
Curriculum Vitae

Name : **Prof. Dr.** FRANCIS ORATA OMOTO
Nationality : Kenyan
Current Address : Masinde Muliro University of Science and Technology.
 Dept. of Pure & Applied Chemistry
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SUMMARY

Associate Professor and Researcher at Pure and Applied Chemistry Department, Masinde Muliro University of Science and Technology (MMUST). **Postdoc** research at the Department of Applied Environmental Science (ITM), Stockholm University, Sweden. **Postdoc** at the Department of Instrumental and Analytical Chemistry, Duisburg-Essen University. Obtained **PHD** from Johannes Gutenberg-universität, Mainz, Germany in 2009, where I worked at IWW Rheinisch-Westfälisches Institut für Wasserforschung gemeinnützige GmbH, Biebesheim, Germany, the former ESWE which is a respected institute in the field of water and engineering research. Research in Persistent Organic Chemicals Pollutants Remediation, Degradation, Chemicals analysis in various matrices and Toxicological aspects.

Field of Chemistry: Associate professor and researcher in *Environmental & Toxicological Chemistry*
 Teaches: Environmental & Toxicological chemistry, inorganic Chemistry, Physical chemistry, analytical Chemistry

EDUCATIONAL BACKGROUND

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| 2014 - 2015 | Post Doc/Guest researcher.
Department of Instrumental & Analytical Chemistry,
Duisburg-Essen University:
Germany | Electrochemical degradation of PFAAs |
| 2011 - 2012 | Post Doc/Guest researcher.
Department of Applied Environmental Science (ITM), Stockholm University,
Sweden | Exposure to Perfluorinated carboxylates (PFCAs) and Perfluorinated sulfonates (PFSAs) |
| 2006 - 2009 | Ph.D. Chemistry, Johannes Gutenberg-Universität, Mainz, Germany | "Perfluorinated compounds and Degradation Studies of Emerging Perfluorinated Surfactants Substitutes".
Supervisor, Prof: Dr. Rolf-Dieter Wilken, Prof. Hoffmann, Thorsten |
| 2000 - 2004 | M.Sc. Environmental Chemistry, University of Nairobi, Nairobi, Kenya | Determination of Heavy Metals in sediments, Plants and Fish in Winam Gulf of Lake Victoria. Supervisors, Dr. J.M. Onyari and Prof. S.O. Wandiga. |
| 1994 - 1998 | B.Sc. Chemistry, University of Nairobi, Nairobi, Kenya | Heavy Metals along Nairobi River". Supervisor. Prof. G. Kamau. |

1989 - 1992 **KCSE**, B, Thika High School,
Kenya
1988 **KCPE**, 68/72 points, General
Kago Primary School, Thika

TEACHING EXPERIENCE

2014 to date Masinde Muliro University of Science and Technology, Kakamega, Kenya. Pure and Physical Chemistry Department. Lecturer; Analytical, Inorganic and Environmental chemistry. Senior lecturer from 13th August 2019
2006 - 2009 Johannes Gutenberg-Universitat, Mainz, Germany. Department of Chemistry, Pharmacy and Geological studies.
2001 - 2004 University of Nairobi, Nairobi, Kenya. Chemistry department, University of Nairobi. Laboratory classes and tutorial courses in Physical and Inorganic chemistry

WORK EXPERIENCE

2020 to date Director, Board Kakamega County Rural Water and sanitation Company (KACRWASCO)
2014 to 2020 **Head of Department (HOD)** Department of Chemistry, Masinde Muliro
2014 to date University of Science and Technology (Kenya)
Masinde Muliro University of Science and Technology (Kenya). Capacity: Senior Lecture and Researcher.
2010 to 2014: Masinde Muliro University of Science and Technology (Kenya). Capacity: Lecture and Researcher.
2013 to 2015 Ministry of Environment and Natural Resources: Capacity: Lead expert and Consultant. GOK/GEF WORLDBANK project on updating the Kenya national Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants.
2012 - 2013 Department of Applied Environmental Science (ITM), Stockholm University, Sweden
2006 - 2009 University of Mainz (Germany). Capacity: Lecturer and Researching
2001 - 2004 University of Nairobi. Capacity: Tutor (graduate assistant)
1999 - 2001 Pharmaceutical Manufacturing Company. Capacity: Assistant quality Control Manager
1999 Kel Chemicals Company. Capacity: Analyst and Researcher
1998 - 1999 Howse & McGeorge pharmaceutical Company. Capacity: Pharmaceuticals Products Analyst in Quality control

PRESENTATIONS AND ATTENDANCE OF INTERNATIONAL AND LOCAL CONFERENCES

- Participation in the West African Clean Energy & Environment Trade Fair & Conference. September, 2021. (WACEE'21), DAAD in the framework of the programme DAAD Alumni Special Projects. Organized and hosted by TU Bergakademie Freiberg, Germany.
- Participation in the digital trade fair: 29th September – 30th September 2021 organized by the Delegation of German Industry and Commerce, Ghana. 4th October – 8th October 2021.

