



CURRICULUM VITAE

NUR IZYAN BINTI WAN AZELEE

Senior Lecturer

(Head of Bioprocess Engineering Laboratory)

**Faculty of Chemical Engineering and Energy Engineering,
Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia.**

Email: nur.izyan@utm.my

Associate Research Fellow

(Head of Cosmeceutical & Fragrance Unit)

Institute of Bioproduct Development

Universiti Teknologi Malaysia

Hp: +60 13-7975900

Email: nur.izyan@ibd.utm.my

Researcher Information

ORCHID ID: <https://orcid.org/0000-0001-9415-4382>

SCOPUS ID: 57209683067

Web of Science Researcher ID:CEW-4817-2022

Researcher ID: X-2013-2019

EDUCATION BACKGROUND

- 2016 : **Doctor of Philosophy (Bioprocess Engineering)**
Universiti Teknologi Malaysia, Skudai, Johor
- 2009 : **Bachelor Degree of Engineering (Chemical-Bioprocess) Second-Class Honour (Upper Division)**
Universiti Teknologi Malaysia, Skudai, Johor
- 2005 : **Foundation Year of Science, UTM-MARA Fast-Track Programme**
Universiti Teknologi Malaysia, Skudai, Johor.

PROFESSIONAL BODY MEMBERSHIP

- 2021 – present : **SAS Young Research Fellow Membership (SYRM)**
(Membership ID: SAS/SYRFM/036/2021)
- 2019 – present : **The Institution of Chemical Engineers (IChemE)**

Associate Member (Membership No. 100196450)

2019 – 2020 : **Malaysian Society for Biochemistry and Molecular Biology**
Ordinary member (No. OM-2019-039)

2016 – present : **Board of Engineers Malaysia**
Graduate engineer – chemical (No. 109508A)

CAREER HISTORY & CURRENT POSITIONS

2007	:	Industrial Trainee Multicore Enterprise Sdn. Bhd., Pontian, Johor, Malaysia.
2009 –2010	:	Research assistant Genetic Engineering Laboratory, Universiti Teknologi Malaysia
2011	:	PhD exchange program Denmark Technical University, Copenhagen, Denmark.
2017	:	Post Doctorate Fellow Genetic Engineering Laboratory, Faculty of Chemical and Energy Engineering, Universiti Teknologi Malaysia.
2018 - present	:	Senior Lecturer Department of Bioprocess and Polymer Engineering, School of Chemical & Energy Engineering, Universiti Teknologi Malaysia.
2019 - 2022	:	Associate Fellow Centre of Lipids Engineering and Applied Research (CLEAR) Universiti Teknologi Malaysia.
2019 - present	:	Associate Fellow Institute of Bioproduct Development (IBD) Universiti Teknologi Malaysia.
2022 - present	:	Head of Laboratory Unit Cosmeceutical & Fragrance Unit Institute of Bioproduct Development (IBD) Universiti Teknologi Malaysia. Head of Bioprocess Engineering Laboratory Department of Bioprocess and Polymer Engineering, School of Chemical & Energy Engineering, Universiti Teknologi Malaysia.

FIELD OF EXPERTISE/RESEARCH HIGHLIGHTS

Enzyme Technology

My research involves the production of recombinant enzyme (xylanase and arabinofuranosidase) from *Pichia pastoris* and partial purification of the enzymes for lignocellulosic hydrolysis. Partial purification of crude enzymes from yeast extract by dialysis. The partially purified enzymes were further used in enzymatic hydrolysis of lignocellulose for

oligosaccharides production. Oligosaccharides are valuable biomolecules for use in pharmaceutical as well as in food manufacturing for functional food production and prebiotics. Currently is working on enzyme immobilization strategies for transesterification of waste cooking oil to biodiesel.

Bioprocess Engineering

Optimization of several reaction parameters for an efficient enzymatic reaction of lignocellulosic biomass. Reaction parameters involved were substrate loading, enzyme loading, temperature, pH and reaction time. The optimization was performed using statistical analysis by the Design Expert Software, V6.

Study of kinetics of enzyme reaction for production of oligosaccharides. The effects of several parameters to the kinetics of enzymatic reactions were investigated. Reaction thermodynamic for production of oligosaccharides was also investigated when certain reaction conditions were manipulated.

Biomass Pretreatment/ Delignification

Determination of chemical compositional analysis in untreated and treated biomass using proximate analysis. Expert in using acid and alkali pretreatment (ranging from harsh to mild), hydrothermal pretreatment and microwave-assisted acid and alkali pretreatment for lignin removal from biomass. This is aimed to increase the enzyme accessibility to the substrate and enhanced the sugar and oligosaccharides production.

Biofuel

Enzyme immobilization optimization study for the production of biodiesel from waste cooking oil as the raw material. Process reaction and optimization on the esterification and transesterification towards achieving high yield of biodiesel with stable and recyclable biocatalyst.

AWARDS AND FELLOWSHIP

1. **Excellent Service Award (Anugerah Perkhidmatan Cemerlang)** in Faculty of Chemical and Energy Engineering, Universiti Teknologi Malaysia for the year 2022.
2. **Silver Award** for Q1/Q2 publication, IBD Awards 2021.
3. **Bronze Award** for Highest Number of Publication of the Year 2021, IBD Awards 2021.
4. **Best Paper Award** in the 5th International Congress of Advances in Bioscience and Biotechnology (ICABB2021), ‘The Impact of Facile Formulation of Alcohol-based Hand Sanitizer containing *Eucheuma cottonii* Seaweed on its Sensory Properties and Acceptability’
5. **Silver Award** in the International Alumni Convention and Innovation Exhibition (INACIX2021), ‘Lipid-Nanol : Potential Hair Growth Promoter’, Universiti Teknologi Malaysia.
6. **Award of Excellent** in Active Blended Learning Course (Chemical Reaction Engineering, Numerical Method & Optimization, Statics & Biochemistry) Semester 2-2019/2020 & Semester 1-2020/2021
7. **Bronze Award** in the Virtual International Research and Innovation Symposium & Exposition (RISE2020), “Polishing Adsorbent”, Universiti Tun Hussein Onn Malaysia (UTHM).
8. **Associate fellow** for Institute of Bioproduct Development (IBD), Universiti teknologi Malaysia (2019-present).
9. **Associate fellow** for Centre of Lipids Engineering and Applied Research (CLEAR), Universiti Teknologi Malaysia (2019-present).

10. **Bronze Award** in the Creation, Innovation, Technology & Research Exposition (CITREX) 2019, “Bromelain for blood stain removal”, Universiti Malaysia Pahang (UMP).
11. **Award of Excellent** in Active Blended Learning Course for Process Transport (SKKK2313-02), Semester 2-2017/2018, Universiti Teknologi Malaysia.
12. **3rd prize winner** in the Three Minute Thesis (3MT) competition Faculty of Chemical Engineering, Universiti Teknologi Malaysia, 2015, 25th February 2015.
13. **4th place** in poster presentation entitled ‘Evaluation of Enzymatic Hydrolysis Conditions for Sugar Production from Pretreated Whole Kenaf Fiber’ in the 2nd International Conference on Kenaf and Allied Fibres, 3rd-5th December 2013.
14. Awarded with **full-sponsorship** for Doctoral study by the Ministry of Education of Malaysia (**MyBrain15**).
15. **Dean’s award** in the Degree of Bachelor of Engineering (Chemical-Bioprocess), UTM 43rd Convocation, 2009.
16. **Dean’s list** for 6 semesters in the Degree of Bachelor of Engineering (Chemical- Bioprocess), UTM.
17. **Full-sponsored** for undergraduate study by Majlis Amanah Rakyat (**MARA**).

