



## CURRICULUM VITAE

### ASSOC. PROF. TS. IR. DR. SHAMSUL IZHAR SIAJAM



Department of Chemical and Environmental Engineering. Faculty of Engineering. Universiti Putra Malaysia. 43400 UPM Serdang. Selangor.

**Tel.** : +603-97694428 / +6019-9878859  
**E-mail** : [shamizhar@upm.edu.my](mailto:shamizhar@upm.edu.my)  
**ORCID** : <https://orcid.org/0000-0002-1207-0538>  
**Scopus** : 24176682700  
**Website** : <https://eng.upm.edu.my/>

#### Academic Qualifications

- Ph.D., Chem. Eng., 2008, Tokyo Univ. Agriculture and Technology, Japan.
- B. Eng., Chem. Eng., 1998, Tokyo Univ. Agriculture and Technology, Japan.
- Adv. Dip., Ind. Chem., 1996, Tokyo Univ. Agriculture and Technology, Japan.

#### Area of Interest

- Fuel Cell Electrocatalyst Development
- Mesoporous Silica: Characterization and Reactivity
- Sub-Critical Water Technology

#### Appointments

Employer	Designation	Department	Start Date	End Date
Universiti Putra Malaysia	Prof Madya	Chemical & Environmental Engineering	2020	Present
Universiti Putra Malaysia	Senior Lecturer	Chemical & Environmental Engineering	2012	Present
Universiti Teknologi Malaysia	Associate Research Fellow	CLEAR	Sept 2018	Sept 2019
Osaka Prefecture University	Post-Doctoral Fellow	Research Organization for the 21st Century	Apr 2010	Aug 2012
Tokyo Univ. Agrc. Technology	Assistant Professor	Bio-application and Systems Engineering	Apr 2009	Mar 2010
Tokyo Univ. Agrc. Technology	Post-Doctoral Fellow	Bio-application and Systems Engineering	Sept 2008	Mar 2009
Polyplastics Asia Pacific Sdn Bhd	Senior Engineer	Production Process Engineer	Apr 1998	Mar 2005

## Professional Qualification/ Membership/ Affiliation

- Institute of Engineers, Malaysia (22082) – Corporate Member
- Board of Engineers, Malaysia (12544) – Member
- Catalyst Society of Japan (106041)
- Chemical Society of Japan (2061604600)
- The Electrochemical Society (338633)
- Society of Chemical Engineers Japan (1111091)

