

## CURRICULUM VITAE



### **ASSOC. PROF. DR. ZAINURA ZAINON NOOR**

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*Assoc. Prof. Dr. Zainura Zainon Noor is a faculty member at Faculty of Chemical Engineering, Universiti Teknologi Malaysia (UTM) whereby she has been appointed as one of their staff since 1999. She is a trained chemical/environmental engineer with extensive experiences in waste and wastewater management, life cycle assessment (LCA), water footprint, carbon footprint as well as sustainable development policy implementation. She has substantial experiences in R&D, project management and is currently leading Green Technology Research Group at one of UTM most dominant center of excellence – Center of Environmental Sustainability and Water Security (IPASA). Dr. Zainura is a recognized expert in her field and has been invited as a speaker in many seminars and workshops. Since 2009, she has been appointed as the government’s consultant for the study of the Malaysia Environmental Performance Index (EPI) focusing on Air Pollution Study and Wastes Generation & Management. She is also one of the appointed committee members of Green Technology Focus Group (Sustainable Solid Waste) under the Ministry of Green Technology, Energy and Water. Dr. Zainura has been coordinating UTM-DTU International Summer Course on Sustainable Consumption and Production since 2010, a high-impact annual collaborative program between UTM and Denmark Technical University (DTU). Recently, Dr. Zainura has been engaged by United Nation Development Program (UNDP) to assist Vietnam to develop the country’s Provincial Environmental Index.*

## **ACADEMIC QUALIFICATIONS**

- Sept. 2002 – June 2006: PhD in Chemical Engineering from Newcastle University, Newcastle upon Tyne, UK.
- Sept. 2001 – Sept. 2002: Master of Science (MSc.) with Distinction in Clean Technology from Newcastle University, Newcastle upon Tyne, UK.
- Sept. 1994 – May '98: Bachelor of Engineering (B.E.) in Chemical Engineering (Major) Environmental Engineering (Minor) from Vanderbilt University, Nashville, TN, USA.

## **CAREER PROFILES**

- August 2014 – Jun 2015: MIT-UTM Visiting Scholars under Malaysia's Sustainable Cities Program (MSCP), Massachusetts Institute of Technology (MIT), Cambridge, MA, USA.
- June 2001 – Present: Department of Chemical Engineering, Faculty of Chemical Engineering and Natural Resources, Universiti Teknologi Malaysia (UTM) – Lecturer (Associate Professor).
- Jan. – Dec. 2012 – Industrial attachment at Seagate International Sdn. Bhd., Senai, Johor, Malaysia.
- 1999-2001: Chemical Engineering Pilot Plant, Universiti Teknologi Malaysia (UTM) - Research Officer.
- 1998-99: A&E Technology, Parit Buntar, Perak, Malaysia - Quality Assurance Engineer.

## **AREAS OF EXPERTISE**

- Green/Clean Technology;
- Greenhouse Gases Inventory/Accounting/Auditing;
- Life Cycle Assessment (LCA);
- Carbon, Water & Ecological Footprints;
- Sustainable Waste Management;
- Membrane Bio-Reactor (MBR).

## **ADMINISTRATIVE POST**

- July 2006 – Dec. 2008: Coordinator of Master and PhD in Environmental Engineering Programs of Faculty of Chemical Engineering UTM.
- Jan. 2009 – Dec. 2011: Coordinator of Master in Environmental Engineering Program, School of Graduate Study.
- Jan. 2013 – Present: Head of Green Technology Research Group & full-time research fellow at Institute of Water Environment and Water Resources Management (IEWRM).

## **TEACHING AND COURSE DEVELOPMENT**

Please refer the enclosed Teaching Portfolio.

