Sr. Lecturer

Contact Details

Ts. DR. MOHD SOBRI BIN IDRIS

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Professional Experience:

Auditor Panel for Malaysian Qualification Agency (MQA) (2018 – Present)
Manager, Centre of Excellence for Frontier Materials Research, Universiti Malaysia Perlis (2016 – Present)
Manager, Qualification and Accreditation Unit, Chancellery Dept., Universiti Malaysia Perlis (2012 – 2015)
Senior Lecturer, School of Materials Engineering, Universiti Malaysia Perlis (2011 – Present)
Vocational Training Officer, School of Materials Engineering, Universiti Malaysia Perlis (2003 – 2011)

Research Contributions:

My research interests are concerned mainly with the design and development of novel oxide materials for green energy applications Our research encompasses on understanding on structure-composition-property correlation of oxide-based functional materials that could allow explanation for its properties and performance. Current researches include:

- Development of novel cathode materials for Lithium-ion batteries
- Development of Fast Ionic Solids for Solid-state Lithium-ion Batteries and Solid Oxide Fuel Cells (SOFCs)
- Novel electroceramics for electronic aplications

Teaching Contributions:

Courses taught are in the areas of: Materials Chemistry; Crystallography; X-ray Diffraction; and Electronic Materials

Current and Recent Researchers:

Research Students

Tan Tze Qing (PhD)	Synthesis and Characterization of Phosphate-based Materials for High-Voltage Rechargeable Lithium-ion Batteries
Nurhamidah binti Zakaria (MSc)	Synthesis and Characterisation of Electrode and Electrolyte for Intermediate Temperature Solid Oxide Fuel Cell (IT-SOFCs)
Najwa Shafiqa Binti Anwar (MSc)	Studies on the Densification and Grain Growth Mechanisms of Polycrystalline Ceramic Based on $LaYO_3$
Tan Tze Qing (MSc)	Oxygen Non-Stoichiometry and Interlayer Mixing in Layered Rock Salt Cathode Materials for Rechargeable Lithium Batteries.
Nur Farahin Binti Abdul Hamid (MSc)	Synthesis and Characterization of La-doped $BaTiO_3$ High-*K* materials for Semiconductor Application
Fatin Adila Binti Ismail (MSc)	Synthesis and Characterization of Er-doped $BaTiO_3$ High Dielectric Materials for Electronic

	Applications
Tuan Amirah Tuan Sulong (MSc)	Synthesis and Characterization of Nd-doped $BaTiO_3$ for Electronic Applications

Some Recent Research Students

Mohd Izha Ishak (PhD)	Fabrication of Lithium Vanadate-based Cathode Materials for Rechargeable Lithium-ion Batteries.
Wan Masku Wan Mohammed (PhD)	Development of Advanced Functional Cathode Materials for High Voltage Lithium-ion Batteries
Soo Soon Peng (PhD)	Structure and Properties Analysis of $LiCo_{1-x-y}Ni_xMn_yO_2$ as Cathode Materials for Rechargeable Lithium-ion Batteries.
Ku Noor Dhaniah Ku Mohsen (PhD)	Synthesis and Characterization of Novel Piezoelectric Materials for Energy Harvesting Applications
Edi Yasa Ardiansyah (PhD)	Processing and properties of Ceramic Materials
Nur Khuzaimah (MSc)	Titanium Oxycarbonitride Materials

Honours, Awards and Memberships:

2018 – Professional Technologist, Malaysian Board of Technologist (MBOT)
2017 – Members of The Institution of Engineers and Technology (IET), United Kingdom (MIET)
2017 – Graduate Member of Malaysian Board of Technologist (MBOT)
2012 – Members of The Malaysian Society for Engineering and Technology (MySET)
2011 – Member of The Royal Society of Chemistry, United Kingdom (MRSC)
2008 – Excellent Researcher Award by Universiti Malaysia Perlis
2007 – PhD Scholarship by Ministry of Higher Education Malaysia
2005 – Graduate Member of the Board of Engineers Malaysia (BEM)
2013 – Awarded *Silver medal* for project of the ***Novel High-K Relaxor Ferroelectric Materials For Broad Range Frequency Devices Application With Ultra Low Dielectric Loss***, **Ekspo Rekacipta & Pameran Penyelidikan UniMAP 2013**.
2007 – Awarded *Gold Medal* for the invention of ***The Production of Lightweight Aggregates From Local Waste*** at the **International Exhibition of Inventions of Geneva 2007, Switzerland** and **The International Warsaw Invention Show 2007 (IWIS), Warsaw**.

2006 – Awarded *Gold Medal* for the invention of ***Artificial Marble*** at **the International Exhibition of Inventions of Geneva 2006, Switzerland**.
2006 – Awarded *Silver Medal* for the invention of ***Production of Lightweight Aggregates from Fly Ash*** at the **17th International Invention, Innovation, Industrial Design and Technology Exhibition 2006 (ITEX 2006), Malaysia**.
2005 – Awarded *Silver Medal* for the invention of ***Artificial Marble*** at the **16th International Invention, Innovation, Industrial Design and Technology Exhibition 2005 (ITEX 2005), Malaysia.**
2005 – Awarded *Silver Medal* for the invention of Artificial Marble at the Research & Development Expositions for Universities in Malaysia 2005 (IPTA R&D EXPO 2005), Malaysia.

