

Fredrick Mzee Mwazighe *Dr. rer.nat.*

fmwazighe@uonbi.ac.ke

EDUCATION BACKGROUND

DATE	INSTITUTION	AWARD
2020	Technische Universität Chemnitz, Germany	<i>Dr. rer. nat</i> Physical Chemistry/Electrochemistry
2013	University of Nairobi, Kenya	<i>Msc Environmental Chemistry</i> Thesis title: Extraction, Physicochemical Characterisation and Stability Monitoring of Essential Oil from <i>Matricaria recutita</i> L. Grown in Selected Areas in Kenya
2005	University of Nairobi, Kenya	<i>BSc. Chemistry, First Class Honours</i>

WORK EXPERIENCE

DATE	ORGANISATION	POSITION & RESPONSIBILITIES
October 2020 -	Department of Chemistry University of Nairobi, Kenya	<i>Tutorial Fellow</i> Resumed from Study Leave Teaching Physical Chemistry (<i>Basic Physical Chemistry Practicals, Thermodynamics & Phase Equilibria, Chemical Kinetics & Electrochemistry, and Chemistry for Pre-clinical students</i>) and supervising postgraduate students
2017-2019	AG Elektrochemie, Institut für Chemie, TU Chemnitz, Germany	Guided undergraduate students through an <i>Electrochemical Impedance Spectroscopy Practical</i>
October, 2014 -	Department of Chemistry University of Nairobi, Kenya	<i>Tutorial Fellow:</i> Taught undergraduate <i>Physical Chemistry and Instrumental Methods of Analysis</i> ; guided undergraduate physical chemistry practicals and supervised undergraduate final year projects

March 30, 2011- October 5, 2014	Department of Chemistry University of Nairobi, Kenya	<i>Graduate Assistant:</i> Taught Physical Chemistry and Instrumental Methods of Analysis; Supervised undergraduate practicals
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SHORT COURSES AND CONFERENCES ATTENDED

DATE	EVENT
10 th November 2021	Chemistry World Webinar on Optimizing Battery Performance through Materials Characterization
1 st – 5 th November 2021	Smarter experimentation for scientists and engineers: online training programme on design of experiments
8 th September 2021	Chemistry World Webinar on Streamlining Small Molecule Discovery with Torx
8 th June 2021	Chemistry World Webinar on Li-ion Battery Electrolyte Degradation Characterization by Mass Spectrometry
18 th – 20 th May 2021	Commonwealth Chemistry Congress (Virtual)
29 th – 30 th April 2021	Workshop on Sustainable Development Through Effective Knowledge Sharing: Concepts, Methods, and Processes, by Centrum für International Migration und Entwicklung
12 th – 19 th May 2019	IUPAC Postgraduate Summer School on Green Chemistry at UDSM, Dar es Salaam, Tanzania
25 th March 2019	Designing Effective Academic Posters Workshop at TU Chemnitz.
16 th -17 th July 2018	Workshop on Scientific Argumentation-Logical Basics and Practical Tools at TU Chemnitz.
21 st -22 nd September 2017	Workshop on Scientific Writing in English at TU Chemnitz.
4 th May 2017	One-day Workshop on Slidewriting and Storylining at TU Chemnitz.
1 st June-30 th September 2016	Intensive Course of German as a Foreign Language up to B1 at Carl Duisberg, Berlin, Germany.
4 th April-27 th May 2016	German Language Course A1 at Goethe-Institut, Nairobi, Kenya.

4 th June- 4th July 2015	Environmental Impact Assessment and Audit Course at Africa Nazarene University, Nairobi, Kenya.
28 th -30th April 2015	Advanced Chemical Safety and Security Workshop, Nairobi, Kenya.
25 th - 29 th August 2014	GC-MS Essentials Workshop at Jomo Kenyatta University of Agriculture and Technology, Kenya.
9 th -13 th June 2014	5 th SEANAC Conference in Mombasa, Kenya.
14 th -27 th September 2013	Intensive Short Course on Environmental Leadership in Sustainable Living with Environmental Risk at Yokohama National University, Japan.
October 2012 – July 2013	Short Course on Sustainable Living with Environmental Risk at University of Nairobi, School of Biological Sciences.
14 th -18 th May 2012	Course on Scientific Communication and Publishing at University of Nairobi Conducted by TCC (Training Centre in Communication).
15 th -17 th February 2012	Second Conference of the International Year of Chemistry at the University of Nairobi.