## **POSTGRADUATE SUPERVISION**

### **List of Graduated PhD Students**

1. Name : Adhi Yuniarto  
Title of thesis : Membrane Bioreactor for Palm Oil Mill Effluent (POME ) Treatment  
Year graduated : 2015
2. Name : Noor Sabrina Ahmad Mutamim  
Title of thesis : Treatment of Spent Caustic utilizing Aerobic Submerged Membrane Bioreactor  
Year graduated : 2015
3. Name : Ahmad Halilu Abba  
Title of thesis : Integration of LCA and AHP Method towards Sustainable Solid Waste Management  
Year graduated : 2014
4. Name : Rafiu Olansukanmi Yusuf  
Title of thesis : Model Development towards Reduction of Methane Emissions in Malaysia  
Year graduated : 2013
5. Name : Farrah Aini Dahalan  
Title of thesis : Development and Characterization of Phototrophic Aerobic Granular Sludge  
Year graduated : 2011

### **List Graduated Postgraduate Master (Full Research) Student**

1. Name : Siti Nurhayati Kamaruddin  
Title of thesis : Life Cycle Analysis of Water Treatment for Electroless Plating Industry  
Year graduated : 2014
2. Name : Hanna Ilyani Binti Zulhaimi  
Title of thesis : Integrated Treatment of Spent Caustic utilizing Fenton and Membrane Bioreactor  
Year graduated : 2014
3. Name : Siti Nadzirah binti Othman  
Title of thesis : Life Cycle Analysis of Solid Waste Disposal Options in Johor Bahru  
Year graduated : 2012
4. Name : Nor Sharliza Safaai  
Title of thesis : CO<sub>2</sub> Projection and Reduction in Malaysia  
Year graduated : 2010

### **Currently Enrolled PhD Students**

1. Name : Che Hafizan Bin Che Hassan  
Title of thesis : Life Cycle Assessment of Green Biodiesel
2. Name : Florianna Iendai Michael  
Title of thesis : Development of Urban Sustainability Indicators
3. Name : Cindy Lee Ik Sing  
Title of thesis : Development of Integrated Waste Management Index
4. Name : Nur Salehan Mohd Sabli  
Title of thesis : Assessment of Potential Environmental Degradation due to Water Consumption towards Production of Crude Palm Oil
5. Name : Siti Nurhayati Kamaruddin  
Title of thesis : Water Footprint Assessment of Malaysia's Automotive Industry

## RESEARCH GRANTS/PROJECTS

1. Carbon Assessment and Reporting for Iskandar Malaysia Development Authority (IRDA), Consultation Project, December 2015 – May 2016 (Ongoing).
2. Water Footprint And Beyond: Development Of A Methodological Approach Towards Assessing The Environmental Impacts Of Water Use, Tier 1, Project Leader (Ongoing).
3. Comprehensive Health Risk Assessment And Environmental Assessment For The Production Of New Green Diesel Formulation, Flagship, Project Leader, (Completed).
4. *Carbon Footprint Assessment of Water Production*, Contract Research by Syarikat Air Johor (SAJ), (VOT 4B061); Project Leader (2012-2013).
5. *Development of Low Carbon Society in Iskandar Malaysia*, International Research Grant funded by Japanese Institute of Corporation Agency (JICA), RM8, 000,000; Principal Investigator (2011-Present).
6. *Performance Assessment of Integrated Treatment System utilizing Fenton and Aerobic Submerged Membrane Bioreactor for the Treatment of Spent Caustic*—RESEARCH UNIVERSITY Grant (RU Grant); Project Leader (2012- Jan 2014).
7. *Development of Indicators to Assess Urban Sustainability in Malaysia* (FRGS VOT 78644), RM44, 000; Project Leader (2010-2012).
8. *Analytical Hierarchy Process: Multi-Criteria Method for Sustainable Municipal Solid Waste Disposal Option in Tropic Climates* (FRGS VOT 78496), RM60, 000; Project Leader (2009-2011).
9. *Development of Zero Discharge Systems for High Level Treatment and Recycling Resources from Palm Oil Mill Effluent (POME)*, TECHNOFUND (TF0206B033); Key Researcher (2008-Present).
10. *Pengurangan Partikal Asap Hitam Melalui Penarikan Aliran Gas Ekzos Siklon Berbilang di Kilang Kelapa Sawit* , FELDA Research Grant, Key Researcher (2009-2011).
11. *Developing Greenhouse Gasses Emission Software Development and Emission Projection*, Fundamental Research (VOT 77014); Project Leader (2007-2009).

