

Curriculum Vitae

Personal information

First name /Surname: Patrick Ssebugere
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Date of birth: 29.08.1980
Nationality: Ugandan

Biography

Patrick Ssebugere is a Senior Lecturer at the Department of Chemistry, Makerere University. His research interests cover environmental chemistry and toxicology, development and validation of analytical techniques, water and wastewater treatment, water resources management, hydrological modelling, solid waste management, environmental impact assessment, food safety and risk assessment, forensic chemistry, and climate change.

Education/Academic training

1. Doctor of Science (Technology), Lappeenranta University of Technology, Finland. April 2011 – April 2015.
2. Master of Science (Chemistry), Makerere University, Uganda. August 2005 – January 2009.
3. Bachelor of Science (Chemistry), Makerere University. August 2000 – March 2004.

Professional appointments

1. November 2021 – To date: Senior Lecturer, Makerere University
2. July 2016 – Oct 2021: Lecturer, Makerere University
3. April 2009 – February 2016: Assistant Lecturer, Makerere University
4. February 2008 – June 2011: Part Time Lecturer, Kyambogo University
5. September 2003 – April 2009: Teacher, St. M. Kalemba Senior Secondary School

Awards and honors

1. January 2024: Makerere University Vice Chancellor's Research Excellence Award 2024.
2. January 2022 – December 2022: Georg Forster Fellowship for Senior Researchers at Helmholtz Centre for Environmental Research – UFZ in Leipzig, Germany, supported by the Alexander von Humboldt Foundation.
3. September – October 2021: Poster Prize Winner at the 2nd Commonwealth Chemistry Posters – Building Networks to Address the Goals' virtual poster event. Awarded a certificate and cash prize in the Water and Environmental Chemistry theme.

4. January 2019 – April 2019: Postdoctoral Research Fellowship at Helmholtz Zentrum München, German Research Center for Environmental Health in Germany, supported by The World Academy of Sciences (TWAS) and Deutsche Forschungsgemeinschaft (DFG).
5. June 2014 – September 2014: Doctoral Research Fellowship at Helmholtz Zentrum München, German Research Center for Environmental Health in Germany, supported by the Organisation for the Prohibition of Chemical Weapons (OPCW).
6. April 2013 – March 2014: Doctoral Research Fellowship, State Key Laboratory of Environmental Chemistry and Ecotoxicology, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences (CAS) in China, supported by TWAS-CAS.
7. April 2011 – September 2011: Doctoral Research Fellowship at Helmholtz Zentrum München, German Research Center for Environmental Health in Germany, supported by the German Academic Exchange Service (DAAD).
8. April 2011 – March 2014: Doctoral Scholarship at the Department of Chemistry, Makerere University in Uganda, supported by DAAD and Carnegie Corporation of New York.
9. August 2005 – July 2007: MSc Scholarship at the Department of Chemistry, Makerere University in Uganda, supported by DAAD and International Programme in the Chemical Sciences (IPICS).

Funded research grants

(a) On-going projects

1. 2023 – 2027, “Capacity building in Gas Chromatography and Food Security in East Africa”, ICM Erasmus plus grant (Project Coordinator).
2. 2022 – 2024, “Environmental Chemistry for Sustainable Development”, APPEAR Academic Partnership, € 373,050.15, Project 249 (Co-Investigator).

(b) Completed projects

1. 2022-2023, “Biomethane and Biofertilizer Production from Biomass-Matooke Peels for Sustainable Energy and Agricultural Applications”, Makerere University Research and Innovation Fund, UGX 74,791,000/=, Grant number: RIF/080/22 (Principal Investigator).
2. 2020 – 2023, “Establishment of a Biomarker research facility to first track the development of COVID19 novel diagnostics and treatment alternatives in Uganda”, Presidential Scientific Initiative on Epidemics (PRESIDE), UGX 2,994,415,000/= (Co-Investigator).
3. 2022 – 2023, “Capacity building in Gas Chromatography and Food Security in Uganda”, ICM Erasmus plus grant, Grant number SK BRATISL01 (Project Coordinator).
4. 2020 – 2023, “Exposure pathways to per- and polyfluoroalkyl substances and thyroid hormone function in breast-feeding mothers and their infants in Uganda”, The World Academy of Sciences (TWAS) and Swedish International Development Cooperation Agency (SIDA) Research Grants Programme, USD 36,079, Grant number 20-267 RG/CHE/AF/AC_G (Principal Investigator).

5. 2021 – 2022, “Watershed land-use footprint on Lake Victoria sediments: Lake-wide chemical contaminant characterization and stakeholder engagement towards a sustainable pollution-control framework for Ugandan lakes”, Makerere University Research and Innovation Fund, UGX 122,633,200/=, Grant number: MAKRIF/CH/01/21 (Co-Investigator).
6. 2021-2022, “Capacity of Moringa oleifera and Eichhornia crassipes in removal of Endocrine Disrupting Chemicals from wastewater: Towards improved water quality and wastewater management”, Makerere University Research and Innovation Fund, UGX 72,678,800/=, Reference number: MAKRIF/CH/02/21 (Principal Investigator).
7. 2019 – 2020, “Mitigation of Hazardous Effects of the Petroleum Industry and other Chemical Pollutants on the Aquatic Environment in Uganda”, Makerere Research and Innovation Fund, UGX 66,696,000/= (Co-Investigator).
8. 2017 – 2019, “Persistent organic pollutants in breast milk, blood and placental tissues for mothers living in the urban and rural areas of Uganda”, Carnegie Corporation of New York, USD 45,000, Grant number G-16-54068 (Principal Investigator).
9. 2016 – 2018, “Persistent organic pollutants and incidences of obesity in Uganda”, Swedish International Development Cooperation Agency, USD 25,000, Grant number 51180060 (Principal Investigator).