RESEARCH GRANTS

1. Development of Sateera®-based sanitary pad for prolonged natural refreshness, 2021-2022 (12 months), RM 20,000, Contract Research DTD, Sateera Biontech Sdn. Bhd. (**Project Leader**).
2. Extraction of Collagen Bioactive Ingredients from Jellyfish for Cosmeceutical Application, 2021-2022 (10 months), RM 50,000, Contract Research DTD, MM Cosmetic Sdn.Bhd. (**Project Leader**).
3. Mechanistic study and kinetics of co-immobilized *Candida rugosa* lipase for one-pot esterification-transesterification of waste cooking oil to biodiesel, 2020-2023, RM 115,900.00, Fundamental Research Grant Scheme (FRGS) (**Project Leader**).
4. Extra Care Hand Sanitizer with Seaweed Extract, 6 months-2020, RM 20,000, PRGS-ICC (**Project Leader**).
5. MYRGS 2.4 Synthesis of highly porous structure of rice husk biochar and characterization for efficient adsorbent, 2020-2022, RM 46,000, (Malaysian Young Research Grant Scheme) (**Project Leader**).
6. CRG 42.3 : Investigation of the mechanism and growth kinetic of mycelium biofoam, 2019-2021, RM 20,000, UTM CRG (Collaborative Research Grant) (**Project Leader**).
7. Ozone pretreatment of agricultural waste for the enhancement of oligosaccharides yield by enzymatic hydrolysis, 2020-2021, RM 70,000, UTMFR (Research University Grant of UTM) (**Project Leader**).
8. Development of organic porous material from pineapple waste as a support for enzyme adsorption and applications in biocatalyst, 2019-2020, RM 30,000, GUP tier 2 (Research University Grant of UTM) (**Project Leader**).
9. Pretreatment and hydrolysis of biomass wastes into edible sugars, 2018-2020, RM 45,000, UTM Transdisciplinary Research Grant (**Project Leader**).
10. Preparation, kinetic and mechanistic study for calcium based trimetallic oxidecatalyst supported on alumina for transesterification of low-grade cooking oil to biodiesel, 2019-2020, RM 128,200 funded by Fundamental Research Grant Scheme (FRGS) (**Project Leader**).
11. Evaluation of microwave pretreatment of pineapple waste for delignification process, 2018-2019, RM 20,000 Potential Academic Staff (**Project Leader**).
12. Fucoidan Extraction from Brown Algae using Microwave Assisted-Deep Eutectic Solvent, 2022-2024, RM 60,000 funded by UTM Encouragement Research (**Project Member**).
13. Structural-performance relationship of enzymatic-alkali metal oxides hybrid catalysts for transesterification reaction of waste cooking oil, 2022-2025, RM 130,000 funded by UTM Fundamental Research (**Project Member**).

14. Adhesion of cellulose hydrogel blends: its correlation to mechanical properties and physical crosslinking of low and high molecular weight of cellulose, 2021-2023, RM115,150.00 funded by Fundamental Research Grant Scheme (**Project Member**).
15. Diffusion study of enzymes cascade immobilisation in biomimetic microcapsule and kinetic of hydrolysis for malto-oligosaccharides production, 2020-2023, RM 132,000, funded by Fundamental Research Grant Scheme (FRGS) (**Project Member**).
16. Identification of polyethylene plastic degrading microbes from local municipal solid waste landfill in Malaysia, 2020-2023, RM 121,800, Fundamental Research Grant Scheme (FRGS) (**Project Member**).
17. Scaling Up Production of Eugenol Rich Oil from Piper Betle for Healthcare Applications, 2020-2023, RM 110,500.00, Prototype Development Research Grant Scheme, (**Project Member**).
18. MYRGS 2.0 : Integrated pollutant-targeted wastewater treatment using cyclodextrin-functionalized rice husk biochar, 2020-2022, RM 250,000, (Malaysian Young Research Grant Scheme) (**Project Member**).
19. MYRGS 2.1: Immobilization of cyclodextrin-glucanotransferase on rice husk biochar for cyclodextrin production, 2020-2022, RM 80,000, (Malaysian Young Research Grant Scheme) (**Project Member**).
20. MYRGS 2.5 Knowledge Transfer for Effective Communication and Cultural Changes in Wastewater Management, 2020-2022, RM 17,500,
21. CRG 42.1 : Fabrication of mycelium biofoam using agricultural biomass, 2019-2021, RM 40,000, UTM CRG (Collaborative Research Grant) (**Project Member**).
22. CRG 42.0: Development of mycelium biofoam as biodegradable composite material, 2019-2021, RM 100,000, UTM CRG (Collaborative Research Grant) (**Project Member**).
23. Scale-up production of eugenol rich oil for therapeutic applications, 2020-2021, RM 80,000, UTMPR (Research University Grant of UTM) (**Project Member**).
24. Development of biomass based magnetic nanoparticle-cross link enzyme aggregates (MCLEAS) for macromolecule (plastic) bioconversion, 2020-2022, RM 150,000, UTMHR (Research University Grant of UTM) (**Project Member**).
25. Kinetic and transport mechanism of beta-cyclodextrin-functionalized cellulose nanofiber for adsorption of heterocyclic aromatic hydrocarbons, 2019-2021, RM30,000, GUP tier 2 (Research University Grant of UTM) (**Project Member**).
26. Tribological investigation of palm stearin oil-based lubricant synthesised through chemoenzymatic modification, 2019-2020, RM 86,000 funded by Fundamental Research Grant Scheme (FRGS) (**Project Member**).
27. UTM-TDR 31.4 (T1): Metabolomics analysis of xylitol producing recombinant E. coli, 2018-2021, RM 84,000, UTM Transdisciplinary Research Grant (**Project Member**).
28. UTM-TDR 31 : Integrated Bioprocessing Strategies for Xylitol Production from Agricultural Biomass by Immobilized *Escherichia coli* Whole Cell Biocatalyst, 2018-2021, RM 90,000.00, UTM Transdisciplinary Research Grant (**Project Member**).
29. UTM-TDR 31.2(T2):Separation and Purification of Sugars from Biomass Hydrolysate, 2018-2020, RM 45,000, UTM Transdisciplinary Research Grant (**Project Member**).
30. HIR 1.3 : Synthesis and development of prebiotics from pineapple waste, 2018-2021, RM 90,000 High Impact Research Grant (**Project Member**).
31. Investigation and improvement of maltogenic amylase thermostability, 2018-2019, RM 20,000 Potential Academic Staff (**Project Member**).

PUBLICATIONS

INDEXED JOURNAL

1. Hilman Ibnu Mahdi, Nurfadhila Nasya Ramlee, José Leandro da Silva Duarte, Yu-Shen Cheng, Rangabhashiyam Selvasembian, Faisal Amir, Leonardo Hadlich de Oliveira, **Nur Izyan Wan Azelee**, Lucas Meili, Gayathri Rangasamy (2023). A comprehensive review on nanocatalysts

