



Department of Chemistry  
School of Physical and Biological Sciences  
Maseno University  
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## Bowa, Otiemo Kwach

Date of Birth: 1<sup>st</sup> June, 1972  
Place of Birth: Kisumu  
Nationality: Kenyan  
Languages: English, Kiswahili and Luo  
Religion: Christian  
Present Appointment: Lecturer / Chairman of Department

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Computer Skills: MS Word, MS Access, MS Excel, MS PPT, MS Publisher, MSTAT-C and GENSTAT.

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**POSITIVE ATTRIBUTES:** A self-motivated, innovative and result-oriented, capable of achieving personal and team objectives.

**CAREER OBJECTIVE:** To secure challenging position that will enable utilization of my education, training and research background, analytical skills and capability, while contributing to the success of an organization

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### **EDUCATION**

2009-2013- Ph.D. (Inorganic Chemistry), Maseno University

2004-2008- M.Sc. in Chemistry, Maseno University  
1990-1995- B.Ed. (Science, Hons), Egerton University  
1986-1989- K.C.S.E., Onjiko High School  
1978-1985- K.C.P.E., Bugo Primary School

## **EMPLOYMENT HISTORY AND WORK EXPERIENCE**

2020 (March) to Date - Chairman, Department of Chemistry, Maseno University  
2013 to Date - Lecturer, Dept. of Chemistry, Maseno University  
2010 - 2013 - Assistant Lecturer, Dept. of Chemistry, Maseno University  
2009 - 2010 - Tutorial Fellow, Dept. of Chemistry, Maseno University  
2008 - 2009 - Graduate Assistant, Dept. of Chemistry, Maseno University  
2007 - 2008 - Lecturer at Diploma level Mawego Technical College  
2000 - 2007 - Nyabondo Boys High School, Chemistry & Mathematics teacher  
1999 - 2000 - St. Anthony's Kajimbo Secondary, Chemistry & Mathematics teacher  
1995 - 1999 - Miriu Secondary School, Chemistry & Mathematics teacher

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## **RESPONSIBILITIES AND PROFESSIONAL CONTRIBUTIONS**

1. March, 2020 to Date: Chairman of the Chemistry Department, Maseno University
  - Coordinating all departmental activities pertaining to curriculum implementation and research.
2. 2016 to Date: Departmental web Champion
  - Providing latest departmental programs events and publications for updating the departmental website
3. 2013 to 2019: Examinations and Time Table Coordinator of Department of Chemistry Maseno University involved in:
  - ensuring that examination papers are set in good time, moderated both internally and externally before being handed University Examinations production unit.
  - ensuring that all examinations for the department are scheduled appropriately in the exam timetable
  - receiving marked examination scripts, sending them for external examination and returning them to the departmental examination's office
  - taking internal examiners through observations of the external examiners for improvement of the marking exercise
  - putting marks on an online management system a
  - Safe keeping of hard copies of mark-sheets
  - ensuring that teaching timetable has all the departmental courses appropriately allocated
4. 2013 to date: Member of Departmental Postgraduate Board:





2008 to date - Teaching Environmental, Inorganic and Analytical Chemistry at undergraduate and Master's levels

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## FUNDS ATTRACTED

1. 2018-2022 Co-PI: Kenya National Science Foundation Grant for Molecular Application of Protein Phosphatase 2A in Cyanobacteria Microcystin Quantification and Degradation in Water Purification Systems. In Collaboration with Moi University, KEFRI-Kisii, and Masinde Muliro University of Science and Technology - KES 18,000,000
  2. Okal Amos Were: Kenya National Research and Innovation Grant for PhD Project - KES 2,000,000/=
  3. Ombori Robert Ondieki: NACOSTI Grant for Masters Project– KES 185,000/=
  4. Daniel Simiyu Wamalwa: NACOSTI Grant for Masters Project – KES 145,000/=
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## POSTGRADUATE GRADUATE SUPERVISION

