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Lecturer

Faculty of Science and Marine Environment
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QUALIFICATIONS

- Doctor of Philosophy (Chemistry), National University of Malaysia
- Master of Science (Chemistry), National University of Malaysia
- Bachelor of Science (Analytical & Environmental Chemistry), Universiti Malaysia Terengganu

FIELD OF RESEARCH

- Analytical Chemistry – Microanalytical

RESEARCH INTEREST

Development of extraction method (microanalytical) is first strategy for intended purpose. Pattern recognition and statistical tool (chemometric) use to tackle the primary hypothesis. Main research interests explore in the past few years were the abundance, distribution, and fate of emerging contaminant (microplastics and pharmaceutically active compounds).

RESEARCH PROJECTS

- Development of thin film for microextraction of stimulant drugs.
- Development of QuEChERS method for endocrine disrupting chemical residue analysis.
- Development of liquid phase microextraction for Bisphenol A analysis.
- Multivariate and risk analysis of caffeine as chemical tracer in environmental waters.
- Formulating new biopolymers as adsorbent encapsulation membranes in microextraction techniques.
- Development of bar adsorptive for microextraction of statin drugs.
- Development of effervescent tablet-assisted supramolecular solvent use to extract pharmaceutically active compounds.

EXPERT LINKAGES

- National University of Malaysia
- Centre for Water Research and Analysis, National University of Malaysia
- Universiti Sains Malaysia
- Universiti Tunku Abdul Rahman
- National Institute Hydraulic of Malaysia
- Pesticide Action Network Asia Pacific
- ALS Technichem (M) Sdn Bhd
- University of Prince Songkhla, Thailand

PROFFESIONAL MEMBERSHIP

- Malaysian Analytical Science Society (ANALIS)
- Malaysian Institute of Chemistry (IKM)
- Royal Chemistry of Society (UK)
- Malaysian Board of Technologist (MBOT)

GRANTS

Project : Microplastics ingestion by polychaetes at Setiu Wetland: investigation of the ecology relationship, prevalence, and characteristic in polychaete

Position : Co-Researcher

Grant : Ministry of Higher Education
Name

Status : Completed

Amount : -

Project : Assessment of oil palm cultivation impact on water quality: a case study in Setiu coastal wetland system

Position : Co-Researcher

Grant : WWF
Name

Status : Completed

Amount : -

Project : Occurrence and bioaccumulation of endocrine disrupting chemicals (EDCs) in Terengganu rivers as indicator of fisheries and environmental health condition

Position : Co-Researcher

Grant Name : Ministry of Higher Education

Status : Completed

Amount : -

Project : Formulating new biopolymers as adsorbent encapsulation membranes in microextraction techniques

Position : Co-Researcher

Grant Name : Ministry of Higher Education

Status : Active

Amount : -

Project : Small hands change the world: raising awareness on plastic pollution

Position : Principle Investigator

Grant Name : Universiti Malaysia Terengganu

Status : Complete

Amount : -

Project : A simple and rapid magnetic effervescent tablet-assisted ionic liquid use to extract pharmaceutically active compounds from environmental waters with the aid of experimental design

Position : Principle Investigator

Grant Name : Ministry of Higher Education

Status : Active

Amount : -

Project : Ecotoxicology studies on industrial effluent

Position : Co-Researcher

Grant Name : Kaneka (M) Sdn Bhd

Status : Complete

Amount : -

Project : Occurrence, identification, and removal of microplastic particles from domestic laundry wastewater using activated carbon and membrane technology

Position : Co-Researcher

Grant Name : National Institute Hydraulic of Malaysia

Status : Complete

Amount : -

Project : Quantifying microplastics, provenance and fate in the Sungai Pulai Estuary, Johor

Position : Co-Researcher

Grant Name : Ministry of Higher Education

Status : Active

Amount : -

Project : Investigating microplastic polymeric-additives using a designated pyrolysis thermal method coupled with gas chromatography-mass spectroscopy for risk assessment evaluation

Position : Co-Researcher

Grant Name : Ministry of Higher Education

Status : Active

Amount : -

AWARDS

- 2 Gold (Research and Innovation Week 2020)
- 1 Silver (Research and Innovation Week 2020)
- 2 Bronze (Research and Innovation Week 2020)
- 1 Gold (Research and Innovation Week 2019)
- 1 Bronze (Research and Innovation Week 2019)
- 1 Silver (Research and Innovation Week 2018)

PUBLICATIONS

1. Tazulazhar, N., Loh, S. H., Ariffin, M.M., Khalik, W.M.A.W. M. Optimization of effervescent tablet-assisted dispersive liquid-liquid microextraction with central composite design for preconcentration of stimulant drug (2021). Sains Malaysiana, 50, pp. 109-121.