List of publications

A) Books/Dissertations

1. Ssebugere, P. (2015): Persistent organic pollutants in sediments and fish from Lake Victoria, Uganda, Doctoral thesis, Lappeenranta University of Technology, Finland, 155 pp. ISBN 978-952-265-684-1.
2. Ssebugere, P. (2009): Determination of persistent organic pollutant pesticides in soil and fish from Kanungu district, Uganda, MSc dissertation, Makerere University, Uganda, 82 pp.

B) Book Chapters

1. Shikuku, V. O., Ngeno, E.C., Njewa, J.B, & **Ssebugere, P.** (2022). Pharmaceutical and personal care products (PPCPs) and per-and polyfluoroalkyl substances (PFAS) in East African water resources: progress, challenges, and future. *Physical Sciences Reviews*.
2. Shikuku, V. O., Achieng, O. G., & **Ssebugere, P.** (2022): Towards Sustainable Use of Algae as Adsorbents for Wastewater Treatment. In *Handbook of Research on Algae as a Sustainable Solution for Food, Energy, and the Environment* (pp. 547-561). IGI Global.
3. Nyairo, W. N., Ngeno, E., Shikuku, V. O., & **Ssebugere, P.** (2021): Application of Metal-Organic Framework Adsorbents for Water Defluoridation. In *Emerging Applications and Implementations of Metal-Organic Frameworks* (pp. 74-91). IGI Global.

C) Articles in peer reviewed journals

1. Manda, T., Omwoma, S., Barasa, O. G., Pembere M. A., Sifuna, D., Ochilo, L., Lagat, S., Ngeno, E., **Ssebugere, P.**, Nagawa, B. C., Kyarimpa, C. (2024): Sorption

- Mechanisms and Enhancement of Selected Organochlorine Pollutants in Water on Zeolites. *Journal of Chemistry* **2024**, 1-19.
2. Kato, D.C., Nsubuga, J., Niyonzima, N., Kitibwa, A., Matovu, E., Othieno, E., **Ssebugere, P.**, Tumwine, A. A., Namayanja, M. (2023): Immunological and biochemical biomarker alterations among SARS-COV-2 patients with varying disease phenotypes in Uganda. *BMC Infectious Diseases* **23**, 857.
 3. Ngeno, E., Ongulu, R., Orata, F., Matovu, H., Shikuku, V., Onchiri, R., Mayaka, A., Majanga, E., Getenga, Z., Gichumbi, J., **Ssebugere, P.** (2023): Endocrine disrupting chemicals in wastewater treatment plants in Kenya, East Africa: Concentrations, removal efficiency, mass loading rates and ecological impacts. *Environmental Research* **237**, Part 2, 117076.
 4. Omara, T., Nagawa, B. C., Kyarimpa, C., Böhmendorfer, S., Rosenau, T., Lugasi, O. S., Matovu, H., Odongo, S., & **Ssebugere, P.** (2023): Lacustrine Cyanobacteria, Algal Blooms and Cyanotoxins in East Africa: Implications for Human and Ecological Health Protection. *Phycology* **3**(1), 147-167.
 5. Kyarimpa, C., Nagawa, B.C., Omara, T., Odongo, S., **Ssebugere, P.**, Lugasi, O.S. Ivan Gumula, I. (2023): Medicinal Plants Used in the Management of Sexual Dysfunction, Infertility and Improving Virility in the East African Community: A Systematic Review. *Evidence-Based Complementary and Alternative Medicine* **2023**, 1-28.
 6. Ngeno, E. C., Mbuci, K. E., Necibi, M. C., Shikuku, V. O., Olisah, C., Ongulu, R., Matovu, H., **Ssebugere, P.**, Abushaban, A., & Sillanpää, M. (2022): Sustainable re-utilization of waste materials as adsorbents for water and wastewater treatment in Africa: recent studies, research gaps, and way forward for emerging economies. *Environmental Advances* **9**, 100282.
 7. Ssepuya, F., Odongo, S., Benjamin A. Bandowe, B. A. M., Abayi, J. J. M., Olisah, C., Matovu, H., Mubiru, E., Sillanpää, M., Karume, I., Kato, C. D., Shikuku, V. O., & **Ssebugere, P.** (2022): Polycyclic aromatic hydrocarbons in breast milk of nursing mothers: Correlates with household fuel and cooking methods used in Uganda, East Africa. *Science of the Total Environment* **842**,156892.
 8. Abayi, J. J. M., Gore, C. T., Nagawa, C., Bandowe, B. A. M., Matovu, H., Mubiru, E., Ngeno, E. C., Odongo, S., Sillanpää, M., & **Ssebugere, P.** (2021): Polycyclic aromatic hydrocarbons in sediments and fish species from the White Nile, East Africa: Bioaccumulation potential, source apportionment, ecological and health risk assessment. *Environmental Pollution* **278**, 116855.
 9. Mukiiibi, S. B., Nyanzi, S. A., Kwetegyeka, J., Olisah, C., Taiwo A. M., Mubiru, E., Tebandeke, E., Matovu, H., Odongo, S., Abayi, J. J. M., Ngeno, C. E., Sillanpää, M., & **Ssebugere, P.** (2021): Organochlorine pesticide residues in Uganda's honey as a bioindicator of environmental contamination and reproductive health implications to consumers. *Ecotoxicology and Environmental Safety* **214**, 112094.
 10. Matovu, H., Li, Z-M., Henkelmann, B., Bernhöft, S., De Angelis, M., Schramm, K-W., Sillanpää, M., Kato, C. D., & **Ssebugere, P.** (2021): Multiple persistent organic