## Publications

### Journals

1. Nor Shazwani Daud, Nordin Sabli, Hiroyuki Yoshida, and Shamsul Izhar, “Wheat Germ Protein Extraction Via Subcritical Water for Water Treatment Process” *Journal of Applied Science and Engineering*, Vol. 28, No 1 (2024), Page 205-213
2. Omar Qistina, Ali Salmiaton, Thomas S.Y. Choong, Shamsul Izhar, Yun Hin Taufiq-Yap, “Characterization of Carbon Nanotubes Coated Monolith Synthesized Via Chemical Vapor Deposition” *Journal of Applied Science and Engineering*, Vol. 28, No 1 (2024), Page 13-23
3. Nordin Sabli, Shamsainon Abu Toat, Hiroyuki Yoshida, Shamsul Izhar, “Hydrolysis of Blended Cotton/Polyester Fabric from Hospital Waste using Subcritical Water” *Sains Malaysiana* 52(1)(2023): 139-151, <http://doi.org/10.17576/jsm-2023-5201-11>
4. N L Rahmah, S M M Kamal, Alifdalino Sulaiman, Farah Saleena Taip, Shamsul Izhar, “Kinetic Study of Total Phenolic Content from Piper betle Linn. Leaves Extract Using Subcritical Water” *Sains Malaysiana* 52(6)(2023): 1737-1747, <http://doi.org/10.17576/jsm-2023-5206-10>
5. NL Rahmah, S M M Kamal, Alifdalino Sulaiman, Farah Saleena Taip, Shamsul Izhar, “Optimization of Phenolic Compounds And Antioxidant Extraction From Piper Betle Linn. Leaves Using Pressurized Hot Water” *Journal of Applied Science and Engineering*, 26 (2023), 2, 175-184
6. Nur Lailatul Rahmah, Siti Mazlina Mustapa Kamal, Alifdalino Sulaiman, Farah Saleena Taip, Shamsul Izhar Siajam, “Subcritical water extraction of total phenolic compounds from Piper betle L. leaves: effect of process conditions and characterization” *Journal of Food Measurement and Characterization* (2023) <https://doi.org/10.1007/s11694-023-02068-3>
7. S. Sinurat, R.S.R.M. Hafriz, S.H. Habib, A. Salmiaton, S. Izhar, M.R.A. Hamid, S. Sobri, N.M. Razali, “Preparation of a single metal catalyst loaded on alumina support to refine waste tire pyrolysis oil (WTPO) via catalytic hydrogenation” *Journal of Analytical and Applied Pyrolysis* 176 (2023) 106236
8. AF Aili Hamzah, MH Hamzah, NI Mazlan, H. Che Man, N.S. Jamali, SI. Siajam, PL Show, “Optimization of subcritical water pre-treatment for biogas enhancement on co-digestion of pineapple waste and cow dung using the response surface methodology” *Waste Management* 150 (2022) 98–109
9. Nur Hidayah Zainan, Razif Harun, SMM Kamal, Shamsul Izhar, MAM Sapardi, YMM Jusoh, “Profile of Amino Acids Production from Microalgae *Nannochloropsis* sp. Biomass using Subcritical Water Technology” *ASEAN Journal of Chemical Engineering* 2022, Vol. 22, No. 1, 178 195
10. Noor Amirah Abdul Halim, Zurina Zainal Abidin, Shamsul Izhar, Chong Gun Hean, Razif Harun “Optimization studies and compositional analysis of subcritical water extraction of essential oil from *Citrus hystrix* DC. Leaves” *The Journal of Supercritical Fluids* 178 (2021) 105384
11. N H Zainan, M A M Sapardi, Bernard Chon Han Ho, Shamsul Izhar, Siti Mazlina Mustapa Kamal, Michael K. Danquah, Razif Harun “Kinetic and thermodynamic characterization of amino acids generation via subcritical water reaction of microalgae *Nannochloropsis* sp. Biomass” *Biomass Conversion and Biorefinery* <https://doi.org/10.1007/s13399-019-00538-7>
12. Mohd Fadhzir Ahmad Kamaruddin, Nordin Sabli, Tuan Amran Tuan Abdullah, Shamsul Izhar, Luqman Chuah Abdullah, Aishah Abdul Jalil and Arshad Ahmad, “Membrane-Based Electrolysis for Hydrogen Production: A Review” *Membranes* 2021, 11, 810. <https://doi.org/10.3390/membranes11110810>

