

# Academic Staff Profile

## Personal Profile

### Personal Details

Name: Lilian Kamau-Gatogo  
Title/Qualification: MSc, PhD  
Department: Department of Chemistry  
Designation/Position: Lecturer  
Email: gatogo.lilian@ku.ac.ke  
Contact Address: P.O. Box 43844, Nairobi, 00100

#### Area of Specialization:

- Bioanalytical Chemistry
- Electrochemistry

#### Research Interests:

- Pathogen detection and profiling
  - Environmental chemistry
  - Food chemistry; food safety and security
- Nanoparticles in pathogen detection, electrochemistry and application in food safety
- Promoting STEM education.

Google Scholar:

[https://scholar.google.com/scholar?hl=en&as\\_sdt=0%2C5&q=Lilian+Kamau-Gatogo&btnG=](https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Lilian+Kamau-Gatogo&btnG=)

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### Academic & Professional Qualifications

- Georgia State University, Atlanta, GA, USA, PhD, Analytical Chemistry, May 2013
- Tuskegee University, Tuskegee, AL, USA, Master of Science (Chemistry) 2008
- Kenyatta University (KU) Nairobi, Kenya. B.Ed. (Science, major in Chemistry), (Graduated with Honors), December 2004

### Employment History

- 2021 – to-date; Lecturer, Department of Chemistry, Kenyatta University, Main Campus
- 2014 - 2020; Lecturer, Department of Chemistry, Kenyatta University-Kitui Campus, Chemistry Department
- 2013 – 2014; Associate lecturer, Mount Kenya University, Thika, Kenya
- 2009; Part-time lecturer, Department of Biochemistry, Biotechnology and Microbiology, Kenyatta University
- Teaching Assistant
  - o Georgia State University, Atlanta, Georgia; 2008-2013
  - o Tuskegee University, Tuskegee, Alabama; 2006-2008

## Awards and Achievements

1. American Chemical Society Biological Science Division Travel Award for graduate students. April 2013
2. The 35<sup>th</sup> Annual Sigma XI Student Research Symposium; 1<sup>st</sup> position award. Tuskegee University, Tuskegee, AL, USA, 36088, April 2008
3. The Abdur Razzaque Memorial Award. The President's Essay Contest & Awards Program. THEME: "Workforce Preparation: A 21<sup>st</sup> Century Priority" Tuskegee University, Tuskegee, AL, USA, 36088, April 2008

## Publications

### Books

1. Development of RNA microchip for pathogen and cancer direct detection

### Referred Learning Modules

1. Dr. Lilian Kamau-Gatogo and Dr. Richard Nthumbi; (December 2020); SCH 403; Phase Equilibria
2. Dr. Lilian Kamau-Gatogo, Dr. Judy Mwaura and Prof. Hudson Nyambaka (December 2020); SCH 404; Instrumental Methods

### Teaching areas of Interest

1. Analytical chemistry; Introduction, Instrumental methods and Chromatography
2. Electrochemistry; general, Electroanalytical Techniques and Fundamentals of Electrochemistry
3. Physical chemistry; introduction, Chemical kinetics and Phase Equilibria

### Publications in preparations

- Nanoparticle-assisted Rapid RNA Detection on RNA Microchip, **Lilian Kamau-Gatogo** and Zhen Huang\* Department of Chemistry, Georgia State University, Atlanta, GA, 30303, USA; huang@gsu.edu
- Rapid RNA Preparation and Detection of RNA Virus on RNA Microchip, **Lilian Kamau-Gatogo** and Zhen Huang\* Department of Chemistry, Georgia State University, Atlanta, GA, 30303, USA; huang@gsu.edu
- Rapid Cancer mRNAs detection by RNA Microchip. **Lilian Kamau-Gatogo** and Zhen Huang\* Department of Chemistry, Georgia State University, Atlanta, GA, 30303, USA; huang@gsu.edu