- The 6th AvH - Kenya "KOLLEGS" Conference, October 6th to 8th, 2021. Title “Conventional Wastewater Treatment Plants as a Discharge and Source Point for Biota Exposure to Micro-pollutants”. **Presented.**
- Workshop, ProUniEdu-WeK, a DAAD funded project Technical University of Brandenburg. TH Brandenburg, August 8th to 14th 2021. Title, “Clean Water and Sanitation Services Crisis in Kenya, Kakamega County - Development of Ceramic based Potable water Purifier”. **Presented**
- Workshop, ProUniEdu-WeK, a DAAD funded project Technical University of Brandenburg. TH Brandenburg, September 23rd to 27th, 2019. Title, “Water Purification and catalysis”. **Presented**
- Workshop on laws and policies for Chemical Management Systems towards Responsible Consumption and Production in Kenya. 7th -8th March, **2019**. Title “chemical management and related policies in Kenya”. **Presented**
- First International Research Congress on Knowledge Generation and Dissemination in Africa. Harnessing Research Output for Sustainable Development. 18th –21st June **2018** Venue: Grand Royal Swiss Hotel Kisumu, Kenya. “Removal of PFAAs from Water by Electro-oxidative Degradation using Boron-Doped Diamond Electrodes (BDD) as a Possible Electrode Material” (**Presented**).
- ANCAP symposium on pesticides and organic pollutants in environment, 1st December to 4th December **2017**, REEF Hotel Mombasa Kenya “Occurrence of Perfluoroalkyl Acids (PFAAs) and Pharmaceuticals in Sewage Sludge from Nine Waste Water Treatment Plants in Kenya”. (**Presented**)
- The 7th International SEANAC conference 28th Nov-1st Dec **2017**, Mombasa, Kenya. Titled ‘Removal of PFAAs from Water by Electro-oxidative degradation using boron-doped diamond electrodes (BDD) as a possible electrode material.’ (**Presented**)
- Kenya Chemical Society (KCS) hereby invite you to a training workshop: “Chemical Inventory Management Systems Training for Chemical Professionals and Technicians from Universities in Western Kenya Region” to be held at Wigot Hotel, Kisumu from November 17 – 20, 2017.
- Kenya Chemical Society (KCS). “Chemical Security Vulnerability Assessments Training in Western Kenya’. Venue: Royal City (Garden) Hotel, Kisumu. Dates: 04-07, July 2017
- DAAD Alumni Conference “Management of Resources – Multi-disciplinary Perspectives from along the Nile” on 10th – 12th November **2016**, in Cairo, Egypt (**Presented**)
- Inorganic Chemistry conference. A National Workshop on the overview of trends in teaching and research in inorganic chemistry and its applications in Kenya, 12-13 May **2016**. University of Nairobi (**Presented**)
- 4th. Alexander von Humboldt. Avh-k. Perfluoroalkyl Acids in Selected Wastewater Treatment Plants and their Discharge Load within the Lake Victoria Basin in Kenya. April **2016**. Naivasha, Kenya (**Presented**).
- 3rd Conference on Emerging Frontiers for Sustainable Water: A Trilateral Partnership Africa-India-UK: Sunnyside Park Hotel, Johannesburg, 3-5 August **2015**. Member who attended is Dr. Francis Orata Omoto, Title of presentation: “*Per-fluorinated surfactants and pharmaceuticals as emerging pollutants within Lake Victoria drainage systems; their treatment technologies*”. **Presented.**
- Kenya Chemical Society (KCS). Applied chemistry and technology in Industry “Bioaccumulation of perfluoroalkyl acids in dairy cows in a naturally contaminated environment. Robin Vestergren & Francis Orata & Urs Berger & Ian T. Cousin. UoN. **Presented. 2015.**
- Annual KDSA Conference and AGM. Theme. “Kenya’s Constitutional Provisions and the Citizen’s Rights: Are we on track?”. The KDSA in collaboration with the DAAD Regional Office for Africa in Nairobi. on 28th – 29th May, 2015. Nairobi, Kenya.
- The 8th International Kenya Chemical Society Conference. Theme: Applied Chemistry and Technology in Industry: May 5th – 8th. 2015. University of Nairobi, Chiromo campus, Kenya. **Presented**
- Inventory on PFOS, PBDEs and HBB. Training workshop on Inventories for chemical pollutants. Organized by Ministry of Environment Water and Natural resources. Isaak Wanton Hotel, Embu Kenya. July 1- 4th. 2013.