## PATENTS

- Akay, G., **Noor, Z. Z.**, Calkan, O. F., Ndlovu, T. and Burke, D. (2010). *Microwave Functionalisation of PolyHIPE*. US Patent 7,820,729 B2. October 26, 2010.
- **Noor, Z. Z.**; Hanna Ilyani Z., Noor Sabrina Mutamin (2013). *Integrated Spent Caustic Treatment System utilizing Fenton and Submerged Aerobic Membrane Bioreactor*. Malaysia Patent, PI 2013701674.

## ACHIEVEMENTS / AWARDS

1. High-Impact Journal Publication Award UTM 2013 (*Citra Karisma*).
2. High-Impact Journal Publication Award UTM 2012 (*Citra Karisma*).
3. International Journal (Science & Engineering) Publication Award UTM 2008 (*Citra Karisma*).
4. Excellence Service Award 2007 (*Citra Karisma*).
5. International Student Research Scholarship Award, Newcastle University, United Kingdom, 2002-2005.

## PUBLICATIONS

### Book Chapters

1. Akay, G., **Z. Z. Noor** and M. Dogru (2005). *Process Intensification in Water-in-Crude Oil Emulsions Separation by Simultaneous Application of Electric Field and Novel Demulsifier Adsorbers based on PolyHIPE Polymers*. Microreactor Technology and Process Intensification. Y. Wang and J. M. Holladay. Washington, DC, American Chemical Society. 914: 378-392.
2. G. Akay; O.F. Calkan; M. Dogru; **Z.Z. Noor** (2005). *Intensified integrated gasification and power generation technology*. Sustainable (Bio) Chemical Process Technology - Incorporating the 6th International Conference on Process Intensification. 2005:177-187.
3. **Zainura Zainon Noor Ujang** (2009). *Adsorption of Organic Compounds*. Chapter in Book: *MWA Design Guidelines for Water Supply Systems, Section 27: Specific Water Treatment Processes*.

### **Journal Publications**

1. Che Hafizan, **Zainura Zainon Noor**, Ahmad Halilu Abba, Norelyza Hussein (2016). *An alternative aggregation method for a life cycle impact assessment using an analytical hierarchy process*. Journal of Cleaner Production, Volume 112, Part 4, 20 January 2016, pages 3244-3255.
2. Chin Hong Neoh, **Zainura Zainon Noor**, Noor Sabrina Ahmad Mutamim, Chi Kim Lim (2016). *Green technology in wastewater treatment technologies: Integration of membrane bioreactor with various wastewater treatment systems*. Chemical Engineering Journal, Volume 283, 1 January 2016, pages 582-594.
3. Chin Hong Neoh, **Zainura Zainon Noor**, Chi Yong Lam, Chi Kim Lim, Adibah Yahya, Hui Han Bay, Zaharah Ibrahim (2015). *Biodecolorization of recalcitrant dye as the sole source of nutrition using *Curvularia clavata* NZ2 and decolorization ability of its crude enzymes*. Environmental Science and Pollution Research; ISSN 0944-1344; Environ Science and Pollution Research; DOI 10.1007/s11356-015-4436-4. **(IF = 2.757)**.
4. J. W. Thong; **Z. Z. Noor**; C. M. Ho (2015). *Assessment of Embodied Energy and Global Warming Potential of Building Construction using Life Cycle Analysis Approach: Case Studies of Residential Buildings in Iskandar Malaysia*. Energy and Building. DOI.org/10.1016/j.enbuild.2014.12.002. **(IF = 2.465)**.
5. Farrah Aini Dahalan; Norhayati Abdullah; **Z. Z. Noor**; Ali Yuzir; Gustaf Olsson; Salmiati; Myzairah Hamdzah; Mohd Fadhil Mohd Din; Siti Aqlima Ahmad; Khalilah Abdul Khalil; Aznah Nor Anuar (2015). *A proposed aerobic granules size development scheme for aerobic granulation process*. Bioresource Technology; 181:291-296. **(IF = 5.039)**.
6. Rafiu O. Yusuf; **Zainura Z. Noor** (2015). *Historical and projected methane emission determination in Malaysia (1980-2020)*. Sustainable Environment Research; 21(1): 37-45. **(SCOPUS)**.
7. Florianna L Michael, **Zainura Zainon Noor**, Maria J Figueroa (2014). *Review of urban sustainability indicators assessment—Case study between Asian countries*. Habitat International; 44: 491-500. **(IF = 1.577)**.
8. W.C. Chong; M. Rashid; M. Ramli; J. Ruwaida; Z.Z. Noor (2014). *Effect of flue gas recirculation on multi-cyclones performance in reducing particulate emission from palm oil mill boiler*. Particulate Science and Technology; 32(3): 291-297. **(IF = 0.482)**.