2. Sabari, S. N. U. M., Loh, S. H., Kamaruzzaman, S., Yahaya, N., Khalik, W. M. A. M. Micro-solid phase extraction of polycyclic aromatic hydrocarbons in water using either C₁₈ or molecularly imprinted polymer membranes: Analytical merits and limitations (2021). *Sains Malaysiana*, 50, pp. 122-133.
3. Amelia, T.S.M., Khalik, W.M.A.W.M., Ong, M.C., Shao, Y. T., Pan, H-J., Bhubalan, K. Marine microplastics as vectors of major ocean pollutants and its hazards to the marine ecosystem and humans (2021). *Progress Earth Planetary Science*, 8, pp. 12.
4. Ibrahim, Y. S., Tuan Anuar, S., Azmi, A. A., Wan Mohd Khalik, W. M. A., Lehata, S., Hamzah, S. R., Ismail, D., Ma, Z. F., Dzulkarnaen, A., Zakaria, Z., Mustaffa, N., Tuan Sharif, S. E., Lee, Y.Y. Detection of microplastics in human colectomy specimens (2021). *JGH Open*, 5, pp. 116-121.
5. Shaari, H. B., Nasir, Q. M., Mohamed, C. A. R., Yusoff, A. H., Khalik, W. M. A. W. M., Naim, E., ... & Anthony, E. J. Sedimentation and sediment geochemistry in a tropical mangrove channel meander, Sungai Kerteh, Peninsular Malaysia (2020). *Progress in Earth and Planetary Science*, 7, pp. 46.
6. Yang Hwi, T., Shuaib Ibrahim, Y., Wan Mohd Khalik, W.M.A. Microplastic Abundance, Distribution, and Composition in Sungai Dungun, Terengganu, Malaysia (2020). *Sains Malaysiana*, 49, pp. 1479-1490.
7. Mohd, N.K., Azmi, A.A., Khalik, W.M.A.W.M. Central composite design approach for the optimisation of catalytic degradation of methyl orange dye using silica-silver core-shell nanoparticles (2020). *Research Journal of Chemistry and Environment*, 24, pp. 104-111.
8. Fadzil, F.N.I.M., Loh, S. H., Ariffin, M.M., Khalik, W.M.A.W. M. Development of effervescent-assisted liquid phase microextraction using 1-dodecanol for determination of ketoprofen drug in water (2020). *ASM Science Journal*, 13, pp. 1-8.
9. Khalik, W.M.A.W. M, Loh, S.H., Albani, H., Alias, S.A.S., Rahman, K.U. Caffeine residue in Terengganu river basins in Malaysia: Distribution and risk assessment (2020). *Nature Environment and Pollution Technology* 19 (2), pp. 711-719.
10. Hassan, N.H, Khalik, W.M.A.W.M., Loh, S.H. Headspace membrane-protected liquid phase microextraction of phenanthrene in beverage and water (2020). *Malaysian Journal of Analytical Sciences*, 24 (3), pp. 373-381.
11. Loh, T.Y., Khalik, W.M.A.W.M., Loh, S.H. Simple extraction of bisphenol a in beverages and water by membrane-protected liquid phase microextraction (2020). *Sains Malaysiana*, 49 (1), pp. 49-55.
12. Baharom, M.Z., Yusoff, N.M., Khalik, W.M.A.W.M., Ariffin, M.M., Karim, J., Sharifuddin. Extraction of 4-octylphenol and 4-nonylphenol in river water using solid phase extraction and high-performance liquid chromatography (2020). *Malaysian Journal of Analytical Sciences*, 24 (1), pp. 146-158.
13. Mohd Khalik, W.M.A.W., Azmi, W.A. Editorial: Sustainable development through science, technology, and innovation (2020). *Journal of Sustainability Science and Management*, 15, pp. 1.

