

**Name** : PROF Ts. DR MUHD ZU AZHAN BIN YAHYA  
**Position** : Deputy Vice Chancellor (Student Affairs and Alumni)  
**BoD /IC** : 18 DEC 1972 / 721218-03-5071  
**Address** : Faculty of Defence Science & Technology,  
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#### Academic Qualification:

- Ph.D. (Advanced Materials) (Mac 2000- Jun 2002) - University of Malaya.
- M.Sc. (Physics) (Jun 1998- Jun 1999) - University of Malaya.
- B. Sc (Hons) Physics with Education (1992-96) - University of Malaya
- SPM (1989) – Kolej Islam Sultan Alam Shah, Klang
- SRP (1987) – SMK (A) Tok Jiring Kuala Terengganu
- 1979-1984 – Sek Ren Tengku Mahmud, Besut Terengganu

#### Working Experiences:

- 2012 - present : **Professor VK6**, Faculty of Defence Science & Technology, UPNM  
2008 - 2011 : **Associate Professor**  
Faculty of Applied Sciences, Universiti Teknologi MARA  
2005 - 2007 : **Senior Lecturer**  
Faculty of Applied Sciences, Universiti Teknologi MARA (UiTM)  
1999 (May) - : **Lecturer**, Department of Physics, Faculty of Applied Sciences, UiTM  
1996 (Sep) - : **Lecturer**, L&G Twintech Institute of Technology  
1999 (Apr) : - HND BTEC (De Monfort University Twinning Program)  
- Coordinator, Mech. & Manufacturing Program, Univ. of Portsmouth, UK  
1996 (May - Aug)- : **Physics Lecturer** Kolej Yayasan Pelajaran MARA, Bangi

#### Appointment:

- **Deputy Vice Chancellor (Student Affairs and Alumni), UPNM** (15 May 2019 – present)
- **Director, Centre for Defence Foundation Studies, UPNM** (15 Feb 2016 – 14 May 2019)
- **Director, Centre for Publication, UPNM** (15 Feb 2014 – 14 Feb 2016)
- **Deputy Dean (Research & Postgraduate)**, Faculty of Sc & Def Technology UPNM, (Nov 2012 – 14 Feb 2014).
- **Senate Member UPNM**, (2013 – present)
- **Deputy Dean (Research & Industrial Networking)**, Faculty of Applied Sciences, UiTM, (Jan 2009 – Dec 2010).
- **Head of Program AS203** – BSc (Hons) Physics (Feb 05 – Jan 09)
- **Head, Centre of Advanced Materials**, Institute of Science, UiTM (Jan 2007 – Dec 2011)
- **Rank: Lt Col, Territorial Reserved Army (ASKAR WATANIAH)** (Jan 2003 – present)
- **Deputy Commandant, PALAPES UPNM** (2014 – present)
- **Head, Ionics Materials & Devices (i-MADE) Research Group** (Jan 2003 - 2012)
- **Research Fellow**, TM R&D (EMC & Power Quality Programme), (Jan 2011 – Jun 2011)
- **Fellow**, Malaysian Solid State Science and Technology Society (MASS): Since 2012
- **Fellow, Teratai Residential College**. (Nov 08 – Dec 2011)
- **Council Member**, Majlis Profesor Negara (MPN) Cluster of Science & Mathematics: 2014 -2018
- **Council Member** of Institute of Materials Malaysia (IMM): 2006-2008.
- **Assessor**, Lab Accreditation MS ISO 17025 STANDARDS MALAYSIA: Since Jun 2009.
- **Expert Panel**, Research Project: Industry Cluster R&D&C (ScFund, InnoFund, TechnoFund), MOSTI: 2010 - 2018
- **Board of Moderators (Examination)**, SEGi College, KL (2014 – 2016)
- **External Examiner**, Pusat Asasi Universiti Teknologi MARA (Mac 15, 2020 – Mac 14, 2022)
- **Panel**, Majlis Akreditasi Teknologi dan Teknikal (TTAC) MBOT (Dec 24, 2019 – Dec 23, 2021)

#### Research Interests:

Batteries (Lithium, Alkaline and Proton Batteries), Supercapacitors, Sensors, Organic Semiconductor Devices, Fuel Cells, Computational Materials Science.

