ACADEMIC & RESEARCH PORTFOLIO

ASSOC. PROF. TS. DR.

SURIATI PAIMAN

Academic & Research Leader | Semiconductor Nanostructures | Sustainable Energy | STEM & ESD

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Prepared as a living portfolio for professorial promotion and continuing academic record
Last updated: 18 August 2026

Academic Profile at a Glance

A concise view of scholarly trajectory, academic leadership, researcher development and institutional impact.

20+	30	84	21
YEARS IN ACADEMIA	GOOGLE SCHOLAR h-INDEX	JOURNAL ARTICLES	POSTGRADUATE COMPLETIONS

RM1.925M	RM882K+	TOP 5%	2019-2023
DOCUMENTED PROJECT PORTFOLIO	PI / PROJECT-LEAD PORTFOLIO	SCIENTIST RECOGNITION	HEAD, DEPARTMENT OF PHYSICS

Executive Profile

Academic and research leader with more than two decades of experience spanning semiconductor physics, nanostructured materials, sustainable energy and science education. Leads the Semiconductor Physics & Devices Laboratory and SEMINANO at UPM, translating fundamental materials research into sensing, energy-harvesting and green-hydrogen technologies. Former Head of Physics, experienced principal investigator and postgraduate mentor, with a strong record of building partnerships across universities, government agencies and the semiconductor industry. Recognised among the World's Top 5% Scientists (SciRank 2025 Global Registry) and as an IEEE STEM Champion.

Current Leadership

Associate Professor, Physics

Academic appointment since August 2018; leads teaching, research and postgraduate development in physics and advanced materials.

Head, Semiconductor Physics & Devices Laboratory

Research direction, laboratory stewardship, talent development and collaborative research.

Leader, SEMINANO

Research leadership across semiconductor nanostructures, sensing, energy harvesting and sustainable technologies.

Founder & Chair, UPMSTEM

University STEM platform established in 2014, connecting academic expertise with schools, teachers and communities.

Core Capabilities

Research & technology: Semiconductor nanostructures and devices; III-V and ZnO materials; thin films; optical and chemical sensors; TENG/PENG energy harvesting; electrocatalysis and green hydrogen.

Leadership & partnerships: Research strategy, grant leadership, laboratory management, postgraduate development, curriculum governance, industry engagement and cross-institutional collaboration.

Education & impact: STEM programme design, Education for Sustainable Development, Planetary Health, science communication and community capacity building.

Portfolio Map

A navigation overview designed to remain useful as this living Word portfolio grows. All major sections use Word Heading styles for easy navigation through the Navigation Pane.

PART I

RESEARCH

Research evolution, current programmes, independent grant leadership and externally funded work

1. Research Leadership & Evolution

The research portfolio demonstrates a sustained progression from semiconductor thin films and III-V nanowire physics toward sensing, energy harvesting and green-hydrogen electrocatalysis. The trajectory retains a strong foundation in structure-property relationships while expanding into increasingly application-driven and sustainability-focused research.

Research Evolution

Period	Research Phase	Academic Focus
2000-2005	**SiGe & Thin Films**	Optical, electrical and microstructural properties of semiconductor thin films.
2006-2013	**III-V Semiconductor Nanowires**	InP nanowire growth, morphology, crystal phase and optoelectronic properties.
2013-2019	**Nanostructured Sensors & Devices**	InSb, ZnO, optical-fibre sensing, nanomaterial transducers and device characterisation.
2017-Present	**ZnO & Mechanical Energy Harvesting**	Piezoelectric nanostructures, nanogenerators and hybrid energy-harvesting systems.
2023-Present	**Advanced Functional Materials & TENG**	Functional materials and triboelectric energy-harvesting research; patent-sensitive device details intentionally omitted from narrative sections.
2025-Present	**Green Hydrogen & Electrocatalysis**	Ni-based and Ni-Cu electrocatalysts, HER/OER, stability studies and DFT-supported materials modelling.

Current Research Programmes

Semiconductor Nanostructures & Devices

III-V semiconductor nanowires, InP/InSb systems, ZnO nanostructures, thin films, structure-property relationships, transport and nanoscale electrical characterisation.

Sensors & Functional Materials

Optical-fibre and nanomaterial-based sensing, hydrogen and hazardous-gas sensors, metal-oxide thin films, graphene-based coatings and functional interfaces.

Energy Harvesting

ZnO piezoelectric nanogenerators, triboelectric nanogenerators and hybrid photovoltaic-nanogenerator systems. Patent-sensitive material, fabrication and device details are not reproduced in the narrative.

Green Hydrogen & Electrocatalysis

Nickel-based and nickel-copper electrocatalysts for HER/OER and water splitting, including electrochemical performance, stability and DFT-supported surface/material analysis.

Sustainable & Advanced Materials

Graphene, carbon materials, photocatalytic systems,

STEM, ESD & Science Education

STEM programme design, Education for Sustainable

nanocomposites and functional materials for energy, environmental and device applications.

Development, science communication and community capacity building, connecting disciplinary expertise with education and societal impact.

2. Grants & Funding

The documented project portfolio totals approximately RM1.925 million, plus a USD9,000 international research award. Approximately RM882,155 plus USD9,000 is associated with projects led as Principal Investigator or Project Leader.

Selected Grant Leadership

Effect of growth rate on the morphology, crystal structure and optical properties of Au-catalysed InP nanowires
Principal Investigator | RUGS | RM29,000 | Oct 2011–Sept 2012 | Completed

Optimising nickel-copper electrocatalysts for scalable hydrogen water splitting
Principal Investigator | GPB UPM | RM100,000 | 2025–2027 | Ongoing

Program 100 Saintis di 100 Sekolah Selama 100 Hari (100^3)
Project Leader | Program Sains, Teknologi dan Inovasi Madani, MOSTI | RM50,000 | 2025 | Completed

Surface modification of contact separation layer using polymer-encapsulated ZnO nanowires for high-output triboelectric nanogenerators
Project Leader | Fundamental Research Grant Scheme, FRGS | RM179,000 | 2023–2026 | Ongoing

Program peningkatan teknologi disruptif dalam kalangan pelajar kurang bernasib baik
Project Leader | Geran Sumbangan Suruhanjaya Kebangsaan UNESCO Malaysia, SKUM | RM23,155 | 2023–2024 | Completed

Empowering STEM education through digital STEM exploration modules towards UPMSTEMpreneurship development
Project Leader | Knowledge Transfer Grant Scheme, KTGS JINM | RM10,000 | 2019–2020 | Completed

Growth of zinc oxide nanowires on RF-sputtered zinc oxide thin films for nanogenerators using microwave-assisted chemical bath deposition
Project Leader | Fundamental Research Grant Scheme, FRGS | RM79,000 | 2017–2019 | Completed

Deposition and characterisation of zinc oxide thin films by RF magnetron sputtering for optical sensing applications
Project Leader | Geran Putra IPS | RM13,000 | 2015–2017 | Completed

Complete Grants & Funding Record

Project	Role	Sponsor / Grant	Amount	Period	Status
III-V semiconductor nanowires for optoelectronic device applications	**Principal Investigator**	The Academy of Sciences for the Developing World	USD 9,000	2013–2014	Completed
Effect of growth rate on the morphology, crystal structure and optical properties of Au-catalysed InP nanowires	**Principal Investigator**	RUGS	RM29,000	Oct 2011–Sept 2012	Completed
Investigation of parallel evolving microstructures and complex permittivities	Member	RUGS	RM155,000	2012	Completed

Project	Role	Sponsor / Grant	Amount	Period	Status
of grain and grain boundaries in magnesium titanate and strontium titanate nanocomposites prepared via mechanical alloying and sol-gel method					
Detection of electrical signals from DNA biomolecule interactions with VLS-grown indium phosphide nanowire field-effect transistors	**Project Leader**	Exploratory Research Grant Scheme, ERGS	RM140,000	2013–2016	Completed
Growth of defect-free indium phosphide nanowires via vapour-liquid-solid mechanism for photovoltaic applications	**Project Leader**	Fundamental Research Grant Scheme, FRGS	RM86,000	2013–2016	Completed
Preparation and characterisation of graphene/PEDOT nanofibres and indium phosphide nanowires for sensor development	**Project Leader**	Geran Putra IPB	RM164,000	2013–2015	Completed
Hazardous gas sensing properties of nanostructured molybdenum trioxide thin films coated on optical transducers	Member	Fundamental Research Grant Scheme, FRGS	RM86,000	2014–2016	Completed
Current-voltage characterisation of as-grown gallium arsenide nanowires using conductive atomic force microscopy	Member	Fundamental Research Grant Scheme, FRGS	RM106,000	2014–2016	Completed
Morphology evolution of indium antimonide nanowires by template-assisted electrochemical deposition	**Project Leader**	Geran Putra IPS	RM9,000	2015–2016	Completed
Deposition and characterisation of zinc oxide thin films by RF magnetron sputtering for optical sensing applications	**Project Leader**	Geran Putra IPS	RM13,000	2015–2017	Completed
Crosslinked chitosan films for real-time heavy metal detection using an interdigitated electrode array	Member	Fundamental Research Grant Scheme, FRGS	RM120,000	2015–2017	Completed
Growth of zinc oxide nanowires on RF-sputtered zinc oxide thin films for nanogenerators using microwave-assisted chemical bath deposition	**Project Leader**	Fundamental Research Grant Scheme, FRGS	RM79,000	2017–2019	Completed

Project	Role	Sponsor / Grant	Amount	Period	Status
Empowering STEM education through digital STEM exploration modules towards UPMSTEMpreneurship development	**Project Leader**	Knowledge Transfer Grant Scheme, KTGS JINM	RM10,000	2019–2020	Completed
Preparation and characterisation of carbon nanotube-polymer conductive ink for printed electronics	Member	Geran Putra	RM50,000	2018–2021	Completed
Surface modification of V_2O_x as a hole transport layer for efficient solar-driven water splitting devices	Member	Geran Putra Inisiatif Putra Muda, GP-IPM	RM60,000	2019–2021	Completed
Electrical properties characterisation of zinc oxide nanowires by conductive atomic force microscopy	Member	Geran Kolaborasi UTM	RM56,000	2020–2022	Completed
Modified optical fibre and nanomaterial coatings for in-situ surface-enhanced Raman spectroscopy system	Member	Transdisciplinary Research Grant Scheme, TRGS	RM410,000	2020–2023	Completed
Program peningkatan teknologi disruptif dalam kalangan pelajar kurang bernasib baik	**Project Leader**	Geran Sumbangan Suruhanjaya Kebangsaan UNESCO Malaysia, SKUM	RM23,155	2023–2024	Completed
Program 100 Saintis di 100 Sekolah Selama 100 Hari (100^3)	**Project Leader**	Program Sains, Teknologi dan Inovasi Madani, MOSTI	RM50,000	2025	Completed
Surface modification of contact separation layer using polymer-encapsulated ZnO nanowires for high-output triboelectric nanogenerators	**Project Leader**	Fundamental Research Grant Scheme, FRGS	RM179,000	2023–2026	Ongoing
Optimising nickel-copper electrocatalysts for scalable hydrogen water splitting	**Principal Investigator**	GPB UPM	RM100,000	2025–2027	Ongoing

PART II

SCHOLARSHIP

Publication record, books, chapters and conference contributions

3. Scholarly Profile

The publication record spans 2000-2026 and reflects both continuity in semiconductor and nanostructured-material physics and a progressive expansion into sensing, energy harvesting, sustainable materials and green-energy technologies.

