

# AHMAD ZAHIRANI BIN AHMAD AZHAR



- KULLIYAH OF ENGINEERING
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## ACADEMIC QUALIFICATION

- Doctor of Philosophy (Materials and Mineral Engineering)
- Master of Science in Materials Engineering
- Bachelor in Materials Engineering

## TEACHING RESPONSIBILITIES

CERAMICS AND GLASSES	2015/2016 2016/2017 2018/2019
CERAMICS PROCESSING	2014/2015
Ceramics	2018/2019 2019/2020
ELECTROCERAMICS	2015/2016
ENGINEERING DRAWING	2016/2017 2017/2018 2018/2019 2019/2020
ENGINEERING ECONOMICS AND MANAGEMENT	2018/2019
ENGINEERING MATERIALS	2013/2014
Electronic Packaging	2019/2020
FAILURE ANALYSIS OF MATERIALS	2016/2017
FINAL YEAR PROJECT I	2018/2019 2019/2020
FUNDAMENTALS OF MATERIALS ENGINEERING	2016/2017
INTEGRATED DESIGN PROJECT	2013/2014 2014/2015
MATERIALS ENGINEERING LAB I	2017/2018 2018/2019 2019/2020
MATERIALS ENGINEERING LAB IV	2013/2014
MATERIALS SCIENCE AND ENGINEERING	2013/2014 2014/2015
PROJECT I	2017/2018 2018/2019
PROJECT II	2014/2015
THERMODYNAMICS OF MATERIALS	2015/2016

## RESEARCH PROJECTS

### In Progress

- 2018 - Present** Environmental-friendly durable concrete bricks made with waste for sustainable construction with utilizing waste materials from Dalia Industries.
- 2017 - Present** Properties improvement of ZTA-TiO<sub>2</sub>-Cr<sub>2</sub>O<sub>3</sub> cutting insert through the optimization of powder compaction process
- 2015 - Present** Development of Ceramic Membranes from Halal Sources Material for Removal of CO<sub>2</sub> from Biogas Plant
- 2014 - Present** Fundamental Mechanism and Activation of Nanoadd Zirconia Toughened Alumina (ZTA) Cutting Insert via the Addition of Carbon Nanotube (CNT) for Machining Super Alloy Inconel 718
- 2014 - Present** Enhancing Tool Life with the Development of Silicon Nitride based Inserts for High Speed Machining of Inconel 718 using Hybrid Microwave Sintering
- 2009 - Present** Advanced Materials and Surface Engineering (AMSERU)
- Unknown - Present** Environmental-friendly durable concrete bricks made with waste for sustainable construction with utilizing waste materials from Dalia Industries.

### Completed

- 2015 - 2018** Development of Ceramic Membranes from Halal Sources Material for Removal of CO<sub>2</sub> from Biogas Plant
- 2015 - 2018** Surface Coating of Duplex Stainless Steel Using Nitriding and TIG Torch Melting Techniques - A Comparative Study
- 2014 - 2018** Fundamental Mechanism and Activation of Nanoadd Zirconia Toughened Alumina (ZTA) Cutting Insert via the Addition of Carbon Nanotube (CNT) for Machining Super Alloy Inconel 718
- 2014 - 2019** Enhancing Tool Life with the Development of Silicon Nitride based Inserts for High Speed Machining of Inconel 718 using Hybrid Microwave Sintering
- 2013 - 2016** Development of High Wear Resistent Nano Add ZTA Ceramic Cutting Insert for High Speed Machining Application

## PUBLICATIONS

### Article

- 2019** [The effects of CeO<sub>2</sub> addition on the physical and microstructural properties of ZTA-TiO<sub>2</sub> ceramics composite.](#) Journal of Alloys and Compounds , 773 pp.27-33
- 2018** [Influence of water molar ratio on fabrication of silica ceramic membranes via sol-gel dip-coating method.](#) International Journal of Current Science, Engineering & Technology , 1 (Special Issue 1) pp.378-383