#### Professional Memberships:

- **Professional Member**, Institute of Materials Malaysia (M 1269): 2006- present.
- **Professional Technologist**, MBOT (PT18030424): Since 2018
- **Life Member**, Malaysian Solid State Science and Technology Society (MASS 266): Since 2007
- **Member**, Malaysian Analytical Science Society, ANALIS (A 158): Since 1999
- **Member**, Electroactive Materials Society (EMS): Since 2012

#### Academic Awards:

- **Special Award of Quality: Pengerusi Lembaga Pengarah Universiti - UPNM 2018**
- **Excellent Academic Award UPNM 2016 (Postgraduate Supervision)**
- **Excellent Academic Award UPNM 2015 (Professional Service)**
- **Excellent Academic Award UPNM 2014 (Research)**
- **Sijil Prestasi Cemerlang UPNM 2016, 2017, 2018**
- **Anugerah Kualiti Pengurusan Penyelidikan, UPNM 2013**
- **Young Scientist Award, MASS 2010**
- **UiTM Excellent Service Award(s) 2009, 2006, 2003**
- **Award for Academic Staff (FSG) Active in Publication (Scopus) – 2009.**
- **Award for Academic Staff (FSG) Top 10 Citations in Publication (Scopus) – 2009.**
- **Best Teaching Award 2007** for Faculty of Applied Sciences
- **Vice Chancellor's Award** for recipient of biggest research grant – 2005.
- **Young Scientist Award, ICEP 2004**
- **Best Researcher Award 2004** for Faculty of Applied Sciences
- **Best Lecturer Award 2003** for Faculty of Applied Sciences
- **HRD STI Fellowship (PhD) 2000, MOSTI.**

#### Invention Awards:

- **ITEX2017 – Gold Medal:** 12 May 2017 – A Green Route of Graphene for Energy Harvesting/Storage Devices and Printed Electronics
- **iENA 2016 – Gold Medal:** 30 Oct 2016 – High Performance Gun Cotton
- **MTE2015 – Silver Medal:** 12 Feb 2014 – Green Route Graphene Nanosheets
- **British Invention Show BIS2014 – Gold Medal:** 22 Oct 2014 – Green Cellulose Based Li-Air Batteries
- **ITEX2014 – Gold Medal:** 10 May 2014 – Green Composite Cellulose Acetate Polymer Electrolytes (G-CAPE) for Lithium Batteries
- **MTE 2014 – Silver Medal:** 22 Feb 2014 - Green Composite Cellulose Acetate Polymer Electrolytes (CAPE) for Application in Electrochemical Devices
- **MTE 2014 – Bronze Medal:** 22 Feb 2014 - MG30 Bio-Polymer Electrolytes for Lithium Batteries
- **PECIPTA 2013 – Bronze Medal:** 09 Nov 2013 – Dispersed Semiconductor Polymer Electrolytes for Solar Cells
- **MTE 2011 - Silver Medal:** 18 Feb 2011 – Cellulose-Based Solid Polymer Electrolytes for proton Batteries
- **MTE 2011 - Bronze Medal:** 18 Feb 2011 – Cellulose-Based Solid Polymer Electrolytes for Electrochemical Devices
- **IID-2010 SE -Innovation and Design Exhibition Gold Medal:** 14 Oct 2010 – Cellulose-Based Polymer Gel Electrolytes
- **IID-2010 SE -Innovation and Design Exhibition Gold Medal:** 14 Oct 2010 – Cellulose-Based Solid Polymer Electrolytes
- **IID-2010 SE -Innovation and Design Exhibition Gold Medal:** 14 Oct 2010 – Green Electrolytes from Natural Rubbers
- **IID-2010 SE -Innovation and Design Exhibition Silver Medal:** 14 Oct 2010 – MG49 Based Electrolytes
- **IID-2010 SE -Innovation and Design Exhibition Bronze Medal:** 14 Oct 2010 – Green Batteries from Cellulose
- **IID-2010 SE -Innovation and Design Exhibition Bronze Medal:** 14 Oct 2010 – New PEM Fuel Cells
- **IID-2008 -Innovation and Design Exhibition Bronze Medal:** 25 Feb 2008 – Li Air Batteries
- **IID-2008 -Innovation and Design Exhibition Bronze Medal:** 25 Feb 2008 – CNT from palm oil
- **IID-2008 -Innovation and Design Exhibition Bronze Medal:** 25 Feb 2008 – Li Polymer Battery from Natural Rubber
- **IID-2008 -Innovation and Design Exhibition Bronze Medal:** 25 Feb 2008 – Cellulose-based proton Battery