Selected Publications Demonstrating Research Evolution

2000	**S. Paiman**, S. Sakrani, B. Ismail. "Optical absorption in SiGe thin films and its dependency on film thickness and annealing temperature." Jurnal Fizik UTM 7(2), 27–34, 2000.
2009	**S. Paiman**, Q. Gao, H.H. Tan, C. Jagadish, K. Pemasiri, M. Montazeri, H.E. Jackson, L.M. Smith, J.M. Yarrison-Rice, X. Zhang, J. Zou. "The effect of V/III ratio and catalyst particle size on the crystal structure and optical properties of InP nanowires." Nanotechnology 20, 225606, 2009.
2010	**S. Paiman**, Q. Gao, H.J. Joyce, Y. Kim, H.H. Tan, C. Jagadish, X. Zhang, Y. Guo, J. Zou. "Growth temperature and V/III ratio effects on the morphology and crystal structure of InP nanowires." Journal of Physics D: Applied Physics 43, 445402, 2010.
2013	**Suriati Paiman**, Qiang Gao, H.H. Tan, C. Jagadish, X. Zhang, J. Zou. "Effects of growth rate on InP nanowires morphology and crystal structure." Journal of Crystal Growth 383, 100–105, 2013.
2014	Yuda Wang, Howard E. Jackson, Leigh M. Smith, Tim Burgess, **Suriati Paiman**, Qiang Gao, Hark Hoe Tan, Chennupati Jagadish. "Carrier thermalization dynamics in single zincblende and wurtzite InP nanowires." Nano Letters 14(12), 7153–7160, 2014.
2015	K. Pemasiri, H.E. Jackson, L.M. Smith, B.M. Wong, **S. Paiman**, Q. Gao, H.H. Tan, C. Jagadish. "Quantum confinement of excitons in wurtzite InP nanowires." Journal of Applied Physics 117(19), 194306, 2015.
2017	A.L. Khalaf, P.T. Arasu, H.N. Lim, **S. Paiman**, N.A. Yusof, M.A. Mahdi, M.H. Yaacob. "Modified plastic optical fiber with CNT and graphene oxide nanostructured coatings for ethanol liquid sensing." Optics Express 25(5), 5509–5520, 2017.
2020	**S. Paiman**, T. Hui Ling, M. Husham, Suresh Sagadevan. "Significant effect on annealing temperature and enhancement on structural, optical and electrical properties of zinc oxide nanowires." Results in Physics 103185, 2020.
2021	R. Sivasubramanian, C.A. Vaithilingam, S.S. Indira, **S. Paiman**, N. Misron, et al. "A review on photovoltaic and nanogenerator hybrid system." Materials Today Energy 20, 100772, 2021.
2023	Shamsu Abubakar, Sin Tee Tan, Josephine Ying Chyi Liew, Zainal Abidin Talib, Ramsundar Sivasubramanian, Aravind C.V., Sridhar Sripadmanabhan Indira, Won-Chun Oh, Rikson Siburian, Suresh Sagadevan, **Suriati Paiman***. "Controlled growth of semiconducting ZnO nanorods for piezoelectric energy harvesting-based nanogenerators." Nanomaterials 13(6), 2023.
2025	Ramsundar Sivasubramanian, Chockalingam Aravind Vaithilingam, **Suriati Paiman**, Ashish Sharma, Indragandhi V. "Hybrid

2026

Photovoltaics cell with triboelectric nanogenerator: Overcoming energy availability limits and reducing optical scattering losses." Environmental Progress & Sustainable Energy, e70046, 2025.

Muhammad Faheem, Asim Riaz, Manzar Sohail, **Suriati Paiman**, Fabrication of In-situ hydrothermally grown NiRu0. 3Se nanostructures on MXene sheets for Asymmetric Supercapacitor Applications, Journal of Alloys and Compounds Communications, 100188, 2026

4. Peer-Reviewed Journal & Scholarly Articles

Author lists are reproduced from the uploaded CV. Entries that were already abbreviated with "et al." in the source remain abbreviated rather than adding unverified authors.

2026

1. Muhammad Faheem, Asim Riaz, Manzar Sohail, **Suriati Paiman**, Fabrication of In-situ hydrothermally grown NiRu0. 3Se nanostructures on MXene sheets for Asymmetric Supercapacitor Applications, Journal of Alloys and Compounds Communications, 100188, 2026
2. Muhammad Faheem, Maria Fayyaz, Manzar Sohail, **Suriati Paiman**, Syed Mustansar Abbas, Asim Riaz, MXene anchored nanostructured nickel phosphide as an efficient photocatalyst for the UV assisted photodegradation of Reactive black-5 dye, Surfaces and Interfaces,108835, 2026
3. Nur Farah Afiqah Asmadi, Aduwati Sali, Nurul Huda Abd Rahman, **Suriati Paiman**, Muhammad Zamir Mohyedin. Synthesized Phantom: From Composition Types to 3D-Printed Versions. IEEE Access, 2026

2025

1. Nur FA Asmadi, Aduwati Sali, Nurul H Abd Rahman, **Suriati Paiman**, Muhammad Z Mohyedin, Stability and Homogeneity of Muscle Phantom for Radiation Exposure from 5G Signals, Progress In Electromagnetics Research C, Vol. 161, 150–158, 2025.
2. Ramsundar Sivasubramanian, Chockalingam Aravind Vaithilingam, **Suriati Paiman**, Ashish Sharma, Indragandhi V. "Hybrid Photovoltaics cell with triboelectric nanogenerator: Overcoming energy availability limits and reducing optical scattering losses." Environmental Progress & Sustainable Energy, e70046, 2025.
3. Rakib Haider, Suresh Sagadevan, Neda'a Al-Adaileh, Is Fatimah, **Suriati Paiman**, Minh-Vien Le, Mohd Rafie Johan. "Sustainable activated carbon derived from coconut shell and betel nuts for energy storage and environmental remediation." Diamond and Related Materials, 154, 112243, 2025.
4. M.A. Ashwini, Suresh Sagadevan, Is Fatimah, **Suriati Paiman**, Sumant Upadhyay, Seema Garg, Mohd Rafie Johan. "Photocatalytic performance of TiO_2/g-C_3N_4 nanocomposite modified with carbon quantum dots for effective dye degradation: Experiments and DFT studies." Journal of Alloys and Compounds, 1025, 180296, 2025.
5. Idris M. Mustapha, Kolo T. Matthew, Olarinoye I. Oyeleke, Ibrahim Sharifat, Muhammad K. Abdul Karim, **Suriati Paiman**. "The role of ZnO in TeO_2 thin films for optical and radiation dosimetry applications." Heliyon, 11(4), e42664, 2025.
6. Muhammad Safwan Zaini, Josephine Ying Chyi Liew, **Suriati Paiman**, Tan Sin Tee, Mazliana Ahmad Kamarudin. "Solvent-dependent photoluminescence emission and colloidal stability of carbon quantum dots from watermelon peels." Journal of Fluorescence, 35(1), 245–256, 2025.

2024

1. R. Siburian, K. Tarigan, Y.G.O. Manik, F. Hutagalung, Y. Alias, Y.C. Chan, B.P. Chang, J. Siow, J.A. Ong, J. Huang, **S. Paiman**, B.T. Goh, L. Simatupang, R. Goei, A. Tok, M.F.Z.R. Yahya, F. Bahfie. "Converting candlenut shell waste into graphene for electrode applications." Processes 12(8), 1544, 2024.
2. I.I. Ajibade, G. Babaji, A.S. Gidado, **Suriati Paiman**, T. Sin Tee, Md Shazlly, Abolanle Saheed Adekunle. "Examining the variations in the properties of chemically pulverized carbons from Cocos nucifera across Nigeria's six political zones." Nigerian Journal of Physics, 33(1), 172–183, 2024.

2023

1. Siti Nurnadiah Mohd Aris, Zaidatul Hanis Azmi, Shamsu Abubakar, Suresh Sagadevan, Rikson Siburian, **Suriati Paiman**. "Influence of hexamethylenetetramine (HMTA) on the physicochemical characteristics of zinc oxide nanowires by chemical bath deposition." Crystal Research and Technology, 2300075, 2023.
2. Rikson Siburian, Liang Wei Tang, Yatimah Alias, Alfred Iing Yoong Tok, Ronn Goei, Crystina Simanjuntak, Kerista Tarigan, **Suriati Paiman**, Boon Tong Goh, Isa Anshori, Cepi Kurniawan. "Coconut waste to green nanomaterial: large scale synthesis of N-doped graphene nanosheets." Nano-Structures & Nano-Objects 36, 2023.

3. Shamsu Abubakar, Sin Tee Tan, Josephine Ying Chyi Liew, Zainal Abidin Talib, Ramsundar Sivasubramanian, Aravind C.V., Sridhar Sripadmanabhan Indira, Won-Chun Oh, Rikson Siburian, Suresh Sagadevan, **Suriati Paiman***. "Controlled growth of semiconducting ZnO nanorods for piezoelectric energy harvesting-based nanogenerators." Nanomaterials 13(6), 2023.
4. Rikson Siburian, Ronn Goei, Hana Manurung, Sri Pratiwi Aritonang, Crystina Simanjuntak, Fajar Hutagalung, Isa Anshori, Yatimah Alias, **Suriati Paiman**, Jon Affi, Alfred Iing Yoong Tok. "Distribution model of iron (Fe) on Fe/graphene nano sheets." Ceramics International 49(17), 2023.
5. Mohammed M. Alkhabet, Saad H. Girei, Husam K. Salih, Rasha Thabit, Mohammed Abdullah Issa, **Suriati Paiman**, Norhana Arsad, Mohammed Thamer Alresheedi, Mohd A. Mahdi, Mohd H. Yaacob. "Room temperature operated hydrogen sensor using palladium coated on tapered optical fiber." Materials Science and Engineering: B 287, 116092, 2023.
6. R. Siburian, **S. Paiman**, F. Hutagalung, L. Simatupang, R. Goei, M.M. Rusop et al. "The new materials for battery electrode prototypes." Materials 16(2), 555, 2023.