- International conference. African Cities of the Future: Smart, Sustainable, Participatory. KDSA, DAAD, Konrad Adenauer Stiftung, in collaboration with UN-Habitat and IFP of Ford Foundation. 30th – 31st May 2013 at The Safari Park Hotel, Nairobi, Kenya.
- International DAAD-Alumni-Summer School at the University of Oldenburg. *Chemicals of Emerging Concern in Developing Countries: Research challenges, collaboration and cooperation with industrial countries*. “Water, energy and sanitation in urban and decentralized regions”. Postgraduate Programme University of Oldenburg, **Germany**. March – April 2013. (**Presented**).
- Sustainable water management in African Countries Conference at Maseno University-Kisumu, Kenya, 1st - 3rd, Oct. 2012.
- Nordfluor/NECC2012. Nordic Environmental Chemistry Conference. “*Biotransfer factors and tissue distribution of perfluoroalkyl acids in dairy cows receiving a naturally contaminated diet*”. 4th-8th June, 2012. Harjattula, **Finland**.
- Alexander Von Humboldt International Kollege. “Synergy And Networking To Enhance Research And Development”. 23 to 26th Nov. 2010. Nairobi, Kenya (**Organized and Presented**)
- “*Intellectual Social Responsibility and the Fight against Corruption in Kenya*” that was held at Kenyatta University, **Kenya** (15th to 16th April 2010).
- 2nd EuCheMS Chemistry Congress. www.euchems-torino2008.it. **2008** September 16 – 20 Turin, **Italy**. **V.3 / P-047 / Emerging Perfluorinated Chemicals Surfactants Substitutes Degradation Studies (presented)**.
- Excellence Center for Development Cooperation (EXCEED), DAAD, UNESCO: Sustainable Water Management in African Countries. Presentation on “*Halogenated chemicals of emerging concern in water: A report on Perfluoroalkyl acids (PFAAs) in Lake Victoria Gulf water and rivers*” Maseno University-Kisumu, Kenya, 1st – 3rd Oct. 2012 (**Presented**).
- Nordfluor/NECC2012. Nordic Environmental Chemistry Conference. “*Biotransfer factors and tissue distribution of perfluoroalkyl acids in dairy cows receiving a naturally contaminated diet*”. 4th-8th June, 2012. Harjattula, **Finland**.
- Alexander Von Humboldt International Kollege. “Synergy And Networking To Enhance Research And Development”. 23 to 26th Nov. 2010. Nairobi, Kenya (**Organized and Presented**)
- “*Intellectual Social Responsibility and the Fight against Corruption in Kenya*” that was held at Kenyatta University, **Kenya** (15th to 16th April 2010).
- 2nd EuCheMS Chemistry Congress. www.euchems-torino2008.it. **2008** September 16 – 20 Turin, **Italy**. **V.3 / P-047 / Emerging Perfluorinated Chemicals Surfactants Substitutes Degradation Studies (presented)**.
- 1st international Workshop / Fluorinated Surfactants: New Developments, Idstein, **Germany**. June **2008**. Title: (**PB 05**). *Emerging perfluorinated chemical surfactant substitutes degradation studies*. (**PB 06**). *Gas chromatography as an alternative analytical methodology for fluorinated alkyl surfactants in biotic and abiotic matrices*. (**Presented**).
- Wasser 2008: a Conference organised by Water Chemical Society, Germany at Trier, **Germany**. April 2008. Title: (**PAn05**). *Gas Chromatography as an Alternative Analytical Methodology for Fluorinated alkyl acid Surfactants in Biotic and Abiotic Matrices*. April **2008 (presented)**.
- International Conference on Water and Developments in Kunming University of Agriculture, **China**. Sept. 2007. Title: *Analysis of PFOS and PFOA in Water and Fish from Lake Victoria and study of New Perfluorinated surfactants substitutes*. Oral presentation. September **2007(presented)**.
- Sustainable use of Natural recourses: organised by UNEP and Tongji University in Shanghai **China**. *Properties and fate of PFCs in the Environment*. Oral presentation. August **2007(presented)**.
- Wasser 2007: a Conference organised by Water Chemical Society, Germany at **Passau, Germany**. (May 2007).