## POSTGRADUATES SUPERVISION:

### PhD. Students:

1. **Ab Malik Marwan Ali** - Characterization of Gel-Type Polymer Electrolytes Based on PMMA for Lithium Polymer Batteries. (Ph.D. – Graduated 2008)
2. **Mohamad Fariz Mohamad Taib** – First Principles Studies on Properties of Pb(II), Sn(II) and Ge(II) Ferroelectric Materials Using Density Functional Theory (Ph.D- Graduated 2014)
3. **Ahmad Nazib Alias** – Computational and Characterization Studies of Non-Conjugated Poly-(N-Vinylcarbazole) Blends as Host Polymer for Phosphorescence Emission (Ph.D.- Graduated 2015)
4. **Muhamad Kamil Yaakob** – Ab-Initio Studies on Properties of Strain-Free and Strained Perovskite-Type  $ABO_3$  Multiferroic Materials (Ph.D.- Graduated 2015)
5. **Siti Zafirah Zainal Abidin** – Nanocomposite Polymer Gel Electrolyte Based on LiBOB-Cellulose Acetate for Lithium-Oxygen Battery (Ph.D.- Graduated 2016)
6. **Ajjs Lepit** – Properties of Poly(vinylidene Fluoride)-co-Poly(vinylimidazole) Solid Polymer Electrolytes Prepared by Radiation-Induced Grafting Method for Proton Exchange Membrane Fuel Cell (Ph.D.- Graduated 2016)
7. **Fadhul Wafi Badrudin** – First Principle Study of Polyanionic  $LiFeSO_4F$  and  $LiFeSO_4OH$  Cathode Materials Using Density Functional Theory (Ph.D.- Graduated 2016)
8. **Amirah Amalina Ahmad Tarmizi** - Electrical and Barrier Properties of Modified Polyaniline Coating Films and Its Effects on The Corrosion Protection of Mild Steel (Ph.D.- Graduated 2017)
9. **Nazli Ahmad Aini** - Studies on PEEK-Chitosan Crosslinked Via UV Curing for Proton Exchange Fuel Cell Membranes: (Ph.D.- Graduated 2018)
10. **Nor Kartini Jaafar** - Preparation of Grafted Conducting Polymers By Gamma Ray Radiation: Characterization For Application In Supercapacitors (Ph.D.- Graduated 2018)
11. **Ainnur Izzati Kamisan** – Ultrasound Assisted Synthesis and Characterization of Graphene Nanosheets as Cathode Material for Lithium Sulfur Battery. (Ph.D.- Graduated 2018)
12. **Khuzaimah Nazir** – Preparation & Characterization of Epoxidized 30% PMMA Grafted Natural Rubber Polymer Electrolyte for Electrochemical Devices (Ph.D.- Graduated 2018)
13. **Ahmad Firdaus Zainal Abedin** - The Perturbation of Backscattered Fast Neutrons Flux Caused by the Resonances in the Cross Section of C, N and O for Possible Use in Explosive Detection (Ph.D.- Graduated 2018)
14. **Mohd Hazrie Bin Samat** - First-Principles Study on Structural, Electronic and Optical Properties of Nd-doped  $TiO_2$  for Dye-Sensitized Solar Cells (Ph.D.- Graduated 2019)
15. **Nur Hafiz Bin Hussin** - First Principles Study Toward lead free Sn(ii) and La doped PZT using DFT (Ph.D.- Graduated 2019)
16. **Ahmad Fairoz Aziz** – Preparation and Characterization of Treated Methyl Grafted Natural Rubber Polymer Electrolytes (Ph.D.- Graduated 2019)
17. **Noorhaslin Che Su** – Ionic Liquid-Based Gel Electrolyte for Potential Application in Sodium Rechargeable Batteries (Ph.D.- Graduated 2020)
18. **Ruslinda Md Ali** – Modified Activated Carbon-Based Cathodes using CoTMPP and Graphene Catalyst for Zinc-Air Battery (Ph.D.- Graduated 2020)
19. **Ismaliza Ismail** - Surface Modification for Enhancement of Barrier and Adhesion Properties of Primer in A Rubber to Metal Bonded Composites in Salt Environment (Ph.D.- Graduated 2020)
20. **Mohd Sazwan Affendi Bin Rasiman** - The Investigation of Cathode Materials of  $Li_2MP_2O_7$  ( $M=Mn,Fe,Co$ ) family for Battery Application via First Principles Study (Ph.D.- Graduated 2020)
21. **Ainnur Sherene Kamisan** – Preparation and Characterization of Graphene Composite Electrode Materials for Supercapacitor
22. **Tunku Ishak Al-Irsyad Tunku Kudin** - Studies on Hybrid Organic Semiconductor Materials for Application in Light Emitting Displays (LED)
23. **Aniza Omar** – Development Of CA-MgTf Polymer Electrolytes Complexes For Magnesium Batteries
24. **Nur Hamizah Binti Mohd Zaki** - Preparation and characterization of graphene-nanocomposite electrode for supercapacitor
25. **Maziidah Binti Hamidi** - Preparation and Characterization of Pyrophosphate Based Cathode Material for Lithium ion Battery
26. **Farinaa Mohd Jamil** –  $MnO_2$  Mesopores Carbon Composite for Supercapacitors Application.
27. **Siti Munirah Hasanaly** – Development of Cathode Materials for Lithium Battery.
28. **Mohamad Firdaus Rosle** – Synthesis of  $Na(MO_x)_2-X(PO_4)_3/C$  as High Rate and Stable Cycling Cathode Materials for Sodium-Ion Batteries