ACTIVITIES

DATE	ACTIVITY
2017 - 2020	Member of Alumni Netzwerk Subsahara Afrika (ANSA) eV
July 2011 & 2012	Mentored Undergraduate Students from Howard University, USA, who had made a research visit to the University of Nairobi
2004 & 2005	Peer Educator on HIV/AIDS

POSTGRADUATE SUPERVISION

NAME	REGISTRATION NUMBER	PROGRAMME	CO-SUPERVISORS
Erick O. Apunda	I56/36065/2019	M.Sc. Analytical Chemistry (Ongoing)	Dr. R. Kimilu (UoN) Dr. Beth Ndunda (UoN)
Mary J. Kosgey	I56/36010/2019	M.Sc. Chemistry (Ongoing)	Dr. P. Tum (UoN) Prof. J. Onyari (UoN)
Aaron Kiplangat	I56/33746/2019	M.Sc. Industrial Chemistry (Ongoing)	Dr. J. Wabomba (UoN)

UNDERGRADUATE RESEARCH PROJECTS SUPERVISION

NAME OF STUDENT	TITLE OF PROJECT
Nancy Wanjiru Kagure (2016)	Extraction and Analysis of the Essential Oil from Cypress Species (<i>Cupressus lusitanica</i> and <i>Taxodium distichum</i>) of Selected Areas in Kenya
Francis Mburu Kamau (2015)	Presence of Lead, Arsenic and Zinc in the Cleaning Process of Returnable Glass Bottles and Assessment of the Effectiveness of the Chelating Agent Used
Gift Mwabili Kasha (2015)	Optimization of Essential Oil Extraction from <i>Eucalyptus grandis</i> leaves by Clevenger Distillation
Masimba Duncan Mbela (2014)	Optimization of Anaerobic Digestion for Biogas Production from Fruit and Food Wastes: A Lab-scale Study
Daniel Kipkurui Sang (2014)	Optimum Distillation Time for the Active Components of Chamomile Oil
Stephen Mbau Njogu (2014)	Extraction of Blue Essential Oil from German Chamomile by Solvent Extraction-Clevenger Distillation Method

PROFESSIONAL AFFILIATIONS

1. Associate Member, **Royal Society of Chemistry**; Membership number 552514.
2. Member, **Kenya Chemical Society**; Membership number N158.

PUBLICATIONS

Journal Articles

1. Nguyen Tien Hoang, Vo Thang Nguyen, Nguyen Dinh Minh Tuan, Tran Duc Manh, Phuoc-Cuong Le, Dinh Van Tac, **Fredrick M. Mwazighe**, Degradation of dyes by UV/Persulfate and comparison with other UV-based advanced oxidation processes: Kinetics and role of radicals, *Chemosphere*, 2022, 134197, ISSN 0045-6535, <https://doi.org/10.1016/j.chemosphere.2022.134197>.
2. **Mwazighe F. M.**, Multi-walled Carbon Nanotubes Modified Glassy Carbon Electrode for the Detection of Anthracene. *Int. J. of Electrochem.Sci.* 15 (2020) 11058-11069. Doi: 10.20964/2020.11.64
3. **Mwazighe F.M.**, Holze R. Pt-Pd Nanoparticles from Green Synthesis Combined with Multi-walled Carbon Nanotubes as a Modifying Layer on a Glassy Carbon Electrode for the Electrochemical Detection of Pyrene. (Submitted)
4. Tum P.K., Kasha G.M., Kithure J.G.N., **Mwazighe F.M.** (2016) Optimization of Essential Oil Extraction from *Eucalyptus grandis* Leaves by Clevenger Distillation. *J. of Ken.Chem.Soc.* Vol. 9(1) 91-102