WORKSHOPS, PROFESSIONAL STUDIES

- 4th – 8th October 2021 International DAAD Alumni Advanced Training Seminar “Water in Africa in Balance with Human Needs and Nature”. Topics: Clean Water, Clean Energy, Circular Economy, and a Panel discussion about water in Africa: Status-quo, challenges, future? Participation in the digital training seminar. Organized and hosted by TU Bergakademie Freiberg, Germany.
- 1st - 14th October 2019 Bioresources, Biomass, Biogas, Climate Change. Leibniz-Institut für Agrartechnik und Bioökonomie e.V. (ATB), Max-Eyth-Allee 100, D-14469 Potsdam, Germany.
- 30th April - 2nd May, 2019 Sustainable Chemical Security and Substitution Workshop, Naivasha, Kenya, by Kenya Chemical society.
- 17th - 26th Jan 2018. Catalysis and its Application. Masinde Muliro University of Science and technology, Kakamega, Kenya.
- 18th – 22nd Dec. 2018 Invitation to workshop to review recommended amendments to the Stockholm Convention Annex. Simba lodge, Naivasha, Kenya
- 10 th April, 2018. Workshop on mainstreaming sound chemicals management & solid waste Management awareness. Golf hotel, Kakamega,
- 17th - 18th Oct. 2017 Workshop on the Role of Universities in Mainstreaming Sound Chemicals Management in National Development Agenda, At Hotel Sarova Woodland, Nakuru, Kenya
- 12th July 2018. University Leaders Chemical Security Awareness Workshop at the Crowne Plaza Hotel, Nairobi, Kenya.
- 17 – 20, Nov. 2017. Workshop on Chemical Inventory Management Systems (CIMS). Wigot Hotel, Kisumu, Kenya.
- 04-07, July 2017. Chemical Security Vulnerability Assessments Training in Western Kenya, Venue: Shalom Hotel, Kisumu, Kenya.
- 12-13 May 2016 National Workshop on the overview of trends in teaching and research in inorganic Chemistry and its applications in Nairobi, Kenya
- July 24th - 27th. 2013. Scientific papers writing workshop. Organized by, KDSA/DAAD. Kenyatta University.
- July 1st - 4th. 2013. Training workshop on Inventories for chemical pollutants. Organized by Ministry of Environment Water and Natural resources. Isaak Wanton Hotel, Embu Kenya.
- March – April 2013 International DAAD-Alumni-Summer School at the University of Oldenburg. “Water, energy and sanitation in urban and decentralized regions”. Postgraduate Programme University of Oldenburg, Germany.
- 30-31 October 2012. KODI - Open Data Incubator Project – outreach to research community sensitization workshop on open data. Organized by DAAD, KDSA, Kenya ICT Board, World Bank, the National Council for Science and Technology (NCST). ICIPE, Nairobi.
- March - April, 2012 :Modelling of Environmental Pollutants I: Partitioning, Transport, and Exposure (advanced course). Department of Applied Environmental Science (ITM), Stockholm University.
- 22nd -25th June, 2010. Regional Facilitators Workshop on Information Literacy. Kenyatta University Conference Centre. Nairobi, Kenya
- 6th -7th May, 2010 E-Resources Training Workshop: TEEAL-RESEARCH4LIFE AND PROTA. ITOCA. Masinde Muliro University of Science and Technology. Kenya.
- Aug - Sept., 2007 Sustainable use of Natural resources: organised by UNEP. China, Tongji University, Shanghai, China.

2 - 12 th Aug 2004	Pesticides in the Environment: Courses covered; Mode of action of Pesticides in Human, Toxicology, Stockholm connection, Transport dynamics of pesticides, Pesticides formulation, Incineration of pesticides. Venue: Arusha, Tanzania.
8 - 19 th Sept, 2003	Analysis of Pesticides in the Environment: Courses covered; Methods in Pesticides analysis, types of pesticides, Pesticides partitioning in the ecosystem. Venue: Nairobi.
22 - 25 th Aug. 2001	Chromatographic separation techniques, NMR – Mass Spectroscopy: Courses covered; Methodologies used in natural products analysis and structural determination. Venue: Nairobi.
7 th - 11 th May, 2001	Theoretical Chemistry workshop. Venue: University of Nairobi.

RECENT PUBLICATIONS

Papers

- Fred Sifuna Wanyonyi, Timothy Tizhe Fidelis, Gershom Kyalo Mutua, **Francis Orata**, Anthony M.S. Pembere (2021) Role of pore chemistry and topology in the heavy metal sorption by zeolites: From molecular simulation to machine learning. *Computational Materials Science* 195 (2021) 110519. <https://doi.org/10.1016/j.commsci.2021.110519>
- Wanyonyi, F.S., Pembere, A., Mutua, G.K. **Orata, F et al.** Computational screening of zeolites for the adsorption of selected pharmaceutical pollutants. *SN Appl. Sci.* **2**, 1901 (2020). <https://doi.org/10.1007/s42452-020-03694-y>.
- Selly Jemutai-Kimosop, **Francis Orata**, Victor Shikuku, Veronica A. Okello, Zachary Moranga Getenga (2019) Insights on adsorption of carbamazepine onto iron oxide modified diatomaceous earth: Kinetics, isotherms, thermodynamics, and mechanisms. *Environmental Research*. DOI: 10.1016/j.envres.2019.108898.
- Oremo, J, F **Orata**, J Owino, W Shivoga (2019). Assessment of heavy metals in benthic macroinvertebrates, water and sediments in River Isiukhu, Kenya. *Environmental Monitoring and Assessment* 191 (11), 646
- Jane Oremo, **Francis Orata**, Joseph Owino, William Shivoga (2010). Assessment of Available Phosphates and Nitrates Levels in Water and Sediments of River Isiukhu, Kenya. DOI:10.12691/aees-8-3-7.
- Ogara Rose Shieunda, Edward Neyole, Stanley Omuterema, **Francis Orata** (2019). Assessment of Key Point Sources of Heavy Metals (Lead, Cadmium and Chromium): A Case of River Sosiani. *Applied Ecology and Environmental Sciences*, 2019, Vol. 7, No. 4, 128-134. DOI: 10.12691/aees-7-4-2.
- Ogara Rose Shieunda, Edward Neyole, Stanley Omuterema, **Francis Orata**. (2019). Assessment of Public Health Risks of Heavy Metals Pollution in River Sosiani Catchment. *American Journal of Environmental Protection*, 2019, Vol. 7, No. 2, 41-51. DOI:10.12691/env-7-2-2
- Ogara Rose Shieunda, Edward Neyole, Stanley Omuterema, **Francis Orata** (2019). Analysis of Spatial and Temporal Levels of Heavy Metals in Water, Sediments and Fish in Sosiani River. *International Journal of Environmental Bioremediation & Biodegradation*, 2019, Vol. 7, No. 1, 20-40. DOI:10.12691/ijebb-7-1-2
- Emily C. Ngeno, Victor O. Shikuku, **Francis Orata**, Lilechi D. Baraza, Selly J. Kimosop. (2019) Caffeine and Ciprofloxacin Adsorption from water onto clinoptilolite: Linear isotherms, kinetics, thermodynamic and mechanistic studies. *South African Journal of Chemistry*. Sajc-001753.