29. **Maisaratul Shamimi Muhamad Shukri** – First Principles Studied of Properties of CO and NO Gas Molecules on Graphene-Based Material using Density Functional Theory

**M.Sc.Students (By-Research):**

1. **Faizatul Farah Hatta** - *Studies On Alkaline Solid Polymer Blends Electrolyte For Proton Rechargeable Batteries. (Graduated 2006)*
2. **Tunku Ishak Al-Irsyad T. Kudin** - Development of Carbon Nanotubes Derived from Palm Oil as Electrode Materials For Lithium Ion Batteries **(Graduated 2009)**
3. **Norazmawati Lahazan** - Preparation and Characterisation of Poly (L-Leucine)-1,3-Diamino Propane (PPL)-Lil as Solid Polymer Electrolyte **(Graduated 2009)**
4. **Noor 'Aisyah Johari** - Preparation and Characterization of Cellulose-Based Polymer Gel Electrolytes for Proton Batteries. **(Graduated d 2009)**
5. **Fauziah Wan Mohd Noor** - Preparation and Characterization of Cellulose Acetate- Based Polymer Electrolytes For Humidity Sensors Application **(Graduated 2009)**
6. **Siti Irma Yuana Sheikh Mohd Saaid** - Investigation of Cellulose Acetate-Ammonium Salt Complexes Polymer Electrolytes for Proton Battery. **(Graduated 2009)**
7. **Mohd Hamizan Selamat** - Characterization of Carbon Derived From Palm Kernel Cake (PKC) as Coating Materials **(Graduated 2011)**
8. **Ainnur Sherene Kamisan** - Characterization of Polymer Electrolytes Based on MethylGrafted Natural Rubber For Proton Batteries **(Graduated 2012)**
9. **Nurhizwati Abd Rahman** - Preparation and Characterization of Electron Conducting Polymer For Its Application in Electrochemical Cells **(Graduated 2012)**
10. **Nurhana Ilmira Harun** - Studies on Cellulose Acetate-Based Polymer Electrolytes For Gas Sensor Applications **(Graduated 2012)**
11. **Ruslinda Md Ali** - Studies on Semiconductor Dispersed Polymer Electrolytes Composite for Electrochemical Solar Cell Applications **(Graduated 2012)**
12. **Maziidah Hamidi** - Preparation and Characterization Of Lithium-Based Glass Ceramic Conducting Materials **(Graduated 2013)**
13. **Aziah Ahmad Arifin** - Synthesis Of Polyfluorene And Its Derivatives Via Electrodeposition Technique **(Graduated 2013)**
14. **Mas Fiza Mustafa** - Preparation And Characterization Of Composited Methyl Cellulose-Based Polymer Electrolytes For Electrochemical Cells **(Graduated d 2013)**
15. **Nurul Ilham Adam** – Physical and Electrochemical Studies on Nanocomposite Natural Rubber Grafted 30% PMMA for Application in Lithium Polymer **(Graduated 2013)**
16. **Nur Hamidah Mohd Zaki** – Gel Polymer Electrolytes Based on 30% Methylgrafted Natural Rubber: Characterization for Application in Electric Double Layer Capacitors **(Graduated 2014)**
17. **Zaidatul Salwa Mahmud** – Alkaline MG49 Based Electrolytes for Solid State Redox Capacitors **(Graduated 2014)**
18. **Nurrisa Asrul** – *Bioenergy Generation From Laccase-Glucose Oxidase Enzymatic Fuel Cell (Graduated 2015)*