5. Mwaniki J.M., **Mwazighe F.M.**, Gitura D.W., Gakuo S.M., Kamau G.N. (2016) Useful Products from Microalgae: Case Study of Ruai Wastewater Treatment Plant in Nairobi. *J. of Ken.Chem.Soc.* Vol 9(1) 15-34
6. Mwaniki J.M., **Mwazighe F.M.**, Masimba D.M. (2016) Optimization of C/N ratio for Mesophilic Anaerobic Digestion from Food Wastes found in Nairobi-A Lab Scale Case Study. *J. of Ken.Chem.Soc.* Vol 9(1) 63-81
7. Mwaniki J.M., **Mwazighe F. M.**, Kamau G.N. (2015) Analysis of Blue Chamomile Essential Oil Produced by Multi-Solvent SECD Method *Afr. J. of Phys. Sci.* 2(1) 1-10
8. **Mwazighe F. M.**, Kamau G. N., Mwaniki J. M. (2014) Anaerobic Digestion of Sewage Wastewaters with Sludge and Rumen Fluid. *Eur. Int. J. of Sci & Technol.* Vol 3(6). 61-66

Conference Paper

1. **Mwazighe F. M.**, “Active Components in the Essential Oil from *Matricaria recutita* L. Grown in Selected Areas in Kenya”. 5th SEANAC Conference 9th – 13th June 2014, Mombasa Kenya.

Seminar Presentations

1. **Mwazighe F.**, Holze R., Pt-Pd Nanoparticles from Green Synthesis Combined with Multiwalled Carbon Nanotubes as a Modifying Layer on a Glassy Carbon Electrode for the Electrochemical Detection of Pyrene. 30th Seminar of AKES, 7th February 2020, at Institut für Experimentelle Physik, TU Bergakademie Freiberg, Germany.
2. **Mwazighe F.**, “Pt/Pd-PANI Nanocomposite Modified GCE for the Detection of Polycyclic Aromatic Hydrocarbons & Research Interests in the Electrochemistry Group”. Doktorandenseminar 13th July 2017, Institute of Chemistry, TU Chemnitz.
3. **Mwazighe F.**, Holze R., “Green Synthesized Pt-Pd Nanoparticles for Electrochemical Detection of Polycyclic Aromatic Hydrocarbons”. 26th Seminar of AKES 10th July 2017, Kurt-Schwabe-Institute, Meinsberg.

Posters

1. **Mwazighe F.**, Holze R. “Morphological and Elemental Analysis and Application of Green Synthesized Pt-Pd Nanoparticles”, at AOFKA Applied Surface and Solid-State Analytics, at TU Bergakademie Freiberg, Germany, on 6th -8th October 2021.
2. **Mwazighe F.**, Holze, R. “Green Synthesis of Pt-Pd Nanoparticles and Their Application in the Electrochemical Detection of Pyrene.” At the IUPAC Postgraduate Summer School on Green Chemistry at UDSM, Dar es Salaam, Tanzania on 12th – 19th May, 2019.

AWARDS

1. DAAD Scholarship for PhD Research in Germany, 2016-2020.
2. Gandhi Smarak Nidhi Scholarship for MSc. Studies, 2009-2011.

REFEREES

Prof. Dr. Rudolf Holze
Technische Universität
Chemnitz
Institut fuer Chemie
Str. Der Nationen 62
D-09111 Chemnitz
rudolf.holze@chemie.tu-
chemnitz.de
+49(0371)531 21260/31509

Prof. John M. Onyari
Department of Chemistry
University of Nairobi
P.O. Box 30197-00100
Nairobi, Kenya
jonyari@uonbi.ac.ke
+254 724 144 904

Prof. Amir O. Yusuf
Department of Chemistry
University of Nairobi
P.O. Box 30197-00100
Nairobi, Kenya
ayusuf@uonbi.ac.ke
+254 713888802
