof Dr Ahmad Kamal Ariffin(Head Department) UKM | 4 |
| **Date** | **Description of Professional Training** | **Report To** | **Duration(months)** |
| **April 2004-****Feb 2008** | **D. Eng (PhD) Student Researcher** Dept of Mechanical Engineering (Advanced Material Processing Laboratory)Work scope :Doing Doctorate in Engineering full time in the field of polymer nano compositeIn 1st and 2nd year of study, there are requirement to take 15 courses which bring to 45 credits. All courses are advanced mechanical engineering course. In parallel below research had been carried out.1. Preparation and characterization of carbon nanotubes for reinforcement fillers in polymeric composite. Chemical functionalization were carried out by wet and dry oxidation. Characterization methods by TEM, SEM, TGA, Raman and XRD.
2. Carbon nanotubes reinforced epoxy composites had been formed by mechanical mixer and compression molding. Characterization of mechanical and electrical properties.
3. Alignment of carbon nanotubes in polyethylene through extrusion prosess (self construted alignment system). Characterization of alignment by observation under SEM and TEM after specimen had been slice under microtoming process.
4. Alignment of carbon nanotubes in polyethylene fibers through melt spinning. Self constructed melt spinning device had been constructed. Characterization of alignment by observation under SEM and TEM after specimen had been slice under microtoming process.
 | Prof Dr Joohyuk Park(Head Dept. of Mechanical Engineering, Sejong University)  |  46 |

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| **Date** | **Description of Professional Training** | **Report To** | **Duration(months)** |
| **March 2008-****Dec 2008** | **Senior Lecturer (UKM)*** Senior Lecturer at the Dept of Mechanical and Materials Engineering, UKM

 Work scope :* Teaching undergraduate and postgraduate, student mentor, supervise undergraduate and postgraduate in research, collaborate with industries and other institution in research, organize and participate in short course, seminar, workshop, conference in Malaysia and overseas

Final two years engineering course and postgraduate course (Teaching)1. Manufacturing Process II KP30232. FEM for Manufacturing KP42633. Polymer and Composite Processing KP61234. CAD/CAM KP6523Research and Development1. Development and Design of Jig for Computer assisted Total Knee Replacement (TKR) Surgery(25/8/2008 ~ 30/11/2011) Principal researcherOverview: Existing procedure in computer assisted TKE surgery using manual guidance to place saw during machining of tibia and femur bone. Thus, cause problem in misalignment and positioning of implant. Thefore, a jig system had been develop by engineering approach. Where from idea, selection of idea using Pugh Method. Then drawn assembly and part drawing using CAD software. Reverse engineering aslo been applied for part drawing. 3D visual reality software had been developed by callobarator to view assembly of jig and positioning during surgery. Then, prototype had been fabricated by machining process. Protype han been tested using artificial bone with handle by HUKM orthopaedic surgeon. Currently patent and protype had been proposed. Then, in order to reduce manufacturing cost, processability by fabrication a part in jig system using metal injection molding in progress.2. Influence of conductivity improvement of bipolar plate on the Polymer Exchange Membran Fuel Cell stack performance. (1/6/2008 ~ 30/6/2012) Co-researcher | Prof Dr Norhamidi Muhamad (Head Dept of Mechanic and Materials, UKM)Prof Dr Che Hassan Che Haron (Director, Centre of Research & Innovation Management, UKM)  | 99 |

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| --- | --- | --- | --- |
| **Date** | **Description of Professional Training** | **Report To** | **Duration(months)** |
| **Jan 2009-****Dec 2009** | **Lecturer (UKM)*** Lecturer at the Dept of Mechnical and Materials Engineering, UKM

 Work scope :* Teaching undergraduate and postgraduate, student mentor, supervise undergraduate and postgraduate in research, collaborate with industries and other institution in research, organize and participate in short course, seminar, workshop, conference in Malaysia and overseas

Final two years engineering course and postgraduate course (Teaching)1. Manufacturing Process II KP30232. FEM for Manufacturing KP42633. Facilities Planning KP34334. Polymer and Composite Processing KP6123 5. CAD/CAM KP6523Research and Development1. Development and Design of Jig for Computer assisted Total Knee Replacement (25/8/2008 ~ 30/11/2011)Principal researcherOverview: mentioned before2. Influence of conductivity improvement of bipolar plate on the Polymer Exchange Membran Fuel Cell stack performance. (1/6/2008 ~ 30/6/2012) Co-researcher3.New Material for Cell Fuel and Hydrogen Technology. (1/7/2009 ~ 30/6/2012)Co-researcher4.Application of Micro Powder Injection Molding on Fabrication of Dental Surgery Component. (1/7/2009 ~ 31/12/2011) Co-researcher5.Development of A Novel Method to Produce Polymer Fiber Using Electrospinning(26/11/2009 ~ 30/4/2012) Principal researcherOverview: Electrospinning is one of the effective methods to produce polymer fibers in nano size of diamater, which have been successfully used as filters for air filtration, as templates for making tubular nanostructures such as metal nanotubes, metal oxide nanotubes or polymer nanotubes, and as substrates for forming hierarchical carbon nanostructures.Electrospun nanofibers are also finding uses in protective clothing, nanocomposites, optical sensors, biomedical applications including biomedicine, scaffolding for tissue growth, drug delivery systems, and for solar sails in space. For macroscopic applications such as clothing, solar sails in space, or media for filtration, stronger polymer nanofibers are desired. Compared to conventional method used for fabrication of polymer fibers, such as melt spinning and dry spinning which required melting equipment to melt polymer feedstock and longer time for solidification of fibers. However, Electrospinning not require such facilities which significantly reduce production cost. The main objectives of this research are to develop Electrospinning system and optimization process parameters. At the end of this research, a prototype of scaffold is expected to be fabricated. Polymer fibers fabricated from electrospinning have huge potential applications in researches at UKM. It can be used in tissue engineering, mechanical structure reinforcements, panel for renewable energy, membrane for filtration, storage for hydrogen and others.  | Prof Dr Norhamidi Muhamad (Head Dept of Mechanic and Materials, UKM)Prof Dr Che Hassan Che Haron (Director, Centre of Research & Innovation Management, UKM)  | 1212 |
| **Date** | **Description of Professional Training** | **Report To** | **Duration(months)** |
| **Jan 2010-****Dec 2010** | **Lecturer (UKM)*** Lecturer at the Dept of Mechnical and Materials Engineering, UKM

 Work scope :* Teaching undergraduate and postgraduate, student mentor, supervise undergraduate and postgraduate in research, consultation for oil and gas industries ,collaborate with industries and other institution in research, organize and participate in short course, seminar, workshop, conference in Malaysia and overseas