19. **Nur Syahida Sahli** – Physical and Electrical Studies on Methylcellulose Based Ion Polymer Electrolyte. **(Graduated 2016)**
20. **Nordiana Nabilla Mohd Ramly** – Synthesis and Charaterization of UV-crosslinked SPEEK-Methyl Cellulose as Proton Exchange Membrane **(Graduated 2016)**
21. **Siti Masyitah Binti Mohd Razalli** - Preparation and Characterization of Cellulose Acetate Plasticized With Non Carbonate Based Plasticizer **(Graduated 2017)**
22. **Siti Fadzilah Ayub** – Preparation and Characterization of Blend MG30 With PEMA Based Polymer Electrolyte **(Graduated 2017)**
23. **Aimi Syahirah Awang Bakar** – *Green Energy Generation from Rhizopus-Gloeophyllum Microbial Fuel Cell (Graduated 2017)*
24. **Lt Kdr Farizha Ibrahim** – Development of Nitrocellulose as a Gun Powder in 5.56 mm Bullet **(Graduated 2019)**
25. **Nursaadah Ahmad Poad** – Electronic Structure of Metal Oxide and Organic Semiconductor Interface by Optical Second Harmonic Generation Measurement **(Graduated 2019)**
26. **Noor Wahidah Zainol Jamil** – Heavy Metal – Ion Selective Electrode Based on Aryl Methyl Carbonylamino Thiazole Derivatives as Ionophore **(Graduated 2019)**
27. **Muhamad Haziq Ridzwan** – First Principles Investigation of The Role of Atomic Substitution (Galium and Aluminium Ions) and Oxygen Vacansies in Multiferroic BiFeO<sub>3</sub> Material **(Graduated 2020)**

28. **Muhammad Syahir Sak Ari** - Biopolymer Electrolyte Based on Agarose and 1-Ethyl-3-Methylimidazolium Acetate Ionic Liquid for Lithium Battery (*Graduated 2020*)
29. **Aqeel Idrus** – First Principle Study on Novel Cathode Material NaFeSO<sub>4</sub>OH by Using Density Functional Theory (*Graduated 2020*)
30. **Roslan Husin** – Electronic Structure and Optical Properties of Lithium Niobate based Sensor for Military Application: A First Principle Study (*Graduated 2020*)
31. **Kamaliati Hanum Binti Kamaruddin** - Comparative studies of structural, magnetic and electronic properties between BaFe<sub>2</sub>As<sub>2</sub> and BaFe<sub>2-x</sub>Ni<sub>x</sub>As<sub>2</sub> at low temperature using density functional theory
32. **Nurul Atikah Binti Shahrul Effendi** - Graphene-ZnO Nanocomposites for Dye-Sensitized Solar Cells Application
33. **Nursyazwani Binti Suhaili** - Structural, Electronic and Optical Properties of Hybrid Organic-Inorganic Halide Perovskite CH<sub>3</sub>NH<sub>3</sub>BX<sub>3</sub> (B= Pb, Sn, Ge; X = I, Br, Cl) Using Density Functional Theory
34. **Nur Zarifah Syazwani Binti Noreaini** - The Effect of Gallium Doped BFO to Their Structural, Electrical and Magnetic Properties
35. **Noor Ezniera Shafieza Sazali** – Supercapacitor Using Binderless Composite Monolith Electrode from HNO<sub>3</sub> Treated Graphene and Pre-Carbonized Biomass Fibers (MSc UKM)
36. **Eza Nuraiena Sota** – Characterization of New Microwave Dielectric of A<sub>1-x</sub>Y<sub>x</sub>WO<sub>4</sub> (A=Zn, Y = Mg, Ca) Ceramics

