

NAME : Ir. Dr. Haslinda Bt Zabiri
DOB/PLACE : 21st January 1976/Ipoh, Perak, Malaysia
POSITION : Associate Professor
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I.ACADEMIC QUALIFICATIONS:

PhD (Advanced Process Control). 2013. Universiti Teknologi PETRONAS, Perak, MALAYSIA

MASc (Advanced Process Control). 2004. McMaster University, Hamilton, ON, CANADA

BSc – 1st Class Honors (Chemical Engineering). 1998. Loughborough University, UNITED KINGDOM

II.EMPLOYMENT HISTORY:

01/2024 – Present : Chair, Chemical Engineering Department, Universiti Teknologi PETRONAS, Malaysia
Associate Professor (MA4). Universiti Teknologi PETRONAS, Malaysia

07/2017 – 12/2023 : Associate Professor (MA3). Universiti Teknologi PETRONAS, Malaysia

01/2010 – 06/2017 : Senior Lecturer. Universiti Teknologi PETRONAS, Malaysia

08/2009 – 09/2013 : Staff Development Program (PhD). Universiti Teknologi PETRONAS, Malaysia

05/2004 – 12/2009 : Lecturer. Universiti Teknologi PETRONAS, Malaysia

10/2002 – 04/2004 : Staff Development Program (MSc). McMaster University, Hamilton, ON, Canada

01/2002 – 09/2002 : Trainee Lecturer. Universiti Teknologi PETRONAS, Malaysia

04/2000 – 12/2001 : Engineer II, Product. Seagate(M) Penang Sdn Bhd, Penang, Malaysia

12/1998 – 03/2000 : Engineer I, Quality Assurance. Seagate(M) Ipoh Sdn Bhd, Perak, Malaysia

III. RESEARCH PORTFOLIO

- **Main Current Research Areas**

1. Hybrid Model Predictive Control
2. Control Valve Stiction Detection, Quantification and Compensation methods
3. Modeling, Simulation and Control of CO₂ Capture Systems
4. Multivariate statistical methods for monitoring and diagnostics of industrial process systems

A. RESEARCH AND INDUSTRIAL GRANTS

- **Research Grants**

Project	Position	Year/Amount	Funding Agency
Partial CO ₂ utilization coupled with storage for enhanced cost efficiency for varying flue gas feeds – An Optimization Study	Leader	2025-2028 RM143,761	YUTP - FRG
A novel hybridized Autoencoder Embedded Detection algorithm by integrating Stiction Detection Network (SDN) with deep autoencoder for a holistic process monitoring and diagnosis of control valves	Leader	2024-2027 RM130,800	MOHE - National (FRGS)
ValveStic 2.0: An upgraded version of online automated control valve health monitoring system	Leader	2024-2025 RM49,700	UTP
Electrolyzer Monitoring System	Leader	2024-2026 RM199,980	YUTP - FRG
Techno-economic, environmental assessments (LCA and CFA), and process optimization for CO ₂ utilization at potentially PETRONAS processing plants from Upstream facilities (PMA, TGAST, SBO, or SKO)	Leader	2023-2025 RM198,220	YUTP - FRG
Advisory diagnostic tool for inferential model validation and monitoring	Leader	2022-2024	YUTP – External
Practical PID-based design for compensating control valve stiction in industrial loops	Leader	2021-2022 RM42,000	Joint Research Project (JRP), UTP-USM-Petro-Vietnam
Predictive monitoring for Acid Gas Removal Unit (AGRU) using Machine Learning Algorithms	Leader	2021-2022 RM72,850	Joint Research Project (JRP), UTP-UTM-Matrix Technologies Australia-Petronas Gas Berhad
A Method for detecting and Quantifying Control Valve Stiction	Leader	2020-2021 RM47,472	Prototype Fund, UTP
Development of data-driven model-based framework on investigating the principles for water–energy–food nexus around Sungai Perak	Leader	2020-2021 RM19,876.00	The Murata Science Foundation
Scale Up Study Of Co ₂ Capture Via Promoted Potassium Carbonate With Glycine:	Leader	2019-2022 RM 176,538	YUTP

Vle Derivation, Dynamic Study And Energy Evaluation.			
Unified predictive controllers for networked process systems with multi-time scale dynamic behavior	Leader	2019-2022 RM74,500.00	MOHE - National (FRGS)
Determination Of Thermodynamic And Hydrodynamic Properties Of Potassium Carbonate-Glycine Based Solvent For Modeling Of Co2 Removal From Natural Gas	Leader	2019-2021 RM 92,240	MOHE - National (FRGS)
A Study On Plant Technologies Related R&D Activities And Set-Up In Malaysia. No 25, Research On Applicability Evaluation Of Anomaly Diagnosis System To Petrochemical Plants and Economic Benefits Hypothesis for Refinery Plants	Co-researcher	2019-2020 RM125,000	Hitachi Asia (Malaysia) Sdn. Bhd.
Mass Transfer Study of CO2 Absorption in Potassium Carbonate Promoted with Glycine	Co-researcher	2017-2019 RM98,000	MOHE - National (FRGS)
A Study on Plant Technologies Related R&D Activities and Set-Up in Malaysia. No 19, Research on Applicability of Anomaly Diagnosis System to Crude Oil Distillation Plants	Co-Principal Investigator	2017-2018 RM134,620	Hitachi Japan – International
An integrated online control valve stiction diagnosis and compensation in a hybrid Model Predictive Controller framework	Leader	2017-2019 RM104,800	MOSTI - National
Dynamic Modeling and Control Studies of High Pressure Pilot scale Absorption Column for the Removal of CO2 at High Concentration Level from the Mixture of CO2-Ng Gas Stream	Leader	2016-2019 RM238,200	YUTP – External
A Study on Plant Technologies Related R&D Activities and Set-up in Malaysia. No 13, Operational Efficiency Improvement Research for Distillation Tower and Relating Utilities by Anomaly Diagnosis Application	Co-Principal Investigator	2015-2016 RM130,000	Hitachi Japan (Completed)
Dynamic model and dynamic behavior of fluidized bed gasification system	Co-researcher	2014-2017 RM75,200	MOHE (FRGS) Completed
Elucidating the Absorption Dynamics for Removal of High Concentration Level CO2 from Natural Gas stream at Elevated Pressures	Leader	2014-2016 RM98,200	MOHE (FRGS) Completed
A One-layer approach for integrating real-time optimization and advanced process control levels in a reaction-separation system	Leader	2013-2016 RM94,000	MOHE (ERGS) Completed
A study on plant technologies related R&D activities and set-up in Malaysia No. 7: Anomaly diagnosis system research for distillation tower	Co-Principal Investigator	2014-2015 RM70,000	Hitachi Japan (Completed)
Improving advanced process control closed-loop performances using control-relevant nonlinear empirical models with extended applicable regions: Novel parallel OBF-SVM	Leader	2013-2014 RM24,200	UTP-STIRF Completed
Development of diagnostic tool to evaluate poor control-loop performance	Leader	2007-2008 RM4,300	UTP-STIRF Completed
Modeling of Control Valve Stiction Dynamics	Leader	2008-2009	<i>1 journal, 6 conf. papers</i> UTP-STIRF