Final two years engineering course and postgraduate course (Teaching)1. Manufacturing Process II KP30232. FEM for Manufacturing KP42633. Facilities Planning KP34334. Polymer and Composite Processing KP6123 5. CAD/CAM KP6523Research and Development1. Development and Design of Jig for Computer assisted Total Knee Replacement (25/8/2008 ~ 30/11/2011)Principal researcherOverview: mentioned before2. Influence of conductivity improvement of bipolar plate on the Polymer Exchange Membran Fuel Cell stack performance. (1/6/2008 ~ 30/6/2012) Co-researcher3. New Material for Cell Fuel and Hydrogen Technology. (1/7/2009 ~ 30/6/2012)Co-researcher4. Application of Micro Powder Injection Molding on Fabrication of Dental Surgery Component. (1/7/2009 ~ 31/12/2011) Co-researcher5.Development of A Novel Method to Produce Polymer Fiber Using Electrospinning(26/11/2009 ~ 30/4/2012) Principal researcher6.Design and Fabrication of Surface Topology as a tool for Stem Cells Differentiation through Morphological Regulation (1/10/2010 ~ 30/9/2012) Co-researcher7. Design, manufacturing and testing for 5kW Fuel Cell car performance. (1/10/2010 ~ 30/9/2012)Co-researcher8.A Novel process of Incorporating Chemical Surface Modified Stainless Steel/Carbon nanotubes in polymer Matrix Composites (1/6/2010 ~ 30/6/2012) Principal researcherOverview: Metal and polymer are well known to have contrast properties between them. Therefore, combination of high strength and high electrical properties of metal and chemical resistance and corrosion resistance of polymer are always desired for applications when balance between given properties are required. The conducting polymers coated on the metal plates increased their corrosion resistance, but it not suitable for complex and mass production. Although polymeric composite materials have many advantages that make them a promising alternative to graphite, further improvements are needed for them to meet the diverse functions that are required. To obtain high electrical conductivity, high carbon concentrations are needed. However, if the filler concentration is too high, the strength of the composite is reduced. To overcome this reduction in the mechanical properties, a stainless steel core is sometimes inserted. Slippage and delamination between the metal and polymer (due to a lack of adhesion) are other problems that need to be solved. The contact resistance between the steel and carbon-filled polymer, due to the presence of a filler deficient layer near the surface of the steel core, should be minimized. An increase in the electrical contact resistance results in power loss and higher cost. These problems should be overcome before these materials can be used for their intended applications. The deposition of noble metals, carbides, nitrides and carbon on metallic plates has been reported in attempt to minimize their contact resistance and improve their corrosion resistance. However, noble metal coatings are too expensive to be used for certain applications. Recently, carbon nanotubes (CNTs) have been added to polymer films to decrease their contact resistance. Novel method in this study is to introduce chemical functional groups on the surface of stainless steel powder and carbon nanotubes (CNTs) in order to decrease contact resistance between it and polymer matrix composite. CNTs with high aspect ration (smaller diameter with longer tubes) and high mechanical strength (~ 1 TPa Young Modulus) able to form network and bridge between stainless steel powder and polymer. Thus, reduce and/or eliminate delamination effect between metal and polymer.  | Prof Dr Norhamidi Muhamad (Head Dept of Mechanic and Materials, UKM)Prof Dr Che Hassan Che Haron (Director, Centre of Research & Innovation Management, UKM  | 12 12 |

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| --- | --- | --- | --- |
| **Date** | **Description of Professional Training** | **Report To** | **Duration(months)** |
| **Jan 2011-****Oct 2011** | **Lecturer (UKM)*** Lecturer at the Dept of Mechnical and Materials Engineering, UKM

 Work scope :* Teaching undergraduate and postgraduate, student mentor, supervise undergraduate and postgraduate in research, consultation for oil and gas industries ,collaborate with industries and other institution in research, organize and participate in short course, seminar, workshop, conference in Malaysia and overseas

Final two years engineering course and postgraduate course (Teaching)1. Manufacturing Process II KP30232. FEM for Manufacturing KP42633. Polymer and Composite Processing KP6123 4. CAD/CAM KP6523Research and Development1. Development and Design of Jig for Computer assisted Total Knee Replacement (25/8/2008 ~ 30/11/2011)Principal researcherOverview: mentioned before2. Influence of conductivity improvement of bipolar plate on the Polymer Exchange Membran Fuel Cell stack performance. (1/6/2008 ~ 30/6/2012) Co-researcher3. New Material for Cell Fuel and Hydrogen Technology. (1/7/2009 ~ 30/6/2012)Co-researcher4. Application of Micro Powder Injection Molding on Fabrication of Dental Surgery Component. (1/7/2009 ~ 31/12/2011) Co-researcher5.Development of A Novel Method to Produce Polymer Fiber Using Electrospinning(26/11/2009 ~ 30/4/2012) Principal researcherOverview: mentioned before6.Design and Fabrication of Surface Topology as a tool for Stem Cells Differentiation through Morphological Regulation (1/10/2010 ~ 30/9/2012) Co-researcher7. Design, manufacturing and testing for 5kW Fuel Cell car performance. (1/10/2010 ~ 30/9/2012)Co-researcher8.A Novel process of Incorporating Chemical Surface Modified Stainless Steel/Carbon nanotubes in polymer Matrix Composites (1/6/2010 ~ 30/6/2012) Principal researcher9.Effect of Metal Injection Molding (MIM) Processing Parameters on the Intra Networking Phase of Novel Hybrid Materials (6/6/2011 ~ 5/6/2013) Principal researcherOverview: Currently, increasing of demand in medical, automotive and aeronautical industry of smaller metal product with complex geometries, precise dimensions, mass quantity and tremendously reduction in unit price. Conventional machining and metal casting process cannot meet these requirements. Metal Injection Molding (MIM) is among the most potential net-shape manufacturing technology which is capable of fullfill of these requirements. High capital cost and high knowledge are required for Malaysian intreprenuers to be in this industry. In Malaysia, only UKM and SIRIM have capability of full line processesing equipments in MIM which consist of four steps (small batch mixer, dedicated injection molding for MIM, solvent/thermal debinding, high vacuum sintering for diffusion). Research in single material such as Titanium, Stainless Steel, Zirconia, and Tungsten Carbide are on-going in UKM. Most of the implants in market today are fabricate through the machining process from Titanium and Stainless Steel, which is high in fabrication cost and do not have bioactive properties compared to implants from Hydroxyapatite (HA). Eventhough HA is bioactive material where it can promote growth on a bone structure on it, low strength and brittle characteristics of HA hindered it usage in most application. Balance of bioactive and structural integrity on implant are necessary for future development of implant. However, there are limited reports on fabrication of different phase (metallic and ceramic) through MIM. Therefore, the main objective of this study is to establish new knowledge in processing window of metal (stainless steel)-ceramic (HA) powder through MIM process, especially during sintering process to fully understand diffusion mechanism of two different materials to form intra networking phase. The expected output is new knowledge and colleration effects of two phase materials (metallic and ceramics) on the MIM parameters for fabrication of intra networking sintered components.. Ultimately, this will reduce the unit price of implant tremendously which will help patients all over the world.10.Effect of vanadium Carbide (VC) on the Properties and Microstructure of Ultrafine tungsten Carbide (WC-10C0) Component Produced by Micro Powder Injection Molding Process (6/6/2011 ~ 5/6/2014)Co-researcher11.Characterization and Peridynamic Modeling of Shape Memory Alloy-based Self-Healing Composite Aerospace (21/6/2011 ~ 20/12/2013) Co-reseacher12.Electrically Conducting polymer Composites for fuel Cell Bipolar Plate(21/6/2011 ~ 20/6/2014)Co-reseacher13.Characterisation and Evaluation of the Effect of Nano Powders in the Metal Injection Molding Process (21/6/2011 ~ 20/6/2014) Co-researcher  | Prof Dr Norhamidi Muhamad (Head Dept of Mechanic and Materials, UKM)Prof Dr Che Hassan Che Haron (Director, Centre of Research & Innovation Management, UKM   |  1212  |
| **TOTAL TIME OF PROFESSIONAL TRAINING** |  | **127** |