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1. Adibah Yusof N.A., Abdul Karim M.K., N.M. Asikin, **S. Paiman**, Awang Kechik M.M., Abdul Rahman, N.M. Noor. "CT reconstruction algorithm and low contrast detectability of phantom study: a systematic review and meta-analysis." Current Medical Imaging, 2022.
2. S. Sagadevan, J.A. Lett, G.K. Weldegebrieal, W.C. Oh, S.F. Alshahateet, et al., **S. Paiman**. "Photocatalytic degradation of methylene blue dye under direct sunlight irradiation using SnO_2 nanoparticles." Inorganic Chemistry Communications 109547, 2022.
3. Mohammed Majeed Alkhabet, Zaher Mundher Yaseen, Moutaz Mustafa A. Eldirderi, Khaled Mohamed Khedher, Ali H. Jawad, Saad Hayatu Girei, Husam Khalaf Salih, **Suriati Paiman**, Norhana Arsad, Mohd Adzir Mahdi, Mohd Hanif Yaacob. "Palladium/graphene oxide nanocomposite for hydrogen gas sensing applications based on tapered optical fiber." Materials 15(22), 8167, 2022.
4. R. Siburian, **S. Paiman**, F. Hutagalung, L. Simatupang, R. Goei, M.M. Rusop et al. "Facile method to synthesize magnesium-graphene nanosheets for candidate of primary battery electrode." Colloid and Interface Science Communications 48, 100612, 2022.
5. Z.H. Azmi, S.N. Mohd Aris, S. Abubakar, S. Sagadevan, R. Siburian, **S. Paiman**. "Effect of seed layer on the growth of zinc oxide nanowires by chemical bath deposition method." Coatings 12(4), 474, 2022.
6. R. Siburian, **S. Paiman**, F. Hutagalung, L. Simatupang, R. Goei, M.M. Rusop et al. "Developing nickel/graphene nano sheets as an alternative primary battery anode." Ceramics International, 2022.

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1. J. Anita Lett, S. Sagadevan, E. Léonard, I. Fatimah, M.A. Motalib Hossain, et al., **S. Paiman**. "Bone tissue engineering potentials of 3D printed magnesium-hydroxyapatite in polylactic acid composite scaffolds." Artificial Organs 45(12), 1501–1512, 2021.
2. S.A.I. Jariya, V.P. Padmanabhan, R. Kulandaivelu, N. Prakash, F. Mohammad, et al., **S. Paiman**. "Drug delivery and antimicrobial studies of chitosan-alginate based hydroxyapatite bioscaffolds formed by the casein micelle assisted synthesis." Materials Chemistry and Physics 272, 125019, 2021.
3. R. Siburian, **S. Paiman**, F. Hutagalung, A.M.M. Ali, L. Simatupang, et al. "The new material battery based on Mg/C-π." Energy Technology 9(10), 2100453, 2021.
4. S. Sagadevan, J.A. Lett, G.K. Weldegebrieal, W.C. Oh, S.F. Alshahateet, et al., **S. Paiman**. "Enhanced gas sensing and photocatalytic activity of reduced graphene oxide loaded TiO_2 nanoparticles." Chemical Physics Letters 780, 138897, 2021.
5. S. Abubakar, J.L.Y. Chyi, S.T. Tan, S. Sagadevan, Z.A. Talib, **S. Paiman**. "Nanoscale domain imaging and the electromechanical response of zinc oxide nanorod arrays synthesized on different substrates." Journal of Materials Research and Technology 14, 2451–2463, 2021.
6. N.M. Al-Hada, R. Md. Kasmani, H. Kasim, A.M. Al-Ghaili, M.A. Saleh, et al., **S. Paiman**. "The effect of precursor concentration on the particle size, crystal size, and optical energy gap of $CexSn1-xO_2$ nanofabrication." Nanomaterials 11(8), 2143, 2021.
7. R. Sivasubramanian, C.A. Vaithilingam, S.S. Indira, **S. Paiman**, N. Misron, et al. "A review on photovoltaic and nanogenerator hybrid system." Materials Today Energy 20, 100772, 2021.
8. N.A. Ariffin, S.N.A. Mustaffa, N. Tamchek, S. Sagadevan, **S. Paiman**. "Influence of gas pressure and RF power on the structural and mechanical properties of germanium thin films." doi:10.21203/rs.3.rs-285400/v1, 2021.
9. M.N.I. Ghazali, M.A. Izmi, S.S.A. Mustaffa, S. Abubakar, M. Husham, S. Sagadevan, **S. Paiman**. "A comparative approach on one-dimensional ZnO nanowires for morphological and structural properties." Journal of Crystal Growth 558, 125997, 2021.
10. S. Balakrishnan, V.P. Padmanabhan, R. Kulandaivelu, T.S. Sankara Narayanan Nellaiappan, S. Sagadevan, **S. Paiman**, et al. "Influence of iron doping towards the physicochemical and biological characteristics of hydroxyapatite." Ceramics International 47, 5061–5070, 2021.

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1. S. Abubakar, N. Khalid, S.F. Abd Rahman, T.S. Tee, M.N. Hamidon, Z.A. Talib, S. Sagadevan, **S. Paiman**. "Fabrication and characterization of nanostructured zinc oxide on printed microcontact electrode for piezoelectric applications." Journal of Materials Research and Technology 9(6), 15952, 2020.

2. Siti Nor Aliffah Mustaffa, Nurul Assikin Ariffin, Ahmed Lateef Khalaf, Mohd Hanif Yaacob, Nizam Tamchek, Suresh Sagadevan, **Suriati Paiman**. "Sensing mechanism of an optimized room-temperature optical hydrogen gas sensor made of zinc oxide thin films." Journal of Materials Research and Technology 9(5), 10624–10634, 2020.
3. **S. Paiman**, T. Hui Ling, M. Husham, Suresh Sagadevan. "Significant effect on annealing temperature and enhancement on structural, optical and electrical properties of zinc oxide nanowires." Results in Physics 103185, 2020.
4. Suresh Sagadevan, Selvaraj Vennila, Lakshmipathy Muthukrishnan, K. Gurunathan, Won Chun Oh, **Suriati Paiman**, Faruq Mohammad, Hamad A. Al-Lohedan, Ainil Hawa Jasni, Is Fatimah, Kuppan Sivaranjan, Prasanna Kumar Obulapuram. "Exploring the therapeutic potentials of phytomediated silver nanoparticles formed via Calotropis root extract." Journal of Experimental Nanoscience 15(1), 217–232, 2020.
5. Suresh Sagadevan, Selvaraj Vennila, Preeti Singh, J. Anita Lett, Won Chun Oh, **Suriati Paiman**, Faruq Mohammad, Hamad A. Al-Lohedan, Is Fatimah, M.M. Shahid, Prasanna Kumar Obulapuram. "Exploration of the antibacterial capacity and ethanol sensing ability of Cu-TiO_2 nanoparticles." Journal of Experimental Nanoscience 15(1), 337–349, 2020.
6. Suresh Sagadevan, Lakshmipathy Muthukrishnan, Selvaraj Vennila, K. Gurunathan, J. Anita Lett, **Suriati Paiman**, Faruq Mohammad, Hamad A. Al-Lohedan, Omid Akbarzadeh, Won Chun Oh. "A glassy carbon electrode modified with tailored nanostructures of cobalt oxide for oxygen reduction reaction." International Journal of Hydrogen Energy, 2020.
7. J. Anita Lett, Suresh Sagadevan, Gobi Saravanan Kaliaraj, Karthik Alagarsamy, S. Arumugam, P. Sivaprakash, S. Muthukumaran, **Suriati Paiman**, Faruq Mohammad, Hamad A. Al-Lohedan, Won Chun Oh. "Synthesis, characterization and electrical properties of alkali earth metal-doped bioceramics." Materials Chemistry and Physics 249, 123141–123151, 2020.
8. Suresh Sagadevana, Lakshmipathy Muthukrishnan, Selvaraj Vennila, K. Gurunathan, J. Anita Lett, **Suriati Paiman**, Faruq Mohammad, Hamad A. Al-Lohedan, Omid Akbarzadeh, Won Chun Oh. "Mechanistic anticarcinogenic efficacy of phytofabricated gold nanoparticles on human lung adenocarcinoma cells." Journal of Experimental Nanoscience 15(1), 160–173, 2020.
9. V. Sathiya Narayanan, P. Varun Prasath, K. Ravichandran, D. Easwaramoorthy, Zohreh Shahnavaz, Faruq Mohammad, Hamad A. Al-Lohedan, **Suriati Paiman**, Won Chun Oh, Suresh Sagadevan. "Schiff-base derived chitosan impregnated copper oxide nanoparticles: an effective photocatalyst in direct sunlight." Materials Science in Semiconductor Processing 119, 105238, 2020.
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11. Sridhar Sripadmanabhan Indira, Chockalingam Aravind Vaithilingam, Kok-Keong Chong, R. Saidur, M. Faizal, Shamsu Abubakar, **Suriati Paiman**. "A review on various configurations of hybrid concentrator photovoltaic and thermoelectric generator system." Solar Energy 201, 122–148, 2020.
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5. Books & Book Chapters

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2. Anita, Fatimah, Jiban, Rafie, **S. Paiman**, S. Sagadevan, - Integrated optoelectronics: Metal Oxides for Optoelectronics and Optics-Based Medical Applications, Elsevier, International, 9780323858243, page 241-256, 2022
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4. Empowering STEM Education through UPMSTEM, in STEM culture in Malaysia, Malaysia of Higher Education, 2018

6. Conference Proceedings & Presentations

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2. Azlinda Abu Bakar, Mohd Nizar Hamidon, Mohd Hanif Yaacob, **Suriati Paiman**, Haslina Jaafar, Wan Nursheila Wan Jusoh, Mehmet Ertugral, Intan Helina Hasan, Ohmic Contact Behaviours between Interdigitated Electrode and Nanosized TiO2-Based Thick Film via Flexible Substrate, 2026 10th IEEE Electron Devices Technology & Manufacturing Conference (EDTM).
3. S.A. Bakr, **S. Paiman**, S.T. Tan, "Piezoelectric properties of zinc oxide nanostructure synthesized via chemical bath solution," IEEE International Conference on Sensors and Nanotechnology, 2019.
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5. A.L. Khalaf, F.S. Mohamad, P.T. Arasu, A.A. Shabaneh, N.A. Rahman, H.N. Lim, **S. Paiman**, N.A. Yusof, M.A. Mahdi, M.H. Yaacob, "Modified plastic optical fiber coated graphene/polyaniline nanocomposite for ammonia sensing," Photonics (ICP), 6th IEEE International Conference, 1–3, 2016.
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PART III

PEOPLE

Developing researchers, supervision, examination and student professional development

7. Developing Researchers & Future Scientists

Postgraduate supervision is an integral component of the research programme, with students contributing across semiconductor nanostructures, optical sensing, ZnO-based energy harvesting, triboelectric systems, medical/optical materials and computational/electrocatalytic research.

