# ENGKU ABD GHAPUR BIN CHE ENGKU ALI

Lecturer
Faculty of Science and Marine Environment
Universiti Malaysia Terengganu

engku_ghapur@umt.edu.my
+609 668 3187 / +6013 2512540
+609 668 3193

## QUALIFICATIONS

- Doctor of Philosophy (Advanced Materials), Universiti Putra Malaysia
- Master of Science (Materials Science), Universiti Kebangsaan Malaysia
- Bachelor of Science (Materials Science), Universiti Kebangsaan Malaysia

## FIELD OF RESEARCH

- 1 Advanced Materials
- 2 Nanomaterials
- 3 Nanocomposite
- 4 Dye sensitized solar cells
- 5 Optic materials

## RESEARCH INTEREST

My primary interest lies in the field of advanced materials, which is focused on sensitizing nanomaterials and its application in solar cell, optical and composite materials. I am working on the producing the zinc silicate (willemite) nanocomposite from the wet chemical and simple thermal treatment method which is environmental-friendly and low in cost and energy usage. The physical and optical properties of materials is study by performing doping of rare earth and transition element. I also had working on the synthesizing zinc oxide nanorod as photoelectrode in dye-sensitized solar cells (DSSC). The performance of cells is also tested by using several organic dyes extracted from plants. The use of graphene nano platelet (GnP) as a filler in polymer composite and its effect to the electromagnetic shielding are also of my present research project. With the rapid development in electronic devices and wireless communication, this polymer composite can be one of the candidate materials for the electronic equipment shielding parts that prone to the high electromagnetic wave area such as cellular communication base tower and for home or room shielding layer wall.

## RESEARCH PROJECTS

- Studies on Physical Properties and Energy Conversion Efficiency of the Nanorod Zinc Oxide Combined With Imidazolium as a Dye Sensitized Solar Cells (DSSC) (*Project leader*)
- Study on the Potential of Maritime Microalgae as a Dye Combined with Zinc Oxide and Conducting Polymer for Multi-layer Thin Film Photovoltaic Cell (Co-researcher)
- Preparation and evaluation of graphene nanoplatelets as a filler to the mechanical and electromagnetic interference shielding properties of polyethylene (PE) composite (*Project leader*)

## EXPERT LINKAGES

- Assoc. Prof. Ts. Dr. Roslan Umar, East Coast Environmental Research Institute (ESERI), UNISZA.
- A.P. Dr. Khamirul Amin Matori, Physics Department, Faculty of Science, Universiti Putra Malaysia.
- Dr. Mohd. Hafiz Mohd Zaid. Physics Department, Faculty of Science, Universiti Putra Malaysia.
- Prof. Dr. Azman Jalar, Applied Physics Department, Faculty of Science and Technology, Universiti Kebangsaan Malaysia.

## PROFFESIONAL MEMBERSHIP

- Malaysia Board of Technologists (MBOT)
- The Malaysian Solid State Science & Technology Society (MASS)
- Malaysia Nanotechnology Association

## GRANTS

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| Project | : | Studies on Physical Properties and Energy Conversion Efficiency of the Nanorod Zinc Oxide Combined With Imidazolium as a Dye Sensitized Solar Cells (DSSC) |
| Position | : | Project Leader |
| Grant Name | : | FRGS |
| Status | : | Completed |
| Amount | : | RM 98,000.00 |

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| Project | : | Study on the Potential of Maritime Microalgae as a Dye Combined with Zinc Oxide and Conducting Polymer for Multi-layer Thin Film Photovoltaic Cell |
| Position | : | Co-reseacher |

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| Grant Name | : | ERGS |
| Status | : | Completed |
| Amount | : | RM 122,000.00 |
| Project | : | Preparation and evaluation of graphene nanoplatelets as a filler to the mechanical and electromagnetic interference shielding properties of polyethylene (PE) composite |
| Position | : | Project Leader |
| Grant Name | : | FRGS |
| Status | : | Active |
| Amount | : | RM 99 690.00 |