Research Funding:

Over the past seven (7) years, extensive research funding has been received from the Ministry of Higher Education (MOHE) and industries. Funding has been received for materials procurement, experimental set-up, equipment and etc.

Some Recent Individual ARC Grants (exc. CoE Projects)

1. **Fundamental Research Grant Scheme (FRGS) Grant:** A Fundamental Study on High Voltage (5Volt) Cathode Materials for Rechargeable Lithium Batteries **Amount: RM 124,500.00**, (2014-2017) - **Completed**
2. **Fundamental Research Grant Scheme (FRGS) Grant:** Understanding a Relationship Between Interlayer Mixing and Oxygen Non-stoichiometry in Layered Rock Salt-type Cathode Materials for High Energy Density Lithium-ion Battery Applications, **Amount: RM 92,680.00**, (2012-2014). - **Completed**
3. **Malaysia Toray Science Fund (MTSF) Grant:** Structure and property correlation of Layered Rock Salt Cathode Materials For Rechargeable Lithium Batteries. **Amount: RM12,000**. (2014-2015) - **Completed**
4. **Malaysia Toray Science Fund (MTSF) Grant:** Oxygen Non-stoichiometry and Interlayer Mixing in Layered Rock Salt Cathode Materials For Rechargeable Lithium Batteries, **Amount: RM18,000** (2013-2014) - **Completed**
5. **UniMAP – Short-term Grant:** Characterisation of New Materials for FTM and MicroRWELL from the ME0 (high-time resolution) and GE2 (wire area) detectors. **Amount: RM20,000** (2016-2017) – Research collaboration with *The European Organization for Nuclear Research* (CERN), Geneva, Switzerland. - **Completed**
6. **Fundamental Research Grant Scheme (FRGS) Grant:** Phase Diagram Studies and Electrical Characterisation of Rare Earth doped $BaTiO_3$

(RE-doped $BaTiO_3$) as relaxor ferroelectric for electronic applications, **Amount: RM 98,600.00** (2014-2017). **Completed**
7. **Exploratory Research Grant Scheme (ERGS Grant:** Discover the nature of relaxor ferroelectric behaviour using Impedance Spectroscopy (IS). **Amount: RM 130,000.00**, (2013-2016). - **Completed**
8. **Fundamental Research Grant Scheme (FRGS) Grant:** Fundamental Studies of Chemical Phosphate Coating Process to Optimize Parameters for Production of a Hydroxyapatite ($Ca_{10}(PO_4)_6(OH)_2$, HA) Coating through Alkali Heat Treatment Modification, **Amount: RM 95,200.00**, (2015-2017). **– Completed**
9. **Fundamental Research Grant Scheme (FRGS) Grant:** Fundamental Investigation of Electro-Optic Behaviour of Microfabricated Thin Film Barium-Based Ferroelectric Optical Waveguides, **Amount: RM 100,000.00**, (2013-2015). - **Completed**
10. **Fundamental Research Grant Scheme (FRGS) Grant:** Performance Characteristics and Invariance Measurement of Nano Porous Eco-Waste Local Clay-Fly Ash Thermal Insulator, **Amount: RM 88,000.00**, (2012-2014). - **Completed**
11. **Fundamental Research Grant Scheme (FRGS) Grant:** Possibility of Ferromagnetism and Isolation in Doped Epitaxial Planar Ferroelectric High-K Dielectric Structures, **Amount: RM 88,000.00**, (2012-2015). - **Completed**
12. **Research Acculturation Grant Scheme (RAGS) Grant:** Structure and Property Correlations of Dielectric Materials for Green Energy Storage, **Amount: RM 50,302.95**, (2012-2014). - **Completed**
13. **Research Acculturation Grant Scheme (RAGS) Grant:** Structure and Property Correlation of $Ba_{1-x}Sr_xCo_{1-y}Fe_yO_2$ as a Cathode For Intermediate-Temperature Solid Oxide Fuel Cell (IT-SOFC), **Amount: RM 61,302.95**, (2012-2014). - **Completed**

Selected Publications:

Over 50 journal and conference papers, book chapters and books.