- and nanobiocatalysts for biodiesel production in Indonesia, Malaysia, Brazil and USA. *Chemosphere*. 138003.
2. Rut Novalia Rahmawati Sianipar, Lisman Suryanegara, Widya Fatriasari, Enos Tangke Arung, Irawan Wijaya Kusuma, Suminar Setiati Achmadi, **Nur Izyan Wan Azelee**, Zuratul Ain Abdul Hamid. (2023). The Role of Selected Flavonoids from Bajakah Tampala (*Spatholobus littoralis* Hassk.) Stem on Cosmetic Properties: A Review. *Saudi Pharmaceutical Journal*.
 3. Hilman Ibnu Mahdi, Nurfadhila Nasya Ramlee, Danilo Henrique da Silva Santos, Dimitrios A. Giannakoudakis, Leonardo Hadlich de Oliveira, Rangabhashiyam Selvasembian, **Nur Izyan Wan Azelee**, Alireza Bazargan, Lucas Meili. (2023). Formaldehyde production using methanol and heterogeneous solid catalysts: A comprehensive review. *Molecular Catalysis*. 537, 112944.
 4. **Nur Izyan Wan Azelee**, Hilman Ibnu Mahdi, Yu-Shen Cheng, Norhafiza Nordin, Rosli Md Illias, Roshanida A. Rahman, Shalyda Md Shaarani, Pankaj Bhatt, Sudesh Yadav, Soon Woong Chang, Balasubramani Ravindran, Veeramuthu Ashokkumar. (2023). Biomass degradation: Challenges and strategies in extraction and fractionation of hemicellulose. *Fuel*, 3339, 126982.
 5. Abdul Manas, N.H.; Kumar, N.K.M.F.; Mohd Shah, N.A.; Ling, G.Y.; **Azelee, N.I.W.**; Fuzi, S.F.Z.M.; Masngut, N.; Bunyamin, M.A.H.; Illias, R.M.; El Enshasy, H.A. Adsorption of Fatty Acid on Beta-Cyclodextrin Functionalized Cellulose Nanofiber. *Sustainability*. 2023, 15, 1559. <https://doi.org/10.3390/su15021559>
 6. Daniel Joe Dailin, Fahim Rithwan, Adibah Mohd Hisham, Zaitul Iffa Abd Rasid, **Nur Izyan Wan Azelee**, Norzahir Sapawe, Lai Fatt Chuah, Abdul Halim Mohd Yusof and Hesham El Enshasy. (2022). A review on current status of plastic waste biodegradation using microbial approach. *Bioscience Research*. 19(3):1599-1606. **(ISI Index)**
 7. Muhammad Abd Hadi Bunyamin, Nor Farahwahidah Abdul Rahman, Sharifah Osman, Najua Syuhada Ahmad Alhassora, Chuzairy Hanri, Nina Diana Nawi and **Nur Izyan W. Azelee** (2022). Graduate success attributes for engineering students: major learning outcomes and significance of the course. *AIP Conference Proceedings*, 2433, 020009 **(Scopus Index)**
 8. Awasthi, M. K., **Azelee, N. I. W.**, Ramli, A. N. M., Rashid, S. A., Manas, N. H. A., Dailin, D. J., ... & Ravindran, B. (2022). Microbial biotechnology approaches for conversion of pineapple waste in to emerging source of healthy food for sustainable environment. *International Journal of Food Microbiology*, 109714. **(ISI Index, Q1, IF=5.911)**
 9. Edis, Z., Bloukh, S. H., Sara, H. A., & **Azelee, N. I. W.** (2022). Antimicrobial Biomaterial on Sutures, Bandages and Face Masks with Potential for Infection Control. *Polymers*, 14(10), 1932. **(ISI Index, Q1, IF=4.967)**
 10. Intan Nur Athirah Daud, Norhayati Mohamed Noor, Zaitul Iffa Abd Rasid, Hesham A. El Enshasy and **Nur Izyan Wan Azelee**. (2022) Lignins as natural active ingredients for Cosmetics: A Review. *Bioscience Research*, 202219(2):1050-1066. **(ISI Index)**
 11. Mirunalini Ganesan b, Ravi Mani, Sakthinarenderan Sai, Govindaraju Kasivelu, Mukesh Kumar Awasthi, Rajinikanth Rajagopal, **Nur Izyan Wan Azelee**, P.K. Selvi, Soon Woong Chang, Balasubramani Ravindran. (2022). Bioremediation by oil degrading marine bacteria: An overview of supplements and pathways in key processes. *Chemosphere*, 134956. **(ISI Index, Q1, IF=8.943)**
 12. Ramlee, N. N., Md Illias, R., A Rahman, R., Toemen, S., Selvasembian, R., Ahmad, R. A. A., ... & **Wan Azelee, N. I.** (2022). Biochemical and Physical Characterization of Immobilized *Candida rugosa* Lipase on Metal Oxide Hybrid Support. *Catalysts*, 12(8), 854. **(ISI Index, Q2, IF=4.501)**
 13. Kaushal, J., Arya, S. K., Khatri, M., Singh, G., **Azelee, N. I. W.**, Rajagopal, R., ... & Awasthi, M. K. (2022). Efficacious bioconversion of waste walnut shells to xylotetrose and xylopentose by free xylanase (Xy) and MOF immobilized xylanase (Xy-Cu-BTC). *Bioresource Technology*, 357, 127374. **(ISI Index, Q1, IF=9.642)**
 14. Ramprasad, C., Gwenzi, W., Chaukura, N., Azelee, N. I. W., Rajapaksha, A. U., Naushad, M., & Rangabhashiyam, S. (2022). Strategies and options for the sustainable recovery of rare earth elements from electrical and electronic waste. *Chemical Engineering Journal*, 135992. **(ISI Index, Q1, IF=13.273)**

15. Nordin, N., Illias, R. M., Manas, N. H. A., Ramli, A. N. M., Selvasembian, R., **Azelee, N. I. W.**, ... & Ravindran, B. (2022). Highly sustainable cascade pretreatment of low-pressure steam heating and organic acid on pineapple waste biomass for efficient delignification. *Fuel*, 321, 124061. (**ISI Index, Q1, IF=6.609**)
16. Veeramalai, S., Ramlee, N. N., Mahdi, H. I., Manas, N. H. A., Ramli, A. N. M., Illias, R. M., & Azelee, N. I. W. (2022). Development of organic porous material from pineapple waste as a support for enzyme and dye adsorption. *Industrial Crops and Products*, 181, 114823. (**ISI Index, Q1, IF=5.645**)
17. Kanimozhi, S., Durga, R., Sabithasree, M., Kumar, A. V., Sofiavizhimalar, A., Kadam, A. A., ... & Azelee, N. I. W. (2022). Biogenic synthesis of silver nanoparticle using *Cissus quadrangularis* extract and its invitro study. *Journal of King Saud University-Science*, 34(4), 101930. (**ISI index, Q2, IF=4.011**)
18. Ravindran, B., Karmegam, N., Awasthi, M. K., Chang, S. W., Selvi, P. K., Balachandar, R., ... & Munuswamy-Ramanujam, G. (2022). Valorization of food waste and poultry manure through co-composting amending saw dust, biochar and mineral salts for value-added compost production. *Bioresource Technology*, 346, 126442. (**ISI index, Q1, IF=9.642**)
19. Afifah, A. N., Syahrullail, S., Azlee, N. I. W., & Rohah, A. M. (2021). Synthesis and tribological studies of epoxidized palm stearin methyl ester as a green lubricant. *Journal of Cleaner Production*, 280, 124320. (**ISI index, Q1, IF=9.297**)
20. Siti Zulaiha Hanapi, Norhayati Mohamed Noor, Zaidah Rahmat, Zaitul Iffa Abd Rasid, Siti Zubaidah Hanapi, Ida Madiha Yusoff, Maizatulkamal Yahayu, Ting Ho, Low Hock Heng, Hesham A. El Enshasy and **Nur Izyan Wan Azelee** (2021). Cannabis-derived ingredients: Trends for a Promising Future Cosmetic. *Bioscience Research*. (**Scopus index**).
21. Mahdi, H. I., Bazargan, A., McKay, G., Azelee, N. I. W., & Meili, L. (2021). Catalytic deoxygenation of palm oil and its residue in green diesel production: a current technological review. *Chemical Engineering Research and Design*, 174, 158-187. (**ISI index, Q2, IF=3.739**)
22. Bandal JN, Tile VA, Sayyed RZ, Jadhav HP, **Azelee NIW**, Danish S, Datta R (2021). Statistical Based Bioprocess Design for Improved Production of Amylase from Halophilic *Bacillus* sp. H7 Isolated from Marine Water. *Molecules*. 26(10):2833. <https://doi.org/10.3390/molecules26102833> (**ISI index, Q2, IF=3.267**)
23. Ramlee, N. N., Illias, R. M., Toemen, S., Manas, N. H. A., & Azelee, N. I. W. (2021). Esterification of a waste cooking oil using metal-hybrid catalysts for chemoenzymatic reactions. *Materials Today: Proceedings*, 47, 1280-1286. (**ISI index**).
24. Badruzaman, S. Z. S., Aminan, A. W., Ramli, A. N. M., Che Man, R., & **Wan Azelee, N. I.** (2021). Extraction and Characterization of Keratin from Chicken and Swiftlet Feather. In *Materials Science Forum* (Vol. 1025, pp. 157-162). Trans Tech Publications Ltd. (**ISI index**)
25. Nashiruddin, N. I., Chua, K. S., Mansor, A. F., A Rahman, R., Lai, J. C., **Wan Azelee, N. I.**, & El Enshasy, H. (2022). Effect of growth factors on the production of mycelium-based biofoam. *Clean Technologies and Environmental Policy*, 24(1), 351-361. (**ISI index, Q2, IF=2.429**)
26. Mazila Ramli, A. N., Binti Muhammad Sukri, N. A., **Wan Azelee, N. I.**, & Bhuyar, P. (2021). Exploration of Antibacterial and Antioxidative activity of seed/peel extracts of south-east Asian fruit Durian (*Durio zibethinus*) for effective shelf-life enhancement of preserved Meat. *Journal of Food Processing and Preservation*, e15662. (**ISI index, Q3, IF=1.405**)
27. Wee, M. Y. J., **Azelee, N. I. W.**, Pachelles, S., Murad, A. M. A., Bakar, F. D. A., & Illias, R. M. (2020). Bioconversion of pineapple pomace for xylooligosaccharide synthesis using surface display of xylanase on *Escherichia coli*. *Biomass Conversion and Biorefinery*, 1-12. (**ISI index, Q2, IF=2.602**).
28. Aizi Nor Mazila Ramli, Nor Wansuhada Abdul Manap, Prakash Bhuyar, **Nur Izyan Wan Azelee** (2020) "Passion fruit (*Passiflora edulis*) peel powder extract and its application towards antibacterial and antioxidant activity on the preserved meat products", *SN Applied Sciences*, 2:1748 (**ISI index**).
29. Shoriya Aruni Abdul Manaf, Siti Fatimah Zaharah Mohamad Fuzi, Nor Hasmaliana Abdul Manas, Rosli Md Illias, Kheng Oon Low, Gurumurthy Hegde, Rohaida Che Man, **Nur Izyan Wan Azelee**, Hazel Monica Matias-Peralta (2020) "Emergence of nanomaterials as potential