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13. H.M. Yusoff, L K Li, Shamsul Izhar, M S M Said “Simulation of acetone-water explosion in hydrothermal extraction reactor” *Case Studies in Thermal Engineering* 28 (2021) 101631
  14. AFA Hamzah, Muhammad Hazwan Hamzah, Hasfalina Che Man, Nur Syakina Jamali, Shamsul Izhar Siajam, Muhammad Heikal Ismail “Recent Updates on the Conversion of Pineapple Waste (Ananas comosus) to Value-Added Products, Future Perspectives and Challenges”, *Agronomy* 2021, 11, 2221. <https://doi.org/10.3390/agronomy11112221>
  15. ZM. Esfahan, S. Izhar, M H Shah Ismail, Hesam Kamy, Yoshida Hiruyuki, Razif Harun “Synthesis and Swelling Kinetic Study of BSA-based Hydrogel Composite by Subcritical Water Technology” *J. Environ. Treat. Tech.* 2020, Volume 8, Issue 2, Pages: 756-761
  16. N A Haridan, H Yoshida, M A M Salleh, S Izhar, “Carbonization of excess sewage sludge using superheated water vapor to produce fuel” *IOP Conf. Ser.: Mater. Sci. Eng.* 991 (2020) 012068
  17. S. Izhar, H. Yoshida, E. Nishio, Y. Utsumi, N. Kakimori, “Removal and recovery attempt of liquid crystal from waste LCD panels using subcritical water”, *Waste Management* 92 (2019) 15–20
  18. N.A. Muda, H. Yoshida, H. Ishak, M.H.S. Ismail, S. Izhar, “Conversion of Oil Palm Trunk into Bio-Oil Via Treatment with Subcritical Water”, *J. Wood Sci. Tech.* 39, 4 (2019) 255-269
  19. S Thiruvankadam, S Izhar, Y Hiroyuki, R Harun, “One-step microalgal biodiesel production from *Chlorella pyrenoidosa* using subcritical methanol extraction (SCM) technology”, *Biomass and Bioenergy* 120 (2019) 265-272
  20. H Yoshida, S Izhar, E. Nishio, Y. Utsumi, N. Kakimori “Application of Sub-Critical Water for Recovery of Tin and Glass Substrates from LCD Panel E-Waste”, *Detritus* 4 (2018) 98-103.
  21. A.K. Mageed, A.B. Dayang Radiah, A. Salmiaton, S. Izhar, M.A. Razak, “Nitrogen doped graphene-supported trimetallic CuNiRu nanoparticles catalyst for catalytic dehydrogenation of cyclohexanol to cyclohexanone”, *Journal of King Saud University-Science*
  22. S Thiruvankadam, S Izhar, Y Hiroyuki, R Harun “Subcritical Water Extraction of *Chlorella pyrenoidosa*: Optimization through Response Surface Methodology”, *BioMed Research International*, 2018
  23. A.K. Mageed, A.B. Dayang Radiah, A. Salmiaton, S. Izhar, M.A. Razak, H.M. Yusoff, F.M. Yasin, S. Kamarudin, A. Buthainah, “Study the Thermal Stability of Nitrogen Doped Reduced Graphite Oxide Supported Copper Catalyst”, *J. Cluster Sci.* 24 (vol.3) (2018) DOI 10.1007/s10876-018-1382-6
  24. S.M. Zakaria, S.M.M. Kamal, M.R. Harun, R. Omar, S. Izhar, “Subcritical Water Technology for Extraction of Phenolic Compounds from *Chlorella* sp. Microalgae and Assessment on Its Antioxidant Activity”, *Molecules* 2017, 22, 1105; doi:10.3390/molecules22071105.
  25. M. Zazalli, H. Yoshida, M.H.S. Ismail, N. Sabli, S. Izhar, “Recovery of Oil from Waste Palm Kernel Cake by Sub-Critical Water”, *Intl. J. App. Engg. Res.*, Vol. 24 (2017) 14574-14579.
  26. O.B. Chong, S. Izhar, C. Yamada, “Passive Air Sampling of Nitrogen Dioxide Within Serdang Area”, *J. Built Environ. Tech. Engineering*, Vol. 2 (2017) 191-197;
  27. A.K. Mageed, A.B. Dayang Radiah, A. Salmiaton, S. Izhar, M.A. Razak, H.M. Yusoff, F.M. Yasin, S. Kamarudin, A. Buthainah, “Preparation and Characterization of Nitrogen Doped Reduced Graphene Oxide Sheet”, *Intl. J. Appl. Chem.*, Vol. 12, (2016) 104-108.
  28. R.J. Jawad, M.H. Shah Ismail, S.I. Siajam, “Adsorption of Iron Ions from Palm Oil Mill Effluent using Novel Adsorbent of Alginate Mangrove Composite Beads Coated by Chitosan”, *Iranica Journal of Energy and Environment* 7(4): 393-400, 2016
  29. A. Shitu, S. Izhar, T. M. Tahir, “Sub-critical water as a green solvent for production of valuable materials from agricultural waste biomass: A review of recent work”, *Global J. Environ. Sci. Manage.*, 1(3): 255-264, Summer 2015, ISSN 2383–3572
  30. S.A. Awaluddin, S. Izhar, Y. Hiroyuki, M.K. Danquah, R. Harun, “Sub-Critical Water Technology for Enhance Extraction of Bioactive Compound from Microalgae”, *J. Eng. Sci. Tech.*, Special Issue on SOMCHE 2015, July (2016) 63 – 72.
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31. S. A. Awaluddin, S. Thiruvankadam, S. Izhar, Y. Hiroyuki, M.K. Danquah, R. Harun, "Subcritical Water Technology for Enhanced Extraction of Biochemical Compounds from *Chlorella vulgaris*", *BioMed Res. Inter* 2016, 1-10. <http://dx.doi.org/10.1155/2016/5816974>