### RESEARCH GRANTS:

1. Strain Tuned ion (Li, Na) Migration in The Iron Hydrosulphate Cathode Material: A First Principles Investigation, *Head of Project*, FRGS/1/2017/STG07/UPNM/01/1 – RM 75,200.00, 15 Aug 2017 – 14 Aug 2019.
2. Thermoelectric properties characteristic of X<sub>2</sub>Y<sub>3</sub> (X=Sb, Bi; Y=Te, Se) topological insulator, *Member of Project*, FRGS/1/2017/STG02/UITM/02/8 – RM 65,200.00, 15 Aug 2017 – 14 Aug 2019.
3. Structural and electronic properties of normal spinel cobalt oxide doped cadmium graphene composite electrodes, *Member of Project*, FRGS/1/2017/STG02/UITM/02/4– RM 60,000.00, 15 Aug 2017 – 14 Aug 2019.
4. Ionic transport mechanism study of lithium based ionogel electrolytes, *Member of Project*, FRGS-UPNM 2015 – RM 107,200.00, 19 Jun 2015 – 31 May 2018.
5. Design of hybrid carbon Nanotube/Polythiophene Based Chemiresistive Sensor for VX-Type Nerve Agent Simulant, *Member of Project*, UPNM/2018/CHEMDEF/ST/3– RM 200,000.00, 01 Apr 2018 – 31 Mac 2020.
6. Detection of Chlorin Gas Using Metal Oxide-Carbon Nanotubes Nanocomposites, *Member of Project*, UPNM/2018/CHEMDEF/ST/4– RM 240,000.00, 01 Apr 2018 – 31 Mac 2020.
7. Development of Biomaterials Based Polymer Electrolytes for Electrochemical Systems, *Head of project*, IRPA Project 2004-2007. (09-02-010068 EA 0068) – RM 199,200.00, Jul 2004- Jul 2007
8. “Electrical Property Studies On Plasticized Chitosan-LiN(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub> With Oleic/ Myristic Acid Based Polymer Electrolytes For Lithium Rechargeable Batteries”, *Member of project* BRC Project 2003, (600-BRC/ST.5/3/542) – RM 20,000.00, 15 Mac 2003 – 15 Mac 2004
9. “Investigations on The Electrical Transport Properties of Chitosan-Lithium Carbonate As Humidity Sensor”, *Head of project*, BRC Project 2003, (600-BRC/ST.5/3/573) – RM 20,000.00, 30 Jun 2003 – 30 Jun 2004
10. “Impedance Spectroscopy Studies On Solid Polymer Electrolytes (SPE) Based On HDPE/PMMA Blends”, *Member of project*, BRC Project 2003, (600-BRC/ST.5/3/597) – RM 33,100.00, 01 Oct 2003 – 01 Oct 2004
11. “Ionic Conductivity Studies On PVA/PVP As Solid Polymer Electrolytes For Secondary Batteries”, *Member of project*, BRC Project 2003, (600-BRC/ST.5/3/598) – RM 25,000.00, 01 Oct 2003 – 01 Oct 2004
12. “Conductivity Studies On Poly(acrylo nitrile) (PAN) – Based Gel Polymer Electrolytes For Capacitors” - *Member of project*, BRC Project 2003, (600-BRC/ST.5/3/612) – RM 47,000.00, 01 Oct 2003 – 01 Oct 2004
13. “Removeable Of Cadmium (Cd) From Waste Water By Using *Hevea Brasiliensis* and *Imprata Pylindrical*” - *Member of project*, BRC Project 2003, (600-BRC/ST.5/3/613) – RM 20,000.00, 01 Oct 2003 – 01 Oct 2004
14. “Ion Transport Studies on PMMA Gel-type Polymer Electrolytes ” *Member of project*, IRDC Project 2004, (600-IRDC/ST.5/3/792) – RM 18,000.00, 01 Jun 2004 – 01 Jun 2005
15. Development of Proton Batteries Based on cellulose Polymer Electrolytes, *Head of project*, Science Fund 03-01-01-SF0022 RM 95,984.00, Dec 2006- Dec 2008
16. Development of Composite polymer Electrolytes Membrane for the Application in Fuel Cells - *Head of project*, FRGS 600-IRDC/ST/FRGS 5/3/1151, RM 60,000.00, Dec 2006- Dec 2008
17. Development of New Bio-Material based Carbon Nanotubes Via spray Pyrolysis and Its Application in Electrochemical Systems, *Member of project*, FRGS 600-IRDC/ST/FRGS5/3/1208 RM 60,000.00, Mac 2007 –Mac 2009
18. Preparation and Characterization of Modified Chitosan for Electrochemical Devices, *Member of project*, Research Excellence Fund UiTM (600-IRDC/ST/DANA 5/3/Dst (92/2008) RM 20,000, 15 Aug 2008 – 15 Aug 2009
19. Natural Rubber (NR) Grafted With 30% Poly (Methyl Methacrylate) (PMMA): Characterization for Application in Lithium Polymer Battery, *Member of project*, Research Excellence Fund UiTM (600-IRDC/ST/DANA 5/3/Dst (98/2008), RM 20,000.00, 15 Aug 2008 – 15 Aug 2009
20. Electrochemical Properties of Zinc-Air Battery Based on Hydroponics, FRGS USM *Member of project*, RM 39,900.00, Feb 2007 – Feb 2010