- immobilization supports for whole cell biocatalysts and cell toxicity effects”, *Biochemistry and Applied Biotechnology*, 68(6), 1128-1138. (**ISI index, Q4**).
30. **Nur Izyan Wan Azelee**, Norhafiza Nordin, Rosli Md Illias, Nor Hasmaliana Abdul Manas, Mohd Nazlee Faisal Md Ghazali (2020) “Enzyme kinetics study for heterogeneous system of pretreated kenaf hydrolysis”, *Pertanika Journal of Science & Technology (Pertanika JST)*, 28(S2), 197-216 (**Scopus index**).
 31. **Nur Izyan Wan Azelee**, Hesham El-Enshasy, Daniel Joe Dailin, Nor Hasmaliana Abdul Manas, Roslinda Abd Malek, Mohd Akmal Mokhter, Nurulhidayah Salamun, Roshanida A. Rahman (2020) “Antimicrobial disinfectants and sanitizers: An effective tool for breaking the circle of pandemic disease”, *Asian Journal of Agriculture and Biology*, 8(3):348-367. (**ISI & Scopus index**)
 32. Nurul Zahidah Nordin, Ahmad Ramli Rashidi, Daniel Joe Dailin, Roslinda Abd Malek, **Nur Izyan Wan Azelee**, Nor Hasmaliana Abdul Manas, Shanmugaprakasham Selvamani, Dayang Norulfairuz Abg Zaidel, Ramzi A. Abd Alsaheb, Dalia Sukmawati and Hesham El Enshasy (2020) “Xanthan biopolymer in pharmaceutical and cosmeceutical applications: Critical review”. *Bioscience Research*, 17(1):205-220. (**ISI indexed**)
 33. Rabi'atul Adawiyah Ahmad, Nardiah Rizwana Jaafar, Nor Hasmaliana Abdul Manas, **Nur Izyan Wan Azelee**, Rosli Md Illias, Noor Namirah Nawawi (2020). “Bioconversion of starch to malto-oligosaccharides (MOS) by the reaction of maltogenic amylase”. *Jurnal Teknologi*, 82(1). DOI:10.11113/jt.v82.14136. (**Scopus index**).
 34. Nor Hasmaliana Abdul Manas, Chong LiYee, Yonas Mehari, Salyani Abang Mahmod, Siti Fatimah Zaharah Mohamad Fuzi, **Nur Izyan Wan Azelee** (2020). “Effects of oil substrate supplementation on production of prodigiosin by *Serratia nematodiphila* for dye sensitized solar cell”. *Journal of Biotechnology*, 317:16-26. (**Q2, IF=3.503, ISI-indexed**)
 35. Malik Muhammad Asif Iqbal, Wan Azelee Wan Abu Bakar, Susilawati Toemena, Fazira Ilyana Abdul Razak, **Nur Izyan Wan Azelee** (2020). “Optimization study by Box Behken design (BBD) and mechanistic insight of CO₂ methanation over RU-FECE/C-AL₂O₃ catalyst by in situ FTIR technique”. *Arabian Journal of Chemistry*, 13(2): 4170-4179. (**Q2, IF=4.752, ISI-indexed**).
 36. Malik Muhammad Asif Iqbal, Susilawati Toemen, Wan Azelee Wan Abu Bakar, Fazira Ilyana Abdul Razak, Salmiah Jamal Mat Rosid, **Nur Izyan Wan Azelee** (2020) “Catalytic methanation over nanoparticle heterostructure of Ru/Fe/Ce/ γ -Al₂O₃ catalyst: Performance and characterisation”, *Renewable Energy*, 162, 513-524. (**Q1, IF=6.274, ISI-indexed**)
 37. D N Abang Zaidel, N H Ismail, Y M Mohd Jusoh, Z Hashim, **N I Wan Azelee** (2020) “Optimization of sweet potato pectin extraction using hydrochloric acid”, *Energy Security and Chemical Engineering Congress*, IOP Publishing, 736, 022042. doi:10.1088/1757-899X/736/2/022042 (**Scopus indexed**)
 38. Nordin, N., Illias, R. M., Manas, N. H. A., Nor, A., Ramli, M., & **Azelee, N. I. W.** (2020, December). Efficient Delignification of Pineapple Waste by Low-Pressure Steam Heating Pre-Treatment. In *Third International Conference on Separation Technology 2020 (ICoST 2020)* (pp. 10-16). Atlantis Press. (**Scopus index**) (accepted).
 39. Daniel Joe Dailin, Luo Zaini Mohd Izwan Low, Roslinda Abd Malek, **Nur Izyan Wan Azelee**, Nor Hasmaliana Abd Manas, Ho Chin Keat, Dalia Sukmawati and Hesham El Enshasy (2019). “Pullulan, a biopolymer with potential applications in pharmaceutical and cosmeceutical: A review”. *Bioscience Research*, volume 16(3): 2604-2616 (**Scopus index**)
 40. Nur Asyikin Zailan, Muhammad Abd Hadi Bunyamin, Chuzairy Hanri, Nor Hasniza Ibrahim, Sharifah Osman, Norulhuda Ismail, **Nur Izyan Wan Azelee** (2019). “Assessment and Evaluation of Non-Formal S, TEM Education Programs”. *International Journal of Recent Technology and Engineering (IJRTE)*. (**Scopus index**)
 41. Afifah, A. N., Syahrullail, S., Azlee, N. I. W., Sidik, N. A. C., Yahya, W. J., & Abd Rahim, E. (2019). Biolubricant production from palm stearin through enzymatic transesterification method. *Biochemical Engineering Journal*, 148, 178-184. (**Q1, IF=3.226, ISI-indexed**).
 42. Nawawi, N. N., Hashim, Z., Manas, N. H. A., **Azelee, N. I. W.**, & Illias, R. M. (2020). A porous-cross linked enzyme aggregates of maltogenic amylase from *Bacillus lehensis* G1: Robust

biocatalyst with improved stability and substrate diffusion. *International journal of biological macromolecules*, 148, 1222-1231. (**Q1, IF=5.162, ISI-indexed**)