- 2018** [The relationship of cutting chip type, length and thickness to wear of Zirconia Toughened Alumina Added with Magnesium Oxide \(ZTA-MgO\) cutting tool.](#) International Journal of Current Science, Engineering & Technology , 1 (Special Issue 1) pp.452-457
- 2018** [Effect of single walled carbon nanotube addition to the physical properties of monolithic alumina.](#) International Journal of Current Science, Engineering & Technology , 1 (Special Issue 1) pp.585-590
- 2018** [Improvements in the development of silicon nitride inserts using hybrid microwave energy for machining Inconel 718.](#) International Journal of Engineering Research & Technology (IJERT) , 7 (10) pp.244-247
- 2018** [Effect of calcination temperature on the silica ceramic membrane synthesized via sol-gel dip-coating method.](#) International Journal of Current Science, Engineering & Technology , Special issue pp.63-67
- 2018** [The effects of glycerol addition to the mechanical properties of thermoplastic films based on jackfruit seed starch \[Kesan penambahan gliserol pada sifat mekanik filem termoplastik berdasarkan kanji biji nangka\].](#) Malaysian Journal of Analytical Sciences , 22 (5) pp.892-898
- 2018** [Effect of banana peel fiber as reinforcement in low density polyethylene/durian seed starch blends.](#) International Journal of Current Research in Science & Technology , Special issue pp.191-196
- 2018** [Enhancing tool life of hot isostatically pressed silicon nitride inserts in machining inconel 718 with different susceptors through hybrid microwave post sintering.](#) International Journal of Engineering Research and Application , 8 (12 Part I) pp.51-56
- 2017** [Synthesis and characterization of silica ceramic membranes via sol-dip coating.](#) Journal of Advanced Research in Materials Science , 39 (1) pp.1-7
- 2017** [Effect of dipping number on the fabricated silica ceramic membranes via sol dip-coating method.](#) Journal of Advanced Research in Applied Sciences and Engineering Technology , 7 (Issue 1) pp.19-24
- 2017** [Microwave sintering of zirconia-toughened alumina \(ZTA\)-TiO<sub>2</sub>-Cr<sub>2</sub>O<sub>3</sub> ceramic composite: the effects on microstructure and properties.](#) Journal of Alloys and Compounds , 722 pp.458-466
- 2017** [Tetragonal and monoclinic phase transformation of ZTA-MgO ceramic cutting tool by machining process.](#) Materials Science Forum , 888 pp.108-111
- 2016** [Effect of titania and magnesia on the physical properties of zirconia toughened alumina.](#) Materials Science Forum , 840 pp.82-86
- 2016** [Effects of Cr<sub>2</sub>O<sub>3</sub> addition on the phase, mechanical properties, and microstructure of zirconia-toughened alumina added with TiO<sub>2</sub> \(ZTA-TiO<sub>2</sub>\) ceramic composite.](#) International Journal of Refractory Metals and Hard Materials , 61 pp.40-45
- 2016** [Role of MgO nanoparticles on zirconia-toughened alumina-5 wt-% CeO<sub>2</sub> ceramics mechanical properties.](#) Materials Science and Technology , 32 (13) pp.1316-1322
- 2015** [Effect of voltage on colloidal gold \(Au\) nanoparticles produced using electro-dissolution-reduction method.](#) Advanced Materials Research , 115 pp.386-386

- 2015 [Wear analysis of ZTA-Mgo ceramic cutting inserts on stainless steel 316L machining.](#) Advanced Materials Research , 1087 pp.101-105
- 2015 [Effect of Titania \(TiO<sub>2</sub>\) Addition to Zirconia Toughened Alumina \(ZTA\) Phases, Hardness and Microstructure.](#) Advanced Materials Research , 1087 pp.293-298
- 2015 [Transition metal oxide \(TMO\) thin film memristor on cu substrate using dilute electrodeposition method.](#) Materials Transactions , 56 (8) pp.1302-1306
- 2014 [Effects of TiO<sub>2</sub> addition on the phase, mechanical properties, and microstructure of zirconia-toughened alumina ceramic composite.](#) Ceramics International
- 2014 [The influence of in-situ formation of hibonite on the properties of zirconia toughened alumina \(ZTA\) composites.](#) Ceramics International , 40 (4) pp.6211-6217
- 2014 [Effects of MgO addition on the phase, mechanical properties, and microstructure of zirconia-toughened alumina added with CeO<sub>2</sub> \(ZTA-CeO<sub>2</sub>\) ceramic composite.](#) Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing , 595 pp.18-24
- 2013 [The relationship between microstructure and fracture toughness of zirconia toughened alumina \(ZTA\) added with MgO and CeO<sub>2</sub>.](#) International Journal of Refractory Metals and Hard Materials , 41 pp.522-530