### PhD Students

#### Continuing

1. **Onesmus Kyalo Mwaniki**, PhD Chemistry, (Maseno University). Effects of location of Production, Seasons, Post-harvest Handling and Food Preparation Methods on Some Carbamates, Pyrethroids, and Organochlorine Pesticide Residues in Selected Vegetables. Ongoing since 2018
2. **Okal Amos**, PG/PHD/SC/00033/2016, PhD Chemistry (Maseno University). Changes in Clonal Tea (*Camellia sinensis*) Green Leaf Catechins and Plain Black Tea Quality Parameters with Cultivars, Age after Pruning and Fermentation Duration. Ongoing from August 2016.

### Masters Students

#### Completed

1. **Ombori Robert Ondieki**, PG/MSc/00062/2012, MSc Chemistry (Maseno University). Effects of Nitrogenous Fertilizer Application Rates and Plucking Intervals on Soil Organic Carbon, pH, Nutrients Levels and Yield of Tea (*Camellia sinensis* (L.) in Eastern Africa Tea Growing Regions.
2. **Daniel Simiyu Wamalwa**, PG/MSc/00032/2013, MSc Chemistry (Maseno University). Effects of long intervals of Nitrogen Fertilizer Application and Recycling of Tea Pruning's Mulch on Nutritional Status and Yields of Tea in Kenya. (**Successfully defended thesis and awaiting graduation in December, 2019**).

#### Continuing

3. **Goga Benard Ooko**, MSc/SC/00044/2018, MSc Chemistry (Maseno University). Concentrations, diurnal and seasonal variations of tropospheric ozone, its precursor nitrogen oxides and their meteorological relationships at Kapiti, Kenya. Ongoing since 2019
4. **George Ooyo**, PG/MSc/00007/2012, MSc Chemistry (Maseno University). Levels of Selected Organophosphorus Pesticide Residues in Some Varieties of Watermelon (*Citrullus lanatus*) and in their Growing Soils. Ongoing since 2015.



5. **Mary Oriaro**, PG/MSc/00058/2012, MSc Chemistry (Maseno University). Post-Harvest Quality Deterioration of Green and Burnt Harvested Sugarcane (*Saccharum officinarum* L.) with Variety, Age and Duration After Harvest. Ongoing since 2014.
6. **Ambira Jerusa Akoya**, PG/MSc/00051/2009, MSc Chemistry (Maseno University). An Assessment of the Distribution of Polychlorinated Biphenyls in Winam Gulf, Lake Victoria. Ongoing from October, 2014.

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## THESES EXAMINED

### Internal Examiner

#### Doctorate Level

1. Nyairo Wilfrida Nyanduko: PHD/SC/00058/2014. Derivatization of Graphene Oxide with Methyl- $\beta$ -Cyclodextrin and Carbon Nanotubes with Polypyrrole for Removal of Lead (II) and Copper (II) from Water

#### Masters level

1. Peter Ogondi Ogola: MSC/SC/00047/08. Influence of Production Location on yield and Non-Volatile Quality Parameters of Selected Tea Cultivars in the Lake Victoria Basin of Kenya
2. Francis Kiema: PG/MSc/00094/2011. Assessment of selected metal pollutants along Lake Victoria shoreline between rivers Kisat and Kisian discharge areas, Kisumu County, Kenya
3. Samwel Oginga Nyandere: PG/MSc/00019/2010. Variations in Soil and Foliar Nutrients Levels, Yields and Quality of Two Ratoon-Sugarcane Crops Due to Harvesting Age, Nitrogen and Potash Fertilizations in Western Kenya
4. Charles Orimbo: PG/MSc/089/2008. The Efficacy of Dichlorodiphenyltrichloroethane and Chlorpyrifos Against Mosquito Larvae and their Dissipation from Mosquito Larval Habitats
5. Theodara Achieng, PG/MSc/00005/2012. Evaluation of Selected Management Practices Contributing to Primary Greenhouse Gas Fluxes in Smallholder Sugarcane Farming in Lower Nyando, Western Kenya
6. Agunja Erick Omondi (PG/MSc/00033/2012). Effective Combinations of Selected Local Natural Materials for Domestic Water Purification on Borehole Water\_\_\_\_\_