- pollutants in mothers' breast milk: Implications for infant dietary exposure and maternal thyroid hormone homeostasis in Uganda, East Africa. *Science of The Total Environment* **770**, 145262.
11. Amusa, C., Rothman, J., Odongo, S., Matovu, H., **Ssebugere, P.**, Baranga, D., & Sillanpää, M. (2021): The endangered African Great Ape: Pesticide residues in soil and plants consumed by Mountain Gorillas (*Gorilla beringei*) in Bwindi Impenetrable National Park, East Africa. *Science of The Total Environment* **758**, 143692.
 12. **Ssebugere, P.**, Sillanpää, M., Matovu, H., Wang, Z., Schramm, K.-W., Omwoma, S., Wanasolo, W., Ngeno, C. E., & Odongo, S. (2020): Environmental levels and human body burdens of per- and polyfluoroalkyl substances in Africa: A critical review. *Science of The Total Environment* **739**, 139913.
 13. Matovu, H., **Ssebugere, P.**, & Sillanpää, M. (2020): Prenatal exposure levels of polybrominated diphenyl ethers in mother-infant pairs and their transplacental transfer characteristics in Uganda (East Africa). *Environmental Pollution* **258**, 113723.
 14. Omwoma, S., Mbithi, B. M., Pandelova, M., **Ssebugere, P.**, Lalah, J. O., Wang, Y., Bi, Y., Henkelmann, B., & Schramm, K-W. (2020): Corrigendum to "Comparative exposomics of persistent organic pollutants (PCBs, OCPs, MCCPs and SCCPs) and polycyclic aromatic hydrocarbons (PAHs) in Lake Victoria (Africa) and Three Gorges Reservoir (China)" [*Sci. Total Environ.* 695, (2019) 133789]. *Science of The Total Environment* **699**, 134820.
 15. Omwoma, S., Mbithi, B. M., Pandelova, M., **Ssebugere, P.**, Lalah, J. O., Wang, Y., Bi, Y., Henkelmann, B., & Schramm, K-W. (2019): Comparative exposomics of persistent organic pollutants (PCBs, OCPs, MCCPs and SCCPs) and polycyclic aromatic hydrocarbons (PAHs) in Lake Victoria (Africa) and Three Georges Reservoir (China). *Science of The Total Environment* **695**, 133789.
 16. Matovu, H., Sillanpää, M., & **Ssebugere, P.** (2019): Polybrominated diphenyl ethers in mothers' breast milk and associated health risk to nursing infants in Uganda. *Science of The Total Environment* **692**, 1106-1115.
 17. **Ssebugere, P.**, Sillanpää, M., Matovu, H., & Mubiru, E. (2019): Human and environmental exposure to PCDD/Fs and dioxin-like PCBs in Africa: A review. *Chemosphere* **223**, 483-493.
 18. Kerebba, N., **Ssebugere, P.**, Kwetegyeka, J., Arinaitwe, K., & Wasswa, J. (2017): Concentrations and sources apportionment of polycyclic aromatic hydrocarbons in sediments from the Uganda side of Lake Victoria. *Environmental Science: Processes & Impacts* **19**, 570-577.
 19. Zhu, C., Wang, P., Li, Y., Chen, Z., Li, H., **Ssebugere, P.**, Zhang, Q., & Jiang, G. (2017): Trophic transfer of hexabromocyclododecane in the terrestrial and aquatic food webs from an e-waste dismantling region in East China. *Environmental Science: Processes & Impacts* **19**, 154-160.
 20. Zhu, C., Wang, P., Li, Y., Chen, Z., Li, W., **Ssebugere, P.**, Zhang, Q., & Jiang, G. (2015): Bioconcentration and trophic transfer of polychlorinated biphenyls and polychlorinated dibenzo-*p*-dioxins and dibenzofurans in aquatic animals from an e-waste dismantling area in East China. *Environmental Science: Processes & Impacts* **17**, 693 - 699.