# PUBLICATIONS

## Journal Article

1. Sheng, C.K., Aarif, R., **Ali, E.A.G.E**., Hassan, M.F. (2020) Influence of hf etching time and concentration on si wafer in the mixture solution of HF/HNO3/CH3COOH, Journal of Sustainability Science and Management, 15(2), 6-11.
2. **Engku Ali, E.A.G**., Matori, K.A., Saion, E., Sidek, H.A.A., Zaid, M.H.M., Alibe, I.M., (2019) Effect of sintering temperatures on structural and optical properties of ZnO-Zn2SiO4 composite prepared by using amorphous SiO2 nanoparticles. Journal of the Australian Ceramic Society, 55(1), 115-122.
3. **Ali, E.A.G.E.**, Kim, T.L., Abdullah, M.A.A., Sheng, C.K. (2019) Effects of graphite milling time and composition to tensile properties of poly-methyl methacrylate (PMMA)/graphite composite. Journal of Sustainability Science and Management14(6), 4-11.
4. Alazoumi, S.H., Sidek, H.A.A., El-Mallawany, R., Kamari, H.M., Zaid, M.H.M., **Ali, E.A.G.E.** (2018) Elastic moduli of TeO2–PbO glass system. Applied Physics A: Materials Science and Processing 124(12),845.
5. **Ali, E.A.G.E.**, Matori, K.A., Saion, E., Aziz, S.H.A., Zaid, M.H.M., Alibe, I.M. (2018) Structural and optical properties of heat treated Zn2SiO4 composite prepared by impregnation of ZnO on SiO2 amorphous nanoparticles. ASM Science Journal 11(Special Issue 1), 75-85.
6. Nurhaziqah, K.F., Sheng, C.K., Amin, K.A.M., Isa, M.I.N., Hassan, M.F., **Ali, E.A.G.E.**, Kamarudin, K.H., Aarif, R. (2018) Effect of HNO3 concentration on etch rate and structure of si wafer etched in the mixture of HF and HNO3 solutions. ASM Science Journal 11(Special Issue 1), 68-74.
7. Alibe, I.M., Matori, K.A., Sidek, H.A.A., Yazid, Y., Saion, E., Alibe, A.M., Zaid, M.H.M., **Ali, E.A.G.E.**, Zangina, T., (2018) The influence of calcination temperature on structural and optical properties of ZnO-SiO2 nanocomposite by simple thermal treatment route Archives of Metallurgy and Materials, 63(2) 539-545.

8. **Engku Ali, E.A.G.**, Matori, K.A., Saion, E., Sidek, H.A.A., Zaid, M.H.M., Alibe, I.M., (2017) Effect of reaction time on structural and optical properties of porous SIO2 nanoparticles, Digest Journal of Nanomaterials and Biostructures, 12(2) 441-447. Alibe, I.M., Matori, K.A., Saion, E., Alibe, A.M., Zaid, M.H.M.,
9. Alibe, I.M., Matori, K.A., Saion, E., Alibe, A.M., Zaid, M.H.M., **Ghapur Engku, E.A.A.**, (2016) A facile synthesis of amorphous silica nanoparticles by simple thermal treatment route, Digest Journal of Nanomaterials and Biostructures, 11(4) 1155-1164.
10. **E. A. Ghapur**, K. A. Matori, M.H.M. Zaid, A. A. Sidek, E. B. Saion, (2016) Synthesis and characterization of zinc silicate produced by wet chemical method Journal of Solid State Science and Technology,24(2) 272-279.
11. A. Dhafina, **E. A. Ghapur** and S. Hasiah, (2012). Hydrothermal Growth Route of ZnO Nanorods for Use in Thin Film Solar Cell Devices, ARPN Journal of Science and Technology, Vol 2(5): 432-436.
12. **Engku Abd Ghapur Engku Ali**, Abdul Razak Daud (2002) Kajian ke atas mikrostruktur dan mikrokekerasan aloi Al-2% Si mengandungi 1-5% Ti Jurnal Fizik Malaysia 23 (1-4) 107-111

## Conference Publication

1. Ali, E.A.G.E., Matori, K.A., Saion, E., Aziz, S.H.A., Zaid, M.H.M., Alibe, I.M. (2018) Calcination effect to the physical and optical properties of Zn2SiO4 composite prepared by impregnation of ZnO on SiO2 amorphous nanoparticles. IOP Conference Series: Materials Science and Engineering, 440(1),012036
2. Sheng, C.K., Amin, K.A.M., Kee, K.B., Hassan, M.F., Ali, E.G.E. (2018) Effect of wood flour content on the optical color, surface chemistry, mechanical and morphological properties of wood flour/recycled high density polyethylene (rHDPE), AIP Conference Proceedings 1958, DOI: 10.1063/1.5034533
3. Z. Fardiana, D.A. Nazri, A. Hamizah, W.A. Dhafina, **E.A. Ghapur**, N.A.N. Aziz, M.S. Azhar, S. Hasiah (2013) Preliminary Study on the Electrical Properties of the Polypyrrole Thin Film for Gas Sensor, UMTAS 2013 Proceeding, Penerbit UMT.
4. Engku Abd Ghapur Engku Ali, A.A. Shahira, S. Hasiah & W.A. Dhafina (2012) Preparation and Characterization of ZnO Thin Film Combined with Imidazoluim Iodides, Prosiding Seminar Hasil Penyelidikan Kementerian Pengajian Tinggi.
5. Ali, E.A.G.E., Rezali, R. (2012) The effect of ZnO nanorod growth duration by hydrothermal deposition method to the photovoltaic properties, AIP Conference Proceedings 1502, 476-485.
6. **Engku Abd Ghapur Che Engku Ali**, Zulfa Suhaimi, Hasiah Salleh (2012) Preparation and Characterization of Zinc Oxide Rods/Thin Film by Hydrothermal Deposition Method Combined with Polythiophene, UMTAS 2012 Proceeding, e-ISBN 978-967-5366-93-2, 1108-1112.
7. A. Hamizah, S. Hasiah, **E. A. Ghapur**, W. A. Dhafina & N. A. N. Aziz (2012) Optical and Electrical Studies on Organic Solar Cells, UMTAS 2012 Proceeding, e-ISBN 978-967-5366-93-2, 1095-1100.
8. W. A. Dhafina, S. Hasiah, **E. A. Ghapur**, A. Hamizah, N. A. N. Aziz (2012) ZnO Nanorods and P3TAA as Hybrid Solar Cells, UMTAS 2012 Proceeding, e-ISBN 978-967-5366-93-2, 1088-1094.