43. **Azelee, N. I. W.**, Adnan, S. A. M., Manas, N. H. A., Dailin, D. J., Ramli, A. N. M., & Illias, R. M. (2019, September). Assessment of microwave-assisted pretreatments for enhancing pineapple waste delignification. In *AIP Conference Proceedings* (Vol. 2155, No. 1, p. 020003). AIP Publishing LLC. (**ISI-indexed**)
44. Manas, N. H. A., Drus, M. N. A. M., Zulkharnain, A., Hui, J. L. C., **Azelee, N. I. W.**, & Dailin, D. J. (2019, September). Transport phenomena of carbazole biodegradation by immobilized *Thalassospira profundimaris* cell and mechanical properties. In *AIP Conference Proceedings* (Vol. 2155, No. 1, p. 020009). AIP Publishing LLC. (**ISI-indexed**)
45. Pagarra, H., Rahman, R.A., **Wan Azelee, N.I.**, Illias, R.M., (2019), Optimization and characterization of exo-polygalacturonase by *Aspergillus Niger* cultured via solid state fermentation, *Jurnal Teknologi*, 81, 59-67. (**Scopus indexed**).
46. **Nur Izyan Wan Azelee**, Jamaliah Md Jahim, Ahmad Fauzi Ismail, Siti Fatimah Zaharah Mohamad Fuzi, Roshanida A.Rahman, RosliMd Illias, (2016), High xylooligosaccharides (XOS) production from pretreated kenaf stem by enzyme mixture hydrolysis, *Industrial Crops and Products*, 81, 11-19. (**Q1, IF=3.849, ISI-indexed**).
47. **Wan Azelee N. I.**, Md Jahim J., Rabu A., Abdul Murad A. M., Abu Bakar F. D., Md Illias R, (2014), Efficient removal of lignin with the maintenance of hemicellulose from kenaf by two-stage pretreatment process, *Carbohydrate Polymers*, 99, 447-453. (**Q1, IF=5.158, ISI-indexed**).

INTELLECTUAL PROPERTIES (IP)

1. 'Formulation of Extra Care Seaweed Hand Sanitizer' **Trade secret** (IP/TS/01671), 2021.
2. 'Two-stage pretreatment of kenaf by peracetic acid and calcium hydroxide', **Copyright** (LY2019002395), 2019.
3. 'Method of malto-oligosaccharides enzymatic production using maltogenic amylase', **Copyright** (LY2019002139), 2019
4. 'Bio-lime process of eggshell powder (ESP)-Uncarbonized, carbonized, and decarbonized ESP' **Copyright** (LY2019002402), 2019
5. 'Bioprocess Engineering Laboratory II (SKKB3221) Problem-based learning module' **Copyright** (IP/CR/2019/0122), 2019

NON-INDEXED JOURNAL

1. **Nur Izyan binti Wan Azelee**, Nor Hasmaliana Abdul Manas, Nurrulhidayah binti Salamun, Hesham Ali Metwally Ali El-Enshasy, Aizi Nor Mazila Ramli, Rohaida Che Man (2019) "Glycerol in food, cosmetics and pharmaceutical industries: basics and new applications". *International Journal of Scientific & Technology Research*, 8(12):553-558.
2. Daniel Joe Dailin, Hesham Ali Metwally Ali El-Enshasy, Nor Hasmaliana Abdul Manas, **Nur Izyan binti Wan Azelee**, Shanmugaprakasham A/L Selvamani (2019) "Review on probiotic potential in human health, aquaculture and animal feed". *International Journal of Scientific & Technology Research*, 8(10):798-803.
3. Daniel Joe Dailin, Nor Hasmaliana Abdul Manas, **Nur Izyan Wan Azelee**, Jennifer Eyahmalaya, Sarah Afiqah Yahaya, Roslinda Abd Malek, Vickpasubathysiwa Siwapiragam, Dalia Sukmawatie and Hesham El Enshasy (2018). Current and Future Applications of Phytases in Poultry Industry: A Critical Review. *Journal of Advances in VetBio Science and Techniques*, 3(3), 65-74.
4. **Nur Izyan Wan Azelee**, Jamaliah Md Jahim, Ahmad Fauzi Ismail, Siti Fatimah Zaharah Mohamad Fuzi, Roshanida A. Rahman, Nazlee Faisal Ghazali, Rosli Md Illias, (2016), Enzymatic hydrolysis of pretreated kenaf using a recombinant xylanase: Effects of reaction conditions for optimum hemicellulose hydrolysis, *American Journal of Agricultural and Biological Science*, 11(2), 54-66.

OTHER PUBLICATIONS

1. **Nur Izyan Wan Azelee**, Nor Hasmaliana Abdul Manas, Siti Zulaiha Hanapi, Siti Hajar Mat Sarip, Roslinda Abd Malek, Hesham Ali El-Enshasy, Daniel Joe Dailin and Mohd Fazri Ngah “Chapter 17: Pesticides Remediation Technologies from Water and Wastewater”. Pesticides Remediation Technologies from Water and Wastewater, Elsevier.
2. Nurfadhila Nasya Ramlee, Hilman Ibnu Mahdi and **Nur Izyan Wan Azelee** (2022) “Chapter 4: Adsorption Immobilization: Mechanisms and Interactions Between Support and Lipase”. Enzyme Immobilization for Bioprocessing, Penerbit UTM Press.
3. Rohaida Che Man, Shalyda Md Shaarani, Nurul Nabila Huda Baharudin, and **Nur Izyan Wan Azelee** “Chapter 13: Hollow Fiber Membrane as a Carrier for Enzyme Immobilization”. Enzyme Immobilization for Bioprocessing, Penerbit UTM Press.
4. Nor Hasmaliana binti Abdul Manas, Dayang Norulfairuz Abang Zaidel, **Nur Izyan Wan Azelee**, Siti Fatimah Zaharah Mohd Fuzi, Aizi Nor Mazila Ramli, Shalyda Shaarani, Rosli Md. Illias and Norsuhada Abdul Karim (2022) “Delivery of bioencapsulated proteins”. Smart Nanomaterials for Bioencapsulation, Elsevier.
5. Aizi Nor Mazila Ramli, Pui Khoo Hong, Nor Hasmaliana Abdul Manas and **Nur Izyan Wan Azelee** (2022) “Chapter 25: An overview of enzyme technology used in food industry”. Value-Addition in Food Products and Processing Through Enzyme Technology AP Press, Elsevier (Book Chapter).
6. Nurfadhila Nasya binti Ramlee, Hilman Ibnu Mahdi, **Nur Izyan Wan Azelee** (2022) “Chapter 7: Biodiesel production using enzymatic catalyst”. Biofuels and Bioenergy: Opportunities and Challenges. Elsevier (Book Chapter).
7. **Nur Izyan Wan Azelee**, Nor Hasmaliana Abdul Manas, Daniel Joe Dailin, Roslinda Malek, Neo Moloi, Joe Gallagher, Ana Winters, Ong Mei Leng and Hesham Ali El Enshasy (2021) “Chapter 13: Mushroom Bioactive Ingredients In Cosmetic Industries”. Advances In Macrofungi Pharmaceuticals And Cosmeceuticals. CRC Press (Book Chapter).
8. Nor Hasmaliana Abdul Manas, Mohd Khairul Hakimi Abdul Wahab, **Nur Izyan Wan Azelee**, and Rosli Md Illias (2021) “Chapter 8: Enzymatic Reaction for Oligosaccharides Production”. Probiotics, the Natural Microbiota in Living Organisms: Fundamental and Applications. CRC Press (Book Chapter).
9. **Nur Izyan Wan Azelee**, Nor Hasmaliana Abdul Manas, Rohaida Che Man, Mohd Akmali Mokhter, Nurrulhidayah Salamun, Shalyda Md Shaarani, Fuad Mohamad, and Zahra Edis (2021) “Challenges and Potential Applications of Plant and Microbial Based Biosurfactants in Cosmetic Formulations”. Microbial Surfactants Volume I: Production and Applications, CRC Press, 1st Edition, R. Z. Sayyed, Hesham Ali Metwally El Enshasy, Bee Hameeda (Eds.). (Book Chapter).
10. **Nur Izyan Wan Azelee**, Nor Hasmaliana Abdul Manas, Daniel Joe Dailin, Aizi Nor Mazila Ramli, Shalyda Md Shaarani (2020) “Biological Treatment of Agro-Industrial Waste”. Valorisation of Agro-industrial Residues – Volume I: Biological Approaches, Springer Nature Switzerland, Zakaria, Zainul Akmar, Boopathy, Ramaraj, Dib, Julian Rafael (Eds.). (Book Chapter).
11. Noor Idayu Nashiruddin, Nor Hasmaliana Abdul Manas, Roshanida A. Rahman, **Nur Izyan Wan Azelee**, Daniel Joe Dailin, and Shalyda Md Shaarani (2020) “Pretreatment and Enzymatic Hydrolysis of Lignocellulosic Biomass for Reducing Sugar Production”. Valorisation of Agro-industrial Residues – Volume II: Non-Biological Approaches, Springer Nature Switzerland, Zakaria, Z.A., Aguilar, C.N., Kusumaningtyas, R.D., Parameswaran, B. (Eds.). (Book Chapter).
12. Hesham Ali Metwally Ali El-Enshasy, Daniel Joe Dailin, **Nur Izyan binti Wan Azelee**, Siti Zulaiha binti Hanapi, Jennifer Edwina A/P Eyahmalay, Elsayed Ahmed Elsayed, Dalia Sukmawati, Vickpasubathysiwa Siwapiragam, (2019). Chapter 2 Fungal Phytases: Biotechnological Applications in Food and Feed Industries. Recent Advancement in White Biotechnology through Fungi Volume 2: Perspective for Value-Added Products and Environments. Book chapter, Springer Nature Switzerland Ag. (Book Chapter).
13. **Nur Izyan binti Wan Azelee**, Nor Hasmaliana Abdul Manas, Daniel Joe Dailin, Aizi Nor Mazila Ramli (2018). “Pineapple Waste: An Emerging Solution for Healthy And Sustainable Food.” International Conference on Probiotics and Food Sustainability (ICPFS2018), 23rd-24th September 2018. Pulau Spring Resort, Johor Bahru Malaysia. (Conference Proceeding)