21. Zhu, C., Li, Y., Wang, P., Chen, Z., Ren, D., **Ssebugere, P.**; Zhang, Q., & Jiang, G. (2015): Polychlorinated biphenyls (PCBs) and polybrominated biphenyl ethers (PBDEs) in environmental samples from Ny-Ålesund and London Island, Svalbard, the Arctic. *Chemosphere* **126**, 40-46.
22. **Ssebugere, P.**, Sillanpää, M., Kiremire, B. T., Kasozi, G.N., Wang, P., Sojinu, S. O., Otieno, P.O., Zhu, N.; Zhu, C., Zhang, H., Shang, H., Ren, D., Li, Y., Zhang, Q., & Jiang, G. (2014): Polychlorinated biphenyls and hexachlorocyclohexanes in sediments and fish species from the Napoleon Gulf of Lake Victoria, Uganda. *Science of The Total Environment* **481**, 55-60.
23. **Ssebugere, P.**, Sillanpää, M., Wang, P., Li, Y., Kiremire, B. T., Kasozi, G. N., Zhu, C., Ren, D., Zhu, N., Zhang, H., Shang, H., Zhang, Q., & Jiang, G. (2014): Polychlorinated biphenyls in sediments and fish species from the Murchison Bay of Lake Victoria, Uganda. *Science of The Total Environment* **482-483**, 349-357.
24. **Ssebugere, P.**, Sillanpää, M., Wang, P., Li, Y., Wang, Y., Kiremire, B. T., Kasozi, G.N., Zhu, C., Ren, D., Shang, H., Zhang, Q., & Jiang, G. (2014): Polychlorinated dibenzo-*p*-dioxins, polychlorinated dibenzofurans and polybrominated diphenyl ethers in sediments and fish species from the Murchison Bay of Lake Victoria, Uganda. *Science of The Total Environment* **500-501**, 1-10.
25. **Ssebugere, P.**, Kiremire, B. T., Henkelmann, B., Bernhöft, S., Wasswa, J., Kasozi, G. N., & Schramm, K.-W. (2013): PCDD/Fs and dioxin-like PCBs in surface sediments from Lake Victoria, East Africa. *Science of The Total Environment* **454-455**, 528-533.
26. **Ssebugere, P.**, Kiremire, B. T., Henkelmann, B., Bernhöft, S., Kasozi, G. N., Wasswa, J., & Schramm, K.-W. (2013): PCDD/Fs and dioxin-like PCBs in fish species from Lake Victoria, East Africa. *Chemosphere* **92**(3), 317-321.
27. Zhu, N., Fu, J., Gao, Y., **Ssebugere, P.**, Wang, Y., & Jiang, G. (2013): Hexabromocyclododecane in alpine fish from the Tibetan Plateau, China. *Environmental Pollution* **181**, 7-13.
28. Wang, P., Zhang, H., Fu, J., Li, Y., Wang, T., Wang, Y., Ren, D., **Ssebugere, P.**, Zhang, Q., & Jiang, G. (2013): Temporal trends of PCBs, PCDD/Fs and PBDEs in soils from an e-waste dismantling area in East China. *Environmental Science: Processes & Impacts* **15**, 1897-1903.
29. Wasswa, J., Kiremire, B. T., Nkedi-Kizza, P., Mbabazi, J., & **Ssebugere, P.** (2011): Organochlorine pesticide residues in sediments from the Uganda side of Lake Victoria. *Chemosphere* **82**(1), 130-136.
30. **Ssebugere, P.**, Wasswa, J., Mbabazi, J., Nyanzi, S. A., Kiremire, B. T., & Marco, A. M. J. (2010): Organochlorine pesticides in soils from south-western Uganda. *Chemosphere* **78**(10), 1250-1255.
31. **Ssebugere, P.**, Kiremire, B. T., Kishimba, M., Wandiga, O. S., Nyanzi, S. A., & Wasswa, J. (2009): DDT and metabolites in fish from Lake Edward, Uganda. *Chemosphere* **76**(2), 212-215.

Publications can be accessed at:

<https://scholar.google.com/citations?user=xspb3vgAAAAJ&hl=en>

D) Conferences attended and papers presented:

- 1) Patrick Ssebugere: 3rd DIFENEW Student International Conference. Theme “Fostering a dynamic platform for students and young researchers”. Held December 5, 2023, Novi Sad, Serbia. Paper presented (oral): Occurrence, biosorption and phytoremediation of selected endocrine disrupting chemicals from wastewater using *Moringa Oleifera* and *Eicchornia Crassipes*.
- 2) Patrick Ssebugere: 3rd Commonwealth Chemistry Posters event. Theme “Building Networks to Address the Goals”. Held September 28, 2022 (virtually). Paper presented (virtual): Polycyclic aromatic hydrocarbons in breast milk of nursing mothers: Correlates with household fuel and cooking methods used in Uganda, East Africa.
- 3) Patrick Ssebugere: Curious2022 – Future Insight conference, Held July 12 – 14, 2022 in Darmstadt, Germany. Theme: “United by science for a better tomorrow”.
- 4) Patrick Ssebugere: Network Meeting of the Alexander von Humboldt Foundation, Held April 27 – 29, 2022 in Rostock, Germany. Paper presented (poster): Prenatal exposure to emerging organic pollutants and child health.
- 5) Patrick Ssebugere: Virtual 2nd Commonwealth Chemistry Posters event. Theme “Building Networks to Address the Goals”. Held September 30, 2021 – October 1, 2021. Paper presented (poster): Polycyclic aromatic hydrocarbons in sediments and fish species from the White Nile, East Africa: Bioaccumulation potential, source apportionment, ecological and health risk assessment.
- 6) Patrick Ssebugere: Virtual Chemistry Workshop for Commonwealth countries, Held August 25 – 27, 2020 in Trinidad and Tobago. Paper presented (poster): Prenatal exposure levels of polybrominated diphenyl ethers in mother-infant pairs and their transplacental transfer characteristics in Uganda (East Africa).
- 7) Patrick Ssebugere: The 3rd International Conference on Toxicology and Clinical Toxicology, Held November 11 – 12, 2019 in London, United Kingdom. Paper presented (oral): Prenatal exposure levels of polybrominated diphenyl ethers in mother-infant pairs and their transplacental transfer characteristics in Uganda.
- 8) Patrick Ssebugere: The 47th World Chemistry Congress of IUPAC, Held July 7 – 12, 2019 in Paris, France. Paper presented (poster): Organochlorine pesticides in honey from areas surrounding an abandoned store in Masindi District, western Uganda: a risk assessment of dietary intake.
- 9) Patrick Ssebugere: TUK-AVH International Conference, Held December 5 – 8, 2017 in Kisumu, Kenya. Paper presented (oral): Pollution status of the Uganda side of Lake Victoria: PCDD/Fs, PBDEs and PCBs.
- 10) Ssebugere, P. (2013): The 15th Beijing Conference and Exhibition Instrumental Analysis, Held October 22 – 26, 2013 in Beijing, China. Paper presented (oral): Will centers of excellence maximize instrument use in sub-Saharan Africa?
- 11) Ssebugere, P. (2013): The 7th National Conference on Environmental Chemistry, Held September 22 – 25, 2013 in Guiyang, China. Paper presented (oral): PCDD/Fs and dioxin-like PCBs in fish from Lake Victoria, East Africa: Levels and associated dietary health risks.
- 12) Ssebugere, P. (2009): International Conference on Environmental Pollution and Toxicology in Africa: Status and Strategies for Sustainable Environmental Quality, Held November 2 – 5, 2009 Kampala, Uganda. Paper presented (oral): DDT and