## RESEARCH ACTIVITIES

- Tea plant nutrition and tea quality biochemicals
- Persistent organic pesticides and organophosphate residue levels in environmental matrices
- Speciation of heavy metals and their pollutant pathways environmental matrices.
- Aflatoxin types and concentrations in grains

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## LIST OF PUBLICATIONS



1. **Kwach, B.O.**; Yonghong J. B. The Concentrations and Spatial Distribution of Selected Organochlorine Pesticides in the Sediments Along the Main Channel of Three Gorges Dam, China. (**in Press**)
2. **Kwach, B.O.**; Yonghong J. B Distribution of Selected Organochlorine Pesticides in Sediments from Xiangxi, Daning and Xiaojiang Rivers, China. (**in Press**)
3. **Kwach, B.O.**; Owuor, P.O; Kamau, D.M; Msomba, S.W.; Muhoza, C. (2015). Variations in the Precursors of Plain Black Tea Quality Parameters due to Location of Production and Nitrogen Fertilizer Rates in Eastern African Clonal Tea Leaves. *Experimental Agriculture*, **(1)**, 1-13.
4. **Kwach, B.O.**; Kamau, D.M.; Msomba, S.W.; Muhoza, C.; Owuor, P.O. (2014). Effects of location of production, nitrogenous fertilizer rates and plucking intervals on clone TRFK 6/8 tea in East Africa: II. Mature leaf nutrients. *International Journal of Tea Science*, **10(3&4)**
5. **Kwach, B.O.**; Owuor, P.O.; Kamau, D.M.; Wanyoko, J.K.; Kamunya, S.M. (2013). Influence of location of production, season and genotype on caffeine and flavan-3-ols in young green tea (*Camellia sinensis*) leaves in Kenya. *Journal of Agricultural Science and Technology B*, **(3)**, 557-574.
6. Omwoyo, W.N.; Owuor, P.O.; Onger, D.M., Kamau, D.M.; **Kwach, B.O.**; Munyao, P.M.; Otieno, M.O. (2013). Availability of some inorganic nutrients and effects of grading on their levels in East African black teas and infusions. *Asian Journal of Biological and Life Sciences*, **1(2)**, 4-16.
7. Owuor, P.O., **Kwach, B.O.** (2012). Quality and yields of black tea (*Camellia sinensis* L.O. Kuntze) in responses to harvesting in Kenya. *Asian Journal of Biological and Life Sciences*, **1 (1)**, 1-7.
8. **Kwach, B.O.**; **Owuor**, P.O.; Kamau, D.M., Wanyoko, J.K. (2012). Evaluation of foliar analysis as a diagnostic tool of predicting nutrients deficiencies of clonal tea in Kenya. *Asian Journal of Biological and Life Sciences*, **1 (2)**, 8-18.
9. **Kwach, B.O.**; Kamau, D.M.; Owuor, P.O.; Wanyoko, J.K.; Msomba, S.W.; Uwimana, M.A. (2011). Effects of location of production and fertilizer rates on mature leaf nutrients of clone TRFK 6/8 in East Africa. *Tea* **2**, 7-14.
10. **Kwach, B.O.**; Lalah, J.O.; Wandiga, S.O. (2009). Spartial and seasonal variations in concentrations of polycyclic aromatic hydrocarbons in water and sediment of Kisumu City bay of Winam Gulf, Lake Victoria. *Bulletin of Environmental Contamination and toxicology*, **83**, 734-741.
11. **Kwach, B.O.**; Lalah, J.O. (2009). High concentrations of polycyclic aromatic hydrocarbons found in water and sediments of Car wash and Kisat areas of Winam Gulf, Lake Victoria-Kenya. *Bulletin of Environmental Contamination and toxicology*, **83**, 727-733.