### Research Interests /experience/technique/skills

- ABI DNA/RNA synthesizer (ABI 3400) for synthesis of DNA and RNA
- Omnigrad Micro (Cartesian Technologies) for printing nucleic acid probes on the microchips
- Microscope (Nikon Eclipse 80i) and an Ultrasensitive charge coupled detector (CCD) camera
- X-cite fluorescence illumination system with CCD camera
- Electrophoretic methods; gel electrophoresis and capillary electrophoresis

- Preparative, analytical (reverse and normal) high performance liquid Chromatography (HPLC)
- Gas chromatography (GC)
- Other chromatographic methods; thin layer chromatography, column chromatography, ion exchange and size exclusion chromatography
- Biologic LP Micro Plate Reader spectrophotometer
- IR spectroscopy and Fourier transformer infra-red spectroscopy (FTIR)

## Research Funding

1. **Principal Investigator**, PEER Seed Grant awarded in partnership with USAID and National Academy of Sciences Engineering and Medicine. Project Title; “Development of a visual detection microarray-based method for the detection of multiple Aflatoxin producing *Aspergillus* species”.
2. Partnership for Enhanced Engagement (PEER) and COACH Women in Science Mentoring Program. PI; Prof Caroline Thoruwa. Travel Award to go to Rwanda and a 1 year Mentorship program in Kenya. Upon completion, one could apply for a seed grant.
3. America Chemical Society Graduate Assistant Travel Award, A travel Award to go to ACS national Conference in Louisiana
4. PHD Chemistry Fellowship (2008); Georgia State University, Atlanta, Ga. Full scholarship coupled with stipend
5. MSc scholarship (2006); Tuskegee University, Tuskegee, Al. Full scholarship coupled with stipend

## Other Research Funding Application

1. Kenyatta University Vice Chancellors grant (VCs grant); A research to evaluate donkey meat as an alternative source of proteins. (Unsuccessful)
2. Context matters Research Grant Competition. CODE grant to promote education

## Conferenced/Workshops/Seminars Attended

### Conferences Attended

1. Conference on Basic and Applied Sciences (CBAS). 10/18 2022. Theme; Embracing Science & Technology for Resilience and Transformation. Kenyatta University School of Pure and Applied Sciences Conference; attendance
2. International Food Safety Conference. Theme, ‘Food and nutrition safety, from farm to fork: a missing link in consumer health and food security’ Venue: Kenyatta University, Nairobi, Kenya. 20-24<sup>th</sup> May 2019
3. Visual RNA microchip for detection of pathogen mRNAs”. Lilian Kamau-Gatogo and Zheng Huang. 245<sup>th</sup> American Chemical Society National Meeting and Exposition. New Orleans, LA, USA, April 2013
4. “Novel RNA microarray for rapid and direct detection of *Escherichia coli*”. Lilian Kamau-Gatogo and Zheng Huang. The 5<sup>th</sup> Annual Poster Day, Chemistry Department. Georgia State University, Atlanta, GA, USA, 30303, March 2013
5. “Rapid and direct cancer and dengue viral serotypes detection on RNA microchip”. Lilian Kamau-Gatogo and Zhen Huang. The 8<sup>th</sup> Annual Emerson Center Lectureship Award Symposium. Emory University, Atlanta, GA, USA, 30322, April 2012
6. “Rapid and direct detection of cancer and virus on a RNA microchip”. Lilian Kamau-Gatogo and Zhen Huang. The 1<sup>st</sup> Center for Diagnostics and Therapeutics (CDT) Conference, Georgia State University, Atlanta, GA, USA, 30303, March 2012