metabolites in fish from Lake Edward, Uganda: Concentrations and associated health risks.

Workshops/webinars/Symposiums attended:

1. Patrick Ssebugere: 16th ANCAP Symposium. Theme “Pesticides and other pollutants: Effects on the environment, food and health”. Held December 28-29, 2023, in Kampala, Uganda. Supported by the International Science Programme (ISP). Paper presented (oral): PAH derivatives in sediments and fish from White Nile near Merut oil fields, South Sudan: Bioaccumulation and source apportionment.
2. Patrick Ssebugere: Stakeholders workshop on Environmental Remediation and the plastics menace organized by Jaramogi Oginga Odinga University of Science and Technology, Kenya, Held December 10-13, 2023. Supported by Austrian Partnership Programme in Higher Education & Research for Development (APPEAR). Paper presented (oral): Green synthesis of zero valent nanoparticles using cape gooseberry fruits and leave extracts.
3. Hands-on training workshop in Gas Chromatography at the Directorate of Government analytical Laboratory (DGAL) organized by Makerere University and Slovak University of Technology in Bratislava, Held June 15-17, 2023. Supported by ICM Erasmus+ programme.
4. Hands-on training workshop in Microscopy at Makerere University, Held on April 17, 2023. Supported by Austrian Partnership Programme in Higher Education & Research for Development (APPEAR).
5. Global Open Science Cloud (GOSC) IPO Launch event (virtual) organized by CODATA, and CNIC, CAS, Held October 12, 2022.
6. The 2022 International Training Workshop on Open Science and SDGs (virtual) hosted by the International Research Center of Big Data for Sustainable Development Goals (CBAS), the CAS-TWAS Centre of Excellence on Space Technology for Disaster Mitigation (SDIM), Held August 29 – September 9, 2022.
7. TWAS Research Grant Webinar (virtual) organized from the Netherlands, Held June 15, 2022. Theme: “Open Science”.
8. Virtual Humboldt Colloquium organized from Cameroon, Held March 30 – 31, 2022. Theme: “Science and Research as Drivers for Development: African-German Cooperation in the Post-COVID-19 Era”.
9. Author AID Webinar (virtual) organized from the United Kingdom, Held October 5, 2021. Theme: “Hot topics in publishing ethics”.
10. ISP Gender workshop (virtual) organized from Sweden, Held September 9 – 10, 2021. Theme: “Gender, diversities and unconscious bias: how to master the playground rules in Academia”.
11. National Policy Forum on Science, Technology, and Innovation (STI) Advancement for Development (virtual webinar) organized from Makerere University, Kampala,

Uganda, Held August 26 – 27, 2021. Theme: “Positioning STI to address emerging threats to national development”.