		RM4,400	Completed <i>2 journals, 3 conf. papers</i>
Energy Optimisation of Crude Preheat Train-Development of Fouling Mitigation Technology Suite	Co-investigator	2006-2009 RM5.88 million	Petroleum Research Fund Government of Malaysia Completed
Development of a Soft sensor for inferential control of fatty acid concentration in palm-oil fractionation column	Co-investigator	2006-2008 RM215,000	IRPA, MOSTI Completed
Development of Heat Exchanger Fouling Model for preventive maintenance diagnostic tool	Co-investigator cum leader (replacing late Prof Radha)	2005-2006 RM10,000	UTP-STIRF Completed <i>2 journals, 4 conf. papers</i>

- **Contract Research/Consultancy project**

Project	Position	Year/Amount	Funding Agency
UI/UX Development by UTP for Model Analytics Advisor (MATA)	Leader	2024 RM96,703.20	GTS PETRONAS
PHASE 1: Valve Diagnosis Analysis for CV -Care, I-Sense and Valve Tracker	Leader	2024-2025 RM82,500	PD&T PETRONAS
Engineering Support of Gas Correlation Table (CORTAB) Study for Larut-A	Leader	2024 RM5,564.16	EPOMS
Multivariate optimization algorithm for selecting CO2 utilization technologies to achieve CO2 emission reduction	Leader	2022-2024 RM796,567.20	MRA, PETRONAS
Model-based Optimization for Lube Base Oil Productions	Leader	2021-2022 RM272,207	MRA, PETRONAS
Provision of Research Services for CO2 Absorption from Natural Gas	Co-PI	2020 – 2022 RM2,275,060	PTTEP
Development of Compact Ultrasonic Absorption System (CUAS) for CO2 Removal from Natural Gas	Co-PI	2019-2022 RM4,900,000	PRSB
Study On Plant Technologies Related R&D Activities And Set-Up In Malaysia No.22, Research On Effectiveness Of Anomaly Diagnosis System In Crude Oil Distillation Plants And Its Application Expansion	Co-PI	2018-2019 RM143,053.18	Hitachi Asia (M) Sdn Bhd
Modeling and control studies of gas Twister system	Leader	2016-2018 RM234,274	PETRONAS Research (PRSB) On-going
A study on plant technologies related R&D activities and set-up in Malaysia No. 15: Operation Efficiency Improvement Research for Crude Distillation Unit by Anomaly Diagnosis Application	Co-Principal Investigator	2016-2017 RM150,000	Hitachi-Japan
Instrument NET Upgrading: Process Control Intermediate Level	Module developer/ Instructor	2009 RM18,000	INSTEP

Development of Neural-Network based quality estimator for depropaniser bottom product	Co-software developer/ Module developer / Instructor	Dec 2004-Dec 2006 RM50,000	Malaysian Liquefied Natural Gas Sdn. Bhd. Bintulu
Neural-Network Training of Trainers for INSTEP – module developer and trainer	Module developer / Instructor	2004 – 2005 RM143,000	INSTEP, PETRONAS

- **Short courses**

Project	Position	Year/Amount
Basics of Separation Processes for Chemical Processes	Lead Trainer	2024 RM27,000
Machine Learning in Chemical Processes: Descriptive, Diagnostic and Predictive Analytics via Python (A distillation column case study)	Lead Trainer	2023 RM14,940
Gas Conditioning Process with Advanced Simulations	Trainer	2023 RM23,400
Machine Learning in Chemical Processes: Descriptive, Diagnostic and Predictive Analytics via Python (A distillation column case study)	Lead Trainer	2022 RM2,775
Model-Based Optimization For Lube Base Oil Productions: Python-Based Training For Modeling And Integrated Optimization Framework	Lead Trainer	2022 RM30,000
Bringing Your Artificial Intelligence to Life: Hands-on experience on software & hardware development, system integration and scalable product in industry 4.0 environment	Trainer	2022 RM29,521
Advanced Process Simulation for typical processing equipment	Lead Trainer	2021 RM16,740
A 1-day course on Introduction to Optimization	Module developer / Instructor	2006 RM7,200
Process Optimization for Chemical Industries	Module developer /Instructor	2006 RM32,753