9. **Engku Abd Ghapur Engku Ali**, Tho Seiw Yen (2011) The Effects of Seeding & Growing Precursor Concentration to the ZnO Physical, Optical & Electrical Properties, UMTAS 2011 Proceeding, 334-339.
10. N.A. Nik Aziz, S. Hasiah, L.S. Wei, **E.A. Ghapur** (2011) Electrical Conductivity Study of Dye-Sensitized Photovoltaic Cell, UMTAS 2011 Proceeding, 28-32.
11. S. Hasiah, **E.A.Ghapur**, N. Amalina, K. Ibrahim, K.B.K. Halim (2010) Fabrication of 8-Hydroxyquinoline Aluminum Thin Film Mixture with Chlorophyll as Bulk Heterojunction Solar Cell. UMTAS 2010 Proceeding, 841-847.
12. S. Hasiah, **E.A. Ghapur**, N.B. Jusoh, K. Ibrahim (2010) The Electrical Conductivity of Chlorophyll with Polypyrrole Thin Film as Solar Cell, Proceedings of ICSSST2010, 1-5.
13. M. K. Mahsan, Chan Kok Sheng, M. Ikmar Nizam Isa, **E. Ghapur E. Ali**, M. Hasmizam Razali (2009) Structural and Physical Properties of PVA/TiO2 Composite, Proceedings Malaysia Polymer International Conference (MPIC 2009), 486-491.
14. Omar, M.A., Mustapha, M., **Ali, E.A.G.E.**, Subuki, I., Meh, B. (2010) Production of medical device using MIM technique, AIP Conference Proceedings 1217, 287-293.
15. **Ghapur, E.A.**, Mustapha, M., Ismail, F., Sidek, I., Meh, B. (2008) The effect of mechanical milling and temperature to the carbothermal reduction process of silica sand, AIP Conference Proceedings 1017, 310-314.
16. Abdul Kadir Masrom, **Engku Abd Ghapur** & Norani Muti Mohamed (2004) Surface Chemistry Characterisation of CNTs by High Energy Resolution X-Ray Photoemission (XPS), Proceeding of International Conference on X-Rays and Related Techniques in Research and Industry (ICXRI 2004)

### Other Outputs

1. Engku Abd Ghapur Che Engku Ali, Hasiah Salleh, Mohd Hasmizam Razali, Asnuzilawati Asari, Wan Almaz Dhafina Che Wan Ahmad, Nik Aziz Bin Nik Ali (2012). Studies On Physical Properties And Energy Conversion Efficiency Of The Nanorod Zinc Oxide Combined With Imidazolium As A Dye Sensitized Solar Cells (DSSC) in Book Compilation of Final Reports 2012 UMT (pp. 9-25). Kuala Terengganu: Penerbit UMT, e-ISBN 978-967-0524-41-2.

## SUPERVISION

### Master Degree

| | | |
|---|---|---|
| Thesis Title | : | A Combination of Zinc Oxide, Poly (3-thiophenyl acetic acid) and Dyes as Tandem Solar Cells |
| Student Name | : | Wan Almaz Dhafina bt Che Wan Ahmad |
| Role | : | Co- supervisor |
| Status | : | Completed |

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|---|---|---|
| Thesis Title | : | Corrosion inhibitor in sea water |
| Student Name | : | Nusaibah Bt Yusof |

Role : Co-supervisor
Status : On-going

## COURSE TAUGHT

- Physics 1
- Fundamental of Physic
- Semiconductor Devices
- Materials Processing Technology
- Thin Film Technology
- Advanced Instrumentation
- Seminar and Research Methods

## LINKS

- SCOPUS Engku Abd Ghapur Engku Ali (Author ID: 36095869100)
- WoS Engku Abd Ghapur Engku Ali (ResearcherID: J-5850-2014)
- Researchgate Engku Abd Ghapur Engku Ali
- ORCID 0000-0002-5992-713X
- Google Scholar Engku Abd Ghapur Engku Ali