12. ASM - AAAS - TWAS Regional Course on Science Diplomacy (virtual workshop) organized from Kuala, Malaysia, Held March 16 – 19, 2021. Supported by the Academy of Sciences Malaysia (ASM), the American Association for the Advancement of Science (AAAS) and The World Academy of Sciences (TWAS).
13. The Thirteenth ANCAP Virtual Symposium organized from Dar es Salaam, Tanzania, Held December 22 – 23, 2020. Symposium theme: “Agriculture, Environment and Health Challenges in Africa”.
14. Science Diplomacy Alumni Review Workshop (online zoom) organized from Trieste, Italy, Held November 9 – 12, 2020, supported by The World Academy of Sciences.
15. TAIEX DEVCO Workshop on pesticides residue certification (webinar) organized in cooperation with Ministry of Internal Affairs / Directorate of Government Analytical laboratory of Uganda, Held September 24 – 25, 2020. Funded by the Technical Assistance and Information Exchange Instrument for the European Commission.
16. Wuppertal Online Course – Wuppertal Annual Course on Loss Prevention and Safety Promotion in the Chemical Process Industries, Held September 7 – 30, 2020 organized from the University of Wuppertal, Germany. Supported by the Foreign Office of the Federal Republic of Germany and Organization for the Prohibition of Chemical Weapons (OPCW).
17. Forensic Chemistry and Toxicology Workshop, Held November 5 – 8, 2019 in Kampala, Uganda. Supported by Makerere University and Cukorova University. Supported by the Government of Uganda.
18. Science Diplomacy Workshop held August 20 – 24, 2018 in Trieste, Italy. Supported by AAAS and TWAS.
19. E-resources Training and Proposal Writing Workshop, funded by the German Academic Exchange Service (DAAD) in collaboration with the Information Training and Outreach Center for Africa (ITOCA), Held October 16 – 19, 2012 at Makerere University, Kampala, Uganda.
20. The IRD-IFS Workshop on applying for Research funding, Held May 28 – June 1, 2012, at the African Academy of Sciences in Karen, Nairobi, Kenya.
21. Training Workshop on the “Upgradation of Food Testing Skills”, Held March 1 – 8, 2012 at Shriram Institute for Industrial Research, Delhi, India.
22. Pan Africa Chemistry Network Catalysis Workshop, organized by the Faraday Division of the Royal Society of Chemistry (RSC), and the South African Chemical Institute (SACI), Held November 16 – 19, 2011 at the University of the Witwatersrand, Johannesburg, South Africa.
23. The 8th African Network for the Chemical Analysis of Pesticide (ANCAP) Workshop, Held October 20 – 23, 2010 at the Institute of Marine Sciences, Zanzibar, Tanzania.
24. Gas Chromatography-Mass Spectrometry (GC-MS) Workshop, organized by Pan Africa Chemistry Network, Held August 23 – 27, 2010 at the Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya.
25. Scholarly Writing and Communication Skills Workshop, supported by the Swedish International Development Cooperation Agency, Held July 27 – 30, 2010 at Makerere University, Kampala, Uganda.

26. The 7th ANCAP Workshop on the Chemical Analysis of Pesticides, Held October 29 –31, 2009 at Makerere University, Kampala, Uganda.

Graduate Students, Post-doctoral Fellows, and Visiting Scholars supervision:

(a) MSc students

1. Ms. Aidah Nanyonjo. Assessment of concentrations and sources of polybrominated diphenyl ethers in marabou stork and free-range chicken around Kiteezi dumping site in Uganda. MSc (Chemistry), Makerere University. Completed 2024.
2. Mr. Deo Ssentongo. Assessment of concentrations and sources PAH derivatives in fish and sediments from the White Nile near Merut Oil fields, South Sudan. MSc (Chemistry), Makerere University. Completed 2024.
3. Ms. Afuwa Kagoya. Assessment of concentrations and sources of selected Persistent Organic Pollutants in surface sediments from Lake Victoria, East Africa. MSc (Chemistry), Makerere University. Completed 2024.
4. Mr. Silver Odongo. Assessment of organochlorine pesticide residues in blood plasma and urine of children from a community with nodding syndrome in Kitgum District, northern Uganda. MSc (Chemistry), Makerere University. Completed 2023.
5. Mr. Fred Ssepuya. Assessment of polycyclic aromatic hydrocarbons in mothers' breast milk from Kampala Capital City, Uganda. MSc (Chemistry), Makerere University. Completed 2022.
6. Mr. Fauza Nsubuga. Sorption behaviour of cypermethrin in selected agricultural soils from Kakira, Lugazi and Kalangala farming areas in Uganda. MSc (Chemistry), Makerere University. Completed 2022.
7. Mr. Juma John Moses Abayi. Concentrations and source apportionment of polycyclic aromatic hydrocarbons in sediments and fish from White Nile near Melut oil fields in South Sudan. MSc (Chemistry), Makerere University. Completed 2021.
8. Mr. Daniel Omoding. Organochlorine pesticides in blood and placental tissues of mothers living in Uganda. M.Sc. (Chemistry), Makerere University. Completed 2019.
9. Ms. Teddy Nantume. Organochlorine pesticides in mothers' breast milk and associated risks to nursing infants in Uganda. MSc (Chemistry), Makerere University. Completed 2019.
10. Mr. Jimmy Ocaya. Pesticide residues in selected vegetables grown along the shores of *Pece Stream*, northern Uganda. MSc (Chemistry), Makerere University. Completed 2019.
11. Mr. Stuart Ben Mukiibi. Organochlorine pesticides in honey and soils from areas surrounding an abandoned store in Masindi District, western Uganda. MSc (Chemistry), Makerere University. Completed 2018.
12. Mr. Chemonges Amusa. Pesticide residues in soils and Mountain Gorilla food plants in and around Bwindi impenetrable National Park (Uganda). MSc in Environmental Science, Makerere University. Completed 2018.
13. Mr. Anthony Fwesa. Effect of municipal effluent on the water quality of *Pece Stream* and selected vegetables along its shoreline in Gulu District, northern Uganda. MSc (Chemistry), Makerere University. Completed 2017.
14. Mr. Nasifu Kerebba. Concentrations and source apportionment of polycyclic aromatic hydrocarbons in sediments from the Uganda side of Lake Victoria. MSc (Chemistry), Makerere University. Completed 2015.