- Agripina Shitandayi, **Francis Orata**, Fred Lisouza. (2019) Assessment of Environmental Sources, Levels and Distribution of Polycyclic Aromatic Hydrocarbons within Nzoia Catchment Area in Kenya. *Journal of Environmental Protection*, 2019, 10, 772-790.
- Mirenga E.O, Korir J.C, Kimosop S.J, **Orata F** and Getenga Z.M. Isolation and Molecular Characterization of Soil Bacteria Capable of Degrading Chlorpyrifos and Diuron Pesticides. *Journal of Applied & Environmental Microbiology*. 2018; 6(1):18-24. doi: 10.12691/jaem-6-1-3.
- Selly Jemutai-Kimosop, Veronica A. Okello, **Francis Orata**, Zachary M. Getenga and Victor O. Shikuku (2017). Green Remediation of Carbamazepine from Water Using Novel Magnetic Iron Modified Carbonized Baggasse: Kinetics, Equilibrium and Mechanistic Studies. *Chemical Science International Journal*. 18(3): 1-9, 2017
- Emily Chelangat Ngeno, **Francis Orata**, Lilechi Danstone Baraza, Victor Odhiambo Shikuku and Selly Jemutai Kimosop. 2016. Adsorption of Caffeine and Ciprofloxacin onto Pyrolytically Derived Water Hyacinth Biochar: Isothermal, Kinetic and Thermodynamic Studies. *J. Chem. Chem. Eng.* 10 (2016) 185-194.
- **F. Orata** and Faith Birgen (2016). Fish Tissue Bio-concentration and Interspecies Uptake of Heavy Metals from Waste Water Lagoons *Journal of Pollution Effects & Control*. *J Pollut Eff Cont* 2016, 4:2. <http://dx.doi.org/10.4172/2375-4397.1000157>.
- Fred W. Sifuna, **Francis Orata**, Veronica Okello and Selly Jemutai-Kimosop. (2016). Phosphate and sulfate supporting electrolytes comparative studies in electrochemical degradation of sulfamethoxazole and diclofenac in water using various electrodes. *Journal of environmental science and health, part A*. 2016, vol. 0, no. 0, 1–8.,
- Selly Jemutai Kimosop & Z. M. Getenga & **F. Orata** & V. A. Okello & J. K. Cheruiyot. Residue levels and discharge loads of antibiotics in wastewater treatment plants (WWTPs), hospital lagoons, and rivers within Lake Victoria Basin, Kenya. *Environ Monit Assess* (2016) 188:532 DOI 10.1007/s10661-016-5534-6.
- Chirikona, Marko Filipovic, Seline Ooko, **Francis Orata**. *Perfluoroalkyl acids in selected wastewater treatment plants and their discharge load within the Lake Victoria basin in Kenya*. *Environ. Monitoring. & Assessment*. April 2015, 187:238. Doi: 10.1007/s10661-015-4425-6).
- Daniel O. Onunga, Isaac O. Kowino, Anastasiah N. Ngigi, Aggrey Osogo, **Francis Orata**, Zachary M. Getenga & Hassan Were. 2015. *Biodegradation of carbofuran in soils within Nzoia River Basin, Kenya*. *Journal of Environmental Science and Health, Part B*. Vol 50, Issue 6, pages 387-397
- Sindika O, **Orata F**, Haglund P, Tysklind M. Weber R, Osibanjo O. *PCDD/F and Per- & Polyfluoroalkyl Substances Contamination in Selected Sewage sludge in Nigeria*. *Organohalogen Compounds*. Vol 76, 368-371 (2014)
- Selly Kimosop, **Francis Orata**, Isaac K'Owino, Zachary Getenga. *The dissipation behaviour of carbofuran in two soils differing in prior exposure to carbofuran within Nzoia River Drainage Basin, Kenya*. *Bull Environ Contam Toxicol*: Volume 92, Issue 5 (2014), Page 616-620.
- Robin Vestergren, **Francis Orata**, Urs Berger, Ian T. Cousins. *Bioaccumulation of perfluoroalkyl acids in dairy cows in a naturally contaminated environment*. *Environmental Science and Pollution Research*. (2013) 10.1007/s11356-013-1722-x. Pg. 1-11
- Omotayo Sindiku, Francis **Orata**, Roland Weber, Oladele Osibanjo. *Per- and Polyfluoroalkyl Substances in selected Sewage Sludge in Nigeria*. *Chemosphere* 92 (2013), pp. 329-335
- Selly Jemutai-Kimosop, **Francis Orata**, Zachary Getenga. *The Influence of Filter Mud Compost and Tithonia diversifolia Leaves on the Dissipation of Diuron in Soils within the Nzoia River Drainage Basin, Kenya*. *Bull Environ Contam Toxicol*. Volume 89, Issue 2 (2012), Page 328-333.