21. Studies on UV Irradiated Chitosan/PEEK Blends for Proton Exchange Fuel Cell Membrane - Member of project FRGS (600-RMI/ST/FRGS 5/3/Fst (21/2009) RM 49,000.00 Aug 09 – Aug 2011
22. Preparation And Characterization Of Lithium Based Glass-Ceramics Conductor Materials For Lithium Batteries- Member of project FRGS (600-RMI/ST/FRGS 5/3/Fst (23/2009) RM 40,000.00 Aug 2009 – Aug 2011
23. Studies On The Effects Of Gamma Irradiation On Fuel Cells Electrode Materials - Member of project FRGS (600-RMI/ST/FRGS 5/3/Fst (18/2009) RM 49,000.00 Aug 2009 – Aug 2011
24. Preparation and Characterization on Nano-Composited Proton Exchange Fuel cell Membrane by Radiation-Induced Grafting - Member of project FRGS (600-RMI/ST/FRGS 5/3/Fst (33/2009) RM 39,000.00, 01 Nov 2009 – 31 Oct 2011
25. Proton conducting Gamma Ray Induced Grafted onto Polyimide Nanocomposite membranes For Fuel Cell Applications- Head of Project Research Excellence Fund 600-RMI/ST/DANA 5/3/Dst (299/2009) RM 40,000.00 0, 1 Jan 2010 – 31 Dis 2011
26. Studies on PEEK-Chitosan Crosslinked Biopolymer Based Proton Exchange Membranes Using UV Curing For Fuel Cell Applications - Head of Project Research Excellence Fund 600-RMI/ST/DANA 5/3/Dst (300/2009) RM 30,000.000, 1 Jan 2010 – 31 Dis 2011
27. Preparation of Grafted Polymer Electrolytes by Gamma Ray Radiation: Characterization for Application in Supercapacitors- Head of Project Research Excellence Fund 600-RMI/ST/DANA 5/3/Dst (299/2009) RM 30,000.00, 01 Jan 2010 – 31 Dis 2011
28. Ab Initio and Experimental Studies On Properties of Lead Free Ferroelectric Materials - Head of Project 600-RMI/ST/FRGS 5/3/Fst (4/2010) RM 45,600.00 01 Apr 2010 – 31 Mac 2012
29. Structural and Electrical Studies on Semiconductor Dispersed Composite Cellulose based Polymer Electrolytes- Member of project FRGS/1/10/ST/UiTM/03/12RM 60,000.00 01 Apr 2010 – 31 Mac 2012
30. Effect of Mixed Ionic and Electronic Conductor on the Electrochemiluminescence Properties of Poly-(N-vinylcarbazole) and their Conduction Mechanism - Member of project 600-RMI/ST/FRGS 5/3/Fst (198/2010) RM 62,000.00 : 27 Dis 2010 – 26 Dis 2012
31. Determination on the Homogeneity and Conductivity Enhancement of PMMA/ENR 50 Blend Electrolyte by Nano SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> Fillers - Member of project 600-RMI/ST/FRGS 5/3/Fst (206/2010) RM 81,000.00 : 27 Dis 2010 – 26 Dis 2012
32. Nano-Polycrystalline Garnet-type Solid Electrolyte Li Ion Conductor - Member of project 600-RMI/ST/FRGS 5/3/Fst (207/2010) RM 75,000.00 : 27 Dis 2010 – 26 Dis 2012