14. Daniel Joe Dailin, Hesham Ali Metwally Ali El-Enshasy, **Nur Izyan Binti Wan Azelee**, Nor Hasmaliana Abdul Manas (2019). "Optimization of Pullulan Production by *Aureobasidium pullulans* using Response Surface Methodology". 6th International Biotechnology Symposium, Universiti Malaysia Sabah, 10-11 July 2019 (Conference Proceeding).
15. **Nur Izyan Wan Azelee**, Rosli Md Illias, Jamaliah Md Jahim (2013). "Evaluation of Enzymatic Hydrolysis Conditions for High Sugar Production from Pretreated Whole Kenaf Fiber." 2nd International Conference on Kenaf and Allied Fibres, ICKAF 2013, 3rd – 5th December 2013. Hotel Equatorial, Bangi-Putrajaya, Malaysia. (Conference Proceedings)
16. **Nur Izyan Wan Azelee**, Rosli Md Illias (2010). "Preliminary Studies towards the Optimization of Pretreatment Parameters for Enzymatic Degradation of Lignocellulosic Biomass to Fine Sugars Production." 3rd International Conference on Southeast Asian Natural Resources & Environmental Management, SANREM, 3rd – 5th August 2010. Promenade Hotel, Kota Kinabalu, Sabah, Malaysia. (Conference Proceedings)
17. Muhammad Abd Hadi bin Bunyamin, **Nur Izyan binti Wan Azelee** (2018). "Agenda Pembangunan Mahasiswa di Era Malaysia Baru: Kerangka Utama dan Kerangka Sokongan." Persidangan Pembangunan Pelajar Peringkat Kebangsaan 2018, 22nd September 2018. Universiti Teknologi Malaysia, (UTM), Johor Bahru, Malaysia.
18. **Nur Izyan Wan Azelee** and Rosli Md Illias (2010). "Optimization of Pretreatment Parameters for Enzymatic Degradation of Hemicellulose to Xylose and other Xylooligosaccharides." The 11th Symposium of the Malaysian Society of Applied Biology, MSABII, pp 211. 13th – 15th June 2010, Kota Bharu. Organized by Universiti Kebangsaan Malaysia, Universiti Sains Malaysia.
19. Nor Hasmaliana Abdul Manas, Rosli Bin Md. Illias, Nur Izyan binti Wan Azelee, Roshanida binti A.Rahman (2019) "Improvement of maltogenic amylase transglycosylation activity by reaction equilibrium control and protein engineering approach", 27TH FAOBMB & 44th MSBMB Conference

OTHER NON-ACADEMIC PUBLICATIONS

1. **Dr Nur Izyan Wan Azelee**, Ts Dr Norayati Mohamed Noor (August 2022). "Nature's Superhero-Local seaweed hand sanitizer", UTM Nexus Magazine.
2. **Dr Nur Izyan Wan Azelee**, Intan Nur Athirah Daud, Ts Dr Norayati Mohamed Noor (August 2022). "Go Natural, Go Green, Sunscreen!-Natural plant-based sunscreen", UTM Nexus Magazine.
3. **Dr Nur Izyan binti Wan Azelee**, Dr Daniel Joe Dailin (1 June 2020). "UTM Pilot Plant Day 2020: Ke Arah Melahirkan Graduan Beratribut Tinggi" UTM Newshub. <<https://news.utm.my/ms/2020/06/utm-pilot-plant-day-2020-ke-arrah-melahirkan-graduan-beratribut-tinggi/>>
4. **Nur Izyan Wan Azelee** (3 May 2019). "Merialisasikan Dunia Hijau dan Lestari menerusi IBCex2019" Kampus Uols, Sinar Harian. <<https://kampusuols.com/article/428828/Uni-Kita/CETUSAN/Merialisasikan-Dunia-Hijau-dan-Lestari-menerusi-IBCEX19>>
5. **Nur Izyan Wan Azelee** (27th March 2019). "UTM Pilot Plant Day 2019: Program khas untuk lahirkan graduan berciri-ciri dan atribut sebagai jurutera" Kampus Uols, Sinar Harian. <<https://kampusuols.com/article/428166/Uni-Kita/CETUSAN/UTM-Pilot-Plant-Day-2019-Program-khas-untuk-lahirkan-graduan-berciri-ciri-dan-atribut-sebagai-jurutera>>
6. **Nur Izyan Wan Azelee** (3rd January 2019). "Ke Arah Melestarikan Alam Sekitar Kita" Kampus Uols, Sinar Harian. <<https://kampusuols.com/article/423970/Uni-Kita/CETUSAN/Ke-arrah-melestarikan-alam-sekitar-kita>>
7. **Nur Izyan Wan Azelee**, Chong Kar Lun, Victor Lai Wei Xiang, Tan Yee Qing (April 2019). International Biotechnology Competition and Exhibition 2019 (IBCEX'19): 'Green and Sustainable World', <<https://news.utm.my/2019/04/internationalbiotechnologycompetitionandexhibition2019ibcex19greenandsustainableworld/>>
8. **Nur Izyan Wan Azelee**, Muhammad Abd Hadi Bunyamin (11th Februari 2019). "Menjayakan ASaP: Ayuh bersama-sama Bersatu Hati Tangani Masalah Penggunaan Plastik" Kampus Uols,

Sinar Harian. <<http://beta.kampusuols.com/article/424395/Uni-Kita/CETUSAN/Menjayakan-ASaP-Ayuh-bersama-sama-bersatu-hati-tangani-masalah-penggunaan-plastik>>

9. Muhammad Abd Hadi bin Bunyamin, **Nur Izyan binti Wan Azelee** (22 September 2018)
“Agenda pembangunan mahasiswa di era malaysia baru: kerangka utama dan kerangka sokongan” Persidangan Pembangunan Pelajar Peringkat Kebangsaan 2018.