## Teaching Experience

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| --- | --- | --- | --- |
| **No.** | **Code and Course Name** | **Types of Programme** | **Year** |
| 1. | KKKP2023  KKKP3023KKKP4914 KKKP4926KKKP6123  | Manufacturing Process I Manufacturing Process IIFinal Project IFinal Project IIPolymer & Composite Processing | Bachelor of Engineering 4‑year programme (Mechanical & Manufacturing Eng.)MEng (Manufacturing System Eng.) | 2008 |
| 2. | KKKF1114KKKP3023  KKKP4263KKKP4914 KKKP4926KKKP6123 KKKP6523 | Introduction to EngineeringManufacturing Process II FEM for Manufacturing Final Project IFinal Project IIPolymer & Composite CAD/CAM | Bachelor of Engineering 4‑year programme (Mechanical & Manufacturing Eng.)MEng (Manufacturing System Eng.) | 2009 |
| 3. | KKKF1111KKKP3023 KKKP4263KKKP4914 KKKP4926KKKP6123 KKKP6523  | Engineering Profesionalisme IManufacturing Process II FEM for Manufacturing Final Project IFinal Project IIPolymer & Composite CAD/CAM  | Bachelor of Engineering 4‑year programme (Mechanical & Manufacturing Eng.)MEng (Manufacturing System Eng.) | 2010 |
| 4. | KKKF1121 KKKP3023 KKKP4263KKKP4914 KKKP4926KKKP6123 KKKP6523  | Engineering Profesionalisme IIManufacturing Process II FEM for Manufacturing Final Project IFinal Project IIPolymer & Composite CAD/CAM  | Bachelor of Engineering 4‑year programme (Mechanical & Manufacturing Eng.)MEng (Manufacturing System Eng.) | 2011 |

## MSc/MEng and PhD Supervisions

### Completed

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Thesis Title and Level** | **Student’s Name** | **Year** |
|  | Influence of addition normal and fine filler on the mivroelectronic package gate chipping mechanism during degating process. (Supervisor) - MEng  | GAN TEK KEONG (G76979) | 2008-2009 |
|  | Energy absorption behavior on pultruded fiber e-glass/polyester compsoites under oblique loading for crash energy reduction. (Supervisor) – MEng  | ABDULLAH ATIQ ARIFIN(G77171) | 2009-2010 |
|  | High Pressure Die Casting: Acceptance of machine and mold by stataiscally method. (Supervisor) MEng  | MOHD ASHIF AHMAD (G76745) | 2009-2010 |
|  | Effect of injection molding parameters and feedstock types on the warpage and shrinkage of micro gear polymer composite through mold flow analysis. (Supervisor) – MEng  | EGHBAL HAKIMIAN (GP00099) | 2009-2010 |
|  | Communication Management for aircraft composites component design and built project (Supervisor) – MEng | MD JASMI MD ARIS (GP00456) | 2009-2010 |
|  | Design and analysis plastic material flow of cutting jig for knee replacement. (Supervisor) – MEng | MUHAMAD AFKAR HUSIN (GP00542) |  2010-2011 |
|  7. | Effect of ultraviolet radiation on the mechanical properties of Polypropylene copolymer with UV stabilizer concentrations. (Supervisor) – MEng  | SHAIFUL HAILI SHARON (GP00750) |  2010-2011 |
|  8. | Mechanical properties of hybrid Wooven Banana/Glass Fibre reinforced epoxy composite. (Supervisor) – MEng | MUSTAFIZUL HILMIE ABD RAHMAN (GP00684) | 2010-2011 |
|  |  |  |  |

### Currently Under Supervision

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Thesis Title and Level** | **Student’s Name** | **Year** |
| 9. | Development of Compression Moldable Thermoset Polymer Composite Bipolar Plate for PEM Fuel Cell. (co-supervisor) – PhD thesis | HENDRA SUHERMAN(P42529) | From 2007 |
| 10. | Kajian pengoptimuman parameter pengacuan suntikan logam mikro menggunakan rekabentuk eskperimen. (co-supervisor) – PhD thesis | MOHD HALIM IRWAN IBRAHIM(P43310) | From 2007 |
| 11. | Penghasilan komponen mikro melalui proses pengacuan suntikan logam mikro (µMIM). (co-supervisor) – PhD thesis | MURTADHAHADI (P40718) | From 2007 |
| 12. | Optimization of injection moulding parameters and solvent debinding parameters for 16micron stainless steel powder (SS316L) by taguchi method. (Main supervisor) – MSc thesis | MUHAMMAD ILMAN HAKIMI CHUA ABDULLAH (P52147) | From 2009 |
| 13. | Metal Injection Molding of Magnesium Alloy using Palm Stearin Binder System. (Co-supervisor) – PhD thesis | MOHD RUZI HARUN(P48972) | From 2008 |
| 14. | Thermal shock resistance of alumina (containing 20% weight siO2) matrix composites reinforced with nickelparticle. (Co-supervisor) – PhD thesis | ISWANDI(P46816) | From 2009 |
| 15. | Development of titanium foam by using tapioca starch as a novel spacer through space holder techniques. (Co-supervisor) – MSc thesis | AMIRHOSSEIN MANSOURIGHASRI (P48000) | From 2009 |
| 16. | Development novel method to produce fiber through electrospinning. (Main supervisor) – MSc thesis | SITI SANIAH AB KARIM (P55854) | From 2010 |
| 17. | Fabrication of tungsten carbide dental bur through micro powder injection molding. (Co-supervisor) – MSc thesis | HENG SHYE YUNN (P54636) | From 2010 |
| 18. | Processability of nano yttria stabilized zirconia with binder system of palm stearin based in micro metal injection molding (µMIM). (Co-supervisor) – MSc thesis | FARHANA MOHD FOUDZI (P52470) | From 2009 |
| 19. | MIM using SS316L with palm stearin. (Main supervisor) – MSc thesis | MOHD FAZURI ABDULLAH (P53329) | From 2010 |
| 20. | Effect of Functionalization of Fillers on the Electrical Conductivity of Nanocomposite. (Main supervisor) – MSc thesis | NISHATA ROYAN A/P RAJENDRAN (P53326) | From 2010 |
| 21. | Effect of Metal Injection Molding (MIM) Processing Parameters on the Intra Networking Phase of Novel Hybrid Materials (Main supervisor) – MSc thesis | MOHD IKRAM BIN RAMLI | From 2011 |