33. Synthesis of Graphene Nano-Sheets matrix Strengthen via Nano metal Oxides as Electrode Materials for Energy Conversion Devices – Head of Project 100-RMI/Nanotech 16/6/2 (1/2011) RM249,000.00 : 01 Oct 2011 – 30 Nov 2014)
34. Development of Prototyped Rechargeable lithium Air Batteries Employing Bio-Derived Cellulose and Rubber Derivatives Based Gelled and Solid Polymer Electrolytes – Head of Project 600-RMI/PRGS 5/3 (6/2011) RM 243,000.00 : 01 Nov 2011 – 31 Oct 2013
35. Modified 1-Vinylimidazole Co-Grafting Protonated Poly(Vinylidene Fluoride) Blend Membranes Proton Conductor – Member of Project 600-RMI/RAGS 5/3 (35/2012) RM 80,000.00: 15 Dec 2012 – 14 Dec 2014
36. Natural Enzymatic Oxidase Bio-Electric Generator Model – Member of Project 600-RMI/RAGS 5/3 (27/2012) RM 80,000.00: 15 Dec 2012 – 14 Dec 2014
37. Cellulose Acetate LiBOB Doped with Ionic Mixture Composite Polymer Gel Electrolyte – Member of Project 600-RMI/RAGS 5/3 (26/2012) RM 80,000.00: 15 Dec 2012 – 14 Dec 2014
38. Electrocatalytic Behaviour of Nanostructured Graphene/Metal Oxide Air Cathode Catalyst – Member of Project FRGS/1/2013/SG06/UPNM/02/2 RM 99,000.00: Apr 2013 – Mac 2015
39. Gamma Radiation Resistance of New Multicomposition Tellurite Glass Doped Er/Ce Rare Earth Ion – Member of Project FRGS/1/2013/SG06/UPNM/03/1 RM 99,000.00: Apr 2013 – Mac 2015
40. Development of Composite Electrolytes for Rechargeable Metal-Air Cells – Head of Project ERGS/1/2012/STG05/UPNM/01/1 RM89,000.00: 01 Jul 2012 – 30 Jun 2015)
41. Synthesis and First Principle Studies of Li<sub>2</sub>Fe<sub>x</sub>M<sub>1-x</sub>SiO<sub>4</sub> (M= Ni, Co, Mg or V) Cathode Materials – Head of Project FRGS/1/2013/ST05/UPNM/01/1 RM 89,000.00: Apr 2013 – Mac 2016
42. Assimilated computational synthesis of Li<sub>2</sub>TMP<sub>2</sub>O<sub>7</sub> (TM = Mn, Fe, Co) cathode conductors. Member of Project. **RAGS** UiTM 2014-1. RM 80,0000. 01 Dec 2014 – 30 Nov 2016.
43. Thionine/Graphene Nanocomposite Modified Gold Electrode Biosensor. Member of Project. **RAGS** UiTM 2014-1. RM 80,0000. 01 Dec 2014 – 30 Nov 2016.
44. Sugar-based Graphene Nanosheets Ultrasound Assisted Synthesis. Member of Project. **RAGS** UiTM 2014-1. RM 80,0000. 01 Dec 2014 – 30 Nov 2016.
45. Quantum Dot Semiconductor Doped On Plasticized Cellulose Acetate Gel Polymer Electrolyte Dye Sensitized Solar Cells. Member of Project. **RAGS** UiTM 2014-1. RM 80,0000. 01 Dec 2014 – 30 Nov 2016.
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