SUPERVISION STUDENTS

Postgraduate Students

1. Name : Intan Nur Athirah binti Daud
Degree : Master of Bioprocess Engineering (Full research)
Status : Main-supervisor (2020), on-going
2. Name : Norhafiza binti Nordin
Degree : Master of Bioprocess Engineering (Full research)
Status : Main-supervisor (2019), **Completed**
3. Name : Nurfadhila Nasya binti Ramlee
Degree : Doctor of Philosophy (Bioprocess Engineering)
Status : Main-supervisor (2019), on-going
4. Name : Jegthiswary A/P Suresh
Degree : Doctor of Philosophy (Chemistry)
Status : Co-supervisor (2021), on-going
5. Name : Nurul Elia Aqila binti Abu
Degree : Doctor of Philosophy (Bioprocess Engineering)
Status : Co-supervisor (2021), on-going
6. Name : Alahmar Nashwa Mohammed
Degree : Doctor of Philosophy (Chemistry)
Status : Co-supervisor (2019), on-going
7. Name : Noor Afifah binti Ahmad
Degree : Doctor of Philosophy (Mechanical Engineering)
Status : Co-supervisor (2019), on-going
8. Name : Nurhidayah Kumar binti Muhammad Firdaus Kumar
Degree : Master of Bioprocess Engineering (Full research)
Status : Co-supervisor (2019), **Completed**
9. Name : Malik Muhammad Asif Iqbal
Degree : Doctor of Philosophy (Chemistry)
Status : Co-supervisor (2019), **Completed**

Undergraduate Students

Session 2021/2022

1. Name: Govinraj A/L Ravi Chandran
Status: On-going

Session 2020/2021

2. Name: Nurul Izzati binti Zaid

Status: **Graduated**

3. Name: Nuraishah binti Mohd Sahal Selvaraja
Status: **Graduated**

4. Name: Sangeetha Veeramalai
Status: **Graduated**

Session 20192020

1. Name: Wong Jia Yi
Status: **Graduated**
2. Name: Hong Xiu Ping
Status: **Graduated**
3. Name: Nurhasanah Yulianti (Indonesia Internship student)
Status: **Graduated**
4. Name: Nadia Ayu Putri (Indonesia Internship student)
Status: **Graduated**

Session 20182019

1. Name: Mohd Khiril Zikri bin Harizan
Status: **Graduated**
2. Name: Den Muhammad Hamdi bin Jumaatuden
Status: **Graduated**

TECHNICAL EVALUATION & ACHIEVEMENTS

1. **Editor** for Springer Nature book "Title: Biomass-based Cosmetics: Recent Research Trend and Future Outlook"
2. **Review Editor** on the Editorial Board of Catalytic Remediation (specialty section of Frontiers in Environmental Chemistry).
3. **Guest Editor** for MDPI Special Issue in Sustainability "Electrical and Electronic Waste: Environmental Impact and Risk Mitigation for Sustainability"
https://www.mdpi.com/journal/sustainability/special_issues/OI0Z34AM4M
4. **Guest Editor** for Elsevier Book "Title: Valorization of Wastes for Sustainable Development, Subtitle: Waste to Wealth"
5. **Reviewer** for MDPI Molecules, 2022
6. **Reviewer** for Nanoarchitectonics, 2022
7. **Reviewer** for Fungal Biology and Biotechnology, 2022
8. **Reviewer** for MDPI Antibiotics, 2022
9. **Reviewer** for technical paper submitted to ICOST2023, 2022
10. **Reviewer** for Frontiers in Chemical Engineering, 2022
11. **Review Editor** for Frontiers in Fungal Biology, 2022
12. **Reviewer** for Frontiers in Microbiology, 2022
13. **Reviewer** for Cleaner Waste System, 2022
14. **Reviewer** for Processes, 2022
15. **Reviewer** for abstract submitted to FOODI International Conference, 2022
16. **Reviewer** for full paper submitted to Sustainable and Integrated Engineering International Conference (SIE 2022), 2022
17. **Reviewer** for Fungal Biology, 2022

18. **Reviewer** for Catalyst Research, 2022
19. **Reviewer** for Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2022
20. **Reviewer** for Frontiers in Animal Science, 2022
21. **Reviewer** for Journal of Applied Water Engineering and Research, 2022
22. **Reviewer** for Frontiers in Bioengineering & Biotechnology, 2022
23. **Reviewer** for Fuel Processing Technology, 2022
24. **Reviewer** for Renewable Energy, 2022
25. **Reviewer** for Frontiers in Animal Science, 2022
26. **Reviewer** for Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2022
27. **Jury** for Safety & Health 2021 Exhibition, Chemical Engineering Undergraduate Students (UTM), 26 January 2022
28. **External Panel** for Plant Design Presentation, 2022 (Unimap)
29. **Reviewer** for Frontiers in Bioengineering and Biotechnology, 2022
30. **Reviewer** for Journal of King Saud University – Science, 2021
31. **Editorial Board Member** in Annals of Applied Sciences, 2021
32. **Review Editor** in Frontiers in Chemical Engineering- Environmental Chemical Engineering, 2021
33. **Editorial Board Member** of Journal of Petrochemical Engineering, 2021
34. **External Panel** for Plant Design Presentation, 2021 (Unimap)
35. **Jury** for Smart Consumer Campaign 2020 – 2021 Exhibition, Undergraduate students (UTM)
36. **Reviewer** for Nova Biotechnologica et Chimica, 2021 (Scopus index)
37. **Reviewer** for Critical Reviews in Biotechnology, 2021
38. **Reviewer** for Materials Today: Proceedings
39. **Reviewer** for Energy Conversion and Management:X, 2021
40. **Reviewer** for Environmental Quality Management, 2021
41. **Reviewer** for Elsevier Book Chapter, 2021
42. **Reviewer** for CRC Press Book Chapter, 2021
43. **Reviewer** for Renewable Energy, 2021, 2022
44. **Forum Moderator** in the 6th International Biotechnology Competition and Exhibition, 2020
45. **Director** for the 3rd International Conference on Separation Technology 2020, (ICoST2020)
46. **Reviewer** for International Conference of Emerging Challenges in Engineering and Current Technology ICECT III (2021)
47. **Editorial Board Member** of Journal of Energy, Environmental & Chemical Engineering, 2020
48. **Internal Panel** for grant evaluation (UTM ER), 2020
49. **Reviewer** for Journal of Cleaner Production, 2020
50. **Reviewer** for Biomass Conversion and Biorefinery-Springer, 2020
51. **Reviewer** for Fuel Processing Technology, 2020
52. **Reviewer** for Journal of Critical Reviews, 2020
53. **Reviewer** for Jurnal Teknologi, UTM, 2020
54. **Reviewer** for SN Applied Science-Springer, 2019
55. **Reviewer** for Jurnal Teknologi, UTM, 2019
56. **Reviewer** for Malaysia Journal of Microscopy
57. **Reviewer** for 2 manuscript submissions in SIE2019.
58. **Reviewer** for Journal of Advanced Manufacturing Technology, 2019
59. **Jury** for the 3rd Undergraduate Research Conference (URC), 2019.
60. **Forum Moderator** in the 5th International Biotechnology Competition and Exhibition, 2019
61. **Chairperson** for Engineering & Technology in the 7th International Symposium on Applied Engineering and Sciences (SAES2019).
62. **Co-chairperson** in the 2nd International Postgraduate Symposium in Biotechnology 2019
63. **Reviewer** for Malaysian Journal of Fundamental and Applied Sciences's manuscript IGCESH, 2018
64. **Reviewer** for manuscript submission in Chemistry of Advanced Material, 2018
65. **Chairman** for Doctor of Philosophy (Bioprocess Engineering) pre-Viva voce, Universiti Teknologi Malaysia, 2018, 2019, 2020.
66. **Chairman assistant** for Doctor of Philosophy (Bioprocess Engineering) Viva voce, Universiti Teknologi Malaysia, 2018, 2019, 2020, 2021.

67. **Internal examiner** for Master by mix-mode dissertation, Chemical Engineering (Bioprocess) Universiti Teknologi Malaysia, 2018, 2019, 2020
68. **Panel** for evaluation of Final Year Project and Plant Design Project, (Bioprocess) Faculty of Chemical & Energy Engineering, Universiti Teknologi Malaysia. 2018, 2019, 2020
69. **Panel** for Industrial Training evaluation (Undergraduate students)

CONSULTATION

1. **Academic member** for the Industry-Academia Engagement Platform (Cenviro Sdn. Bhd.)
2. **Consultant** for 2 projects under Desans Solution Sdn. Bhd. (Disember 2018-Mac 2019).