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| **No.** | **Research Title and Description** | **Status/Duration** | **Financial Resources** |
| 1. | Design, Development, and fabrication of Jig for Computer Assisted Total Knee Replacement (Principal researcher) | June 2008- June 2011 | Research University Fund GUP: UKM-GUP-NBT-08-26-092(RM 250,000) |
| 2. | Influence of improvement bipolar plate conductivity on the performance of stack for PEMFC (Co-researcher) | June 2008-June 2012 | : UKM-GUP-TK-08-17-063(RM 150,000) |
| 3. | Development of a novel method to produce polymer fiber using electrospinning (Principal researcher) | Nov 2009-Oct 2011 | Fundamental Research Grant Scheme FRGS: UKM-KK-02-FRGS0124-2009(RM 50,000) |
| 4. | New Material in Sel Fuel and Hydrogen Energy (Co-researcher) | July 2009-June 2011 | Research University Fund GUP: UKM-AP-TK-05-2009(RM 730,000) |
| 5. | Application of micro injection molding for fabrication of dental surgery components (Co-researcher) | July 2009-June 2011 | Research University Fund GUP: UKM-AP-NBT-11-2009(RM 827,800) |
| 6. | A novel process of incorprating chemical surface modified stainless steel/carbon nanotubes in polymer matrix composite (Principal researcher) | June 2010- June 2012 | Research University Fund GUP: UKM-GGPM-NBT-078-2010(RM 30,000) |
| 7. | Design and fabrication of surface topology as a tool for stem cells differientation through morphologucal regulation (Co-researcher) | June 2010- July 2012 | Research University Fund GUP: UKM-AP-TKP-10-2010(RM 350,000) |
| 8. | Creativity and inovation enhancement gifted students, PERMATA (Co-researcher) | June 2010 – July 2012 | UKM-PERMATA-11-2010(RM958,400) |
| 9. | Design, fabrication and performace test 5kW Cell Fuel Car (Co-researcher) | June 2010 – June 2012 | Research University Fund GUP: UKM-AP-TK-08-2010(RM 350,000) |
| 10. | Effect of Metal Injection Molding (MIM) Processing Parameters on the Intra Networking Phase of Novel Hybrid Materials (Principal researcher) | June 2011 – June 2013 | Fundamental Research Grant Scheme FRGS: FRGS/1/2011/TK/UKM/02/20(RM 165,200) |

## Research Experience

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| **No.** | **Research Title and Description** | **Status/Duration** | **Financial Resources** |
| 11. | Characterization and Peridyanamic Modeling of Shape Memory Alloy-based Self-Healing Composites Aerospace (Co-researcher) | June 2011-Dec 2013 | ERGS/1/2011/TK/UKM/01/2(RM225,000) |
| 12. | Characterization and Evaluation of The Effect of Nano Powders in the Metal Injection Molding Process (Co-researcher) | June 2011-June 2014 | ERGS/1/2011/TK/UKM/01/8(RM 106,000) |
| 13. | Electrically Conducting Polymer Composites for Fuel Cell Bipolar Plate (Co-researcher) | June 2011-June 2014 | ERGS/1/2011/TK/UKM/01/20(RM 108,000) |
| 14. | Effect of Vanadium Carbide (VC) on the Properties and Microstructure of Ultrafine Tungsten Carbide (WC-10Co) Component Produced by Micro Powder Injection Molding Process (Co-researcher) | June 2011-June 2014 | FRGS/1/2011/TK/UKM/01/6(RM 196,400) |
|  |  |  |  |

## List of Publications

Up to date, the candidate has published 34 articles in international journal and 40 articles in conference proceedings. The list is as follows:

### International Journals

1. Abu Bakar Sulong, Joohyuk Park, Che Husna Azhari, Kamaruzaman Jusoff. Process optimization of melt spinning and mechanical strength enhancement of functionalized multi-walled carbon nanotubes reinforcing polyethylene fibers, *Composites: Part B* 2011;42:11-17 (ISI WoS & Scopus)

2. Mohd Fazuri Abdullah, Abu Bakar Sulong, Norhamidi Muhamad, Muhammad Ilman Hakimi Chua Abdullah, Nor Hamdan Nor Yahya. Comparison on rheology properties of polypropylene and polyethylene as binder system with stainless steel 316L for metal injection molding. *Key Engineering Materials* 2011;471-472:409-414 (Scopus)

3. Muhamad Ilman Hakimi Chua, Abu Bakar Sulong, Norhamidi Muhamad, Mohd Fazuri Abdullah, Che Hassan Che Haron. Optimization of injection paramaters using 16um stainless steel powder (SS316L) at 63,63.5,64 vol% powder loading by taguchi method for metal injection molding. *Key Engineering Materials* 2011;471-472:558-562 (Scopus)

4. Heng Shye Yunn, Norhamidi Muhamad, Abu Bakar Sulong, Abdolali Fayyaz, Haw Pei Li. Critical solid loading and rhelogical study of WC-10% Co. *Applied Mechanics and Materials* 2011;52-54:97-102 (Scopus)

5. Farhana Mohd Foudzi, Norhamidi Muhamad, Abu Bakar Sulong, Hafizawati Zakaria. Flow behavior characteristic for injection process using nano-yttria stabilized zirconia for micro metal injection molding (uMIM). *Applied Mechanics and Materials* 2011;44-47:480-484(Scopus)

6. Abu Bakar Sulong**,** Joohyuk Park. Alignment of multi-walled carbon nanotubes in a polyethylene matrix by extrusion shear flow: mechanical properties enhancement, *Journal of Composite Materials*, 2011;45(8)931-941 (Scopus & ISI WoS)

7. R. Nishata Royan, Abu Bakar Sulong, Hendra Suherman, Jaafar Sahari, Effect of wet oxidation on the dispersion and electrical properties of multi-walled carbon nanotubes/epoxy nanocomposites. Keys Engineering Materials, 2011:471-472:162-166 (Scopus)

8. MHI Ibrahim, N Muhamad, AB Sulong, KR Jamluddin, S Ahmad, NHM Nor. Optimization of micro injection molding with multiple performance characteristic using grey relational grade. Chiang Mai J. Sci., 2011:38(2):231-241 (ISI WoS & Scopus)

9. Abu Bakar Sulong, Muhamad Ilman Hakimi, Mohd Fazuri Abdullah, San Wei Koon, Nor Hamdan Nor Yahya, and Rizauddin Ramli. Design approach for jig in computer assisted Total Knee Replacement Surgery, *Key Engineering Materials* 2010;447-448:341-345 (Scopus)

10. Hendra Suherman, Abu Bakar Sulong, Jaafar Sahari. Effect of filler loading concentration, curing temperature and molding pressure on the electrical conductivity of CNTs/Graphite/Epoxy nanocomposites at high loading of conductive fillers, *Int. J. of Mech. & Mater. Eng.*  2010;5(1):74-79 (Scopus)

11. Abu Bakar Sulong, Gan Tek Keong, Jaafar Sahari. Effect of molding parameters and addition of fillers on gate chip off formation during the degating process in transfer molding, *Key Engineering Materials* 2010;447-448:790-794 (Scopus)

12. Mohd Fazuri Abdullah, Abu Bakar Sulong, Ilman Hakimi Chua, Che Hassan Che Haron, Jaharah A Ghani. Effect of insert nose radius and machining parameters on the surface roughness of stainless steel 316L, *Key Engineering Materials* 2010;447-448:51-54 (Scopus)

13. Mohd Halim Irwan Ibrahim, Norhamidi Muhamad, Abu Bakar Sulong, Khairur Rijal Jamaludin, Nor Hafiez Mohamad Nor, Sufizar Ahmad, Mohd Ruzi Harun and Hafizawati Zakaria. Parameter optimization towards highest micro MIM density by using Taguchi Method, *Key Engineering Materials* 2010;447-448:705-710 (Scopus)

14. Hendra Suherman, Jaafar Sahari, Abu Bakar Sulong, Nishata Royan. Electrical conductivity and flexural strength of graphite/carbon nanotubes/epoxy composites, *Key Engineering Materials* 2010;447-448:643-647 (Scopus)

15. Hendra Suherman, Jaafar Sahari, Abu Bakar Sulong. Electrical conductivity and micro hardness of synthetic and natural graphite epoxy composite, *Key Engineering Materials* 2010;447-448:614-618 (Scopus)