Current Postgraduate Research Team

Level	Role	Researcher	Research / Thesis
Phd	Main Supervisor	**CHE SYAZANA BINTI CHE AB RAZAK (GS51991)**	Enhancing Triboelectric Nanogenerator (Teng) Performance Through Surface Modification Of The Contact Separation Layer With Polymer-Encapsulated Metal-Organic Frameworks
Phd	Main Supervisor	**Shamsu Abu Bakar**	Growth Optimization Of Zinc Oxide Nanorods And Analysis Of Piezoelectric Properties By Piezoresponse Force Microscopy Technique
Master	Main Supervisor	**Nur Aqilah Zamri**	DFT
Master	Co - Supervisor	**Zaib**	Membrane for water filter
Master	Co Supervisor	**NUR FARAH AFIQAH BINTI ASMADI (GS71840)**	SPECIFIC ABSORPTION RATE(SAR) AND ABSORBED POWER DENSITY(APD) FROM C-BAND AND MILLIMETER-WAVE SIGNALS USING IN-HOUSE FABRICATED PHANTOM
Master	Co Supervisor	**NUR IZZATI THAQIFAH BINTI SAMSOL BAHARI (GS64844)**	SPECTRAL ABSORBANCE CHARACTERIZATION FOR DETECTION OF FORMALIN USE ON FISH USING NIR SPECTROSCOPY WITH GOLD NANORODS AS SENSING LAYER

Postgraduate Supervision Record

Level	Supervisory Role	Student	Thesis / Project	Status
PhD	Main Supervisor	**CHE SYAZANA BINTI CHE AB RAZAK (GS51991)**	Enhancing Triboelectric Nanogenerator (Teng) Performance Through Surface Modification Of The Contact Separation Layer With Polymer-Encapsulated Metal-Organic Frameworks	On-going
PhD	Main Supervisor	**Shamsu Abu Bakar**	Growth Optimization Of Zinc Oxide Nanorods And Analysis Of Piezoelectric Properties By Piezoresponse Force Microscopy Technique	On-going 2019

Level	Supervisory Role	Student	Thesis / Project	Status
PhD	Co Supervisor	**AZLINDA BINTI ABU BAKAR (GS56982)**	FLEXIBLE THICK FILM GAS SENSOR USING GRAPHITE INTERDIGITATED ELECTRODE	Graduated 2026
PhD	Co Supervisor	**Safwan Zaini**	Quantum Dots/Nanowires core-shells	Graduated (2024)
PhD-Taylors University	Co Supervisor	**Ramsundar**	Development of Triboelectric Nanogenerators	Graduated 2025
PhD	Co Supervisor	**Al-Khabet Mohhammed Majeed Mohhammed**	Palladium Coated nanocomposite on tapered optical fiber for hydrogen sensing applications	Graduated 2022
PhD	Co Supervisor	**Arafat A.A. Shabaneh**	Ultra Sensitive Ammonia Sensor Based on Tapered Optical Fiber Coated with Nanostructured Thin Films	Graduated 2015
PhD	Co Supervisor	**Aeshah Salem Nizar**	Synthesize and characterization Cdse, Znse nanoparticle	Graduated 2017
PhD	Co Supervisor	**Ahmad Lateef Khalaf**	Nanostructures For Gas Sensors	Graduated 2017
PhD	Co Supervisor	**Batool Eneaze Bandar**	Synthesis of Porous Silicon Nanostructured by Different Method	Graduated 2017
PhD	Co Supervisor	**Saman Azhari**	Nanotechnology	Graduated 2020
PhD	Co Supervisor	**Mutia Suhaibah Binti Abdullah**	Parallel Studies Of The Evolving Morphologies And Dielectric Properties Of Strontium Titanate Prepared Via Sol Gel And Mechanical Alloying	Graduated 2019
PhD	Co Supervisor	**Maharaz Mohammed Nasir**	Microwave Irradiation Synthesis, Structural, Optical And Electrical Properties Of Zns And Pbs Nano-Particles	Graduated 2019
PhD (non-graduating)	Main supervisor	**Isa Ajibade**	FABRICATING SUPERCAPACITOR DEVICE USING ACTIVATED CARBON NANOSTRUCTURE DERIVED FROM NIGERIAN COCONUT SHELL BIOMASS: MATERIALS SYNTHESIS AND DEVICE CHARACTERIZATION	Graduated 2023
PhD (non-graduating)	Main supervisor	**Mohammed Mustapha Idris**	OPTIMISATION AND FABRICATION OF (ZnO)x(TeO2)1-x THIN FILM-BASED REAL TIME X-RAY DOSIMETER	Graduated 2024
Master	Main Supervisor	**Azelah Bt Kharudin**	Morphology And Structural Properties Of Indium Antimonide (InSb) Nanowires Prepared By Template Assisted Electrodeposition	Graduated 2017
Master	Main Supervisor	**Siti Noor Aliffah Binti Mustaffa**	Deposition And Characterization Of Zinc Oxide Thin Films Using Radio Frequency Magnetron Sputtering For Optical Hydrogen Gas Sensor Application	Graduated 2018

Level	Supervisory Role	Student	Thesis / Project	Status
Master	Main Supervisor	**Nurul Assikin Binti Ariffin**	High-Quality Ge Layers by Magnetron Sputtering For Multijunction	Graduated 2019
Master	Main Supervisor	**Intan Nur Ain bt Arifin @ Mohd Ripin**	The Electrical Properties of Indium Antimonide nanowires via electrodeposition	Graduated 2019
Master	Main Supervisor	**Osamah Ali Fayyadh**	Transport Proeprties of Indium Antimonide nanowires	Graduated 2019
Master	Main Supervisor	**Talal Mansoori**	Development of cement with nanoparticles embedded for construction materials	On-going (Withdraw)
Master	Main Supervisor	**Nur Aqilah Zamri**	DFT	On-going
Master	Co - Supervisor	**Zaib**	Membrane for water filter	On-going
Master	Co Supervisor	**NUR FARAH AFIQAH BINTI ASMADI (GS71840)**	SPECIFIC ABSORPTION RATE(SAR) AND ABSORBED POWER DENSITY(APD) FROM C-BAND AND MILLIMETER-WAVE SIGNALS USING IN-HOUSE FABRICATED PHANTOM	On-going
Master	Co Supervisor	**NUR IZZATI THAQIFAH BINTI SAMSOL BAHARI (GS64844)**	SPECTRAL ABSORBANCE CHARACTERIZATION FOR DETECTION OF FORMALIN USE ON FISH USING NIR SPECTROSCOPY WITH GOLD NANORODS AS SENSING LAYER	On-going
Master	Co Supervisor	**Aimi Adibah Yusof**	Imaging for medical physics applications	Graduated
Master	Co Supervisor	**ALFAEDI RISHAA ATALLAH A**	RESIDENTIAL SOLAR PV SYSTEMS AND SOCIAL PERCEPTION IN SAUDI ARABIA	Graduated
Master	Co Supervisor	**Rafidah Binti Hassan**	Dielectric Properties Of Nickel-Zinc Ferrite Nanoparticles By Using Mechanical Alloying	Graduated 2014
Master	Co Supervisor	**Saad Hayatu Girei**	Ethanol Sensor Using Tapered Optical Fiber Coated With Graphene Based Nanomaterials	Graduated 2014
Master	Co Supervisor	**Manal Ahmed Hashem**	Synthesize and characterization of Nio nano particle by thermal method	Graduated 2015
Master	Co Supervisor	**Noradira Suhaimie**	Microwave field	Graduated 2018
Master	Co Supervisor	**Syarifah Aloyah Syed Husin**	Passively Q switched Thulium Doped Fiber Laser Based on Fiber Taper-coated ZnO via RF Sputtering	Graduated 2018

Undergraduate Research Supervision

Supervisory Role	Student	Research / Project	Status
Main Supervisor	**Shah Rizal B. Mohd. Yusof**	Designing A Variable Power Supply	Graduated 2003
Main Supervisor	**Nadia Bte Kosnin,**	Perkembangan Bahan Termaju dan Peranti SiGe	Graduated 2003
Main Supervisor	**Pua Loo Sing**	Preparation and Structural Studies of Amorphous Carbon Thin Films Prepared via RF Magnetron Sputtering	Graduated Mar 2005

Supervisory Role	Student	Research / Project	Status
		Method	
Main Supervisor	**Soo Kok Hang**	Ellipsometric Study of Amorphous Carbon Thin Films Prepared via RF Magnetron Sputtering Method	Graduated Mar 2005
Main Supervisor	**Maria Mariani Jaberi**	A Correlation Between the Composition and the Microstructure of Amorphous Carbon Films	Graduated Nov 2005
Main Supervisor	**Diyana Daud**	Review Of The Past, Present and Future Research on Semiconductor Nanostructures	Graduated Nov 2005
Main Supervisor	**Verawati Wahid**	Silicon Germanium-Materials and Devices: A Market and Technology Overview	Graduated Nov 2005
Main Supervisor	**Norhidayah**	'Preparation and optical characterization of Amorphous Carbon Thin Films Prepared via RF Magnetron Sputtering Method'	Graduated Nov 2005
Main Supervisor	**Maizatul**	'Preparation and structural characterization of Amorphous Carbon Thin Films Prepared via RF Magnetron Sputtering Method	Graduated Nov 2005
Main Supervisor	**Nurfazliana Binti Hasanudin**	Growth rate effects on InP Nanowires crystal structure	Graduated 2012
Main Supervisor	**Azelah Bt. Kharudin @ Khairudin**	Pre-growth annealing temperature effects on InP Nanowires crystal structure	Graduated 2012
Main Supervisor	**Hasnani Abd. Rahman@ Abd. Wahab**	InP Nanowires growth on (100) substrates	Graduated 2012
Main Supervisor	**Asma Bte Mustafa**	InP Nanowires growth morphology on (110) substrates	Graduated 2012
Main Supervisor	**Nur Azizah Binti Sawi**	Influence of the pre-growth annealing temperature on the indium phosphide nanowires growth directions	Graduated 2013
Main Supervisor	**Syaza Rosalina Bte Rosli**	Pre-growth annealing effect on indium phosphide nanowires crystal structure	Graduated 2013
Main Supervisor	**Nor Nadhirah Bte Che Muda**	Electrical conductivity of indium phosphide nanowires in the zinc-blend and wurtzite phase	Graduated 2013
Main Supervisor	**Nur Ain Bte Mohd Saat**	Study of Raman signal from ZB and WZ indium phosphide nanowires	Graduated 2013
Main Supervisor	**Nur Syafiqah Binti Mansor**	Effects Of Pressure And Power On The Rf-Sputtered Germanium Layers	Graduated 2015
Main Supervisor	**Afifah Binti Mustafakamal**	Template Assisted Electrodeposition Technique Of Indium Antimonide Nanowires	Graduated 2015
Main Supervisor	**Seri Haini Sulastri Binti Zulkepli**	Template Assisted Electrodeposition Technique Of Indium Antimonide Nanowires	Graduated 2015
Main Supervisor	**Fathiah Syazana Bt Mohamed Shuhaimi**	Effects of annealing temperatures and sputtering parameters on the RF-sputtered zinc-oxide thin films	Graduated 2015
Main Supervisor	**Nurulaini Binti Shamsuddin**	Template assisted electrodeposition technique of indium antimonide nanowires	Graduated 2015
Main Supervisor	**Nurul Fahana Amilia Binti Rosman**	Effects of annealing temperatures on the RF-sputtered germanium layers	Graduated 2015
Main Supervisor	**Siti Nor Najia Ibrahim**	Electrical Properties Of Indium Antimonide (Insb) Nanowires At Different Deposition Time Using Template Assisted Electrodeposition Technique	Graduated 2016
Main Supervisor	**Nur Syaza Syamira Binti Mohd Fikri**	Electrical Properties Of Indium Antimonide (Insb) Nanowires By Using Two Point Probe Method: Nanowires Diameter Studies	Graduated 2016