- **Francis Orata**, Natalia Quinete, Friedrich Werres, Rolf-Dieter Wilken. *Determination of Perfluorooctanoic Acid and PerfluorooctaneSulfonate in Lake Victoria Gulf Water*. Bull Environ Contam Toxicol. Volume 82, Issue 2 (2009), Page 218.
- **Francis Orata**, Quinete Natalia, Maes Anke, Werres Friedrich, Wilken Rolf-Dieter. *Perfluorooctanoic acid and perfluorooctane sulfonate in Nile Perch and tilapia from gulf of Lake Victoria*. African Journal of Pure and Applied Chemistry Vol. 2 (8), pp. 075-079, August, 2008.
- Natalia Quinete, **Francis Orata**, Friedrich Werres, Isabel Moreira, Rolf-Dieter Wilken. *Determination of Perfluorooctane Sulfonate and Perfluorooctanoic Acid in the Rhine River, Germany*. FEB Vol.18 Reference-No: F-2009-043
- **Francis Orata**, Natalia Quinete, Rolf-Dieter Wilken. "Long Chain Perfluorinated alkyl acids Derivatisation and Identification in Biota and Abiota Matrices using Gas Chromatography". Bull Environ Contam Toxicol. Volume 83, Number 5 (2009), 630-635
- Natalia Quinete, **Francis Orata**, Anke Maes, Markus Gehron, Karl-Heinz Bauer, Isabel Moreira, Rolf-Dieter Wilken . *Degradation Studies of New Substitutes for Perfluorinated Surfactants*. Arch Environ Contam Toxicol. 2010 Jul; 59(1):20-30.
- **Orata, Francis** , Maes, Anke , Werres, Friedrich and Wilken, Rolf Dieter(2011) '*Perfluorinated Compounds Distribution and Source Identification in Sediments of Lake Victoria Gulf Basin*', Soil and Sediment Contamination: An International Journal, 20: 2, 129 -141.

Books

- ISBN: 978-1-53612-622-8, **Book chapter: Orata Francis, 2017**. *Sewage and Wastewater Treatment Plants Performance: Challenges and their Environmental Impact*, In: Advances In Environmental Research, Editor, Justin A. Daniels. Nova Science Publishers, New York, Vol 58: 137 – 157, Isbn: 978-1-53612-622-8; Issn: 2158-5717.
- ISBN 9781315296364, **Book chapter: Francis Orata Omoto: 2018**. Conventional Wastewater Treatment Plants as a Discharge and Source Point for Biota Exposure to Micro-pollutants, In: Ecotoxicology, Perspectives on Key Issues, Editors, Rachel Ann Hauser-Davis, Thiago Estevam Parente. Chapter 11.
- ISBN 978-3-8322-8352-0; **Book, 2009**. "*Perfluorinated compounds in environmental Matrices of Lake Victoria gulf*". Shaker.de publishers.
- ISBN 978-953-51-0298-4, **Book chapter: Orata Francis, 2012**: Advanced Gas Chromatography - Progress in Agricultural, Biomedical and Industrial Applications. Chapter entitled "*Derivatization Reactions and Reagents for Gas Chromatography Analysis*". InTech - Open Access Publisher. Chapter 5: 83-108.
- ISBN13: 9781799818717; Orata, F. (2020). Chemicals of Emerging Concern in Surface and Wastewater: A Perspective of Their Fate within the Lake Victoria Catchment Area of Kenya. In V. Shikuku (Ed.), *Effects of Emerging Chemical Contaminants on Water Resources and Environmental Health* (pp. 1-16). Hershey, PA: IGI Global. doi:10.4018/978-1-7998-1871-7.ch001.
- ISBN: 978-1-53617-466-3; Chapter 3. *Environmental Toxicity of Diclofenac*, in **Environmental Pharmacology of Diclofenac**. (**Francis Orata**, PhD, Department of Pure and Applied Chemistry, Masinde Muliro University of Science and Technology, Kakamega, Kenya)

Journals

Editorial board: Journal of Waste water Management & Analysis.