16. MHI Ibrahim, N Muhamad, AB Sulong, KR Jamluddin, S Ahmad, NHM Nor. Optimization of micro injection molding for highest green strength by using taguchi method. Int. J. Mech. & Mater. Engineering 2010:5(2)282-289 (Scopus)

17. AB Sulong, J Sahari, JH Park, Electrical Conductivity Behaviour of Chemical Functionalized MWCNTs Epoxy Nanocomposites. *European Journal of Scientific Research*, 2009;29(1):13-21 (Scopus)

18. AB Sulong, N Muhamad, MJ Ghazali, AG Jaharah, SH Tan, JH Park. Functionalized MWCNTs reinforced Polyethylene fiber composite: mechanical strength characterization, *International Journal of Modern Physics B*, 2009;23(6-7):1419-1424 (Scopus & ISI WoS)

19. AG Jaharah, CH Che Hassan, MJ Ghazali**,** AB Sulong, MZ Omar, MZ Nuawi, AR Ismail. Performance of uncoated carbide cutting tool when machining cast iron in dry cutting condition, *International Journal of Modern Physics B*, 2009;23(6-7):1796-1802 (Scopus & ISI WoS)

20. MJ Ghazali, AA Pauzi, R Mustafa, CH Azahari, AB Sulong. Effect of starch binder in alumina coating on 316L stainless steels for medical applications, *International Journal of Modern Physics B*, 2009;23(6-7):1034-1039 (Scopus & ISI WoS)

21. Rizauddin Ramli, Hidehiko Yamamoto, Abu Bakar Sulong, Dzuraidah Abdul Wahab, Jaber Abu Qudeiri, 2009, Real-time AGV Action Decision in AD-FMS by Hypothetical Reasoning, *European Journal Scientific Research*, 2009;25(2):310-324 (Scopus)

22. Sulong AB, Azhari CH, Zulkifli R, Othman MR, Park JH. A comparison of defects produced on oxidation of carbon nanotubes by acid and UV ozone treatment., *European Journal Scientific Research*, 2009;33(2):295-304 (Scopus)

23. Ibrahim MHI, Muhamad N, Sulong AB, Rheological investigation of water atomized stainless steel powder for micro metal injection molding, *International Journal of Mechanical and Materials Engineering*, 2009:4(1):1-8 (Scopus)

24. Zulkifli R, Azhari CH, Ghazali MJ, Ismail AR, Sulong AB, Interlaminar fracture toughness of multi-layer woven silk/epoxy composites treated with coupling agent. *European Journal Scientific Research*, 2009;27(3):454-462 (Scopus)

25. Intan Syaherra Ramli, Haslina Arshad, Abu Bakar Sulong, Nor Hamdan Mohd Yahaya, and Che Hassan Che Haron. Visualization of the newly designed jig and fixture for computer-assisted knee replacement surgery, *Lecture Notes in Computer Science* 2009; 5857:223-231 (Scopus)

26. Baba Md Deros, Chua Yee Peng, Mohd Nizam Ab Rahman, Ahmad Rasdan Ismail and Abu Bakar Sulong, Assessing Acceptance Sampling Application in Manufacturing Electrical and Electronic Products, *Asian International Journal of Science and Technology,* 2008;1(2):59-68 (Scopus)

27. Sulong AB, Park JH,. Effect of chemically surface modified MWNTs on the mechanical and electrical properties of epoxy nanocomposites*, Studies in Surf. Sci. & Catalysis*, 2007;165:405-408 (Scopus)

28. Sulong AB, Park JH. Dynamic thermo-mechanical properties of chemically surface modified MWCNTs reinforced polymeric composites, *Advanced Materials Research*, 2007;24-25:285-288 (Scopus)

29. Sulong AB, Park JH. Fabrication of carbon nanotubes reinforced Polyethylene fibers by melt spinning: process optimization and mechanical strength characterization, *Advanced Materials Research*, 2007;26-28:289-292 (Scopus)

30. Sulong AB, Park JH, Lee NS, Goak JH. Wear behavior of functionalized multi-walled carbon nanotubes reinforced epoxy matrix composites, Journal of Composite Material, 2006; 40(21):1947-1960 (ISI WoS & Scopus)

31. Abu Bakar Sulong, Norhamidi Muhamad, Che Husna Azahari dan Joohyuk Park. Mechanical and electrical properties of functionalized multi-walled carbon nanotubes reinforced Polyethylene composite fabricated by extrusion shear flow. Indonesia Nanoletter 2006;3(2): 86-93. (Scopus)

32. B.M. Deros, C.Y. Peng, M.N. Ab Rahman, A.R. Ismail, A.B. Sulong. Assessing acceptance sampling applications in manufacturing electrical and electronic products. Journal of Achievements in Materials and Manufacturing Engineering 31(2): 622-628 (Scopus)

33. R.Nishata Royan, Abu Bakar Sulong, Jaafar Sahari. Effect of loading concentration on the electrical and hardness properties of MWCNT/Epoxy nanocomposites. Key Engineering Materials 2006;471-472: 157-161. (Scopus)

34. Siti Saniah Ab Karim, Abu Bakar Sulong, Che Husna Azahari, Ng Min Hwei and Mohd Reusmaazran Yusof. Influence of Polyacrilonitrile (PAN) concentration on the mechanical and physical properties of electrospun fibres. Key Engineering Materials 2006;471-472: 43-48. (Scopus)

### 2. Proceeding Papers

35. Abu Bakar Sulong, Abdullah Atiq Ariffin, Jaafar Sahari & Hendra Suherman, Analysis of energy absorption on pultruded composite tube under oblique loading in 8th International Conference on Composite Science and Technology, Kuala Lumpur, March 2011.

36. Intan Syaherra Ramli, Haslina Arshad, Abu Bakar Sulong et al, Development of visualization application (VJBK) for newly designed jig and fixture for computer assisted knee replacement surgery, in Proc IVIC 2010, Turkey

37. Hendra Suherman, Abu Bakar Sulong, Jaafar Sahari, Electrical conductivity and flexural strength of graphite/carbon nanotubes/epoxy nanocomposites, in Proc ICoPEA 2010, Singapore

38. Hendra Suherman, Abu Bakar Sulong, Jaafar Sahari, Electrical conductivity and micro hardness of synthetic and natural graphite epoxy composite, in Proc ICoPEA 2010, Singapore

39. Mohd Fazuri Abdullah, Abu Bakar Sulong, et al, Effects of insert nose radius and machining parameters on the surface roughness of stainless steel 316L, in Proc ICoPEA 2010, Singapore

40. Abu Bakar Sulong, Muhamad Ilman Hakimi, et al, Design approach for jig in computer assited total knee replacement surgery, in Proc ICoPEA 2010, Singapore 2010, Singapore

41. Abu Bakar Sulong, Gan Tek Keong, Jaafar Sahari, Effects of molding parameters and addition of fillers on the gate chip off formation during degating process in transfer molding, in Proc ICoPEA 2010, Singapore 2010, Singapore

42. A. B. Sulong, N. Muhamad, M.I. Hakimi, Influence of additional acetone on feedstock and density of anum’s body for micro metal injection molding, in Proc MPM2A 2009, Kuala Lumpur

43. Abu Bakar Sulong, Che Husna Azhari et al, UV/ozone treated multiwalled carbon nanotubes reinforced polyethyelene composite fibre by melt spinning: process optimization, in Proc. AMPT2009, Malaysia