  32. N.A. Kurnin, M.H.S. Ismail, H. Yoshida, S. Izhar, "Recovery of Palm Oil and Valuable Material from Oil Palm Empty Fruit Bunch by Sub-critical Water", *J. Oleo Science* (Jan 2016).
  33. M.K. Rashed, M.A.M. Salleh, H.A. Abdulbari, M.H.S. Ismail, S. Izhar, "The Effects of Electrode and Catalyst Selection on Microfluidic Fuel Cell Performance", *ChemBioEng Reviews* 09/2015; DOI: 10.1002/cben.201500007.
  34. A. Shitu, S. Izhar, T.M. Tahir, "Sub-critical water as a green solvent for production of valuable materials from agricultural waste biomass: A review of recent work", *Global J. Env. Sci. Management* 07/2015; 1(3):255-264. DOI: 10.7508/gjesm.2015.03.008
  35. S. Thiruvankadam, S. Izhar, H. Yoshida, M.K. Danquah, Razif Harun, "Process application of Subcritical Water Extraction (SWE) for algal bio-products and biofuels production", *Applied Energy* 154 (2015) 815–828.
  36. S.N.A. Abas, M.H.S. Ismail, S. Izhar, M.L. Kamal, "Development of novel adsorbent- mangrovealginate composite bead (MACB) for removal of Pb(II) from aqueous solution", *J. Taiwan Inst. Chem. Engi.* 50, 182–189, (2015).
  37. S.N.A. Abas, M.H.S. Ismail, S. Izhar, M.L. Kamal, "Adsorption of Pb(II) ions by using mangrovealginate composite beads(MACB): Isotherm, Kinetics and Thermodynamics studies", *J. Purity, Util Reaction and Env.*, Vol.4 No.3, 124-131, 2015.
  38. S.N.A. Abas, M.H.S. Ismail, S. Izhar, M.L. Kamal, "Comparative study on adsorption of Pb(II) ions by alginate beads and mangrove-alginate composite beads", *Advanced Materials Research* Vol. 1113 pp 248-254, (2015).
  39. H. Yoshida, S. Izhar, E. Nishio, Y. Utsumi, N. Kakimori, S.F. Asghari, "Recovery of indium from TFT and CF glasses of LCD wastes using NaOH-enhanced sub-critical water", *J. Supercritical Fluids* 104, p.40–48, (2015)
  40. H. Yoshida, S. Izhar, E. Nishio, Y. Utsumi, N. Kakimori, S.F. Asghari, "Recovery of indium from TFT and CF glasses in LCD panel wastes using sub-critical water", *Solar Energy Materials and Solar Cells*, vol. 125, p.14-19, (2014).
  41. S.N.A. Abas, M.H.S. Ismail, M. L. Kamal, S. Izhar, "Adsorption Process of Heavy Metals by Low-Cost Adsorbent: A Review", *World Applied Sciences Journal* 28 (11): 1518-1530, 2013
  42. S. Izhar, M. Nagai, "Oxidation of Methanol using Carburized Molybdenum Catalyst", *The Open Catalysis Journal* 6, 37-40 (2013).
  43. M.H.S. Ismail, S. Dalang, S. Syam, S. Izhar, "A Study on Zeolite Performance in Waste Treating Ponds for Treatment of Palm Oil Mill Effluent", *J. Water Res. Protection* 5, 18-27 (2013).
  44. H. Yoshida, S. Izhar, N. Kakimori, Y. Utsumi, E. Nishio, "Special Edition: Complete recovery of indium, liquid crystal and glass from LCD panel wastes using subcritical water technology", *機能材料 (Function & Material)* 32, p.4-10 (2012).
  45. S. Izhar, S. Uehara, N. Yoshida, Y. Yamamoto, T. Morioka, M. Nagai, "Hydrodenitrogenation of fast pyrolysis bio-oil derived from sewage sludge on NiMo/Al<sub>2</sub>O<sub>3</sub> sulfide catalyst", *Fuel Processing Technology* 101, p.10-15 (2012).
  46. M. Taki, S. Izhar, M. Nagai, "Biomarker discrimination of bio-oil derived from activated sludge and heavy oil from crude oil", *Journal of Japan Petroleum Inst.* 54, p.124 (2011).
  47. T. Ando, S. Izhar, H. Tominaga, M. Nagai, "Preparation and characterization of carbon supported cobalt tungsten nitride as ORR electrocatalyst for PEFC", *Electrochimica Acta* 55, p.2614 (2010).
  48. S. Izhar, M. Yoshida and M. Nagai, "Characterization and performances of cobalt-tungsten and molybdenum-tungsten carbides as anode catalyst", *Electrochim. Acta*, 54, p.1255 (2009).
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49. S. Izhar, and M. Nagai, "Transition metal phosphide catalysts for hydrogen oxidation reaction", *Catalysis Today* 146, p.172 (2009).
50. S. Izhar and M. Nagai, "Study of Co-Mo carbides as anode electrocatalyst for PEFC", *Catalysts & Catalysis*, Vol.50, No.6, p. 565-567 (2008).
51. S. Izhar, M. Nagai, "Cobalt molybdenum carbides as anode electrocatalyst for proton exchange membrane fuel cell", *J. Power Sources*, 182, 52-60 (2008).
52. S. Izhar, S. Otsuka, M. Nagai, "Application of Carbon Supported NiMo Carbided Catalyst to Fuel Cell Anode Electrocatalyst", *J. New Mat. Electr. Sys.* 11, p.15 (2008).
53. S. Izhar, H. Kanesugi, H. Tominaga, M. Nagai, "Cobalt molybdenum carbides: Surface properties and reactivity for methane decomposition", *App. Catal. A* 317, p.82 (2007).
54. M. Nagai, K. Kunieda, S. Izhar, S. Omi, "Preparation of Carbided WO<sub>3</sub>/FSM-16 and Al-FSM-16 and Its Catalytic Activity", *Stud. Surf. Sci. Catal.*, 146, p.733 (2003).