Some Recent Publications

1. Tze Qing Tan, Rozana AM Osman, Zul Azhar Zahid Jamal and Mohd Sobri Idris, Structural and electrical studies of olivine $LiNi_{1-x}(Co_{0.5}Mn_{0.5})_xPO_4$ ($0 \le x \le 1$) at high temperature
2. Tze Qing Tan, Mohd Sobri Idris, Rozana Aina Maulat Osman, M.V. Reddy and B.V.R Chowdari, **Structure and electrochemical behaviour of $LiNi_{0.4}Mn_{0.4}Co_{0.2}O_2$ Cathode Material for Lithium Ion Batteries**, Solid State Ionics, 278, 43-48 (2015)
3. M.V. Reddy, T. W. Jie, C.J. Jafta K.I. Ozoemena, M.K. Mathe, A.S. Nair, S. P. Soo, M. Sobri Idris, G. Balakrishna, F.I. Ezema and B.V.R

Chowdari,, **Studies on Bare and Mg-doped $LiCoO_2$ as a cathode material for Lithium ion Batteries**, Electrochimica Acta, 128, 192-197 (2014)

4. Mohd Sobri Idris and Anthony R. West, **The effect on cathode performance of oxygen non-stoichiometry and interlayer mixing in layered rock salt $LiNi_{0.8}Mn_{0.1}Co_{0.1}O_{2-\delta}$**, Journal of Electrochemical Society*, 159(4) A396-A401, 2012.*
5. Mohd Sobri Idris, **The Existing of Oxygen Nonstoichiometry In Complex Lithium Oxides**, Advanced Materials Research, 795, 438-440 (2013).
6. Mohd Sobri Idris and Rozana AM Osman, **Determination of Interlayer Mixing and Oxygen Non-Stoichiometry in $LiNi_{0.8}Mn_{0.1}Co_{0.1}O_{2-\delta}$ Using Powder Diffraction Data**, Advanced Materials Research, 795, 464-468 (2013).
7. Mohd Sobri Idris and Rozana AM Osman, **Structure Refinement Strategy of Li-based Complex Oxides using GSAS-EXPGUI software package**, Advanced Materials Research, 795, 479-482 (2013).
8. Yuk Ming Chin, Rozana AM Osman, and Mohd Sobri Idris, **Structural Analysis of $LiNi_{0.7}Mn_{0.3}O_2$ as a Cathode Material for Rechargeable Lithium-Ion Batteries**, Applied Mechanics and Materials, 754-755, 1187-1190 (2015).
9. Soon Peng Soo, Rozana AM Osman, Mohd Sobri Idris, **The Effect of Synthesis Temperature on Interlayer Mixing in Layered Rock Salt Cathode Materials $LiNi_{0.7}Mn_{0.1}Co_{0.2}O_2$ for Li-ion Batteries Application**, *Materials Science Forum, 819, 155-160 (2015).*
10. Tze Qing Tan, Rozana AM Osman and Mohd Sobri Idris, **Characterisation of Cation Ordering in Layered Rock-salts $LiNi_{1/3}Mn_{1/3}Co_{1/3}O_2$ Cathode Material for Lithium Ion Batteries,** *Materials Science Forum, 819, 179-184 (2015).*
11. Zulkifeli Abdullah, Rozana A. M. Osman, S.P. Soo, N. Farahin, and M.S. Idris, **Synthesis and Characterisation of $Li_{1-x}Na_xNi_{1/3}Co_{1/3}Mn_{1/3}O_2$ as Cathode Materials for Rechargeable Lithium Batteries,** *Materials Science Forum, 819, 232-237 (2015).*
12. Tze Qing Tan, Azmi Rahmat, Shamsul Baharin Jamaludin, Rozana Aina Maulat Osman, Zul Azhar Zahid Jamal and Mohd Sobri Idris. **A Brief Review of Layered Rock Salt Cathode Materials For Lithium Ion Batteries**, Advanced Materials Research, 795, 245 – 250 (2013).
13. Nur Farahin Abdul Hamid, Rozana Aina Maulat Osman, and Mohd Sobri Idris, **X-ray Diffraction and Dielectric Constant of Lanthanum Doped Barium Titanate Ceramics,** Applied Mechanics and Materials 815, 131-135 (2015).
14. Rozana AM Osman and Mohd Sobri Idris, **Electrical Properties of fresnoite $Ba_2TiSi_2O_8$ Using Impedance Spectroscopy**, Advanced Materials Research, 795, 640-643 (2013).
15. Rozana A.M. Osman, Mohd Sobri Idris, Zul Azhar Zahid Jamal, Sanna Taking, Syarifah Norfaezah Sabki and Prabakaran Poopalan, **Ferroelectric and relaxor ferroelectric to paraelectric transition based on Lead Magnesium Niobate (PMN) Materials**, Advanced

Materials Research, 795, 458 – 663 (2013).

16. Nur Farahin Abdul Hamid, Rozana Aina Maulat Osman, Mohd Sobri Idris, **X-ray Diffraction and Dielectric Constant of Lanthanum Doped Barium Titanate Ceramics,** *Applied Mechanics and Materials* 815, 131-135**. (**2015**)**

17. Nur Farahin Abdul Hamid, Rozana Aina Maulat Osman, Mohd Sobri Idris and Mohd Rosydi Zakaria, **Review on Preparation and Properties of High-K Dielectric Material Based on Lanthanum Doped Barium Titanate,** *Materials Science Forum, 819, 173-178 (2015)*