B. LIST OF KEY PUBLICATIONS

- **Referred Book Series**

1. Haslinda Zabiri, Faezah Isa, Tahir Sultan, Muhammad Afif Asyraf Affian, Anmol Fatima, Abdulhalim Shah Maulud, Improvements in Process Design, Simulation, and Control, Sustainable Carbon Capture, 1st Edition, 2022, CRC Press, Pages 23, eBook ISBN9781003162780
2. H. Zabiri and Y. Samyudia, MPC design for constrained multivariable systems under actuator backlash, in S.L Shah and J. F. MacGregor (Eds.), *Dynamics and Control of Process Systems 2004*, Elsevier Press 2005. (ISBN: 0-08-044297-8)

- **ISI/Scopus-indexed Journals (Q1/Q2 Journals)**

For details please see Google Scholar:

https://scholar.google.com.my/citations?hl=en&user=GQmfYnkAAAAJ&view_op=list_works&sortby=pubdate

1. Improving Equilibrium Based CO₂-PCGLY Process Simulations via Neural Network-Optimized Murphree Efficiency: Accuracy and Energy Insights, F Isa, H Zabiri, SAA Taqvi
2. Chemical Engineering and Processing-Process Intensification, 2025, 110568
3. Multiobjective Optimization of CO₂ Capture from Varied CO₂ Point Sources: An Evolutionary Algorithm Approach to Economic, Engineering, and Environmental, MS Khaidzir, H Zabiri, MYJ Jalani, AAA Mohd Amiruddin, Industrial & Engineering Chemistry Research, 2025, 64 (39), 19140-19167
4. Optuna-LightGBM: An Optuna hyperparameter optimization framework for the determination of solvent components in acid gas removal unit using LightGBM, RJ Wishnuwardana, MB Omar, HB Zabiri, M Faqih, K Bingi, R Ibrahim, Cleaner Engineering and Technology, 2025, 28, 101054
5. An embedded KPI-based advisory framework for monitoring and diagnosis of soft sensor degradation, M Shahid, H Zabiri, SAA Taqvi, Results in Engineering, 2025, 27, 106516
6. Calculation of the Viscosity of a Mixture of Heavy Hydrocarbon Oil with Temperature Relation Consideration, MAM Fadzil, SA Razak, AA Razali, MNM Salleh, H Zabiri, ACS Omega, 2025, 10 (29), 31274
7. Sequential integrated multi-objective optimization for CO₂ capture and utilization into fuels from varying CO₂ feedstock, MS Khaidzir, H Zabiri, MYJ Jalani, AAAM Amiruddin, Fuel, 2025, 388, 134518
8. Fault root cause analysis using degree of change and mean variable threshold limit in non-linear dynamic distillation column, M Shahid, H Zabiri, SAA Taqvi, M Hai, Process Safety and Environmental Protection, 2024, 189, 856-866
9. Investigative Analysis of Automatic Mode Detection for a Lubricant Base Oil Production Plant Using PCA and Machine-Learning Models, MA Mohd Fadzil, AA Razali, H Zabiri, AH Che Hussin, ACS omega, 2024, 9 (3), 3525-3540
10. Prediction of heat exchanger fouling for predictive maintenance using artificial neural networks, SAA Taqvi, K Kumar, S Malik, H Zabiri, F Ahmad, Chemical Papers 78 (15), 8295-8308
11. Machine Learning-Based Modeling and Optimization Analysis for an Integrated Industrial Base Oil Production Complex, MA Mohd fadzil, AA Razali, H Zabiri, Industrial & Engineering Chemistry Research, 2023, 62, 47, 20280–20299
12. Recent advances in dynamic modeling and control studies of biomass gasification for production of hydrogen rich syngas, M Hussain, O Ali, N Raza, H Zabiri, A Ahmed, I Ali, RSC advances 13 (34), 23796-23811 (2023)
13. Investigation of control performance on an absorption/stripping system to remove CO₂ achieving clean energy systems, SAA Taqvi, H Zabiri, SKM Singh, LD Tufa, M Naqvi, Fuel 347, 128394 (2023)
14. Fault Detection and Identification in an Acid Gas Removal Unit Using Deep Autoencoders, TK Kathlyn, H Zabiri, C Aldrich, X Liu, AAA Mohd Amiruddin, ACS Omega (2023)
15. Syed Muhammad Mustafa Rizvi, Syed Ali Ammar Taqvi, Mahwish Mobeen Khan, Haslinda Zabiri, Danial Qadir, Mohamed Ouladsmene, Ahmed Sayed M Metwally, Techno-economic sustainability assessment for bio-hydrogen production based on hybrid blend of biomass: A simulation study, Fuel 347 (2023), 128458
16. NL Jian, H Zabiri, M Ramasamy, Control of the Multi-Timescale Process Using Multiple Timescale Recurrent Neural Network-Based Model Predictive Control, Ind. Eng. Chem. Res. 2023, 62, 15, 6176–6195. Fuel 347 (2023), 128394
17. SH Hasnen, M Shahid, H Zabiri, SAA Taqvi, Semi-supervised adaptive PLS soft-sensor with PCA-based drift correction method for online valuation of NO_x emission in industrial water-tube boiler, Process Safety and Environmental Protection 172 (2023), 787-801