9. Irina Safitri Zen, **Zainura Zainon Noor**, Rafiu Olasunkami (2014). *The Profiles of Household Waste Recyclers in Kuala Lumpur, Malaysia*. Habitat International; 89; 42-83. **(IF = 1.577)**.
10. Mohammed Evuti Abdullahi, Mohd Ariffin Abu Hassan, **Zainura Zainon Noor**, R.K. Raja Ibrahim (2014). *Temperature and air-water ratio influence on the air stripping of benzene, toluene and xylene*. Desalination and Water Treatment. **(IF = 0.987)**.
11. Nor Azimah Ahmad, Mohd Ariffin Abu Hassan, **Zainura Zainon Noor**, Abdullahi Mohammed Evuti; Jibrin Mohammed (2014). *Optimization of nickel removal from electroless plating industry wastewater using response surface methodology*. Jurnal Teknologi (Sciences and Engineering); 67(4):33-40. **(SCOPUS)**.
12. Sharifah Hanis Yasmin Sayid Abdullah; Mohd Ariffin Abu Hassan; Zainura Zainon Noor; Siti Fadilah Md Noor; Azmi Aris (2014). *Fenton and photo-fenton oxidation of sulfidic spent caustic: A comparative study based on statistical analysis*. Environmental Engineering and Management Journal; 13(3): 531-538. **(IF = 1.258)**.
13. Che Hafizan, **Z.Z. Noor**, F.L. Michael (2014). *Energy production from natural gas: Evaluation of potential environmental impacts using life cycle assessment approach*. Advanced Materials Research; 864-867:1132-1138. **(SCOPUS)**.
14. M. Rashid, W.C. Chong; M. Ramli, **Z. N. Zainura**, J. Norruwaida (2013). *Evaluation of particulate emission from a palm oil mill boiler*. Sains Malaysiana; 42(9): 1289-1292. **(IF = 0.480)**.
15. R. Yusof, **Z. Z. Noor**, M. A. Hassan (2013). *A comparison of the efficacy of two strains of Bacillus subtilis and Pseudomonas fragii in the treatment of tannery wastewater*. Desalination and Water Treatment. **(IF = 0.987)**.
16. Noor Sabrina Ahmad Mutamim, **Zainura Zainon Noor**, Mohd Ariffin Abu Hassan; Adhi Yuniarto; Gustaf Olsson (2013). *Membrane bioreactor: Applications and limitations in treating high strength industrial wastewater*. Chemical Engineering Journal; 225:109-119. **(IF = 4.058)**.
17. Adhi Yuniarto, **Zainura Zainon Noor**, Zaini Ujang, Gustaf Olsson, Azmi Aris; Tony Hadibarata (2013). *Bio-fouling reducers for improving the performance of an aerobic submerged membrane bioreactor treating palm oil mill effluent*. Desalination. 2013; 316:146-153. **(IF = 3.481)**.
18. R. Yusof, **Z.Z. Noor**, M. A. Hassan (2013). *An overview for energy recovery from municipal solid wastes (MSW) in Malaysia scenario*. Renewable and Sustainable Energy Review; 20; 378-384. **(IF = 5.510)**.