15. Mr. Edison Ntezimana. Assessment of organochlorine pesticides in foods of animal origin from Kanungu district, Uganda. MSc (Chemistry), Makerere University. Ongoing.
16. Mr. Charles Seguya. Assessment of the quality of skin lightening cosmetic products in Uganda. MSc in Environment and Natural Resources, Makerere University. Ongoing.

(b) PhD students

1. Ms. Emily C. Ngeno. Capacity of *Moringa oleifera* and *Eichhornia crassipes* in removal of Endocrine Disrupting Chemicals from wastewater. PhD in Chemistry, Masinde Muliro University of Science and Technology, Kenya. Completed 2023.
2. Mr. Teddy Nantume. Persistent organic pollutants and risk of asthma and allergies in Ugandan adolescents. PhD in Chemistry, Makerere University, Uganda. On-going.
3. Mr. Jimmy Ocaya. Dynamics of micro-plastics in the aquatic environment of Lake Victoria, East Africa. PhD (Chemistry), Makerere University, Uganda. On-going.
4. Mr. Fred Ssepuya. Application of Nano particles in bioremediation of oil spills. PhD in Chemistry, Makerere University, Uganda. On-going.
5. Mr. Michael Ahimbisibwe. Efficacy of moringa protein in the monitoring and remediation of emerging persistent organic pollutants. PhD in Biosystems Engineering, Makerere University, Uganda. On-going.
6. Mr. Godfrey Muhwezi. Assessment of selected emerging organic pollutants in indoor and outdoor environments of Uganda. PhD in Chemistry, Kyambogo University, Uganda. On-going.

(c) Hosted Visiting Scholars/Post-doctoral Fellows

1. Dr. Solomon Omwoma (Jaramogi Oginga Odinga University of Science and Technology), IUCEA fellow. May – August 2023.
2. Prof. Ing. Ivan Špánik (Slovak University of Technology in Bratislava), Erasmus+ fellow. June 6 – 20, 2023.
3. Dr. Ing. Agneša Szarka (Slovak University of Technology in Bratislava), Erasmus+ fellow. June 6 – 20, 2023.

Service to the scientific community

a) *Membership in panels*

2023 – To date: Chairperson of the Graduate Training and Research Committee at the Department of Chemistry, Makerere University.

2021 – To date: Chairperson of the Technical Committee at the Uganda National Bureau of Standards on the standardization of Paints, Varnishes, and related products for East Africa.

2020: Technical Scientist at the 36th Appointments Board meeting of Muni University held on 26th October 2020 at Muni University, Uganda.

2016 – 2019: Member for GEF/UNEP project “Continuing regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the Africa Region”.

2016 – 2018: Member, Africa Task Force for the Alexander von Humboldt Group Linkage programme between Germany/Kenya and China on the project “Exposomics of Persistent Organic Pollutants (PCBs, OCPs, MCCPs and SCCPs) and Polycyclic Aromatic Hydrocarbons (PAHs) in Lake Victoria (Africa) and Three Georges Reservoir (China)”.

2015 – To date: Member of the Research and Higher degrees committee and, the Curriculum Review committee at the Department of Chemistry, Makerere University.

b) Group leader of the Laboratory of Environmental Chemistry and Toxicology

Since 2016, I have been group leader of the Laboratory of Environmental Chemistry and Toxicology at the Department of Chemistry, Makerere University. The laboratory performs cross-cutting research in studies involving the environment, human health, and industry; thus, contributing substantially to solving the grand challenges of basic and applied science, and demands of industrial users and society.

c) Outreach and dissemination

I have organised community outreach activities, workshops, conferences, sciences days, and policy briefs to disseminate research results.

Developing new courses and/or improving existing courses

Course development:

In 2019, I participated in the development of a Master of Science in Forensic Chemistry for Makerere University.

In 2015, I participated in the development of a joint MSc. Natural Products Technology and Value Chain for Makerere University and University of Nairobi-Kenya.

Course improvement:

In 2022, I participated in curriculum review of a Bachelor of Science in Analytical Chemistry for Jaramogi Oginga Odinga University of Science and Technology, Kenya.

In 2020, I reviewed the Bachelor of Science in Applied Chemistry and Diploma of Science in Applied Chemistry for Ankole Western University, Uganda.

In 2019, I reviewed 2 postgraduate courses (Advanced Reaction Kinetics, CHM 7215; Chemistry of Water Environment, CHM 7223) and 3 undergraduate courses (Reaction Kinetics, CHM 3131; Solution and Statistical Thermodynamics, CHM 3130; Thermodynamics and Reaction Kinetics, CHM 2222) for Makerere University.

Courses Taught:

- 1) Postgraduate: Advanced Reaction Kinetics (CHM 7215), Laboratory Management and Quality Assurance (CHM 7103), Advanced Analytical Chemistry (CHM 7104) and Chemistry of Water Environment (CHM 7223) (Makerere University Curriculum).

- 2) Undergraduate: Advanced Physical Chemistry Practical (CHM 3231), Reaction Kinetics (CHM 3131), Solution and Statistical Thermodynamics (CHM 3130), Thermodynamics and Reaction Kinetics (CHM 2222), Electrochemistry (CHM 2213) and Basic Physical Chemistry (CHM 1102) (Makerere University curriculum). Natural Products, Stereochemistry and Heterocyclics (CH 323), Structure Determination and Spectroscopy (CH 223), Structure and bonding (CH 113), Basic Chemistry (HEN 114) (Kyambogo University curriculum).