18. TL Kok, C Aldrich, H Zabiri, SAA Taqvi, J Olivier, Application of unthresholded recurrence plots and texture analysis for industrial loops with faulty valves, *Soft Computing*, 1-16, 2022
19. T Sultan, H Zabiri, M Shahbaz, AS Maulud, Model Analysis for the Implementation of a Fast Model Predictive Control Scheme on the Absorption/Stripping CO₂ Capture Plants, *ACS omega* 7 (10), 2022, pages 8437-8455
20. H Ali, AS Maulud, H Zabiri, M Nawaz, H Suleman, SAA Taqvi, Multiscale Principal Component Analysis-Signed Directed Graph Based Process Monitoring and Fault Diagnosis, *ACS omega* 7 (11), 2022, pages 9496-9512
21. M Nawaz, AS Maulud, H Zabiri, H Suleman, Review of multiscale methods for process monitoring, with an emphasis on applications in chemical process systems, *IEEE Access*, Volume 10, 2022, pager 49708-49724
22. Tahir Sultan, Haslinda Zabiri, Muhammad Shahbaz, Abdulhalim Shah Maulud, Performance evaluation of the fast model predictive control scheme on a CO₂ capture plant through absorption/stripping system, *Process Safety and Environmental Protection*, Volume 157, 2022, Pages 218-236, ISSN 0957-5820,
23. Q Siah, H Zabiri, Modeling and Optimization of Water–Food–Energy Nexus for Malaysia’s Agricultural Sector, *Sustainability* (2022) 14 (3), 1799
24. SAA Taqvi, H Zabiri, LD Tufa, F Uddin, SA Fatima, AS Maulud, A Review on Data-Driven Learning Approaches for Fault Detection and Diagnosis in Chemical Processes, *ChemBioEng Reviews* (2022), 8 (3), 239-259
25. Hussain, M., Zabiri, H., Uddin, F. et al. Pilot-scale biomass gasification system for hydrogen production from palm kernel shell (part B): dynamic and control studies. *Biomass Conv. Bioref.* (2021). <https://doi.org/10.1007/s13399-021-01733-1>
26. M Hussain, H Zabiri, F Uddin, S Yusup, LD Tufa, Pilot-scale biomass gasification system for hydrogen production from palm kernel shell (part A): steady-state simulation, *Biomass Conversion and Biorefinery* (2021), 1-14
27. SA Fatima, N Ramli, SAA Taqvi, H Zabiri, Prediction of industrial debutanizer column compositions using data-driven ANFIS-and ANN-based approaches, *Neural Computing and Applications*, 1-13
28. Rana, Z.A.; Khor, C.S.; Zabiri, H. Computational Experience with Piecewise Linear Relaxations for Petroleum Refinery Planning. *Processes* 2021, 9, 1624. <https://doi.org/10.3390/pr9091624>, <https://doi.org/10.1016/j.psep.2021.11.018>.
29. M Nawaz, AS Maulud, H Zabiri, SAA Taqvi, A Idris, Improved process monitoring using the CUSUM and EWMA-based multiscale PCA fault detection framework, *Chinese Journal of Chemical Engineering* 29, 253-265
30. YYS Henry, C Aldrich, H Zabiri, Detection and severity identification of control valve stiction in industrial loops using integrated partially retrained CNN-PCA frameworks, *Chemometrics and Intelligent Laboratory Systems* 206, 104143
31. M Nawaz, AS Maulud, H Zabiri, H Suleman, LD Tufa, Multiscale Framework for Real-Time Process Monitoring of Nonlinear Chemical Process Systems, *Industrial & Engineering Chemistry Research* 59 (41), 18595-18606
32. NA Othman, LD Tufa, H Zabiri, AAMM Jalil, K Rostani, “Enhancing the Supersonic Gas Separation operating envelope through process control strategies of the feed conditioning plant for offshore CO₂ removal from natural gas”, *International Journal of Greenhouse Gas Control* (2020) 94, 102928
33. B Kamaruddin, H Zabiri, AAAM Amiruddin, WK Teh, M Ramasamy, S Jeremiah, “A simple model-free butterfly shape-based detection (BSD) method integrated with deep learning CNN for valve stiction detection and quantification”, *Journal of Process Control* (2020), 87, 1-16
34. AAAM Amiruddin, H Zabiri, SS Jeremiah, WK Teh, B Kamaruddin, “Valve stiction detection through improved pattern recognition using neural networks”, *Control Engineering Practice* (2019), 90, 63-84 (**Impact factor 3.232**)
35. Sean Suraj Jeremiah, Haslinda Zabiri, Marappagounder Ramasamy, Weng Kean Teh, Bashariah Kamaruddin, Ahmad Azharuddin Azhari Mohd Amiruddin, “Generic framework for