14. Mazlan, A.F., Loh, S.H., Khalik, W.M.A.W.M. Optimization of C₁₈-Cellulose Triacetate Thin Film for Analysis of Caffeine Residue in Water (2019). *Asian Journal of Chemistry*, 31(9), pp. 2101-2106.
15. Aow Yong, L.M., Khalik, W.M.A.W.M., Yusoff, F., Loh, S.H. μ -SPE of Bisphenol A in Beverage and Water using Multi-walled Carbon Nanotubes-Reinforced Agarose Film (2019). *Research Journal of Chemistry and Environment*, 23 (5), pp. 10-15.
16. Zulkipli, N.A., Loh, S.H., Khalik, W.M.A.W.M. C₁₈-CTA composite thin film usage as an extraction sorbent for caffeine residue in water analysis (2019). *Research Journal of Chemistry and Environment*, 23 (1), pp. 44-50.
17. Mohd, N.K, Azmi, A.A., Khalik, W.M.A.W.M. Synthesis and characterization of silica-silver core-shell nanoparticles (2019). *Malaysian Journal of Analytical Sciences*, 23 (2), pp 290-299.
18. Shaari, H., Abdul Razak, N.S., Mohd Khalik, W.M.A.W., Shazili, N.A.M., Bidai, J. Spatial distribution of heavy metals in tropical coastal sediment of the Northern Malacca Strait, Malaysia (2018). *Nature Environment and Pollution Technology*, 17 (4), pp. 1115-1123.
19. Osman, B.E., Khalik, W.M.A.W.M. Data on organochlorine concentration levels in soil of lowland paddy field, Kelantan, Malaysia (2018). *Data in Brief*, 20, pp. 999-1003.
20. Khalik, W.M.A.W.M., Ibrahim, Y.S., Tuan Anuar, S., Govindasamy, S., Baharuddin, N.F. Microplastics analysis in Malaysian marine waters: A field study of Kuala Nerus and Kuantan (2018). *Marine Pollution Bulletin*, 135, pp. 451-457.
21. Jumaah, M.A., Othman, M.R., Salimon, J., Khalaf, B., Khalik, W.M.A.W.M. Optimization of selected charcoal powder composite electrode for electrochemical treatment of landfill leachate (2018). *Malaysian Journal of Analytical Sciences*, 22 (2), pp. 249-257.
22. Nabhan, K.J., Khalik, W.M.A.W.M., Abdullah, M.P., Othman, M.R., Isahak, A., Zulkepli, S.A. Assessment of multiresidue pesticides in agricultural soils from ledang, Malaysia and related potential health risks (2018). *Nature Environment and Pollution Technology*, 17 (1), pp. 99-106.
23. Abidin, N.A.Z., Abdullah, M.P., Al-Qaim, F.F., Khalik, W.M.A.W.M., Othman, M.R. Assessing stir bar sorptive extraction for triazine herbicides extraction by using a central composite design approach (2018). *Malaysian Journal of Analytical Sciences*, 22 (1), pp. 45-53.
24. Hassan, A., Abdullah, M.P., Khalik, W.M.A.W.M. Removal of residual oil from palm oil refinery factory effluent by chitosan and its derivatives (2018). *Asian Journal of Chemistry*, 30 (1), pp. 76-80.
25. Abdullah, F., Shaari, H., Satyanarayana, B., Wan Mohd Khalik, W.M.A., Mohd. Jaafar, M.Z. Macro, micro, and non-essential elements in different parts of *Rhizophora apiculata* (2018). *Malaysian Journal of Analytical Sciences*, 22 (4), pp. 570-578.
26. Jumaah, M.A., Othman, M.R., Yusop, M.R., Salimon, J., Khalaf, B., Khalik, W.M.A.W.M. Charcoal base metallic composite electrode for wastewater