Review activities and examination

Review activities: Since 2023: External Reviewer of research proposals for University of Rwanda-College of Education, CARNEGIE supported projects.

From 2023: Associate Editor for Frontiers in Environmental Chemistry, and Editorial Board Member for Global Science Publishing.

Since 2009: Reviewer for 15 journals: Journal of Hazardous Materials, Environment International, Environmental Pollution, Environmental Research, Talanta, Science of the Total Environment, Chemosphere, Food Chemistry, Environmental Monitoring and Assessment, Scientific Africa, African Health Sciences, Journal of Trace Elements in Medicine and Biology, Journal of Medical and Biological Science Research, Journal of Food Composition and Analysis and, International Journal of Environment and Pollution.

PhD/MSc theses examined/reviewed:

a) PhD theses

1. Mr. Hannington Ngabirano. Pesticides use in vegetable growing in Kabale District, Uganda: Concentrations, fate, and health risks. PhD in Chemistry, Mbarara University of Science and Technology, 2022.
2. Ms. Gloria Nontobeko Maphuhla. Enzyme activity, physical and chemical properties of soil contaminated with heavy metals and their influence on plant and downstream water of Alice dumpsite in Eastern Cape. PhD in Chemistry, University of Fort Hare, 2022.
3. Mr. Gabriel Muthee Marete. Pesticides: Occupational Exposure and Potential Impacts on Ecosystem and Human Health in Meru County, Kenya. PhD in Environmental Science, The Technical University of Kenya, 2020.
4. Ms. Proscovia Nnamuyomba. Biokinetics and modeling of pollutant accumulation in catfish (*Clarias wernerii*) and silver fish (*Rastreneobola argentea*) from selected aquatic ecosystems in Uganda. PhD (Chemistry), Makerere University, 2018.

b) MSc dissertations

1. Mr. Derrick Kayeera. Assessment of mercury bioavailability in soils and potential uptake by food crops grown around selected artisanal and small-scale gold mining areas of eastern Uganda. MSc in Chemistry, Makerere University, 2023.
2. Ms. Lydia Mwikali. Assessment of concentrations and sources of perfluoroalkyl Carboxylic acids in Surface Sediments of Lake Victoria. MSc in Chemistry, Mbarara University of Science and Technology, 2023.

3. Mr. Cosmas Musoke. Development of a Method for the Purification and Iodization of Lake Katwe Salt. MSc in Chemistry, Kyambogo University, 2023.
4. Mr. Joel Ntale. Sorption Kinetics and Equilibria of Atrazine and Diuron as Single and in a Mixture using Selected Tropical Soils from Uganda. MSc (Chemistry), Makerere University, 2022.
5. Mr. Simon Lukato. Supported silver and copper catalysts for selective oxidation of benzyl alcohols using molecular oxygen as oxidant. MSc (Chemistry), Makerere University, 2020.
6. Mr. Herbert Ssemwanga. Electrodeposition of Nickel-Metalloid alloy films and their investigation into electrocatalytic water splitting. MSc in Chemistry, Kyambogo University, 2020.
7. Ms. Sambakanya Siyasanga. Synthesis and application of coal fly ash supported C doped TiO₂/SnO₂ photocatalyst in water treatment. MSc in Chemistry, University of Fort Hare, 2020.
8. Mr. Bernard Walulya. PAHs in soils and nearby creeks from selected automobile garages and surrounding areas in Kampala capital city (Uganda). MSc (Chemistry), Makerere University, 2019.
9. Mr. Eric Ssenoga. Determination of selected acaricide residues in soils and water sources around cattle dip tanks in Mbarara District, Western Uganda. MSc in Chemistry, Kyambogo University, 2019.
10. Ms. Fiona Nakibuule. Fixation of carbon dioxide into epoxides to form cyclic carbonates using silicate-based catalysts. MSc (Chemistry), Makerere University, 2017.
11. Mr. Henry Matovu. Concentrations and sources of petroleum-derived pollutants in water of Lake Albert, Uganda. MSc (Chemistry), Makerere University, 2017.
12. Mr. Francis Gumisiriza. Teratogenic pesticide residues in soil, sediments, and food matrices from the vicinity of chimpanzee territory of Kibale National Park, Uganda. MSc (Chemistry), Makerere University, 2017.
13. Ms. Irene Otworot Atuko. Direct fixation of carbon dioxide into olefins to form cyclic carbonates using polyoxometalate-based catalysts. MSc (Chemistry), Makerere University, 2017.

Professional affiliations

1. Uganda Chemical Society (member)
2. African Academy of Sciences (member)
3. Royal Society of Chemistry (member)
4. African Water Association (member)
5. World Association of Young Scientists (member)
6. Society of Environmental Toxicology and Chemistry (member)
7. DAAD Scholars Association (member)
8. TWAS Young Affiliate Network (member)
9. African Young Chemistry Network (member)
10. Inter Academy Partnership (member)
11. International Network of Government Scientific Advice (member)
12. Open Doors Program Using Science for/in Diplomacy to Address Global Challenges (member).

Referees

1. Prof. Joseph O. Lalah
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Attestation:

I certify that the information stated above is true to the best of my knowledge.



Dr. Patrick Ssebugere