- valve stiction detection and compensation with ANFIS-activated dual-mode MPC”, *Journal of Process Control* (2019), 79, 85-97 (**Impact factor 3.316**)
36. KMS Salvinder, H Zabiri, Syed A Taqvi, M Ramasamy, F Isa, NEM Rozali, H Suleman, A Maulud, AM Shariff, “An overview on control strategies for CO₂ capture using absorption/stripping system”, *Chemical Engineering Research and Design* (2019), (147) 319-337 (**Impact factor 3.073**)
 37. SA Taqvi, LD Tufa, H Zabiri, AS Maulud, F Uddin, “Multiple Fault Diagnosis in Distillation Column Using Multikernel Support Vector Machine”, *Industrial & Engineering Chemistry Research* (2018), 57 (43), 14689-14706 (**Impact factor 3.375**)
 38. F Isa, H Zabiri, NKS Ng, AM Shariff, “CO₂ removal via promoted potassium carbonate: A review on modeling and simulation techniques”, *International Journal of Greenhouse Gas Control* (2018), 76, 236-265 (**Impact factor 3.231**)
 39. Weng Kean Teh, Haslinda Zabiri, Yudi Samyudia, Sean S Jeremiah, Bashariah Kamaruddin, Azhari AA Mohd Amiruddin, Nasser M. Ramli, “An Improved Diagnostic Tool for Control Valve Stiction Based on Nonlinear Principle Component Analysis”, *Industrial & Engineering Chemistry Research* (2018), 57 (33), 11350-11365 (**Impact factor 3.375**)
 40. AAAM Amiruddin, H Zabiri, SAA Taqvi, LD Tufa, “Neural network applications in fault diagnosis and detection: an overview of implementations in engineering-related systems”, *Neural Computing and Applications* (2018), 1-26 (**Impact factor 4.664**)
 41. SA Taqvi, LD Tufa, H Zabiri, AS Maulud, F Uddin, “Fault detection in distillation column using NARX neural network”, *Neural Computing and Applications* (2018), pp. 1-17 (**Impact factor 4.664**)
 42. Salvinder Kaur Marik Singh, Haslinda Zabiri, Faedah Isa, Syed Ali Ammar Taqvi, Mohammad Aiman Haikal Roslan, Azmi M. Shariff, “Dynamic Modelling and Validation of CO₂ Absorption Based on High Pressure Pilot Plant for Natural Gas Treatment”, *International Journal of Greenhouse Gas Control* (2018), 70, pp. 164–177 (**Impact factor 3.7**)
 43. F. Isa, H. Zabiri, M. Ramasamy, T. D. Lemma, A.M. Shariff, “Pressure modification based on hydrodynamic and mass transfer effects at high pressure for modeling of CO₂ removal from natural gas via absorption”, *International Journal of Greenhouse Gas Control* (2017), 56, pp. 173-186 (**Impact factor 3.7**)
 44. F. Isa, H. Suleman, H. Zabiri, A. Maulud, M. Ramasamy, T. D. Lemma, A. M. Shariff, “An overview on CO₂ removal via Absorption: Effect of elevated pressures in counter-current packed column”, *Journal of Natural Gas Science & Engineering* (2016), 33, pp. 666-677 (**Impact factor 2.157**)
 45. H. Zabiri, M. Ramasamy, T. D. Lemma, A. Maulud, “Integrated OBF-NN models with enhanced extrapolation capability for nonlinear systems”, *Journal of Process Control* (2013), Volume 23, Issue 10, pp. 1562–1566 (**Impact factor 2.653**)
 46. H. Zabiri, and M. Ramasamy, NLPCA as a Diagnostic Tool for Control Valve Stiction, *Journal of Process Control* (2009), Vol. 19(8), pp. 1368-1376 (**Impact factor 2.653**)
 47. H. Zabiri and Y. Samyudia, “A hybrid formulation and design of Model Predictive Control for systems under actuator saturation and backlash”, *Journal of Process Control* (2006), 16(7): 693-709 (**Impact factor 2.653**).
 48. V. R. Radhakrishnan, M. Ramasamy, H. Zabiri, V. D. Thanh, N. M. Tahir, H. Mukhtar, M R Hamdi, N Ramli, “Heat Exchanger Fouling Model and Preventive Maintenance Diagnostics Tool”, *Applied Thermal Engineering Journal* (2007), 27, pp. 2791-2802 (**Impact factor 2.739**).

- **Invited Lectures/Plenary Lectures**

1. H. Zabiri, Sequential integrated multi-objective optimization for CO₂ capture and utilization into fuels from varying CO₂ feedstock - A Preliminary Feasibility Study, 2025 Belt and Road

- Symposium on Advances in CCUS 2025, 13th December 2025, China University of Petroleum, Beijing.
- H. Zabiri, Getting Control Right: A student-friendly guide to PID, Teacher-Exchange Program, International Week, 17th – 22nd November 2025, IMT Mines Albi, Albi, France.
 - H. Zabiri, Introduction to Universiti Teknologi PETRONAS, Albi International Week, 17th – 22nd November, IMT Mines Albi, Albi, France.
 - H. Zabiri, Control Valve Monitoring System in Process Industry, Keynote Address, 3rd ProSES Symposium 2023, 6th September 2023, Kuantan, Pahang
 - H. Zabiri, Process Control Strategies in Chemical plant Design, KNC4303 – Rekabentuk Loji Kimia, Fakulti Kejuruteraan, Universiti Malaysia Sarawak (UNIMAS), Kuching, 14th November 2016
 - V. R. Radhakrishnan, M. Ramasamy, and H. Zabiri, Data to Knowledge - The Role of Megavariate Modeling for Plant Performance Enhancement Enhancement in the Oil, Gas and Petrochemical Industry', 2nd PETRONAS Int. R&D Forum, Kuala Lumpur, 6-7 December 2006
 - V. R. Radhakrishnan, M. Ramasamy, and H. Zabiri, Superior Performing Assets - Role of Intelligent Predictions and Neural networks, Invited lecture, PETRONAS Instrument forum 2006, 12-14 September 2006

IV. TEACHING AND SUPERVISION

- Undergraduate/Post-graduate Teaching (Major Courses)**

- Operability & Control (MSc in Process Integration)
- Advanced Process Control Systems Technology (MSc in Advanced Process Control)
- Multivariate Statistical Analysis (MSc in Advanced Process Control)
- Process Instrumentation & Control / Chemical Process Dynamics, Instrumentation and Control
- Process Plant Design
- Process Instrumentation & Control Lab
- Separation Process 1
- Heat Transfer Design

- Undergraduate Supervision from 2014 - present**

- Final year projects (FYP) – more than 40 students supervised
- Final Year Plant Design Project (PDP) – more than 40 groups supervised
- Engineering Team Project (ETP) – more than 3 groups supervised