7. "Development of an oligonucleotide microarray for detection of RNAs". Lilian Kamau-Gatogo, Sarah Spencer, Zhen Huang. The 2<sup>nd</sup> Annual Poster Day, Department of Chemistry, Atlanta, GA, USA, 30303, March 2011
8. "Chromatographic Analysis of  $\alpha$ -tocopherol and cholesterol in longissimus dorsi muscle: a comparative study of Gas Chromatography and High Performance Liquid Chromatography". Lilian Kamau<sup>1</sup>, Kyle R. Willian<sup>1</sup> and Christopher Kerth<sup>2</sup>. <sup>1</sup>Department of Chemistry, Tuskegee University, Tuskegee, AL, 36088 and <sup>2</sup>Department of Animal Sciences, Auburn University, Auburn, AL, 36849, USA, The 35<sup>th</sup> Annual Sigma XI Student Research Symposium, April 2008. (Winner of position 1 poster presenter)

## Workshops Attended

- KCS Nairobi Chapter workshop held at KU; 24/06/2023; " Role of Chemistry in Climate Change Mitigation, Food Safety and Security" (Attendance)
- Centre for Teacher Professional Development and Excellence retooling workshop. Held at Kenyatta University on 03/05/2023
- Inclusion and Diversity Training Workshop held at United States International University on 17/04/2023. Theme, "Bridging the Gap that exists in the Delivery of Learning Materials to Students with Disabilities at higher learning institutions" (Attendance)
- Teacher Professional Development capacity building workshop; Held at KU on 14-15<sup>th</sup> Dec 2021
- Africa Centre for Transformative and Inclusive Leadership workshop held at ACTIL Centre, Kenyatta University on 17/03/2023. Theme; "Programme for ACTIL stakeholders meeting on validation of mentoring programme at K.U.C.C."
- SPHEIR curriculum workshops held at Naivasha and Kenyatta University, Kenya. The workshops aim was to review the curriculum in line with the CBC education system. Curriculum review and mapping for the department; 2019
- "Partnerships for Enhanced Engagement in Research (PEER) and COACH Women in Science Mentoring Program" Trained as a mentor of mentors. Held on 11-13<sup>th</sup> July 2018 in Hotel des Mille Collines, Kigali, Rwanda
- Induction on New National Technical Committee members. KICC Nairobi; 22/08/2022

## Seminars Attended

- PEER Seed Grant workshop and JKUAT. (2022) Topic, Isolation and **Identification of Aflatoxin Producing *Aspergillus* Species and other Maize Contaminants (Presenter)**
- **5<sup>th</sup>- 6<sup>th</sup> May 2021**- SPAS Staff Training on Development and Implementation of the Competency Based Curriculum. Organized by School of pure and Applied Sciences (SPAS) Kenyatta University in collaboration with Association for Faculty Enrichment in Learning and Teaching (AFELT).
- Women in Educational Researchers of Kenya (WERK) seminar meeting series. The seminars are more targeted on enhancing research in education. There are several sub-themes and I am a member of STEM education subtheme. The main agenda is to promote STEM education in girl child.
- PEER seminar series, Online seminar series for all their research grant recipients.

## Supervision of Postgraduate Students

### Masters

S/NO	Name of Student	Thesis Title	Status on the project
1.	Hellen Seka Anyanga	Occurrence and Molecular Identification of <i>Fusarium</i> spp and determination of	Research stage

	I56/21021/12	fumonisin levels in maize from different regions in Kenya	
2.	Vacel Kirima I56/CE/26971/2018	Synthesis of Nickel/Platinum Catalysts on Glassy Carbon for Methanol Electro-Oxidation	Proposal submitted for registration
3.	Jacob Mutua Ndola I56/CE/27708/2019	Evaluation of the Pesticides Residues on Mangoes Grown in Nzaui Ward, Makueni County, Kenya	Proposal defended awaiting registration
4.	Marigu Wilfred Gikundi I56/CE;28679/2018	To investigate the efficacy and effect of selected non-conventional ripening agents on physicochemical properties of Cavendish bananas	Proposal development stage
5.	James Muthui Musyimi I56/CE/21334/2020	Determination of pesticides residues and health risk of khat leaves (muguka) in Meru county, Kenya	Proposal development stage
6.	Linet A. Onyango I56/CE/28678/2015	Level of selected essential immune-boosting trace elements during sprouting of green grams, finger millet and sorghum from Homabay, Kenya.	Proposal development stage