### Books / Monographs

1. Dissertation: "Research and Development of transition metal carbides as electrocatalyst for proton exchange membrane fuel cell (PEMFC)"

### Past Research Projects

Project No	Project Title	Role	Year	Source of Fund	Status
	Preparation of Fuel cell electrocatalyst from solid oxide particles containing titanium with carbon and nitrated catalyst support	Member	2009	Asahi Chemical	Patent (JP 2011-258354A) (2 published)
	Method of recycling liquid crystal display panel	Member	2011	Sharp Corp.	Patent (2011-267611)
	Method of recycling display panel	Member	2011	Sharp Corp.	Patent (2012-043049)
9300425	Membawa Peralatan Makmal Dari Tokyo University of Agriculture and Technology, dan Osaka Prefecture University, Ke Jabatan KKA, Fakulti Kujuruteraan, UPM	Member	2013	RMC (Matching Grant)	Completed (3 Published)
5527144	Sub-Critical Water Technology for The Recovery of Carotenes from Fruit Fibers and Pressed Palm Fiber Residues	Head	2013-2015	MOE (ERGS)	Completed (1 Published)
9433100	Non-Precious metal transition metal carbides and nitrides for methanol	Head	2014-2016	UPM (IPM)	Completed (1 Published)

	oxidation reaction in Direct Methanol Fuel Cell				
5524505	Sub-critical water reaction mechanism and kinetics modelling with heat transfer from oil palm trunks	Head	2014-2017	MOE (FRGS)	Completed (1 Accepted, 2 Submitted)
9491400	Carbonization of Excess Sewage by Using Superheated Water Vapour To Make Fuel	Head	2016-2017	UPM (IPS)	Completed
9525000	Conversion of Palm Kernel Oil Solid Residue into Valuable Materials by Using Subcritical Water	Head	2017-2019	UPM (IPS)	In Progress (Two Publication)
9536400	Production of Valuable Material from Sago Bark using Sub-critical Water treatment	Member	2017-2019	UPM (IPS)	Completed
RDU1703 51	Biofuel from The Microwave Assisted Fluid Catalytic Cracking of Castor 01	Member	2017-2019	UMP (Internal)	Completed
9701300	Value-Added Subcritical Water Hydrolysate from Bovine Serum Albumin at Low Temperature Parameter	Head	2021-2024	UPM (IPS)	On-Going

### Honours and Awards

Name of Awards	Title	Award Authority	Award Type	Year
Academic Awards	Application of Sub-critical water for treatment of LCD Panel Waste	AUN/SEED	Best Paper Award	2013
Non-Academic Awards	Steam Energy Reduction in Monomer Production Plant M.D. Award	Polyplastics Asia Pacific Sdn Bhd	MD Award	2004
Awards of Merit	Anugerah Perkidmatan Cemerlang	FK, UPM	Cert.	2016 2017 2019 2020
Awards of Merit	Anugerah Kecemerlangan Dalam Pengajaran	FK, UPM	Cert.	2016. 2017

Awards of Merit	Pertandingan Inovasi Perkhidmatan Sempena Hari Kualiti dan Inovasi Perkhidmatan (HKIP)	UPM	Cert	2016
Awards of Merit	Projek Pelajar Tahun Akhir “Continuous Subcritical Water Treatment of Palm Oil Mill Effluent (POME)”	FK	Emas	2021
Awards of Merit	Projek Pelajar Tahun Akhir “Carbonization of Empty Fruit Bunch (EF8) 8Y Superheated Steam to Make Activated Carbon”	FK	Emas	2021
Awards of Merit	Pingat Perak HKIP	UPM	Perak	2022

### Language Proficiency

- English (Very Good, 4/5)
- Malay (Excellent, 5/5)
- Japanese (Excellent, 5/5)

**End of Document**