Supervisory Role	Student	Research / Project	Status
Main Supervisor	**Syaza Bte Lokman**	Development Of An Integration Stem Based Module And Model On Motion Graph	Graduated 2017
Main Supervisor	**Nur Hilda Ruslin**	Tuning The Morphology Of Indium Antimonide (Insb) Nanowires By Controlling The Conductive Layer Conditions	Graduated 2017
Main Supervisor	**Siti Hajarnur Binti Shaaris**	Optical Properties Of Zno Thin Films Towards The	Graduated 2017
Main Supervisor	**Muhammad Nur Iman Ghazali**	Comparative Study Of Zinc Oxide Nanowires Deposited On Silicone Substrates Using Microwave And Conventional Oven	Graduated 2018
Main Supervisor	**Ammar Izmi**	Studies of ZnO Seed Layer towards Zinc Oxide Nanowires Growth On Glass Substrates Using CBD	Graduated 2018
Main Supervisor	**Nur Amalina Syahirah Bt Mohd Idris**	Optical Gas Sensing Mechanism Of Zinc Oxide Nanowires On Fiber Optics	Graduated 2018
Main Supervisor	**Siti Shahirah Kardi**	ZnO nanowires towards nanogenerators	Graduated 2018
Main Supervisor	**Toh Hui Ling**	Optical Properties of ZnO nanowires towards nanogenerators	Graduated 2018
Main Supervisor	**Toh Choon Beng**	Electrical Properties of ZnO nanowires towards nanogenerators	Graduated 2018
Main Supervisor	**Naimah Khalid**	Piezoelectric effects of ZnO nanowires towards nanogenerators	Graduated 2019
Main Supervisor	**SITI NURNADIAH BINTI MOHD ARIS**	ROLE OF HMTA ON THE STRUCTURAL PROPERTIES OF ZINC OXIDE NANOWIRES BY CHEMICAL BATH DEPOSITION	Graduated 2020
Main Supervisor	**ZAIDATUL HANIS BINIT AZMI**	EFFECT OF SEED LAYER THICKNESS ON THE GROWTH OF ZNO NANOWIRES USING SOL-GEL SPIN COATING METHOD	Graduated 2020
Main Supervisor	**AINIE MARDIA BINTI MOHD FADIL**	DEVELOPMENT OF INTELLIGENT AUTOMATIC PET FEEDER USING COMPUTATIONAL ALGORITHM TOWARDS MOBILE APPS	Graduated 2020
Main Supervisor	**SITI NOORUL NADHIRAH BINTI ZAMRUS**	EFFECT OF HTMA RATIO ON THE STRUCTURAL, MORPHOLOGY OPTICAL AND SURFACE PLASMON RESONANCE PROPERTIES OF ZINC OXIDE NANOWIRES	Graduated 2021
Main Supervisor	**Alwani Ibrahim**	EFFECTS OF GROWTH TIME ON THE STRUCTURAL-MORPHOLOGY, OPTICAL AND SURFACE PLASMON RESONANCE PROPERTIES ON ZINC OXIDE NANOWIRES	Graduated 2021
Main Supervisor	**Fazlin**	Completed	Graduated 2022
Main Supervisor	**Nik Nur Syafiqah**	Completed	Graduated 2022
Main Supervisor	**Nur Syakirah Ghani**	Completed	Graduated 2022
Main Supervisor	**Iffah**	Completed	Graduated 2022
Main Supervisor	**Nur Hazirah Hamidi**	Completed	Graduated 2023
Main Supervisor	**ZULIANA BT ZULKIFLI**	Completed	Graduated 2024
Main Supervisor	**MUHAMMAD NIZAR BIN ABD HALIM**	Completed	Graduated 2024
Main Supervisor	**NURAINI BINTI MANSOR**	Completed	Graduated 2024
Main Supervisor	**NURDIYANAH BINTI MOHAMED NAZAR**	Completed	Graduated 2026
Main Supervisor	**NUR IZZAH BINTI ISMAIL**	Completed	Graduated 2026
Main Supervisor	**NUR ARINA NADHIRAH BINTI ISMAIL**	On-going	Graduate 2027
Main Supervisor	**NOR FARZANA BINTI ABDUL SALIM**	On-going	Graduate 2027

Postgraduate Thesis Examination

Level	Role / Institution	Candidate	Thesis	Year
PhD	External examiner (UTM)	**EMILLY BINTI ALBERT ALIM**	TWO-DIMENSIONAL SILICON CARBIDE SYNTHESIS BY RF MAGNETRON CO-SPUTTERING	2024
MSc	External examiner (UTM)	**Zainur Atika Ibrahim**	THE MORPHOLOGY AND STRUCTURAL PROPERTIES OF MULTILAYER GRAPHENE GROWN BY RADIO FREQUENCY MAGNETRon SPUTTERING	2023
PhD	External examiner (Anna University, India)	**Mrs.Rathi V**	Design And Fabrication Of Tungstate/G-C3N4 Hybrid Photocatalyts For Removal Of High Toxic Pollutants Under Visible Light Irradiation	2022
PhD	External examiner (UKM)	**SITI NUR FADHILAH BINTI ZAINUDIN**	Fabrikasi Filem Nipis Fotoanod Nanokomposit Berasaskan Tin Dioksida Bagi Aplikasi Sel Suria Pemeka Warna	2022
PhD	External examiner (UTM)	**IBRAHIM BULUS**	STRUCTURAL AND OPTICAL CORRELATION OF EUROPIUM AND DYSPROSIUM CO-DOPED BORO-TELLURO-DOLOMITE GLASSES INCORPORATED WITH SILVER NANOPARTICLES	2022
PhD	External examiner (UTM)	**NASER KHAMIS SAID AL SHEKAILI**	INCORPORATION OF TITANIUM DIOXIDE IN ORGANIC SOLAR CELLS WITH FULLERENE BASED ACCEPTOR	2021
MSc	External examiner (UTM)	**MUHAMAD MUIZZUDIN AZALI**	FEASIBILITY OF USING VHF-PECVD AS COMPARE TO MAGNETRON SPUTTERING FOR SILICON CARBIDE THIN FILM DEPOSITION	2021
PhD	External examiner (UTM)	**AL LUHAYBI HANA ABDULLAH H**	STRUCTURAL AND OPTICAL PROPERTIES EVALUATION OF GOLD NANOPARTICLES VIA SYNTHESIS, CHARACTERIZATION, MODELING AND SIMULATION	2020
MSc	External examiner (UTM)	**Haezah Munyati Jusoh**	Morphology and optical properties of Silicon Carbide QUantum Dots Grown by Very High Frequency Plasma Enhanced Chemical Vapor Deposition	2020
MSc	Internal examiner (UPM)	**ADILAH BINTI IDRIS**	THE STUDY OF COPPER IONS ADSORPTION FROM AQUEOUS SOLUTION USING IONOPHORE DOPED CHITOSAN FILM	2022
MSc	Internal examiner (UPM)	**NUR SYAHIRA BINTI MD RAMDZAN**	DEVELOPMENT OF BIOPOLYMER-POLY(3,4-ETHYLENEDIOXYTHIOPHENE) BASED THIN FILMS AND THE POTENTIAL FOR MERCURY ION DETECTION USING SURFACE PLASMON RESONANCE	2021
MSc	Internal examiner (UPM)	**NUR AMIERA BINTI NOR HALIM**	PARTICLE MANIPULATIONS BY TRAVELLING SURFACE ACOUSTIC WAVE	2021
MSc	Internal examiner (UPM)	**Nazalea Yazmin Binti Muhammad**	ENHANCEMENT OF DYE SENSITIZED SOLAR CELL BY ADSORPTION OF CARBON QUANTUM DOTS AND GRAPHENE QUANTUM DOTS	2019
MSc	Internal examiner (UPM)	**SILVAN SALEVITER**	DEVELOPMENT OF CHITOSAN-GRAPHENE OXIDE BASED ACTIVE LAYERS FOR THE	2019

Level	Role / Institution	Candidate	Thesis	Year
			DETERMINATION OF COBALT ION USING SURFACE PLASMON RESONANCE OPTICAL SENSOR	
MSc	Chairman (UPM)	**Noor Aizat bin Noor Hisham**	PHYSICAL, STRUCTURAL AND MECHANICAL PROPERTIES OF FOAM GLASS-CERAMICS DERIVED FROM WASTE SODA-LIME-SILICA GLASS AND CLAMSHELL	2021
MSc	Chairman (UPM)	**MUHAMMAD FAHMI BIN ANUAR**	SYNTHESIS, STRUCTURAL AND OPTICAL PROPERTIES OF ZNO-SIO2 COMPOSITE DERIVED FROM WASTE COCONUT HUSK	2020
MSc	Chairman (UPM)	**NOOR ARIFFUDDIN BIN JALANI**	ESTABLISHMENT OF EXCHANGE-COUPLING IN HARD/SOFT FERRITE (SrFe12O19/Ni0.5Zn0.5Fe2O4) NANOPARTICLES	2017

Industrial Training & Placement Supervision

Student	Placement / Project	Year
Aznin Baharuddin	MINT Bangi	2010
Wan Loqman Hakim Mustapha	MINT Bangi	2010
Azrina Anuwi	MINT Bangi	2010
Liyana Binti Mohd Ali Napia	MINT Bangi	2010
Nurul Saihah Abdul Lani	Malaysian Mosaic Berhad	2010
Nurul Nadia	Petrosains KLCC	2010
Nashru Amira Razak	Optical properties of Tellurite Glass	2012
Yap Chuo Pong	Panasonic System Network (M) Sdn Bhd	2012
Nur Hilda Ruslin	Hokuden (M) Sdn Bhd	2016
Chan Jia Hui	Karex Industries Sdn Bhd	2016
Tan Chew Ling	Karex Industries Sdn Bhd	2016
Lai Jiun Wei	Pioneer Technology	2016
Noor Aizat Noor Hisham	Development of Ceramic based composite	2016
Novia Putri Enzri	Acoustic emission verification procedure & attenuation curve for acoustic emission	2016
Rohaniah Abdul Jalil	Determination of counting efficiency and minimum detectable activity of thyroid monitoring system.	2016
Wan Amirah Wan Abdul Razak	x-ray computed tomography 2-D slice reconstruction by using matlab/ image J	2016
Jessica Liang Yei Shan	Group Calibration TLD Card 0110H using TLD Reader	
Nor Haleeda Mohd Yusmi	Extraction of Garcenia Cambogia and nanosizing process	2013
Nur Liyana Mat Hussin	Extraction and nanosizing technology of selected herbs	2013
Intan Nur Amalia Mohd Khalid	Petronas Malaysia	2019
Chan Kar Fei	Petronas Malaysia	2019
Muhammad Zakwan Azizan	Petronas Malaysia	2019
Siti Nur Alisya Ellya Mat Jusoh	Petronas Malaysia	2019
Khairul Putra Aiman	Sedafiat Kuching sarawak	2020
Norashida Mohamad Razali	UTM Skudai	2020
Muhammad Hanzalah Bin Mohammad Hafizul	FAKULTI SENI, KOMPUTERAN dan INDUSTRI KREATIF UNIVERSITI PENDIDIKAN SULTAN IDRIS, UPSI	2021
NURADIANA BINTI ZAIN	BRAINET (M) SDN. BHD	2022
NUR FATIHAH BINTI PAWI	JEONBUK NATIONAL UNIVERSITY, REPUBLIC OF KOREA	2022
AHMAD ZAHIER BIN MAT AKHIR	JEONBUK NATIONAL UNIVERSITY, REPUBLIC OF	2023

Student	Placement / Project	Year
	KOREA	
NUR SYAHIRAH BINTI ABDULLAH	AGENSI NUKLEAR MALAYSIA	2023
NURUL FARIZAH BINTI HISAMUDDIN	JEONBUK NATIONAL UNIVERSITY, REPUBLIC OF KOREA	2023
NUR AQILAH BINTI ZAMRI	UiTM	2024
NORHAMIDATUL HAIRIYAH BINTI HAIREE	PETRONAS Research Sdn. Bhd.	2024
MUHAMMAD AMMAR BIN DZULKIFLI	Texas Instruments Electronics Malaysia	2026
NUR IRDINA FARISHA BINTI ZAMHURI	Texas Instruments Electronics Malaysia	2026
FATNIN MALIHAH BINTI AMIZI ZAIN	Malaysian Refining Company SDN BHD	2026

PART IV

EDUCATION

Teaching profile, course leadership, pedagogical innovation and academic development

8. Teaching & Educational Leadership

More than two decades of university teaching across foundational, intermediate, advanced undergraduate and postgraduate physics. Core teaching strengths include solid-state physics, semiconductor devices and technology, nanoscience, electronics, materials science and laboratory/project-based learning.