- Graduate Supervision**

No.	Name of Student	Main Supervisor/ Co-Supervisor	Level	Title of thesis / research / dissertation (Please indicate by Research/Coursework)	Date of Completion (Graduated)
By Research					
1	Faezah Isa	Main Supervisor	MSc	Development of Pressure Modifiction Index in rate based model for CO ₂ at elevated pressure.	2014 - 2016 Graduated in June 2016
2	Faezah Isa	Main Supervisor	PhD	Development of Pressure Modifiction Index in rate based model for CO ₂ at elevated pressure.	2019 – 2025 Graduated
3	Bashariah Kamaruddin	Main Supervisor	PhD	Development of Control Valve Stiction Quantification Algorithm	2015-2021 Graduated

4	Sean Suraj Jeremiah	Main Supervisor	MSc	Model Predictive Control Design for Stiction Compensation	2015-2019 Graduated
5	Salvinder Kaur Marik Singh	Main Supervisor	MSc	Advanced Process Control Strategies for absorption/stripping system for CO ₂ capture from natural gas at high pressure	2017-2019 Graduated
6	Weng Kean Teh	Main Supervisor	MSc	Development of Control Valve stiction detection algorithm	2017-2019 Graduated
7	Nurzatil Aqmar Othman (part-time, PRSB Engineer)	Main Supervisor	MSc	Modeling of Gas Twister System for CO ₂ capture from natural gas	2017-2019 Graduated
8	Syed Ali Ammar Taqvi	Main Supervisor	PhD	Fault Detection & Diagnosis for Distillation Column based on a combined PCorrA and ANN scheme	2015-2019 Graduated
9	Maham Hussein	Main Supervisor	PhD	Dynamic Modeling of Biomass Gasifier	2015-2020 Graduated
10	Patrick, David Onoja	Co-Supervisor	PhD	Catalytic Gasification of Agricultural waste to Fuel	2015-2020 Graduated
11	Ahmad Azharuddin Azhari Mohd Amiruddin	Main Supervisor	MSc	Valve stiction detection through improved pattern recognition using neural networks	2017-2019 Graduated
12	Anmol Fatima	Main Supervisor	MSc	Control of Industrial Debutanizer Column using Adaptive Neuro-Fuzzy Inference System	2018-2020 Graduated
13	Tahir Sultan	Main Supervisor	MSc	Implementation of Fast Model Predictive Control on a CO ₂ Capture System Using Amine Absorption for Post-Combustion	2019-2021 Graduated
14	Ngiam Li Jian	Main Supervisor	MSc	Unified Predictive Controllers for Networked Process Systems with Multi-Time Scale Dynamic Behavior	2019-2022 Graduated
15	Henry Yau Yong Song	Main Supervisor	MSc	Detection and severity identification of control valve stiction in industrial loops using integrated partially retrained CNN-PCA frameworks.	2020-2021 Graduated
16	Qi Siah	Main Supervisor	MSc	Modeling and Optimization of Water–Food–Energy Nexus for Malaysia’s Agricultural Sector	2020-2022 Graduated
17	Zaid Ashraf Rana	Main Supervisor	MSc	Computational Studies Based on Piecewise-linear Relaxations for Petroleum Refinery Planning Optimization	2020-2021 Graduated
18	Husnain Ali	Co-Supervisor	MSc	MULTISCALE PROCESS MONITORING IN A CSTR SYSTEM USING PRINCIPAL COMPONENT ANALYSIS AND SIGNED DIRECTED GRAPH	Graduated 2022
19	Muhammad Nawaz	Co-Supervisor	PhD	Fault detection and diagnosis framework using wavelet-based kernel principal component analysis for chemical process systems	Graduated 2022
23	Muhammad Shafiee Bin Khaidzir	Main Supervisor	MSc	Multi-objective optimization for CO ₂ utilization studies	2023 – 2025 Graduated
24	M Amir M Fadzil	Main Supervisor	PhD	Hybrid modeling of Lube Base Oil	2020-2025

					Graduated (Part-time)
25	Muhammad Shahid	Main Supervisor	PhD	Hybrid modeling of NOx emission systems	2023-2025 Graduated
26	Zamzila Binti Kasim	Co-Supervisor	PhD		2022-On-going
27	Izzaty Abdullah	Main Supervisor	MSc	Valve Diagnosis via SDN-Autoencoder	2024-2026 On-going
28	Muhammad Afdhil Islam	Main Supervisor	MSc	Electrolyzer Monitoring System	2024-2026 On-going
29	Tan Kiin Yin	Main Supervisor	MSc	Multi-objective optimization for CO2 utilization studies AI-Python	2024-2026 On-going
By Mixed-Mode (MSc by Coursework – Dissertation)					
1	Nur Amalina Shairah	Main-supervisor	MSc	The development and investigation analysis of an ARX-based Generalized Likelihood Ratio (GLR) Stiction Detection Method	Completed Sept 2015
2	Bashariah Kamaruddin	Main-supervisor	MSc	Investigating the performance of MIQP-based MPC to compensate control valve stiction	Completed Jan 2015

V.PATENTS/COPYRIGHTS

Name	Patent / Copyright numbers	Project Leader	Date filed
Advisory Soft Sensor Monitoring Indices (ASSMI)	LY2025W09114	AP Dr Haslinda Bt Zabiri	June 2025
ValveStic™	LY2021P06583	AP Dr Haslinda Bt Zabiri	Dec 2024
A Method for Detecting and Quantifying Control Valve Stiction (Patent)	My-204645-A	AP Dr Haslinda Bt Zabiri	July 2019 (Granted 6 th September 2024)
Valve Stiction Detection Model Based on Artificial Neural Networks	LY2019001305	AP Dr Haslinda Bt Zabiri	26/2/2019
An Improved Diagnostic Tool for Control Valve Stiction based on Nonlinear Principle Component Analysis (NLPCA-AC)	LY2019001303	AP Dr Haslinda Bt Zabiri	28/2/2019
Algorithm Development of Indexed Butterfly Shape based Method (BSBM) for Control Valve Stiction Detection	LY2019001307	AP Dr Haslinda Bt Zabiri	28/2/2019
Multiple Fault Diagnosis in Distillation Column Using Multikernel Support Vector Machine	LY2019001302	AP Dr Haslinda Bt Zabiri	15/3/2019
NARX Network FDA: Fault Detection in Distillation Column Using NARX Neural Network	LY2019001304	AP Dr Haslinda Bt Zabiri	15/3/2019