44. Abu Bakar Sulong, Che Husna Azhari et al, Effect of fuctionalized MWCNTs on the mechanical and electrical properties of PE matrix composites, in Proc. AMPT2009, Malaysia

45. Mohd Ruzi H, Norhamidi M, Abu Bakar S et al, A review of workability of wrought Magnesium alloys, in Proc AMReG2009, Putrajaya

46. Mohd Ruzi H, Norhamidi M, Abu Bakar S et al, Magnesium alloy metal injection molding using wax based binder system, in Proc MPM2A 2009, KL

47. MHI Ibarahim, N Muhamad, AB Sulong, et al, Optimization of micro onjection molding for the highest green strength by using taguchi method, in Proc AMPT2009, Shah Alam, Malaysia

48. MHI Ibarhim, N Muhamad, AB Sulong et al, Rheological characterization of water atomized stainless steel powder for micro metal injection modling, in Proc AMPT2009, Shah Alam, Malaysia

49. Abu Bakar Sulong, Norhamidi Muhamad, Joohyuk Park et al, Effects of chemical functionalized MWCNTs/Epoxy matrix composites on electrical conductivity behavior, in Proc FAIM 2009, UK

50. AB Sulong, N Muhamad, MI Hakimi et ala, Influence of additional acetone on feedstock and density of anum’s body for micro metal injection molding, in Proc MMC2009, Penang

51. Mohd Yusri Mohd Yusof, Abu Bakar Sulong et al, Jig holder design as aid for the knee replacement surgery, in Proc AMReG 2009, Putrajaya

52. Hendra Suherman, Abu Bakar Sulong, Jaafar Sahari, Effect of filler loading on electrical conductivity of CNTs/Epoxy nanocomposites, In Proc RAMM 2009, Penang

53. Murtadhahadi, N Muahamd, AB Sulong at al, Temperature influence to solvent debinding of metal injection molding (MIM) components, In Proc AMReG 2009

54. AB Sulong, Hasanal Izwan, Jaafar Sahari et al, Electrical conductive carbon nanotubes /graphite/polypropylene nanocomposites, in Proc ICAME 2009, Shah Alam

55. Abu Bakar Sulong, Nishayata Royan, Jaafar Sahari, Multiwalled carbon nanotube/epoxy nanocomposites: fabrication of electrical conductive plate, in Proc ICAME 2009, Shah Alam

56. Jaafar Sahari, Abu Bakar Sulong, Joohyuk Park et al, UV/Ozone treated multiwalled carbon nanotubes reinforced polyethylene composite fibre by melt spinning, in Proc ICCE-17 2009, USA

57. Hendra Suherman, Abu Bakar Sulong, Jaafar Sahari , Electrical conductivity of the multi-walled carbon nanotubes/epoxy nanocomposites, in Proc ICCE-17 2009, USA

58. Abu Bakar Sulong, Jaafar Sahari, Joohyuk Park et al, Mechanical and electrical properties of functionalized MWNTs reinforced PE composites fabricated by extrusion shear flow, in Proc ICCE-17 2009,USA

59. Hendra Suherman, Abu Bakar Sulong, Jaafar Sahari, Electrical properties of carbon nanotubes based epoxy nanocomposites for high electrical conductive plate, in Proc AMPT 2009, Kuala Lumpur

60. Hendra Suherman, Abu Bakar Sulong & Jaafar Sahari, Fabrication of graphite epoxy composite: electrical conductivity and hardness properties in Prosiding Kolokium & Sanggar Kerja II, Institut Sel Fuel, December 2009.

61. Iswandi, Jaafar Sahari & Abu Bakar Sulong, Sorotan serakan zarah bahan komposit karbon untuk plat dwikutub yang diproses dengan pengacuan suntikan in Prosiding Kolokium & Sanggar Kerja II, Institut Sel Fuel, December 2009.

62. Nishata a/p Rajendran Royan, Abu Bakar Sulong & Jaafar Sahari, The effect of chemical functionalization in nano composite processing : A review in in Prosiding Kolokium & Sanggar Kerja II, Institut Sel Fuel, December 2009.

63. Abu Bakar Sulong, Che Husna Azhari, Nurhamidi Muhammad, Tan Soon Huat, and Joohyuk Park. Mechanical Properties and Fracture Behavior of Functionalized Multi-walled Carbon Nanotubes Reinforced Polyethylene Fibers Composites by Melt Spinning, In Proc. 6th International Materials Technology Conference & exhibition, Kuala Lumpur, Malaysia, August 2008.

64. AB Sulong, N Muhamad, MJ Ghazali, AG Jaharah, SH Tan, JH Park. Functionalized MWCNTs reinforced Polythylene fiber composite: mechanical strength characterization, In Proc. ICAMP-5 (International Conference on Advanced Materials and Processing), Harbin , China, September 2008.

65. M.H.I Ibrahim, N. Muhamad, A.B. Sulong, Murtadhahadi, K.R. Jamaludin, S. Ahmad, N.H.M Nor. RHEOLOGICAL CHARACTERISTIC OF WATER ATOMISED STAINLESS STEEL POWDER FOR MICRO METAL INJECTION MOLDING, in Proc. AMREG II (Advanced Manufacturing Research Group), Port Dickson, Malaysia, December 2008.

66. M.H.I Ibrahim, N. Muhamad, A.B. Sulong, Murtadhahadi, K.R. Jamaluin, S. Ahmat, N.H.M Nor WATER ATOMISED STAINLESS STEEL POWDER FOR MICRO METAL INJECTION MOLDING: OPTIMIZATION OF RHEOLOGICAL PROPERTIES, in Proc. MMC 2008 (Malaysian Metallurgical Conference, UKM, Malaysia, December 2008

67. Hendra Suhernan, Abu Bakar Sulong and Jaafar Sahari, FABRICATION OF CARBON NANOTUBE/THERMOSET NANOCOMPOSITES FOR BIPOLAR PLATE: A REVIEW, In Proc. KISF (Kolokium Institute Fuel Cell), Langkawi, Malaysia, November 2008

68. Hendra Suherman., Abu Bakar Sulong and Jaafar Sahari, HIGH CONDUCTIVE POLYMER COMPOSITE AS BIPOLAR PLATE FOR POLYMER EXCHANGE MEMBRANE FUEL CELL (PEMFC): A REVIEW, in Proc. AMREG II (Advanced Manufacturing Research Group), Port Dickson, Malaysia, December 2008.

69. Norhamidi Muhamad, Murtadhahadi, Abu Bakar Sulong, Che Hassan Che Harun, Khairur Rijal Jamaludin,Mohd Halim Irwan Ibrahim KESAN PARAMETER PERCAMPURAN DAN PEMBUTIRAN KE ATAS PENYEDIAAN BAHAN SUAPAN YANG OPTIMUM BAGI PROSES PENGACUAN SUNTIKAN LOGAM, in Proc. MMC 2008 (Malaysian Metallurgical Conference, UKM, Malaysia, December 2008

70. Norhamidi Muhamad, Murtadhahadi, Abu Bakar Sulong, Che Hassan Che Harun, Khairur Rijal Jamaludin,Mohd Halim Irwan Ibrahim and Sufizar Ahmad, OPTIMISATION OF INJECTION PARAMETER IN METAL INJECTION MOLDING (MIM) PROCESS, in Proc. AMREG II (Advanced Manufacturing Research Group), Port Dickson, Malaysia, December 2008.