Reviewer: Analytical and Bioanalytical Chemistry, Chemosphere, Science of Total Environment

FUNDED RESEARCH PROJECTS

- Towards COVID-19 Containment: Serological, Faecal and Wastewater Epidemiological Surveillance of SARS-CoV-2 in Support of Home-Based Isolation and Care in Kenya", in response to the NRF, collaborative research on coronavirus call 2020 grant was awarded. The awarded grant amount is 200,000US Dollars
- Royal Society of Chemistry Inclusion and Diversity Fund ("RSC"). £4976. May 2020
- Grant for your Multidisciplinary project by the NRF Kenya. KES 9,000,000 (Nine Million Kenya shillings) "Use of locally available plant resources for phytoremediation of potable contaminated water by endocrine disrupting chemicals".
- ProUniEdu-WeK, a DAAD funded project Between MMUST and Technical University of Brandenburg. Ongoing since 2017
- Dietary exposure to perfluorinated carboxylates (PFCAs) and perfluorinated sulfonates (PFSAs).In Collaboration with Department of Applied Environmental Science (ITM). *Stockholm University, Sweden*. EU, PEEFOOD PROJECT.
- Inventorying. Kenya national Implementation Plan (NIP) for the Stockholm convention on Industrial Persistent Organic Pollutants (POPs).World Bank and Government Ministry of Environ, Water and natural Resources. World Bank, through the Ministry of Environment **1.5 million**.
- Field dissipation of Carbofuran and Diuron in Kenyan Tropical Soils and the influence of organic amendments. MMUST.
- Isolation and Characterization of Carbofuran degrading Bacteria: A case Study of Nzoia River Basin. Funded by National Council of Science and Technology, Kenya. NACOSTE.
- NRF 2019 2020 **850000KSH** Agripina Khalembi Dr. Francis Orata Omoto
- IFS – Phytoremediation and adsorption of pharmaceuticals from waste water. **12000 \$** Ms. Sally Kimosop Dr. Francis Orata
- CEWARM – River catchment research. MMUST Fund. **1500000Ksh.** Prof. William Shivoga Dr. Francis Orata Omoto
- River Isiukhu research (URF) Jane Oremo Dr. Francis Orata Omoto, Joseph Owino
- Farms contamination (URF) Agripina Khalembi Dr. Francis Orata Omoto.

STUDENTS SUPPERVISSION

Post graduate students (MSc)

- Ngeno Emily (Reg. No. SCH/G/07/12). Isothermal, Kinetic and Thermodynamic Studies of Adsorption of Caffeine and Ciprofloxacin onto Pyrolytically Derived Water Hyacinth Biochar. **Complete**
- Sifuna W Fred (Reg. No. SCH/G/02/13). Levels of selected pharmaceuticals in wastewater treatment plants within Lake Victoria region of Kenya, and their electrochemical degradation. **Complete**
- Florah Chirikona (Reg. No. SCH/G/02/11). (MSc). Determination of Perfluoroalkyl acids (PFAAs) in waste water treatment plants (WWTPs). Degree of Master of Science. Department of Pure and Applied Chemistry. Masinde Muliro University of Science and technology. **Complete**.
- Selly Jemutai Kimosop. (Reg. No. SCH/G/01/09). Selected Carbamate and Organophosphorous Pesticides Occurance and Fate in Environmental Matrices of Nzoia River Basin. **Complete**.
- Pauline Adisa, REG NO: SEB/G/03/15 Assessment of levels and forms of mercury in soils, sediments and Vegetation material in Muhudu-kaimosi, Vihiga County, Kenya.
- Faith Birgen SCH/G/06/15. Multi pollutant removal by impregnated al-fe oxide clay water Hyacinth biochar composite via adsorption.
- Joyce Kipchumba, SCH/G/05/2014. Kinetics Models for Degradation of, Chlorpyrifos and Diuron at Different Substrate Concentrations.

- Julius Thuku Kamau, (SCH/G/07/14). The Application Amount of Filter Mud for the Best Fit Kinetic Model on Degradation of Diuron and Chlorpyrifos
- Shitandayi Agripina Mukhabali, (SCH/G/08/14). Source and Distribution of Polycyclic Aromatic Hydrocarbons in the Sugarcane Growing Regions of Nzoia River Catchment, Kenya. **Complete.**
- Jane Oremo, SCH/G/01-57596/2016. Assessment of Heavy Metals, Nutrients in Water and Benthic Macroinvertebrate; Their Partitioning and Sorption Characteristics along Isiukhu River. **Complete**
- Caroline Mukenye. To work on Application of Natural and Fe-doped zeolite as adsorbents for the removal of ionic and halogenated pollutants.
- Manoah Opnga. Is to start work on Endocrine Disrupting Compounds in dumpsite waste leachates.