19. S. N. Othman, **Z. Z. Noor**, A. H. Abba, R. Yusuf, M. A. Abu Hassan (2013). *Review on Life Cycle Assessment Studies of Integrated Solid Waste Management in Asian Countries*. Journal of Cleaner Production, Vol. 41: 251-262 . **(IF = 4.088)**.
20. N. S. Ahmad Mutamim, **Z. Z. Noor**, M. A. Hassan, G. Olsson (2012). *Application of Membrane Bioreactor Technology in High-Strength Industrial Wastewater: A Performance Review*. Desalination, 305: 1-11. **(IF = 3.481)**.
21. R. Yusof, **Z.Z. Noor** (2012). *Methane emission by sectors: A comprehensive review of emission sources and mitigation methods*. Renewable and Sustainable Energy Reviews (16), 5059-5070. **(IF = 5.510)**.
22. R. Yusof, **Z.Z. Noor** (2012). *Greenhouse Gas Emissions: Quantifying Methane Emissions from Livestock*. American J. of Engineering and Applied Sciences 5(1): 1-8, 2012, ISSN 1941-7020. **(SCOPUS)**.
23. **Z. Z. Noor**, N. Safaai, H. Hashim and Z. Ujang (2011). *CO<sub>2</sub> Projection in Malaysia*. Environmental Progress & Sustainable Energy; 30(4); 658-665. **(IF = 1.271)**

#### **International Conference/Proceeding**

1. Md Noor; Abu Hassan; **Z.Z. Noor**; A. Aris (2011). *Performance of fenton oxidation towards sulfide removal for spent caustic remediation*. National Postgraduate Conference - Energy and Sustainability: Exploring the Innovative Minds, NPC 2011. 2011: [6136279].
2. 22. Diya'Uddeen Basheer Hasan; M.K. Ghengesh; M. A. Abu Hassan; **Z.Z. Noor**; A. Yuniarto; M.H. Chakrabarti; M.S. Islam; Ali; G.M.A. Khan (2011). *Use of a membrane bioreactor in effluent treatment from electroplating industry: Oil and grease* 2011 National Postgraduate Conference - Energy and Sustainability: Exploring the Innovative Minds, NPC 2011. 2011: [6136254].
3. S. H. Y. Sayid Abdulah; M. A. Abu Hassan; **Z. Zainon Noor**; A. Aris (2011). *Optimization of photo-Fenton oxidation of sulfidic spent caustic by using response surface methodology*. National Postgraduate Conference - Energy and Sustainability: Exploring the Innovative Minds, NPC 2011. 2011: [6136286].
4. Farrah Aini Dahalan, Aznah Nor Anuar, **Zainura Zainon Noor**, Zaini Ujang and G.Olsson (2009). *The Challenge to Develop Photosynthetic Aerobic Granular Sludge: Optimization of Photosynthetic Condition for Oxygenic Phototrophic Bacterial Growth in an SBR*. IWA ASPIRE Conference, Taipei, Taiwan, 2009.
5. **Noor, Z. Z.**, Ujang, Z. and Mat Din, M. F (2007). *Cleaner Production in Industrial Wastewater Utilizing Hybrid Membrane Bioreactor for Pollution Control and Resource Recovery*. ASEAN +3 Seminar on Promotion of Environmentally Sound

Technologies and Cleaner Production, 27 to 28 November 2007.

6. **Noor, Z. Z.**, G. Akay, M. Dogru and S. R. Larter (2005). *Process intensification in water-crude oil separation by simultaneous application of electric field and novel micro-porous polymeric demulsifiers*. 7th World Congress of Chemical Engineering, Glasgow, Scotland, IChemE.
7. **Noor, Z. Z.**, G. Akay and Li S. (2006). *Determination of Water-Polymer Interactions in Micro-porous Polymers by Low Resolution NMR Spin-Spin Relaxation Time Measurements*. Presented at: 17<sup>th</sup> INTERNATIONAL CONGRESS OF CHEMICAL AND PROCESS ENGINEERING (CHISA 2006), 27-31 August 2006, Prague - Czech Republic.
8. Akay, G., Aydin, A. F., Calkan, O. F. and **Noor, Z. Z.** (2006). *Intensification of ion-exchange processes using monolithic ionic micro-porous polymers*. Presented at: 17th International Congress of Chemical and Process Engineering (CHISA 2006), 27-31 August 2006, Prague - Czech Republic.
9. Mohamed, R., **Z.Z. Noor**, O.F.Calkan, B. Calkan, T. Ndlovu, D. Burke and G. Akay (2006) *Development of catalytic micro-reactors with ultra-high surface area-to volume ratio for bioprocess and chemical process intensification*. Presented at: 17th INTERNATIONAL CONGRESS OF CHEMICAL AND PROCESS ENGINEERING (CHISA 2006), 27-31 August 2006, Prague - Czech Republic.