### **Professional/ Consultancy (Editor/ Peer review in journals, Networks/ Collaborations, External Examiner, Patents)**

- ICED (International Consortium for educational development) conference abstract reviewer for the conference held in 2022. The conference was facilitated by Danish Network for Educational Development (DUN); 2022
- WERK collaborations; in the STEM subtheme, our interest is to promote girl child education especially in STEM subjects. Participate in proposal writing and a pilot project to promote online learning. The pilot project involved teaching in high school for a whole term (semester). The proposal will be presented to funding agencies before the end of the year

Proposal Title; **'EMPOWERING GIRLS IN MARGINALISED COMMUNITIES IN PERFORMANCE OF STEM SUBJECTS: A DIGITAL PLATFORM'**

- The group have participated in project trials for 3 months where we offered tuition to high school students with an aim of writing a proposal. The group submitted a proposal in 2022 (unsuccessful) and we are working on other proposals
- Head of the analytical section developing Masters of Science (chemistry) curriculum at Mount Kenya University, 2014 – 2015
- Dr. Lucy M. Kamau, Department of Animal Sciences, School of Agriculture and Environmental Sciences. Kenyatta University
- Dr. Agatha Wagutu, School of Pure and Applied Sciences, Kirinyaga University, Kirinyaga.

### **Community Service and Other Engagements**

1. Kenya Bureau of Standards (KEBS) as a technical committee member, Helps in evaluation of standards, spices and condiments. TC 24; 2018 – Present.

2. Member in the Organisation of Vocational Bible School targeting children and teens in Ting'ang'a community, 2017 – 2018. The VBS attracted 300 children from Ting'ang'a community and its environs
3. Member in the organisation of Free medical camp in Ting'ang,a Community, 2015. The medical camp attracted 350 outpatients from Ting'ang'a and its environs
4. Started and supported a two-year girl support program for the mentorship of Ting'ang'a girls football club
5. Teens class teacher, Full Gospel Churches of Kenya, Ting'ang'a, Kiambu
6. Coordinator in preparation of FGCK Kiambu Women Sports Day. The even attracted more than 100 women participants.

### **Affiliation of Professional Bodies**

- |   |                |
|---|----------------|
| 1. Kenya Chemical Society (KCS)   | 2014 - Present |
| 2. American Chemical Society (ACS)  | 2008 - 2014    |
| 3. Women Educational Researchers of Kenya (WERK) A member of stem education and gender thematic group | 2019 - Present |
| 4. Kenya Association of Food Safety and Protection (KAFSAP)   | 2018 - Present |
| 5. Sigma XI Scientific Research Society   | 2012           |

### **Administrative Positions Held**

#### **Recognized university administrative positions**

- 2018-2021; Coordinator, School of pure and applied sciences, Kenyatta university-Kitui Campus
- 2014 - 2021; Secretary; Management and Advisory Board, Kenyatta university-Kitui Campus
- 2019-2021; Quality management systems committee, Chemistry, Kenyatta university-Kitui Campus
- 2019-2021; member - staff recruitment, appraisal and promotions committee; Kenyatta university - Kitui Campus

#### **Departmental Duties**

- Marks verification Team
- Departmental Unit Allocation Committee
- Departmental Instrumentation Committee
- Research and General Laboratories Committee
- Departmental Grant Proposal and Consultancy Committee
- Research and Collaboration committee, Kitui Campus

#### **Other skills**

Microsoft Office, Fortran, EndNote, ChemDraw Ultra, PubMed, SciFinder Scholar, Web of Science

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[webmaster@ku.ac.ke](mailto:webmaster@ku.ac.ke) to enable updates to your web page.