Postgraduate students (PhD)

- Selly Jemutai Kimosop. (Reg. No. SCH/H01/13). (PHD). Phytoremediation and Sorption Kinetics of selected Pharmaceuticals using Iron-doped Adsorbents, and their Discharge Loads within Lake Victoria basin, Kenya. Department of Pure and Applied Chemistry. Masinde Muliro University of Science and technology. **Complete.**
- Ogara Rose Shieunda CDP/H/04/012 Accumulation of heavy metals (Cr and Cd) and their spatial and health risk assessment in river Sosiani, Kenya. Temporal distribution in water, sediment and 3 species of fish, emphasizing on public. **PHD. Complete**
- Agripina Muranditsi Khalembi, (Sch/H/02/2016). Bioaccumulation and Biotransfer of Selected Pesticides and Veterinary Drugs in Dairy Cattle in a Naturally Contaminated Environment, their Prevention Using Haccp. **PHD. On going**
- Emily C. Ngeno. (SCH/H/01-56335/2017). Use of Locally Available Plant Resources for Biosorption and Phytoremediation of Wastewater Contaminated by Endocrine Disrupting Chemicals. **On-going**
- Fred Wanyonyi Computational screening of zeolites for the adsorption of selected pharmaceutical pollutants. **On going**
- Agripina M. Shitandayi. SCH/H/01-54508/2020 (PHD). Potential of Zero Valent Fe/Al in Degradation of Azaarenes and Nitro-Polycyclic Aromatic Compounds and Their Distribution in Nzoia and Isiukhu Rivers Basin. **On going**

THESIS EXAMINATION.

- Determination of Aflatoxin Strains and Nutritive Levels Associated with *Rastrineobola Argentea* in Selected Localities in Kenya. Mr. Aloo Lawrence Odhiambo's I56/74268/2014 MSc thesis. University of Nairobi, Chemistry Department. **October 2021**
- Analysis of Pesticides Residues in Tomatoes and French Beans in Murang'a and Kiambu Counties, Kenya. Student: Evans Kipkemoi-AS401/5023/2018. University: Murang'a University of technology. **September 2021**
- Trans-Esterification of Fatty Acids for Production of Biodiesel under Magnetic-Impulse High-Frequency Cavitation Processing on Activated Carbon and Hydrotalcite Support: By Student Number: 201185324, Mr. Ajay Bissessur. University of Johannesburg. PhD Thesis. **February, 2020**
- Determination of Metribuzine and Chloropyrifos in Organically Amended Soils and with Application History within Nzoia River Drainage Basin, by Me. Gershom Kyalo Mutua, **July 2013.** Masinde Muliro University of Science and Technology. MSc Thesis.

LANGUAGES

- English: language of instruction and mother tongue
 Germany: Basic communication; Language course from November 2005 to April 2006
 Kiswahili: National language

HONORS AND AWARDS:

- The MMUST Vice Chancellors recommendation 2015
- 4th Best researcher, MMUST 2015
- Best PHD thesis, Mainz University 2009.
- Deutscher Akademischer Austausch Dienst e.V (DAAD) Scholarship 2005.
- University of Nairobi Scholarship Award, 2001 – 2003
- Certificate of Service to University of Nairobi Award, 1998.
- Certificate of Service to NUCC, 1998 (Public Relations Officer)
- Certificate of Merit from WCK, KGGA, YWCA, NCCK, and KAYO, 1994
- Life Member YMCA
- Honored by inclusion in the WHO is WHO (world book of fame) in Science and Engineering, July 2009.

PROFESSIONAL AFFILIATIONS

- Royal Society of Chemistry Membership (RSC), MRSC Member
- Kenya Chemical Society.
- American Chemical Society
- Gesellschaft Deutscher Chemiker
- DAAD Alumni
- The Society of Environmental Toxicology and Chemistry (SETAC)
- ANCAP (Africa Network of Chemical Analysis of Pesticides)
- International Panel on Chemical Pollution, IPCP
- AIHA: International Affairs Subcommittee for Africa

Services to the University (MMUST)

- Head of Department.
- Board member, CIT.
- Board Member, STIPIL,
- Board member, Disability mainstreaming unit. Member of Senate subcommittees

Service to Community

- Director, Board Kakamega County Rural Water and sanitation Company (KACRWASCO)
- Synod Member, ACK, Mumias Diocese
- Committee member KEBs
- Government consultant/advisor, Industrial chemicals
- Broad of Management and Chairman of secondary schools (Imakale, Namamba, Mukweya, Sidikho, Namudere).
- Board member and founder of Harambee Netherlands/Kenya, an NGO that gives scholarship to the needy

Non-Academic Projects

1. Inventory of solid waste management in Nairobi and Central Kenya. Co-operation with National Environmental Management Authority (NEMA) and Waste management company LACOTE (2003 - 2004). Capacity: Researcher.
2. TRUST project: Twinning contrasting basins with common issues: Nzoia River in Kenya and the middle Catchment of the Rhine River in Germany (Hessisches Ried). A Nzoia River Basin Management Initiative (2006 - 2007). Capacity: Co-ordinator.

REFEREES

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Signed



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