Flagship Teaching Areas

Solid State Physics

Atomic arrangement, crystal structure, diffraction, bonding, lattice dynamics, electronic properties and band concepts.

Semiconductor Devices

Carrier transport, junction physics, metal-semiconductor contacts, transistors and optoelectronic devices.

Semiconductor Technology

Semiconductor manufacturing processes, fabrication technologies and contemporary processing.

Nanoscience & Nanotechnology

Nanostructured materials, size-dependent phenomena, fabrication, characterisation and device applications.

Courses Taught

Course Code	Course Title	Sessions / Semesters Taught
PHY3201	Solid State Physics / Fizik Keadaan Pepejal	2011/2012-2, 2012/2013-1, 2013/2014-2, 2017/2018-2, 2024/2025-2
PHY4210	Semiconductor Technology / Teknologi Semikonduktor	2018/2019-2, 2019/2020-2, 2022/2023-2, 2024/2025-1
PHY4202	Semiconductor Devices / Peranti Semikonduktor	2012/2013-2, 2017/2018-2, 2018/2019-1, 2024/2025-2
PHY5205	Nanoscience and Nanotechnology / Nanosains dan Nanoteknologi	2020/2021-1, 2020/2021-2, 2021/2022-2, 2022/2023-1, 2024/2025-1
PHY5206	Semiconductor Physics / Fizik Semikonduktor	2020/2021-1, 2021/2022-1
PHY3305 / PHY3306	Electronics / Elektronik	2022/2023-1
PHY4995	Advanced Laboratory / Amali Lanjutan	2017/2018-1, 2018/2019-1
PHY3103	Physics I / Fizik I	2011/2012-1, 2012/2013-1, 2015/2016-1
PHY3104	Physics II / Fizik II	2013/2014-1, 2013/2014-2, 2014/2015-1, 2014/2015-2, 2015/2016-2
PHY2001	General Physics / Fizik Am	2004/2005-1, 2005/2006-2, 2006/2007-1, 2013/2014-1, 2014/2015-1, 2014/2015-2, 2016/2017-2
PHY3101	Thermal and Modern Physics / Fizik Terma dan Fizik Moden	2005/2006-1, 2005/2006-2
PHY4401	Applied Electromagnetism / Keelektromagnetan Gunaan	2015/2016-2, 2016/2017-1
PHY4203	Materials Science / Sains Bahan	2011/2012-2
PHY4997	Mini Project / Projek Mini	2005/2006-1, 2005/2006-2, 2006/2007-1
PHY1101	Introductory Physics I / Fizik Pengenalan I	2004/2005-2

Teaching Innovation & Educational Recognition

2018	**Putra InnoCreative Competition - Gold** Centre for Academic Development, UPM
2018	**Innovative Pedagogy - Best InnoCreative in Alternative Assessment** Centre for Academic Development, UPM
2018	**Augmented Reality Mobile Application in Teaching Crystal Structure - Bronze** IIDEL, IIUM
2018	**Understanding P-N Junction Concept Through Dam Haji Analogy - Bronze** Putra InnoCreative Carnival in Teaching and Learning
2019	**STEM Teaching Innovation Award - Gold** Malaysia Technology Expo / National STEM Movement
2019	**STEM Mentor-Mentee Award - Silver** Malaysia Technology Expo / National STEM Movement
2022	**IEEE STEM Champion** IEEE / TRY Engineering

PART V

LEADERSHIP

Departmental, institutional, professional and national academic service

9. Academic & Institutional Leadership

Head, Department of Physics | 2019-2023

- Provided academic and operational leadership across teaching, research, staffing, quality assurance and departmental planning.
- Strengthened engagement with research partners, industry and professional bodies while supporting programme development and staff progression.
- Guided the department through evolving teaching and research requirements, maintaining continuity, standards and collegial decision-making.

Research & Institutional Leadership Roles

Role	Institution	Period
Associate Professor of Physics	UPM	Aug 2018-Present
Head, Department of Physics	Faculty of Science, UPM	Aug 2019-Jul 2023
Head, Semiconductor Physics & Devices Laboratory	UPM	Current
Leader, SEMINANO	UPM	Current
Founder & Chair, UPMSTEM	UPM	2014-Present
Research Associate, Functional Device Laboratory / ION2	UPM	2013-Present
Departmental Visitor & Sabbatical Researcher	Australian National University	2022-2024
Sabbatical Research Fellow	NANOCAT, Universiti Malaya	Jan-Jun 2024
World Class Professor	Universitas Sumatera Utara, Indonesia	2021
Senior Lecturer	UPM	2012-2018
Lecturer	UPM	2003-2012
Tutor	UPM	2001-2003
Physics Demonstrator	Universiti Teknologi Malaysia	2001
Trainee Engineer	Mitsubishi Electric Malaysia	1999

Professional Services

Title / Service	Level	Year
Penggubal, Physics paper, Sijil Tinggi Peperiksaan Malaysia (STPM), Malaysian Examination Board (MPM)	National	2005
SCL Workshop Facilitator for the Faculty of Economics and Management	CADe	2005
SCL Workshop Facilitator for the Faculty of Design and Architecture	CADe	2005
Editor, Info Sains, Faculty of Science	Faculty	2005-06
Editor in Chief, SINAR magazine	Department	2005
Collaboration Meeting between UPM-Western Digital	Faculty	2011
Physics Screening Test For Submarine Science Application Course, Sekolah Pengajian Sains Fakulti Pendidikan KD PELANDOK, Lumut	National	2012

Title / Service	Level	Year
Examiner, Sijil Tinggi Peperiksaan Malaysia (STPM), Physics 960/2, Malaysian Examination Board (MPM)	National	2012
Sesi Temubual Berfokus : “Semai Bakti Menuai Budi” Memperkasa Kepimpinan Akademik Di Kalangan Anak Generasi Felda	National	2012
Examiner for Physics Paper Examination, Matriculation	National	2003-2011
Research Associate, Functional Device Laboratory, Advanced Technology Institute (ITMA)	University	2013-2019
Judge, L’oreal Young Scientist Carnival 2012 Science Innovation And Invention Competition	National	2012
Evaluator for Physics Paper Examination, Matriculation	National	2015-2016
Judge, Malaysia Conference of Young Scientist (MyCYS), SBP/MRSM	National	2015
Grant Evaluator Committee, ITMA	University	2015
Grant Evaluator Committee, AJK Penilaian Permohonan Skim Geran Penyelidikan Peringkat Universiti 2015	University	2015
Jawatankuasa Pengurusan Makmal Sintesis Bahan dan Fabrikasi Termaju (Bilik Bersih UPM)	University	2016-2020
Judge, Nobel Laureate’s Outreach camp (NLOC)	National	2014, 2016
Coordinator for UPM STEM	University	2017-2019
Penggubal, Physics paper, Sijil Tinggi Peperiksaan Malaysia (STPM), Malaysian Examination Board (MPM)	National	2017
Judge, Simposium Inovasi Sains dan reka Cipta, SBP/MRSM	National	2017
Judge, Ihtifal Ulul Albab MRSM Se-Malaysia 2017, MRSM Gemencheh	National	2017
Coordinator for PHY3201	University	2018
Coordinator for PHY4202	University	2018
Pensyarah Penyelia Projek Inovasi SM Sains Selangor (SMSS)	University	2018
Judge, Sekolah Kluster Kecemerlangan (SKK)-UA	National	8 & 9 July 2018
Penasihat, Malaysian Teachers STEM Association	National	2018
Ketua Juri, Global iLead STEM Camp (GISC2018)	National	2018
Ketua Juri, International STEM Olympiad (ISTEMO2018)	International	2018
Publication and Technical Committee, IEEE International Circuits and Systems Symposium (ICSyS)	International	2018
IEEE WIE representative for Best Award Convocation – Monash University, Semenyih	National	2018

Academic Duties & Committee Memberships

Academic Duty / Committee	Level	Year
Secretary, Hari Terbuka Jabatan	Department	2002
Representative for Hari Wanita : Program wanita dalam dunia sains	National	22-25/7/02
Facilitator, Program Promosi Akademik Fakulti ke Kolej Matrikulasi	Faculty	2002
Committee member, Kebajikan dan Sumber Manusia Jabatan	Department	2003
Committee member, Kem Hala Tuju Jabatan Fizik	Department	2003
Committee member, Seminar Fizik Ke 5	Department	2003
Mengawasi peperiksaaan akhir MTH 3004 & PHY 3101	University	2003
Vice Chairman, 6th Physics Putra Seminar	Department	2004

Academic Duty / Committee	Level	Year
Committee member (curriculum revision)	Department	2004
Committee member, Hari Penerangan mahasiswa baru	Department	2004
Committee member, Ambang Kemerdekaan	Faculty	2004
Committee member, Kem Keceriaan Fizik1	Department	2004
Konvensyen Kumpulan Meningkat (KMK) Mutu Kerja Peringkat Negeri Selangor Bagi Sektor Awam Tahun	National	2004
Kem Didikan Sains Dan Matematik Anak-anak Fizik	Department	2004
Committee member (IPTA Quality Assessment)	Faculty	2005
Committee member (Publicity Unit), Theoritical Studies Laboratory Expository Lecture Series IV : Quantum Information	National	2005
Committee member, Department Publicity unit, Published the Undergraduate Physics Department Flyers	Department	2005
Committee member, Publicity unit	Faculty	2005-06
Committee member, Publicity unit and mass communication, Quality Day	Faculty	2006
Editor, Info Sains, Faculty of Science	Faculty	2005-2016
Vice Chairman, Kelab Warga Fizik	Department	2011-13
Committee member, The Seventh International Conference on Magnetic and Superconductor Materials (MSM2011)	International	2011
Emcee, MSM 2011 Dinner	International	2011
Committee member, Multimedia Unit, Hari Penerangan Pelajar Baharu	Department	2011
Committee member, Multimedia Unit, Fizik 360 Launching	Department	2011
Secretary, Fundamental Science Congress FSC 2012	Regional	2012
Chairman, Lawatan Kerja Felo Perunding dari Kazakhstan	Faculty	02/07/2012
Perarakan Pegawai Akademik, Majlis Konvokesyen UPM	University	2012-2016
Head of Technical Unit, The 5th International Conference on Solid State Science and Technology (ICSSST 2015)	International	Dec 2015
Secretary 1, Symposium of Advanced Materials and Nanotechnology (SAMN 2017)	Regional	2017
2018 IEEE Leadership Camp & Strategic Meeting Retreat	National	10/03/2018
Coordinator, Development of Massive Open Online Course (MOOC) Malaysia	University	2018

Professional Credentials & Memberships

Professional Technologist (Ts.)