71. Norhamidi Muhamad, Murtadhahadi, Che Hassan Che Harun, Abu Bakar Sulong, Khairur Rijal Jamaludin, Sufizar Ahmad, Mohd Halim Irwan Ibrahim, Nor Hafiez Mohamad Nor, KESAN SUHU PENYUNTIKAN YANG TIDAK OPTIMUM TERHADAP KECACATAN JASAD ANUM PADA PROSES PENYUNTIKAN LOGAM (MIM), in Proc. AMREG I (Advanced Manufacturing Research Group), Seremban, Malaysia, June 2008.

72. Ahmad Rasdan Ismal, Abu Bakar Sulong, Baba Mohd Deros, The relation between the discomfort level of Malaysian automotive industries operator towards their workstation design and work environment, in Proc GCMM2008

73. Norhamidi Muhamad, Murtadhahadi, Che Hassan Che Harun, Abu Bakar Sulong, Pembebanan serbuk yang optimum bagi bahan suapan daripada SS316L, PEG, PMMA dan AS bagi proses pengacuan suntikan logam (MIM) in Seminar AMReG 1, Seremban 2008

74. Abu Bakar Sulong and Joohyuk Park. Fabrication of carbon nanotubes reinforced polyethylene fibers by melt spinning: Process optimization and mechanical strength characterization in Advanced Materials Research, 2007.

### Paten & Copyright

 75. Haslina Arshad, Abu Bakar Sulong et. al, 2011, ‘Virtual Training System for Newly Designed Jig and Fixture Usage in Computer Assited Knee Replacment Surgery’ Copyright

 76. Abu Bakar Sulong, Haslina Arshad et. al, 2011, ‘Method and apparatus for Knee Arthoplasty’ Malayia Patent Filing

## Training and Appointments

### Committees and Appointments

Up to date, the candidate has participated and appointed in various. The selected list is as follows:

1. Member of Malaysia Board of Engineer (BEM) – since 2004

2. Member of Institute Material Malaysia (IMM) – since 2008

3. Member of Korean Society Mechanical Engineer – since 2007

4. Member of Association Powder Metallurgy International (AMPI) –since 2009

### Conference and Training an

 1. DELMIA Training, JKMB, UKM, 13 Jan 2011

 2. Mesyuarat dan Kerja Lapangan untuk MPM2A, AMREC SIRIM Kulim, 13 Feb 2011

 3. Menghadiri Kursus Powder Injection Molding & International Conference on Injection Molding of Metals, Ceramic and Carbides, Orlando, USA, 12 March 2011

 4. 8th International Conference on Composite Science & Technology (ICSST8), KL, 22 March 2011

 5. Bengkel Kerja Pengukuran Hasil Pembelajaran Menggunakan Model Rasch, Port Dickson, 6 May 2011

6. Sanggar Kerja dan Kolokium JKMB 2011, Gambang, Pahang, 13 May 2011

 7. Bengkel Halatuju Nic Penyelidikan Tenaga Keterbaharuan UKM 2011, Port Dickson, 20 May 2011

 8. Crystallography & Structure Determination Workshop 6-10 June 2011, UiTM Shah Alam, 6 June 2011

 9. Nano Malaysia Summit & Expo 2011, PWTC, KL, 14 June 2011

 10. Taguchi Method for Process & Product Optimization, Puri Pujangga UKM, 21 June 2011

 11. Bengkel XRD: Revield Analisis, FST UKM, 29 June 2011

 12. Bengkel Projek 100 Jurnal Q1 FKAB, Port Dickson, 10 July 2011

 13. Induction Course for new M&E Engineers, KL, 3 Oct 2011

14. Pemantau Penyelidikan GUP Peringkat Universiti, Royal Adelphi, Seremban, 5 Feb 2010

 15. Training Delmia Software, JKMB, 1 Marc 2010

 16. Bengkel Penambahbaikan Program Sarjana JKMB, Melaka, 13 March 2010

 17. Kursus PTK4, UKM, 24 May 2010

 18. Latihan bagi persediaan perkhemahan PERMATA PINTAR bulan 12/2010, UKM, 5 June 2010

 19. Latihan Sebagai Ketua Modul Bagi Pusat PERMATA PINTAR “Flight Service” di CTY International Educators Institute, John Hopkins, USA, 13 June 2010

 20. International Conference on Precision Engineering ICoPE2010 & 13th ICPE, Singapore, 28 July 2010

 21. Sanggar Kerja Kumpulan BPP Sel Fuel, Cyberjaya, 3 Aug 2010

 22. Program Pemantapan Akademik JKMB, Kem Sungai Gabai, Hulu Langat, Selangor, 11 Oct 2010

 23. Seminar UKM-Nagaoka NUT, FKAB, 11 Oct 2010

 24. 4th Malaysian Powder Metallurgy Symposium (4th MPMS) and MMC 2010, Penang, 22 Nov 2010

 25. Energy & Green Technology, KL, 24 Nov 2010

 26. Perkhemahan Tahunan Pusat PERMATA PINTAR Negara, UKM, 26 Nov 2010

 27. Workshop on Micromolecules, UiTM Shah Alam, 14 Dec 2010

 28. Jangkauan Penyelidikan dan lawatan ke National University of Singapore dan Nanyang University of Technology, Singapore, 17 March 2009

 29. Lawatan Penyelidikan ke National University of Singapore dan Nanyang Technology University, Singapore, 17 March 2009

 30. Pemantapan Akademik Mahasiswa Muslim, Kem Ria Rimba, Hulu Langat, 20 March 2009

 31. Bengkel Kumpulan Automotif, MINES Resort City, 25 March 2009

 32. Bengkel Penulisan Manuskrip & Tesis, Hotel Uniten, Selangor, 18 April 2009

 33. Kolokium JKMB 2009, Corus Paradise, Negeri Sembilan, 29 May 2009

 34. 4th International Conference on Recent Advances in Materials, Minerals, Environment and 2nd Asian Symposium on Material and Processing, Bayview Beach Resort, Penang, 1 June 2009

 35. Half Day Seminar of Tissue Engineering TESMA, UPM, 17 June 2009

 36. International Conference on Advances in Mechanical Engineering ( ICAME) 2009, Concorde Hotel, Shah Alam, 24 June 2009

 37. Lawatan Teknikal dan Mesyuarat Kolaborasi Penyelidikan UKM (AMPI) dan LPSB, Unlam, Kalimantan Selatan, Indonesia, 29 June 2009

 38. Flexible Automation and Intelligent Manufacturing 19th International Conference, of Tesside, Middlesbrough, 4 July 2009

 39. Bengkel Halatuju & Pemantapan Struktur Pusat Penyelidikan Automotif, Melaka, 17 July 2009

 40. The 17th Annual International Conference on Composite/ Nano Engineering ICCE-17, Hawaii, USA, 25 July 2009

 41. 3rd Powder Metallurgy Symposium & Exhibition 2009, Kuala Lumpur, 12 Aug 2009

 42. Seminar Penyelidikan Berkala Institut Sel Fuel, Putrajaya, 17 Aug 2009

 43. AMPI Roadmap Workshop II, Residence Hotel, Bangi, 21 Aug 2009

 44. Bengkel Kemahiran CMM “Holds”, JKMB, UKM, 20 Oct 2009

 NADEC National Automotive Digital Engineering 2009, Putrajaya, 22 Oct 2009

 45. Advances in Material and Processing Technologies AMPT 2009, UIA, Kuala Lumpur, 26 Oct 2009

 46. Seminar “Nanoteknologi dalam komposit dan tekstil” dari Prof David Hui, Chief Editor Composite Part B, Elsevier, UTHM, 14 Dec 2009