#### Conference or Workshop Item

- 2019 [Hardness and fracture toughness analysis of ZTA-SWCNT ceramic cutting inserts.](#) In: **International Conference on X-Rays and Related Techniques in Research and Industry 2018 (IXCRI 2018)**
- 2019 [Analysis on physical and microstructural properties of ZTA-SWNT ceramic cutting tool.](#) In: **International Conference on X-Rays and Related Techniques in Research and Industry 2018 (IXCRI 2018)**
- 2018 [Optimizing the synthesis of alumina inserts using hot isostatic pressing \(HIP\).](#) In: **International Conference on Advances in Manufacturing and Materials Engineering (ICAMME 2017)**
- 2018 [Preparation and characterization of jackfruit seed starch/poly \(vinyl alcohol\) \(PVA\) blend film.](#) In: **International Conference on Advances in Manufacturing and Materials Engineering 2017, ICAMME 2017**
- 2018 [Fabrication of silica ceramic membrane via sol-gel dip-coating method at different nitric acid amount.](#) In: **International Conference on Advances in Manufacturing and Materials Engineering 2017, ICAMME 2017**
- 2018 [XRD investigation of the effect of MgO additives on ZTA-TiO<sub>2</sub> ceramic composites.](#) In: **International Conference on Advances in Manufacturing and Materials Engineering 2017, ICAMME 2017**
- 2018 [The effect of cutting parameters on the performance of ZTA-MgO cutting tool.](#) In: **International Conference on Advances in Manufacturing and Materials Engineering 2017, ICAMME 2017**
- 2018 [Konsep pelaksanaan pengasingan kolej kediaman pelajar di Universiti Islam Antarabangsa Malaysia mengikut fakulti.](#) In: **Konvensyen Kepengetuaan & Felo Penghuni Kolej-kolej Kediaman Peringkat Kebangsaan 2018**

- 2017 [Tetragonal and monoclinic phase transformation of ZTA-MgO ceramic cutting tool by machining process.](#) In: **International Conference of X-Ray and Related Techniques 2016 (ICXRI 2016)**
- 2017 [Optimizing the synthesis of alumina inserts using hot isostatic pressing \(HIP\).](#) In: **International Conference on Advances in Manufacturing and Materials Engineering (ICAMME 2017)**
- 2017 [Effects of TiN single layer coating on the wear of ZTA cutting inserts and surface roughness of workpiece.](#) In: **International Conference on X-Rays and Related Techniques in Research and Industry, ICXRI 2016**
- 2016 [Preparation of modified ceramic membranes with silica sol-dip coating for separation biogas application.](#) In: **4th International Conference on Biotechnology Engineering 2016 (ICBioE 2016)**
- 2016 [Effect of Cr<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub> addition on the physical properties of zirconia toughened alumina.](#) In: **Advanced Materials Characterization Technique**
- 2016 [Effect of citrate concentration on colloidal gold \(Au\) nanoparticles produced using electro-dissolution-reduction method.](#) In: **Seminar on Advanced Materials haracterization Techniques in Research, Industry and Nuclear Applications, AMCT 2015**
- 2015 [Fabrication of flexible Au/ZnO/ITO/PET memristor using dilute electrodeposition method.](#) In: **4th International Conference on Electronic Devices, Systems and Applications 2015 (ICEDSA)**

**Book**  
**Book Section**