VI.ACADEMIC RECOGNITION AND LEADERSHIP

	Date	Programme/Activity	Role	Level
A. JOURNAL REVIEWER				
	2024-current	Journal of Process Control, Results in Engineering, ACS Omega, IEEE Transactions, ISA Transactions, International Journal of Hydrogen Energy, Process Safety & Loss Prevention, Scientific Reports (Springer Nature) Fuel Journal of the Taiwan Institute of Chemical Engineers	Reviewer	International
	2022 - 2023	ASEAN Journal of Process Control (AJPC)	Associate Editor	International
	2021-2022	Journal of Cleaner Production Journal of Hydrogen Energy Environment Systems and Decisions International Journal of Hydrogen Energy Part I: Journal of Systems and Control Engineering	Reviewer	International
	2021	Biomass Conversion and Biorefinery	Reviewer	International
	2021	Chemical Engineering Communications	Reviewer	International
	2018-2019	Fuel Processing Technology	Reviewer	International
	2017-2018	Reviewer for Journal of Process Control, 2017.	Reviewer	International
	2016	Reviewer for Part 1: Journal of Systems and Control Engineering, 2016	Reviewer	International
	2017	Reviewer for International Journal of Automation and Control (IJAAC), Inderscience	Reviewer	International
	2015-2016	Reviewer for Chemical Engineering Communications, 2015-2016.	Reviewer	International
	2016	Reviewer for ICPEAM conference, 2016	Reviewer	International/UTP
	2014	Reviewer for ICPEAM conference, 2014	Reviewer	International/UTP
	2014	Reviewer for ICIAS conference, 2014	Reviewer	International/UTP
	2010	Reviewer for Asia-Pacific Journal of Chemical Engineering, 2010.	Reviewer	International
	2009	Reviewer for the 7th International Federation of Automatic Control (IFAC) Symposium on Fault Detection, Supervision and Safety of Technical Processes (SafeProcess 2009)	Reviewer	International
	2010	Reviewer for the 9th International Federation of Automatic Control (IFAC) International Symposium on Dynamics and Control of Process Systems (DYCOPS 2010).	Reviewer	International
B. INVITED SPEAKER/PAPER				
	2023	Control Valve Monitoring System in Process Industry	Keynote Speech	3rd ProSES Symposium 2023, 6th September 2023, Kuantan, Pahang

	2016	Process Control Strategies in Chemical Plant Design, KNC4304	Invited Speaker	National – UNIMAS, Sarawak, 14 th November 2016
	2006	Data to Knowledge - The Role of Megavariate Modeling for Plant Performance Enhancement in the Oil, Gas and Petrochemical Industry	Invited paper	2nd PETRONAS Int. R&D Forum, Kuala Lumpur, 6-7 December 2006
	2006	Superior Performing Assets - Role of Intelligent Predictions and Neural networks	Invited paper	PETRONAS Instrument forum 2006, 12-14 September 2006
C. PROFESSIONAL/ACADEMIC ASSOCIATION				
	2019-present	Malaysia Process Control Society (MyPCS)	Secretary	National
	2017-2019	Malaysia Process Control Community (MPC-C) Protem Committee	Secretary	National
	2017-present	IChemE-Women in Society (IChemE-WIS)	Co-founder/ Vice-Chairman	National
	2017-present	PETRONAS SKG16.4 Community of Practice (CoP) Process Control	Member	Industry
	2013-present	IChemE	Associate Member	International
	2017	Energy Institute	Affiliate Member	International
	2013-present	Board of Engineers (BEM) Malaysia	Graduate Member	National
	2022 - 2024	UTP Innovation Committee	Member	UTP
	2013 - present	CO2 Mission Oriented Research Group	Member	UTP
	2017	Board of Study for MSc in Process Integration	Member	UTP
	2017	Malaysia Process Control Seminar – PETRONAS SKG16.4 Process Control Forum	Chairman	National
	2017	PETRONAS SKG16.4 Community of Practice (CoP) Process Control	Member	Industry
	2016	Process Control Strategies in Chemical Plant Design, KNC4304	Invited Speaker	National – UNIMAS, Sarawak
	2009	INSTEP training	Module developer/Instructor	Industry
	2004-2005	INSTEP Training of Trainers	Module developer/Instructor	Industry
	2006	Introduction to Optimization short-course	Module developer/Instructor	Industry
	2006	Soft-sensor development	Module developer/Instructor	Industry
	2017	Malaysia Process Control Community (MPC-C) Protem Committee	Co-Chairman	National
	2017	Malaysia Process Control Seminar – PETRONAS SKG16.4 Process Control Forum	Chairman	National
D. ADMINISTRATION				
	2024-current	Chair, Chemical Engineering Department	Chair	UTP
	2023-2024	Program Leader, Post-graduate Chemical Engineering Department	Program Leader	UTP
	2017-2023	MSc in Process Integration	Program Manager	UTP
	2013-2017	Student Industrial Internship Program	Coordinator, ChE	UTP