 47. Kolokium dan sanggar kerja sel fuel, Pulau Pinang, 18 Dec 2009

 48. Training Computer Integrated Manufacturing, JKMB, FKAB, 28 Jan 2008

 49. Bengkel Jurnal oleh Thomson Scientific, PTSL, UKM, 21 Feb 2008

 50. Manufacturing Group Retreat, Grand River View Hotel, Kelantan, 10 March 2008

 51. Program Pemantapan tenaga Akademik 2008, Kursus Penulisan Markah Jurnal Berimpkas and Berindek, Cyberjaya, 25 March 2008

 52. Technical Talk on Controlling Dispersion to Yield Functional Nanocomposites Materials and Products by Dr. Stuart Bateman from CSIRO Materials Science and Engineering, Australia, Petronas Twin Tower, 11 April 2008

 53. Bengkel STAR\_CD, JKMB, 14 April 2008

 54. Kursus Kemahiran Penyeliaan Efektif di IPT, Port Dickson, Negeri Sembilan, 18 April 2008

 55. Re-treat “Fuel Efficiency Concept Car” Putrajaya, 2 May 2008

 56. Bengkel PASTRAN NASTRAN, JKMB, UKM, 24 April 2008

 57. Re-treat Kumpulan Nic Tenaga Keterbaruan, Putrajaya, 2 May 2008

 58. Kursus SPIN, UKM, 5 May 2008

 59. AMReG Seminar I, Royale Bintang, Seremban, 12 June 2008

 60. Seminar I- Kumpulan Penyelidikan Pembuatan Termaju 2008 (AMReG 08), Royale Bintang, Seremban, 12 June 2008

 61. Kajian Lapangan Kerja Perundingan di Seoul, Icheon, Korea Selatan, 17 June 2008

 62. Seminar on Instrumentation and Diagnotis Measurement on Engine Testing 2008, Putrajaya, 2 July 2008

 63. Kursus Induksi bil 3/2009 (P) Kumpulan Pengurusan dan Profesional, Kolej Keris Mas, UKM, 15 July 2008

 64. 6th International Material Technology Conference & Exhibition, Park Royal, KL, 25 August 2008

 65. The 5th International Conference on Advanced Material & Processing (ICAMP-5), Harbin, China, 1 Sept 2008

 66. ICCST/7 Seventh International Conference on Composite Science and Technology, Sarjah, Dubai, 19 Oct 2008

 67. Engineering Postgraduate Conference, Residence Inn, Kajang, 22 Oct 2008

 68. Jangkauan & Lawatan Penyelidikan antara LIPI (Indonesia Society of Nanotechnology) & ITB (Institute Technology Bandung) dengan AMPI (Kumpulan Bahan Termaju, UKM), Indonesia, 26 Oct 2008

 69. Seminar on Design Engineering Rubber Components, Akademi Havea Malaysia, Sg Buloh, Selangor, 3 Nov 2008

 70. Kursus Perisian MoldFlow Insight, FKAB, UKM, 17 Nov 2008

 71. Kolokium Pertama Institut Sel Fuel 2008, Langkawi, 21 Nov 2008

 72. Kursus Software Pro Cast, IME Trading, Petaling Jaya, 25 Nov 2008

 73. Jangkauan Penyelidikan ke Membrane Research Unit, UTM, Johor, 1 Dec 2008

 74. Malaysian Metallurgical Conference (MMC 2008), Danau UKM, 3 Dec 2008

 75. Seminar II – Kumpulan Penyelidikan Pembuatan Termaju 2008 (AMReG 2008), Port Dickson, Negeri Sembilan, 17 Dec 2008

 76. Jangkauan Penyelidikan antara AMPI (Advanced Material Processing & Integrity, UKM) dengan Alexandria University, Egypt (New Advanced Materials & Nanotechnology Lab, Dept. of Textile Engineering), 20 Dec 2008

 77. NIDays ASEAN 2003-04, Palace of The Golden Horses, The MINES Resort City, 15 Jan 2004.

78. Kursus Kenegaraan Bagi Tenaga Pengajar Akademik Yang Akan Melanjutkan Pengajian Ke Luar Negara, Kem Bina Semangat Ulu Sepri, Rembau, Negeri Sembilan, 26 Feb 2004

 79. Kursus Pemantapan Bahasa Inggeris II, Hotel Royal Adelphi, Seremban, 1 Sept 2004

### Organizer for Seminar

1. Bengkel Pembangunan Program Dwi Ijazah Pembuatan & Industri Universiti, 23 Sept 2011 (Equatorial Bangi 2011)

2. Sanggar Kerja Kumpulan Penyelidikan Pemprosesan Bahan Termaju dan Intergirti 2011 (AMPI), Cerengin Hills Convention & Spa Resort, Janda Baik, Pahang, 16-18 Sept 2011

3. Sanggar Kerja Kumpulan Penyelidikan Bahan dan Pembuatan Plat Sel Fuel, Palm Garden Putrajaya, 5 July 2011

4. Seminar Penulisan Jurnal Akademik, JKMB, 24 May 2011

5. Seminar Penyelidikan JKMB-PPUKM, FKAB, 14 April 2011

6. Sanggar Kerja & Pemantauan Kumpulan Penyelidikan Pembuatan Termaju 2010 (AMReG), Felda Residence Hot Springs Sungkai, Perak, 26-28 Dec 2010

7. The 2nd UKM-NUT Joint Seminar 2010, FKAB, 11 Oct 2010

8. Sanggar Kerja Kumpulan Penyelidikan Bahan & Pembuatan Plat, Institut Sel Fuel 2010, 3 Aug 2010 (Palm Garden Putrajaya)

9. Latihan Perisian MoldFlow, JKMB, UKM, 24-27 May 2010

10. Bengkel Pemantauan Penyelidikan Kumpulan Proses Persis, Hotel Equatorial Bangi, 21 Jan 2010

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# ****Conclusion****

It has always been my intention to contribute to the society in whatever capacity that I can. In order to do this I will always strive to improve myself in areas which are important to human being in general and engineers in particular. These areas include administration, economics, public relations, strategic planning, quality assurance in addition to technical expertise. I strongly believe that my participation in IEM will greatly enhanced the experience and also help me to channel my contribution to society.

# ****References****

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| --- | --- |
| **Position** | **Referee** |
| Academic | Prof. Dr. Ahmad Kamal Ariffin HeadDept. of Mecahnical & Materials EngineeringFaculty of Engineering and Built EnvironmentUniversiti Kebangsaan Malaysia43600 UKM BangiSelangor Darul Ehsan |
| Research | Prof. Dr Che Hassan Che HarronDirectorCenter of Research and Innovation Management (CRIM) Universiti Kebangsaan Malaysia43600 UKM BangiSelangor Darul Ehsan  |
|  |  |

***Appendices***

Sample Research Report

1. Executive summary: Design and fabrication of jig for computer assisted Total Knee Replacement Surgery.

Sample Research Papers

1. Abu Bakar Sulong, Joohyuk Park, Che Husna Azhari, Kamaruzaman Jusoff. Process optimization of melt spinning and mechanical strength enhancement of functionalized multi-walled carbon nanotubes reinforcing polyethylene fibers, *Composites: Part B* 2011;42:11-17 (ISI WoS & Scopus)

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