## **CONSULTANCY**

1. Appointed as International Consultant by United Nation Development Program (UNDP) for Viet NAM EPI Calculation Training in Hanoi, December 2015 - Present. **Ongoing.**
2. Appointed as Head Consultant for Carbon Accounting Report Preparation Project for Iskandar Development Authority (IRDA), December 2015 - Present: **Ongoing.**
3. Appointed as Head Consultant for Carbon Accounting & Management for Water Production and Water Supply for Syarikat Air Johor (SAJ), Jan 2015 - Ongoing: **Ongoing.**
4. Appointed as Head Consultant for Environmental Management Plan (EMP) of Subang Skypark Development by Pelaburan MARA Berhad (PMB), Jun 2014 – Present: **Ongoing**

5. Appointed as Head Consultant for Carbon Accounting & Management for Water Production and Water Supply for Syarikat Air Johor (SAJ), Jan – December 2012: **Completed.**
6. Appointed as Consultant by Ministry of Natural Resources and Environment for Malaysia's Environmental Performance Index (EPI) Improvement Task and Policy Development. **2009 - Ongoing.**
7. Appointed as Consultant by EVYAP SABUN MALAYSIA Sdn. Bhd for for HAZOP, Modeling and Review of Wastewater Treatment Plant: **Completed (2013).**
8. Appointed as an EIA Consultant for the Preparation of Detail Environmental Impact Assessment (DEIA) for the Proposed Utilization of KAMI at KA as Clinical Waste Incinerator, 2011: **Completed.**
9. Appointed as an EIA Consultant Preparation of Supplementary Environmental Impact Assessment (SEIA) for the Proposed Development of Sludge Destabilization System and Mineral Oil Waste Treatment Plants Pre-Treatment at KA, 2011: **Completed.**
10. Appointed as Project Leader for the Development of 'Introduction to Cleaner Production' Module for Department of Environment (DOE) Malaysia under UTBS, 2009: **Completed.**
11. Appointed as an EIA Consultant by Universiti Malaysia Pahang (UMP) for the Preparation of Environmental Impact Assessment (EIA) for the Proposed Development of Ultrasonic Solvent Extraction Plant for the Recovery of Oil from Spent Adsorbent, 2009: **Completed.**
12. Appointed as an EIA Consultant by Kualiti Alam Sdn Bhd (KA) for the Preparation of Comprehensive Environmental Impact Assessment (EIA) for the Proposed Development of KAMI Incinerator, 2009: **Completed.**
13. Appointed as an EIA Consultant by Tenaga Malaysia Berhad (TNB) for the Preparation of Detailed Environmental Impact Assessment (DEIA) for the Proposed Development of Ulu Jelai Hydroelectric Project at Cameron Highlands, Pahang Darul Makmur, 2007: **Completed**
14. Appointed as an EIA Consultant by Faber Mediserve Sdn. Bhd. for the Preparation of Detailed Environmental Impact Assessment (DEIA) for the Proposed Upgrading of Clinical Waste Thermal Treatment Facility at Lot 65, Kamunting Raya Industrial Estate, Taiping, Mukim Asam Kumbang, Daerah Larut Matang, Perak Darul Ridzuan, 2007: **Completed.**

15. Appointed as a Consultant for the preparation of Environmental Management Plan (EMP): The Expansion of Integrated Iron and Steel Making Plants at Olak Lempit Industrial Estate, Banting, Selangor Darul Ehsan, 2007. **Completed.**

#### **MEMBERSHIP OF PROFESSIONAL BODIES**

1. International Water Association (IWA), membership no: 00943552
2. Institute of Chemical Engineers (IChemE), membership no: 99928864
3. American Institute of Chemical Engineers (AIChE), membership no: 9900125798
4. Institute of Engineers Malaysia (IEM), membership no: 53774
5. Board of Engineers Malaysia (BEM), membership no: 50490A
6. Competent Safety Officer endorsed by National Institute of Safety and Occupational Health (NIOSH) Malaysia (have taken the courses and passed the competency exam for Safety and Health Officer)