Malaysia Board of Technologists (MBOT)

Senior Member, IEEE

Institute of Electrical and Electronics Engineers

Association / Organisation	Role
The Australian Research Council Nanotechnology Network (ARCNN)	Ordinary Member
Australian Research Network for Advanced Materials (ARNAM)	Ordinary Member
American Chemical Society (ACS)	Ordinary Member
Malaysian Association of Solid State Science and Technology (MASS)	Ordinary Member
UPM Academic Staff Association (PPAUPM)	Ordinary Member
Golden Key National Honour Society	Ordinary Member
Persatuan Kejiranan Damai Impian, Bandar Baru Bangi	Ordinary Member
Gabungan Anak Anak Perantauan Parlimen Semberong, Johor (GAASP)	Ordinary Member
Institute of Electrical and Electronics Engineers (IEEE)	Ordinary Member

Institute of Electrical and Electronics Engineers (IEEE) Women in engineering (WIE) 2018	Secretary
IEEE Circuit and System (CAS)	Auditor
Institute of Electrical and Electronics Engineers (IEEE) Women in engineering (WIE) 2020	Secretary
Institute of Electrical and Electronics Engineers (IEEE) Women in engineering (WIE) 2021	Auditor
Institute of Electrical and Electronics Engineers (IEEE) 2020	Senior Member
MBOT Professional Technologist 2021	Ts

Student Development & Academic Mentoring

Programme	Organiser	Role	Date
1 Ringgit, 1 Telescope, AIG	Astronomy Interactive Group	Advisor	Ogos 2012
Mentor Mentee Kelab Fizik UPM	Department	Advisor	2011-2012
Program Kem Gerak Ilmu Fizik	Undergraduate Physics Club	Facillitator	2012/2013
Program Kem Gerak Ilmu Fizik,	Undergraduate Physics Club	Facillitator	2011/2012
Majlis Makan Malam Aspirasi	Undergraduate Physics Club	Participant	2011, 2012, 2016
Physics Fusion Day 2013	Undergraduate Physics Club	Facillitator	2013-2016
UPM Kem Future The Making	Faculty	Facillitator	2015
Bakti Siswa	Faculty/UPM	Facillitator	2018-2019
Digital UPMSTEMPrenuership	National	Advisor	2019-2020

PART VI

IMPACT & RECOGNITION

External validation, awards, STEM/community contribution and the case for professorial promotion

10. Selected Recognition

Year	Recognition	Significance
2026	**World's Top 5% Scientists**	SciRank 2025 Global Registry; Verification ID A5061544562.
2025	**Bulan Akademia Putra, UPM**	Recognition for academic leadership and contribution.
2024	**Silver Award, iSAMN2024**	Nanohybrid materials research.
2024	**Gold Medal, ITEX 2024**	Irradisol innovation; co-researcher.
2022	**IEEE STEM Champion**	Sustained leadership in STEM education and outreach.
2021	**World Class Professor**	Universitas Sumatera Utara, Indonesia.
2020	**Excellent Research Associate Award**	Institute of Advanced Technology, UPM.
2019	**Vice-Chancellor's Fellowship Award**	Universiti Putra Malaysia.
2019	**Gold & Silver Medals, Malaysia Technology Expo**	STEM Teaching Innovation and STEM Mentor-Mentee recognition.
2018	**Gold Medal, Putra InnoCreative Carnival**	Teaching and learning innovation.

Complete Awards & Recognition Record

Award / Recognition	Organisation	Year
Outstanding Scholastic Achievement and Excellence	Golden Key National Honour Society	1998
Excellent Student Prize	Badan Amal Tenaga Isteri Wakil-Wakil Rakyat Negeri Johor (JUITA)	1999
Faculty Excellent Service Certificate	Universiti Putra Malaysia	2002
Faculty Excellent Service Certificate	Universiti Putra Malaysia	2003
Faculty Excellent Teaching Award	Universiti Putra Malaysia	2004
Calon Anugerah Adi Pengajar Cemerlang Hari Kualiti Fakulti	Faculty of Science	2005
Faculty Excellent Service Certificate	Universiti Putra Malaysia	2005
Faculty Excellent Teaching Award	Universiti Putra Malaysia	2005
Faculty Excellent Service Certificate	Universiti Putra Malaysia	2006
IEEE LEOS Travel Grants	IEEE Photonics Society	2009
ANU Vice Chancellor Travel Grants	The Australian National University	2009
Faculty Excellent Teaching Award	Faculty of Science	2011
Exhibiton of Invention Research and Innovation (PRPI) 2012, Bronze medalist	Universiti Putra Malaysia	2012
Faculty Excellent Service Certificate	Faculty of Science	2012
Certificate of Service Excellency	Universiti Putra Malaysia	2013
Certificate of Service Excellency	Universiti Putra Malaysia	2014
Exhibiton of Invention Research and Innovation (PRPI) 2016, Gold medalist (co-researcher)	Universiti Putra Malaysia	2016
Anugerah Jaringan Industri dan Komuniti Berimpak Tinggi (ICAN) 2015	Universiti Putra Malaysia	2016
Certificate of Service Excellency	Universiti Putra Malaysia	2016
Anugerah Perkhidmatan Cemerlang (APC) 2017	Universiti Putra Malaysia	2017

Award / Recognition	Organisation	Year
Anugerah Perkhidmatan Cemerlang (APC) 2017	Universiti Putra Malaysia	2018
Putra InnoCreative Carnival in Teaching and Learning 2018 (PICTL)- Putra InnoCreative Competition	Centre for Academic Development (CADe)	Gold 2018
Putra InnoCreative Carnival in Teaching and Learning 2018 (PICTL)- Putra InnoCreative Awards (Innovative Pedagogy Best InnoCreative in Alternative Assessment)	Centre for Academic Development (CADe)	2018
Invention, Innovation & Design on e-Learning (IIDEL) 2018 : Collaborative of Augmented Reality Mobile Application in Teaching Crystal Structure (Bronze)	IIUM Gombak	2018
Putra InnoCreative Carnival in Teaching and Learning 2018 (PICTL)- Putra InnoCreative Awards Understanding Pn-Junction Concept Through Dam Haji Analogy Method (Bronze)	Centre for Academic Development (CADe)	2018
Malaysian Technology Award (MTE2019) : STEM Teaching Innovation Award (Gold)	National STEM Movement	2019
Malaysian Technology Award (MTE2019) : STEM Mentor Mentee Award (Silver)	National STEM Movement	2019
Anugerah Fellowship Naib Canselor 2018 : Seni dan Kreativiti, Kategori Penyelidikan dan Inovasi	Universiti Putra Malaysia	2019
Putra InnoCreative Carnival in Teaching and Learning 2022 (PICTL)- Putra InnoCreative Competition	Centre for Academic Development (CADe)	Gold
Sijil Perkhidmatan Cemerlang	Universiti Putra Malaysia	2020
Sijil Perkhidmatan Cemerlang	Universiti Putra Malaysia	2021
Anugerah Perkhidmatan Cemerlang (Ketua Jabatan)	Universiti Putra Malaysia	2023
Sijil Perkhidmatan Cemerlang	Universiti Putra Malaysia	2022
Sijil Perkhidmatan Cemerlang	Universiti Putra Malaysia	2025

11. STEM, Community & Societal Engagement

The portfolio includes sustained engagement beyond disciplinary research through UPMSTEM, science outreach, teacher development, school-university programmes and community-based STEM activities. This body of work demonstrates translation of academic expertise into capacity building and public engagement.

Activity / Programme	Organiser	Place	Date
Pameran Sains (SEM)	MRSM Kuala Klawang	MRSM Kuala Klawang, Jelebu, Negeri Sembilan	Ogos 2014
Program Free market For OKU, Asnaf and Fakir	UPM	Dewan Besar, UPM	2014
Pelancaran UPM STEM Di Karnival Pemuafakatan Belia Paloh	Parlimen Sembrong	Paloh, Kluang, Johor	Jan 2015
Kem Transformasi STEM Siri 1	UPM STEM and Parlimen Sembrong	SMK Seri Kota Paloh	Feb 2015
Perlawanan Persahabatan Bola Jaring	Sri Ayesha Islamic School	Taman Tasik Cempaka, Bandar Baru Bangi	2015
Kem Transformasi STEM Siri 2 (JOM masuk UPM!), Karnival JOM Sains	Parlimen Sembrong	UPM	Feb 2016
Program Motivasi dan Aspirasi Minat Sains	Sekolah Kebangsaan Jalan 3, Bandar Baru Bangi dan PIBG	UPM	May 2015
STEM Pedagogical Approach for Teaching & Learning Education MRSM/SBP	MRSM Terendak	UTEM Melaka	Jul 2015
The Kuala Lumpur: Engineering Science Fair (KLESF) 2015	ASEAN Academy of Engineering and Technology (AAET), University Tunku Abdul Rahman (UTAR), Malaysian Industry-Government Group for High Technology (MIGHT), and The Institution of Engineers Malaysia	MINES International Exhibition and Convention Centre (MIECC),	Nov 2015

Activity / Programme	Organiser	Place	Date
	(IEM).		
Kem Transformasi STEM Siri 2 (JOM masuk UPM!), Karnival JOM Sains UPM	FASSA UPM	Panggung Percubaan dan Sekitar UPM	Feb 2016
STEM Exhibition KJS 2016	FASSA UPM	Panggung Percubaan, UPM	2016
Program Upm stem For Kids Sempena Minggu Pendidikan Khas 2015	Sekolah Kebangsaan Bukit Beruntung 2 dan UPM	Sekolah Kebangsaan Bukit Beruntung 2	Apr 2016
Stem Action Research For Science And Mathematics Teachers Workshop I	MPN and UPM	Concorde Inn KLIA	Mar 2016
Stem Action Research For Science And Mathematics Teachers Workshop II	MPN and UPM	AKEPT	May 2016
Stem Action Research For Science And Mathematics Teachers Workshop III	MPN and UPM	KPT, Putrajaya	Sept 2016
The Kuala Lumpur: Engineering Science Fair (KLESF) 2016	ASEAN Academy of Engineering and Technology (AAET), University Tunku Abdul Rahman (UTAR), Malaysian Industry-Government Group for High Technology (MIGHT), and The Institution of Engineers Malaysia (IEM).	MINES International Exhibition and Convention Centre (MIECC),	Nov 2016
Demonstration of 3B scientific products	Suria Pembekal Umum Sdn Bhd and the 3B Scientific GMBH	Faculty of Science, UPM	Nov 2016
Putra Sains Eksplorasi : Seeding Science Culture	MRSM Ulul ALbab, Gemencheh	MRSM Ulul ALbab, Gemencheh	Jan 2017
Program National Science and Technology Exhibition 2017 (NaSTE2017)	Majlis Perwakilan Pelajar UPM	Dewan Besar UPM	Apr 2017
Karnival Karnival STREAM (Science, Technology, Religion, Engineering, Arts, Mathematic)	PIBG SMK Intan Baiduri Cheras	SMK Intan Baiduri Cheras	Apr 2017
Program Science is Fun	SK Taman Segar, Cheras	SK Taman Segar, Cheras	26-09-2017
Problem Solving – Basic Quality Tools Used in Manufacturing (theory & lab visit)	MIMOS Sdn Berhad	MIMOS Bukit Jalil	16-10-2017
The Kuala Lumpur: Engineering Science Fair (KLESF) 2017	ASEAN Academy of Engineering and Technology (AAET), University Tunku Abdul Rahman (UTAR), Malaysian Industry-Government Group for High Technology (MIGHT), and The Institution of Engineers Malaysia (IEM).	MINES International Exhibition and Convention Centre (MIECC),	Nov 2017
Global iLead STEM (GISC2017)	PIBG SBPI Selandar	Auditorium, Faculty of Engineering, UPM	20-24 Dec 2017
STEM Teacher Training with Mideast Training center and Cambridge for development	UPMSTEM, FDL ITMA & IEEE Circuit and System	Faculty of Engineering, UPM	26 June 2018
Science-Engling-math SKK with UA	SMK Puteri Seremban and FPP UPM	FPP, UPM	8&9July 2018
UPMSTEM with Maahad Hamidiah Kajang	UPMSTEM, FS	Maahad Hamidiah Kajang	17 & 18/07/2018
Science exploration day meeting	QDees kindergarten	UPMSTEM Laboratory	26 July 2018