- treatment (2017). *Malaysian Journal of Analytical Sciences*, 21 (6), pp. 1432-1437.
27. Ibrahim, Y.S., Rathnam, R., Anuar, S.T., Khalik, W.M.A.W.M. Isolation and characterisation of microplastic abundance in Lates calcarifer from setiu wetlands, Malaysia (2017). *Malaysian Journal of Analytical Sciences*, 21 (5), pp. 1054-1064.
 28. Farina, Y., Abdullah, M.P., Bibi, N., Khalik, W.M.A.W.M. Determination of pesticide residues in leafy vegetables at parts per billion levels by a chemometric study using GC-ECD in Cameron Highlands, Malaysia (2017). *Food Chemistry*, 224, pp. 186-192.
 29. Al-Qaim, F.F., Jusof, S.H., Abdullah, M.P., Mussa, Z.H., Tahrim, N.A., Khalik, W.M.A.W.M., Othman, M.R. Determination of caffeine in surface water using solid phase extraction and high performance liquid chromatography (2017). *Malaysian Journal of Analytical Sciences*, 21 (1), pp. 95-104.
 30. Abdullah, M.P., Mohd Khalik, W.M.A.W., Othman, M.R. Development of extraction procedure for determination of mercury species using SPME-assisted dispersive derivative agent (2016) *AIP Conference Proceedings*, 1784, art. no. 030003.
 31. Al-Qaim, F.F., Abdullah, Md.P., Latip, J., Khalik, W.M.A.W.M., Tahrim, N.A., Abidin, N.A.Z., Othman, M.R. Detection of gliclazide in aqueous samples using liquid chromatography/time-of-flight/mass spectrometry (2016). *Sains Malaysiana*, 45 (5), pp. 803-810.
 32. Zulkepli, S.A., Abdullah, M.P., Khalik, W.M.A.W.M. Removal of malachite green dye from aqueous solution using multi-walled carbon nanotubes: An application of experimental design (2016). *Malaysian Journal of Analytical Sciences*, 20 (2), pp. 258-271.
 33. Farina, Y., Abdullah, M.P., Bibi, N., Khalik, W.M.A.W.M. Pesticides residues in agricultural soils and its health assessment for humans in cameron highlands, Malaysia (2016). *Malaysian Journal of Analytical Sciences*, 20 (6), pp. 1346-1358.
 34. Khalik, W.M.A.W.M., Abdullah, M.P., Baharudin, F.K., Zulkepli, S.A. Optimization of extraction procedure for determination of caffeine residue in water (2016). *Journal of Materials and Environmental Science*, 7 (3), pp. 720-728.
 35. Sabri, N.A.S.M., Abdullah, M.P., Mat, S., Elfithri, R., Khalik, W.M.A.W.M. Evaluation of hydrochemistry variation in water quality of Cempaka Lake, Malaysia using multivariate statistical analysis (2016). *Journal of Materials and Environmental Science*, 7 (12), pp. 4403-4410.
 36. Abdullah, M.P., Asri, K., Ramli, M.S., Wahid, M.S., Khalik, W.M.A.W.M. Development of solid phase micro extraction technique for determination of triazines in water samples using experimental design (2016). *Asian Journal of Chemistry*, 28 (3), pp. 562-566.
 37. Haque, M.Z., Rahim, S.A., Abdullah, M.P., Embi, A.F., Elfithri, R., Lihan, T., Mohd Khalik, W.M.A.W., Khan, M.F., Mokhtar, M. Multivariate chemometric approach on the surface water quality in langat upstream tributaries, peninsular Malaysia (2016) *Journal of Environmental Science and Technology*, 9 (3), pp. 277-284.
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- application of experimental design (2015). *Asian Journal of Chemistry*, 27 (10), pp. 3803-3808.
39. Al-Qaim, F.F., Abdullah, M.P., Othman, M.R., Mussa, Z.H., Zakaria, Z., Latip, J., Afiq, W.M. Investigation of the environmental transport of human pharmaceuticals to surface water: A case study of persistence of pharmaceuticals in effluent of sewage treatment plants and hospitals in Malaysia (2015). *Journal of the Brazilian Chemical Society*, 26 (6), pp. 1124-1135.
 40. Khalik, W.M.A.W.M., Abdullah, M.P., Othman, M.R. Comparative study of SPME method performance on the analysis of mercury species in water: Integrated on-fiber vs in-matrix derivatization (2015). *International Journal of Chemical Sciences*, 13 (3), pp. 1085-1092.
 41. Abdullah, M.P., Saadati, N., Khalik, W.M.A.W.M., Zakaria, Z. Patern recognition of the presence and distribution of organochlorine pesticides in sediment of cameron highlands, Malaysia (2015). *Malaysian Journal of Analytical Sciences*, 19 (4), pp. 692-706.
 42. Abdullah, P., Abdullah, S.M.S., Jaafar, O., Mahmud, M., Khalik, W.M.A.W.M. Characterization of spatial and temporal variability in hydrochemistry of Johor Straits, Malaysia (2015). *Marine Pollution Bulletin*, 101 (1), pp. 378-385.
 43. Al-Qaim, F.F., Abdullah, M.P., Othman, M.R., Latip, J., Afiq, W. A validation method development for simultaneous LC-ESI-TOF/MS analysis of some pharmaceuticals in tangkas river-Malaysia (2014). *Journal of the Brazilian Chemical Society*, 25 (2), pp. 271-281.
 44. Khalik, W.M.A.W.M., Abdullah, M.P., Al-Qaim, F.F., Yasin, S.Y.M. Adsorption study of mercury species from aqueous solution using thiocarbamoyl chitosan (2014). *International Journal of Chemical Sciences*, 12 (4), pp. 1095-1108.
 45. Al-Qaim, F.F., Abdullah, M.P., Othman, M.R., Khalik, W.M.A.W.M. Development and validation of HPLC analytical assay method for mefenamic acid tablet (ponstan) (2014). *International Journal of Chemical Sciences*, 12 (1), pp. 62-72.
 46. Al-Qaim, F.F., Abdullah, M.P., Othman, M.R., Latip, J., Afiq, W.M. Development of analytical method for detection of some pharmaceuticals in surface water (2013). *Tropical Journal of Pharmaceutical Research*, 12 (4), pp. 609-616.
 47. Khalik, W.M.A.W.M., Abdullah, M.P., Padli, N., Amerudin, N.A. Assessment on nutrient status in water and sediment quality of Bertam River, Cameron Highlands (2013). *International Journal of Chemical Sciences*, 11 (2), pp. 709-720.
 48. Khalik, W.M.A.W.M., Abdullah, M.P., Amerudin, N.A., Padli, N. Physicochemical analysis on water quality status of Bertam River in Cameron Highlands, Malaysia (2013). *Journal of Materials and Environmental Science*, 4 (4), pp. 488-495.
 49. Wan Mohd Khalik, W.M.A., Pauzi Abdullah, M., Abdullah Sani, N.A. Preliminary studies on sediment characteristics and metals contaminants of temenggor lake Malaysia (2013). *Journal of Sustainability Science and Management*, 8 (1), pp. 80-86.
 50. Wan Mohd Khalik, W.M.A., Abdullah, M.P. Seasonal influence on water quality status of Temenggor Lake, Perak (2012). *Malaysian Journal of Analytical Sciences*, 16 (2), pp. 163-171.