## BOOKS AND BOOK CHAPTERS

1. **Kwach, B.O.**; Shikuku, V.O. (2020). Microplastics as Emerging Contaminants: Occurrence, Toxicology, and Analysis In: *Advances in Environmental Engineering and Green Technologies (AEEGT)* ISBN: 978-1-7998-1241-8 (**Book Chapter**)



2. Owuor P.O.; Kamau, D.M.; Kamunya, S.M.; Uwimana, M.A.; Okal, A.W.; **Kwach, B.O.** (2011). Effects of Genotype, Environment and Management on Yields and Quality of Black Tea In: Agriculture Reviews Volume 7. DOI 10.1007/978-94-007-1521-910. (Book Chapter)
3. **Kwach, B.O.** (2011). Polycyclic Aromatic Hydrocarbons in the Gulf of Winam in Kenya. Lap Lambert, Germany. ISBN: 978-3-8465-2336-0. (**Book**)

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#### CONFERENCES, WORKSHOPS AND SEMINARS ATTENDED

- 2019: - Exceed-Swindon regional experts' workshop on modern and traditional ways of water resource management in Africa-Durban, South Africa
- 2018:** - EXCEED Regional Training Workshop on Holistic Approach to Water Resources Management in Africa – Yaoundé Cameroon.
- 2018:** - 2<sup>nd</sup> Africa Tea Science Symposium & Exhibition. Green Hills Hotel, Nyeri, Kenya
- 2018:** - DAAD Workshop on The Role of Supervisors in Quality Research and Proposal Writing-Kisumu Hotel, Maseno University, Kenya
- 2018:** - EXCEED Regional Training Workshop on Holistic Approach to Water Resources Management in Africa – Yaoundé Cameroon
- 2017:** - Kenya Chemical Society Training Workshop on Chemical Security Vulnerability Assessment – Royal City Garden, Kisumu
- 2016:** - DAAD National Workshop on Inorganic Chemistry – University of Nairobi
- 2016:** - EXCEED Experts Workshop on Sustainable Use of Water Resource - Kisumu
- 2015:** - Technical Committee on Tea KEBS Workshop - Nairobi
- 2015:** - Technical Committee on Roots and Tuber Crops KEBS Workshop - Nairobi
- 2011:** - VicRes Biennial Forum at Soeke Resort Munyonyo, Kampala, Uganda.
- 2011:** - 4<sup>th</sup> National Council for Science and Technology Conference at Kenyatta International Conference Centre, Nairobi, Kenya.
- 2009:** - DAAD PhD Proposal Writing Workshop at ICIPE, Nairobi, Kenya.

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#### PAPERS PRESENTED AT SEMINARS

1. Towards development of water quality index based on physicochemical, biological, inorganic and organic parameters (2019) – Durban South Africa
2. Genotypes, Environment and Plain Black Tea (*Camellia sinensis* L.) Quality (2018). 2<sup>nd</sup> Africa Tea Science Symposium & Exhibition. Green Hills Hotel, Nyeri, Kenya
3. The Impacts of Microplastics on Quality of Surface Waters: A Brief Review (2018). EXCEED Regional Training Workshop on Holistic Approach to Water Resources Management in Africa – Yaoundé Cameroon
4. Effects of cultivars and location of production on 1<sup>st</sup> Bud, 2<sup>nd</sup> and 3<sup>rd</sup> Tea Leaf Nutrients (2011). 4<sup>th</sup> National Council for Science and Technology Conference at Kenyatta International Conference Centre, Nairobi, Kenya

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#### MEMBERSHIP OF PROFESSIONAL BODIES

- A member of the Kenya Chemical Society

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#### EXTRA RESPONSIBILITIES



1. 2019 to Date - BOM member, Bugo Primary School
2. 2016 to date – Member, National Development Committee, Apostolic Evangelical Christian Church.

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## REFEREES

1. Prof. Crispin Ounga Kowenje  
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