Professorial Promotion Profile

A sustained record of scholarship, academic independence, people development, institutional leadership and societal contribution.

1. Sustained & Independent Research Leadership

Repeated leadership as Principal Investigator and Project Leader across semiconductor nanowires, sensing, energy harvesting, STEM knowledge transfer and green-hydrogen electrocatalysis, complemented by leadership of a laboratory and research group.

2. Established Scholarly Record

A publication record spanning more than two decades across semiconductor physics, nanotechnology, materials science, sensing, energy, optical technologies and sustainable materials.

3. Development of Researchers & Academic Capacity

Twenty-one postgraduate completions, ongoing PhD and Master supervision, extensive undergraduate researcher development, industrial placement supervision and external thesis examination.

4. Institutional Academic Leadership

Four years as Head of the Department of Physics, together with laboratory leadership, research-group leadership, academic governance and professional service.

5. National & International Academic Standing

International collaborations, World Class Professor appointment, external thesis examination, IEEE professional recognition and World's Top 5% Scientist recognition.

6. Educational & Societal Impact

Sustained leadership in STEM education, university-school engagement, teacher development, science communication and community knowledge transfer through UPMSTEM and related initiatives.

7. Future-Focused Research Direction

A strategic evolution toward sustainability-oriented research in energy harvesting, functional materials and green hydrogen while maintaining a strong disciplinary foundation in semiconductor and nanostructured-material physics.

Taken collectively, the record demonstrates sustained scholarship, academic independence, research leadership, researcher development, institutional leadership, disciplinary contribution and societal impact consistent with consideration for promotion to Professor.

APPENDIX

DETAILED PROFESSIONAL RECORD

Professional development and teaching-observation records retained for completeness and future updating

A. Professional Development, Conferences & Training Attended

Course / Workshop / Training	Date	Place / Organiser
Teaching Methods Course		Faculty of Educational Studies
E-Learning Course		Institute of Multimedia & Software
MS ISO 9001:2000 Wokshop		Faculty of Science and Environmental Studies
English Course	26-30/05/03	Faculty of Modern Languages & Communication
Waste Management Course	10/2003	Faculty of Science and Environmental Studies
Virtual Instrumentation in Class room & Laboratories	12/2003	National Instruments and Faculty of Science and Environmental Studies UPM
NIDays 2003-04	15/01/04	Palace of the Golden Horses, Seri Kembangan
Kem Keceriaan Fizik 1- 2004	05/02/04	DKAP1, UPM
Workshop on Introduction to Atomic Force Microscope	17/02/04	Makmal Sains, jabatan Fizik, UPM
Kursus INDUKSI Modul Umum dan Khusus Kumpulan Pengurusan dan Professional 3/2004	23/03/04	Dewan Seminar, Fakulti Kejuruteraan UPM
Material Science Workshop – Nanotechnology by Dr. MASAYUKI MORI	08/04/04	Fakulti Kejuruteraan UPM
Kursus Kaedah Penyelidikan 2004 RMC	23-26/04/04	Faculty of Economics and Management
Workshop on Matlab Software	12/05/04	INSPEM
Training Course on X-Pert PRO and SAXS	17– 21/05/04	XRD laboratory, Physics Department
Kursus Aplikasi Kuliah On-line (Komprehensif)	24–25/05/04	Computer Lab, Physics Department
Bengkel Pengurusan Dan Pengukuhan E-Kuliah Dan Pengurusan Makmal Pengajaran 2004	29/05/04	Computer Lab, Physics Department
Wokshop on Department of Physics Website Physics Department	14-16/06/04	Computer Lab, Physics Department
Konvensyen Kumpulan Meningkat Mutu Kerja Peringkat Negeri Selangor Bagi Sektor Awam Tahun 2004	12-13/07/04	Kerajaan Negeri Selangor
Wokshop on Research Introductory	27/07/04	Research management Centre
Kem Didikan Sains Dan Matematic Anak-anak Fizik'	21/08/04	Physics Department
Electronic Workbench Training	24/11/04	Physics Department
Student Centred Learning	10-11/05/05	CADe, UPM
Pemerhati bengkel SCL untuk Fakulti Ekonomi dan Pengurusan	19-20/05/05	CADe, UPM
Seminar Percambahan Pemikiran Islam Hadhari Peringkat IPT 2005	14/06/05	DEKTAR, UKM
Bengkel Penulisan Modul Student Centred Learning (SCL)	28-31/06/05	FS
Kursus Kenegaraan Master dan PHD ke Luar Negara	8-12/12/05	JPA
LO wokshop	01/06	FS
Wokshop on Research Examination Thesis	23/11/06	FBMK
International Conference On Nanoscience and Nanotechnology	22/02/2010	ANU Canberra / The Australian Research Council Nanotechnology Network
2010 Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD)	12/12/2010	IEEE

Course / Workshop / Training	Date	Place / Organiser
Latihan pengkalan data ISI	21/02/2011	Faculty of Science, UPM
Bicawara Sains 2001 Siri 1	13/04/2011	Faculty of Science, UPM
Bengkel pemantapan modular approach	22/08/2011	Faculty of Science, UPM
Bengkel pemantapan LMS	24/08/2011	Faculty of Science, UPM
Lindau Programme Roadshow	04/11/2011	Akademi Sains Malaysia
"What and Why H-index?"	09/11/2011	Persatuan Pegawai Akademik Universiti Putra Malaysia
Photonics Lecture Series	03/01/2012	Fakulti of Engineering
Kolokium Sains 2012	15/02/2012	Faculty of Science
Nanomaterials Technology Specialized Conference 2012	06/03/2012	UTM and Nagoya Institute of Technology
Kursus Kesarjanaan Dalam Pengajaran Dan Pembelajaran (SoTL)	13/03/2012	CADe and Registrar
Providing quality postgraduate supervision	06/05/2013	Universiti Putra Malaysia and Otago University, New Zealand
Kursus Asas Sains Pengembangan Universiti Siri 2	03/06/2014	UCTC UPM
UPM Research Supervisor Support And Development Programme 2015	23/02/2015	Graduate School Oficce (GSO), UPM
8th MPOB GSAS Seminar 2015	10/06/2015	MPOB
EURAXESS Share “Advancing your Research Career in Europe: Science Communication Workshop	02/11/2015	Malaysia Academy of Sciences
The 5th International Conference on Solid State Science and Technology (ICSSST 2015)	13/12/2015	Malaysia Solid State Science & Technology (MASS) Society
Bengkel Action Research for STEM Enhancement for Science and Mathematics Teachers I, II, III	2016	Ministry of Higher Education, Ministry of Education, Majlis Professor Negara
Fabrication Cleanroom Workshop	19/07/2016	Clean Room, UPM
Fundamental Science Congress 2016	09/08/2016	Faculty of Science
Mustafa Prize akan menganjurkan Science and Technology Exchange Program (STEP) in Islamic Countries	19/12/2016	Mustafa Prize and UPM
Olympus BX51 High Power Microscope Training	06/09/2017	FK, UPM
Industrial Trip	06/10/2017	National Instruments, Penang
Porous silicon fabrication Workshop	17&18 Jan 2018	FK, UPM
Wiley Publishing	18/01/2018	Library, UPM
CADeTALK (SERIES 1) IMMERSIVE LEARNING THROUGH CYBERGOGY	23/01/2018	CADe, UPM
PROGRAM CEO@FACULTY OLEH PUAN HAZAMI HABIB, KETUA PEGAWAI EKSEKUTIF AKADEMI SAINS MALAYSIA	25/01/2018	FS, UPM
JOURNAL WRITING WORKSHOP 2018	6&7/02/2018	TnCPI UPM
Mentorship Programme Toolkit Workshop	24&25/02/2018	Permata PINTAR UKM
CADe Talk (Series 2) l EFFECTIVE TEACHING 4.0: CREATIVE & INSPIRING WAYS	26/02/2018	TnCPI UPM
CPD2018: BLENDED LEARNING WITH PUTRABLAST	01/03/2018	TnCPI UPM
SCHOLARSHIP OF TEACHING AND LEARNING (SoTL)	13/03/2018	TnCPI UPM
HOW TO APPLY FOR MOSTI RESEARCH GRANTS: TECHNICAL BRIEFING	15/03/2018	TnCPI UPM
Autolab NOVA Advanced Training	17/04/2018	Metrohm Msia Sdn Bhd
Afm bruker workshop	25/04/2018	Bruker Sdn Bhd
CPD2018: 3 MEI l DEVELOPMENT OF MOOC	03/05/2018	TnCPI UPM
JEMPUTAN KE BENGKEL PEMBANGUNAN PUTRA MASSIVE OPEN ONLINE COURSE (PutraMOOC)	31/05/2018	FEM, UPM

B. Teaching Observation / PALS Supervision

Supervisory Role	Student	Year
Main Supervisor	Nur Saliza	2014

Supervisory Role	Student	Year
PALS Supervisor	MUHAMMAD DANISH BIN MOHD DAUD	2024
PALS Supervisor	JARELD GREY JULIUS	2025
Main Supervisor	Nur Saliza	2014
Main Supervisor	Naqiuddin	2014
Main Supervisor	Nurul Husna	2014
Main Supervisor	Nur Shafeeqah Arifin	2014
Main Supervisor	Nurul Afiza Nordin	2013
Main Supervisor	Nor Syazana binti Shamsuddin	2013
Main Supervisor	Nurul Syazwani Binti Abd Samat	2013
Main Supervisor	Fadilah Binti Mohamad	2013
Main Supervisor	Nur Fathin Suhana Bt Ayob	2013

END OF ACADEMIC & RESEARCH PORTFOLIO

Living master document - update publications, grants, supervision and recognition as new records are confirmed.