SUPERVISION

Master Degree

- Thesis Title : Formulating and investigating magnetic effervescent tablets containing ionic liquid use as micro-scale extraction tool for multi-drugs analysis
- Student Name : Sarvieshwhary A/P Rajendran
- Role : Full time student
- Status : Ongoing
-
- Thesis Title : Occurrence and bioaccumulation of endocrine disrupting chemicals (EDCs) in Terengganu rivers as indicator of fisheries and environmental health condition
- Student Name : Mohd Zahid Baharom
- Role : Full time student
- Status : Ongoing
-
- Thesis Title : Characterization of microplastics heterogeneity in Asian marine waters using multivariate analysis
- Student Name : Wan Nor Amirah Wan Yaacob
- Role : Full time student
- Status : Complete
-
- Thesis Title : Formulation new biopolymers as adsorbent encapsulation membranes in micro-solid phase extraction technique
- Student Name : Nurul Aryani Zulkipli
- Role : Full time student
- Status : Ongoing
-
- Thesis Title : Synthesis and characterization of silica-silver core-shell nanoparticles and its potential in catalytic degradation of methyl orange dye
- Student Name : Nur Kamilah Mohd
- Role : Full time student
- Status : Ongoing

COURSE TAUGHT

- Introduction to Environmental Analysis (KIM4702)
- Instrumental Analytical Chemistry (KIM3405)
- Basic Analytical Chemistry (KIM3400)
- Environmental Chemistry: Special Topics (KIM4703)
- Practical Analytical Chemistry (KIM3402)
- Environmental Monitoring and Analysis (FAS6141)

LINKS

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