	2007-2008	Graduate Assistant Program	Coordinator, ChE	UTP
	2005-2006	Task-force for LAN Document and Syllabus Development for MSc in Advanced Process Control	Member	UTP
E. CONTRIBUTION TO SOCIETY/CONFERENCE/SEMINAR				
	2025	Sesi Libat Urus Inisiatif Pembangunan Teknologi Berkaitan Pemerangkapan, Penggunaan dan Penyimpanan Karbon (CCUS), MOSTI	Member	National
	2025	AHLI PANEL PENILAI (LUAR) BAGI PENILAIAN PEMATUHAN MQA PROGRAM AKADEMIK IJAZAH TINGGI YANG DITAWARKAN OLEH PUSAT PENGAJIAN KEJURUTERAAN KIMIA, UNIVERSITI SAINS MALAYSIA	External Assessor	National
	2022	ICSupCet 2022	Leader, Industrial Session	International conf
	2022	CSD Women in Career Talk: Walking the Women's Tightrope	Chief Advisor	UTP
	2021	ICPEAM 2020	Leader, Industrial Session	International conf
	2017	Joint event of Malaysia Process Control Seminar – PETRONAS SKG16.4 Process Control Forum	Chairman	National
	2017	Women's Seminar, IChemE-Woman in Society (IChemE-WIS)	Vice-Chairman	National
	2017	Women's Seminar, IChemE-Woman in Society (IChemE-WIS)	Forum Moderator	National
	2016	ICPEAM 2016	Leader, Secretariat	International conf
	2014	ICPEAM 2014	Member, Secretariat	International conf
	2009	Process Integration, Reliability, Availability & Maintainability in the Process Industries (PIRAM) Short Course, Jan 2009.	Secretariat	National
	2008	Polymer Reaction Engineering (PRE) Seminar, 2008	Secretariat	National
	2006	Seminar on Advanced Process Control, March 2006	Secretariat	National
	2006	Process Optimization Short-course,	Secretariat	National
	2004	SOMChE 2004	Technical Committee, Secretariat	National
	2008	Provost Lehigh Visit	Secretariat	UTP
	2015 onwards	CO2 Mission Oriented Research Group	Grant proposals reviewers	UTP
	2016	Publication award Committee, Quality Day	Member	UTP
	2008	Award & Prize Committee, Quality Day	Member	UTP
		SEDEX 13	Judge	UTP
	2015	Undergraduate Research Paper Competition, URPC	Paper Reviewer	UTP
	2010	Global Village on the Move (GVOTM) 2010 in Kuala Lumpur, organized by Lehigh University, Oct 2010.	Participant	International

VII. AWARDS

Name of Award/Prize	Awarding Body	Date conferred
Bronze Medal, ASSMI	Malaysia Technology Expo 2025, The International Expo on Innovation & Technology	2025
Bronze Medal, CVD-Tech	Malaysia Technology Expo 2024, The International Expo on Innovation & Technology	2024
Gold Medal, ValveStic™	Malaysia Technology Expo 2022, The International Expo on Innovation & Technology	2022
Gold Medal, ValveStic™	ITEX 2022	2022
Silver Medal, Innovative Practices in Higher Education Expo, I-PHEX 2015, “Sparkling Creativity and Enhancing Learning of Chemical Engineering Students in UTP via Co-operative Learning”.	Higher Education Leadership Academy (Akept), Ministry of Higher Education Malaysia	August 2015
Diplome une Medaille D’ Argent, Salon International Des inventions, Geneve pour l’ invention ‘ INTEPRID, Technologie pour usines de traitementpour convertir des donnees operatinnelles’ – Silver Medal, 34 th International Exhibition on New Products and Innovations, Geneva, April 2006 for Project entitled ‘INTEPRED: Intelligent Predictor Technology for Process Plants’	34 th International Exhibition on New Products and Innovations, Geneva.	April 2006
Gold medal, at IPTA R&D Expo 2005, 30 Sept-2 Oct 2005 Kuala lumpur for project entitled ‘Inferential Modeling for Process Plants using Mega Variate Data’	IPTA R&D Expo 2005, Kuala Lumpur.	30 Sept-2 Oct 2005.
Gold medal, 16 th International Invention, Innovation, industrial Design & Technology Exhibition 2005 (ITEX 2005) Kuala Lumpur, 19-21 May 2005 for Project entitled ‘ Neural Network based Soft Sensor’	16 th International Invention, Innovation, industrial Design & Technology Exhibition 2005 (ITEX 2005) Kuala Lumpur	19-21 May 2005
Publication Award	Quality Day, UTP	2007
Silver Medal, FYP Award, SEDEX 2016	UTP	Dec 2016
2 Gold stars for STPG-S Qtr 3 Continuous Improvement (CI) In-House Presentation	Total Quality Management, Seagate Penang	May, 2001
2 nd place (Silver) for Engineering Team Project, 27 th Edition of Engineering Design Exhibition (EDX27), UTP, Oct 2008, for Project entitled ‘Alternative Oil-spill Collector’	27 th Edition of Engineering Design Exhibition (EDX27), Universiti Teknologi PETRONAS.	Oct 2008
3 rd place (Bronze) for Chemical Engineering Final Year Process Plant Design, 21 st Edition of Engineering Design Exhibition (EDX21), UTP, Jan 2008, for Project entitled ‘Production of Maleic Anhydride from Butane’	21 st Edition of Engineering Design Exhibition (EDX21), Universiti Teknologi PETRONAS	Jan 2008

3 rd place (Bronze) for Chemical Engineering Final Year Design Project, 18 th Edition of Engineering Design Exhibition (EDX18), UTP, Oct 2006, for Project entitled "Online detection of backlash nonlinearity in control valves"	18 th Edition of Engineering Design Exhibition (EDX18) Universiti Teknologi PETRONAS.	Oct 2006
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