PROFESSIONAL SERVICE AND TRAINING

1. **Trainer** for A 3-Day Courses on Cosmetic Formulations & Evaluations, 18-20 July 2022, 19-21 September 2022.
2. **Moderator** for IBD's monthly webinar 'The Active Compounds in Aloe Vera as Natural Antimicrobial Agent for Cosmetic Applications' by Assoc Prof Dr Zehra Edis, Ajman University, 23rd August 2022.
3. **Moderator** for a Publication Lecture Series, 'Publishing in Open Access: Advantages & Limitation – Strategies to Minimize the Article Processing Charge (APC)', by Professor Dr Hesham El-Enshasy, Director, Institute of Bioproduct Development (IBD), UTM.
4. **Speaker** in Corporate Social Responsibility (CSR) Program "Herstory Health & Wellness Seminar" entitled 'We Are What We Wear', with BAKES UTM, 24th April 2022.
5. **Trainer** for A 3 Day Courses on Herbal Processing and Product Formulations, 31th March 2022.
6. **Speaker** in UTM IBD-UNJ One Day Workshop, 'Biohealth in Tropic: Herbal and Microbial Resources', 17th January 2022.
7. **Speaker** in Corporate Social Responsibility (CSR) Program "Herstory Health & Wellness Seminar" entitled 'We Are What We Wear', Ecoworld Gallery@ Eco Business Park 2 Senai, Johor, 9th January 2022.
8. **Trainer** for Cosmetic Formulation Course 'Sunscreen: Science and Product Development', Online Course, Institute of Bioproduct Development (IBD), 16th & 25th November 2021.
9. **Invited Speaker** for Fermentation Technology and Its Modern Application, Saveetha School of Engineering, SIMATS, Chennai, TamilNadu, India. 30 October 2021.
10. **Trainer** for BeST 2.0 Programme IBD, Module 'Overview of Bioprocess & Fermentation Technology', 17 & 20 September 2021.
11. **Trainer** for Cosmetic Formulation Course 'Sunscreen: Science and Product Development', Online Course, Institute of Bioproduct Development (IBD), 5th June 2021, 9.00am-12.00pm.
12. **Speaker** for 'Cosmetic Product Design: Innovation Concept and Challenges' Free Webinar, Institute of Bioproduct Development (IBD), 6th April 2021, 10.00-11.00am.

SEMINAR AND WORKSHOP ATTENDED

1. UTM Leadership Acceleration Program (ACCER2021), organized by UTMLead, UTM (2nd August 2021-18th November 2021)
2. Workshop on Full Paper Peer Review of the 3rd International Conference on Separation Technology 2020 (ICoST2020)
3. Workshop on Supercritical Fluid Extraction: Fundamental & Application 2019. CLEAR, UTM Johor (28-29th January 2019).
4. The 5th Asia Pasific Probiotics Workshop 2018. Pulai Spring Resort, Johor Bahru, Johor (23rd-24th September 2018).
5. Process Optimisation: Response Surface Methodology, UTM Johor (29th-30th November 2015).
6. *Bengkel Penulisan Tesis Pantas dan Pengurusan Artikel Mendeley bersama Dr.Othman Talib*, UTM Johor (23th Disember 2014).

7. Effective Writing, Communication and Presentation Skill Seminar, Faculty of Chemical Engineering, UTM in collaboration with CentreForward (Practical English) (15th January 2014).
8. Global Application Manager: Analytical Chromatography Seminar, UTM Johor. Organized by Merck Sdn Bhd. (28th June 2012).
9. Merck Safety Workshop cum CARS seminar, UTM Skudai. (15th July 2011).
10. Training course on Analysis of Carbohydrates, organized by BioIngredient Research Group, Universiti Kebangsaan Malaysia, UKM in collaboration with Universitas Airlangga, Indonesia and University of Groningen, Netherlands. (20th-27 January 2010).
11. Half-Day Workshop on Effective Public Speaking Skills, organized by the English Language Unit, Centre for Teaching and learning, Universiti Teknologi Malaysia, UTM Skudai. (7th February 2009).
12. English Language Communication Workshop for Final Year Students Say it with Confidence: Positive Image through Speaking, organized by the English Language Unit, Centre for Teaching and learning, Universiti Teknologi Malaysia, UTM Skudai. (17th January 2009).
13. Seminar on 'Spinning up Your Career with CCM' at Dewan Sultan Iskandar, UTM, by Chemical Company of Malaysia, organized by The Institution of Engineers, Malaysia. (2nd-3rd August 2008).
14. Seminar on 'Career Opportunities at Titan Chemicals-Fresh & Fit' at Dewan Sultan Iskandar, UTM, by Titan Chemicals Crop Berhad, organized by The Institution of Engineers, Malaysia. (2nd-3rd August 2008).

COURSES ATTENDED

1. 42347 Sustainable Production and Consumption, 3 weeks **Summer Course** at **Technical University of Denmark**, DTU, Denmark. (20th June – 8th July 2011).
2. UTM Degree++ Programme on 'Total Quality Management' at Lab 409, Level 4,D07, CICT, UTM, Skudai, Johor. (1st-2nd November 2008).
3. UTM Degree++ Programme on 'How to Get Yourself Employed' at Room 1-3, Block N03, Faculty of Chemical & Natural Resources Engineering, UTM, Skudai, Johor. (30th-31st August 2008).
4. UTM Degree++ Programme on 'Understanding Lubricating Oil Analysis' at Bestari1, Level 4, D07, CICT, UTM, Skudai, Johor. (16th February 2008).
5. Course on 'Comparative Religion Conference 2007' organized by Masjid Sultan Ismail at Dewan Senat, UTM Skudai. (13th-14th January 2007).

SOCIETIES

1. Committee member for Jawatankuasa Kebajikan dan Rekreasi Staf (JAKRIS), School of Chemical & Energy Engineering, UTM (2022-2023)
2. Tresurer for Undergraduate Research Conference (URC), Universiti Teknologi Malaysia (2021)
3. Community Service Responsibility to Rumah Seri Kenangan, Johor Bahru (1st August 2019)
4. Knowledge sharing on Design of Experiment (DOE) using Response Surface Methodology (RSM) to 10 students from Faculty of Science, UTM and 15 students from Faculty of Chemical Engineering (January 2016).
5. Executive Committee Member of Motivation Camp 'Melangkah Dunia Baru' at Teluk Gorek Chalet dan Campsite, Endau Johor, organized by Bioprocess Student Society (BIOSS) and Bioprocess Engineering Department, Faculty of Chemical Engineering & Natural Resources, UTM, Skudai. (27th-29th July 2007).
6. Facilitator in the 'Minggu Haluan Siswa' session 2006/2007 at UTM, Skudai. (1st-8th June 2006).
7. Committee Member of Student College (EXCO HELWI), Kolej Tuanku Canselor, UTM, Skudai. (Session 2006).
8. Committee Member of Food and Beverage Department, organized by the ASTANA

- Committee 2006 at the Kolej Tuanku Canselor, UTM, Skudai. (14th-17th September 2006).
9. Committee Member in the 'Majlis Jamuan dan Penghargaan' at Dewan Seri Kempas, Kolej Tuanku Canselor. Organized by the Biro Kerohanian, Jawatankuasa Kolej Mahasiswa, Kolej Tuanku Canselor in collaboration with committee of Surau As-Syakirin, Kolej Tuanku Canselor, UTM, Skudai. (2006).
 10. Committee Member of Printing and Documentation in the 'Kem Pemantapan Keintelektualan 2006' at Tiram Indah Village, Ulu Tiram, Johor. Organized by the Biro Kerohanian Jawatankuasa Kolej Mahasiswa, Kolej Tuanku Canselor in collaboration with Kelab Remaja Ukhuwah and the committee of Surau As- Syakirin, Kolej Tuanku Canselor, UTM, Skudai. (4th-6th August 2006).
 11. Committee Member of Cleanliness in the 'Program Kempen Berbudaya Endah' at Dewan Astana, Kolej Tuanku Canselor, organized by Committee of Student College, Kolej Tuanku Canselor, UTM, Skudai. (11th March 2006).
 12. Committee Member of Registration Unit in the 'Penghayatan Solat Jemaah dan Malam Penghayatan Islam' at Dewan Astana, Kolej Tuanku Canselor, organized by the Biro kerohanian, Committee of Student College, in collaboration with Surau As-Syakirin, Kolej Tuanku Canselor and Persatuan Mahasiswa Islam, UTM, Skudai. (13th August 2005).