Naumih M. Noah (PhD)
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Career Objective

Research on Analytical/Bioanalytical chemistry focusing on development and validation of biosensors for the detection of infectious diseases and integration of nanotechnology and health care in developing countries. My current research is geared towards development of Nano-kits for rapid and sensitive diagnostic of Schistosomiasis as well as green synthesis of Silver Nanoparticles. I am also interested in chemical safety and security as well as green chemistry and waste management.

Education:

- PhD, State University of New York at Binghamton, May, 2012.
  Dissertation title: New Concepts in Pain Detection and Management using Biochemical Principles.
  Research Advisor: Professor O.A Sadik, Email: osadik@binghamton.edu
  Department of Chemistry, Binghamton University http://www2.binghamton.edu/chemistry/people/sadik/sadik.html
- MSc, University of the Ryukyus, Okinawa, Japan. Analytical Chemistry, 2006
  Thesis title: Evaluation of Heavy metal pollution on the coastal marine environments of Okinawa Island, Okinawa, Japan
  Research Advisor: Prof Oomori Tamotsu
- BSc, University of Nairobi, Chemistry Major, 2002 (First Class Honors)

Professional Experience:

1) May 2015 – Present: Assistant Professor of Analytical/Bioanalytical Chemistry, School of Pharmacy and Health sciences, United States International University- Africa (USIU-A)
   Detailed Task Assigned: Teaching and Research
   Units Taught
   - ENV 2000: Introduction to Environmental Science
   - ENV 2001: Sustainable Resource Management
   - NSC 2212: Life, Society and Environment
   - CHE 1305: Basic Inorganic Chemistry
   - CHE1306: Atomic Structure and Chemical Bonding
   - CHE 2307: Physical Chemistry
   - PHM 3401: Introduction to Analytical Chemistry
   - PHM 3402: Instrumental Methods of Analysis
2) September, 2012 – May 2015: Lecturer of Analytical/Bioanalytical Chemistry, Chemistry Department, Kenyatta University.

Detailed Tasks Assigned: Teaching and Research;

Units Taught:

- SCH 100: Fundamentals of Inorganic Chemistry (First Years),
- SCH 103: Introduction to Classical analysis and Separation Techniques (First Years),
- SCH 106: Quality Control and Laboratory Management (First Years),
- SCH 321: Research Methods (Third Years),
- SCH 418: Non-Spectroscopic Methods of Analysis (Fourth Years),
- SCH 856: Analytical Electrochemical Methods (MSc Students)
- SCH 851: Advanced Separation Methods (MSc Students)

Past Administrative Duties

- Kenyatta University Green Chemistry Club Matron.
- Kenyatta University Chemistry Department Exam Coordinator assistant.

3) Visiting Research Fellow, University of the Western Cape, South Africa, Sensor Lab, Chemistry Department, 1st to 23rd May, 2011
    - Synthesized and characterized polyamic acid (PAA) for biomolecules immobilization and signal amplification
    - Used amperometric and impedance electrochemical techniques to develop an immunosensor using a modified PAA for biomolecules immobilization and signal amplification.
4) August 2010 to 2012. Research assistant. State University of New York at Binghamton, Harpur College of Arts and Sciences, Chemistry (Prof. Sadik's research lab).
    - Developed and validated three immunosensor for the detection of COX-2 and iNOS, pain and cancer biomarkers
    - Worked with HPLC, MS, flash chromatography, ion chromatography, SPR and electrochemical techniques in the development of the immunosensors
    - Wrote research summary reports and presented the findings to my research advisor every week
    - Mentored and trained six undergraduate students whom we have published work together.
5) 2009-2010, Teaching assistant, State University of New York at Binghamton, Harpur College of Arts and Sciences,(Analytical chemistry and Instrumental analysis laboratory course to undergraduate students)
6) 2008-2009, Teaching assistant, State University of New York at Binghamton, Harpur College of Arts and Sciences, (Organic chemistry)
7) 2007-2008, Teaching assistant, State University of New York at Binghamton, Harpur College of Arts and Sciences, (General Chemistry)
8) January – July, 2007, Research Assistant, University of Nairobi, College of Biological and Physical Sciences, Chemistry. (Dr Kituyi's Lab)
    - Literature search on pollution from motor vehicles

- Assisted in the development of a proposal for the establishment of a centre of excellence at the University of Nairobi, Chiromo Campus, Kenya. Funded by VOLVO, Switzerland.
- Organized travel and accommodations of collaborators from Uganda, Senegal, Switzerland and Ethiopia.

9) 2002-2004, Research Assistant, University of Nairobi, College of Biological and Physical Sciences, Chemistry (Dr D.K Kariuki, Analysis of soil permeability).

Research Grants

i. **Donor:** Carnegie Diaspora Fellowship
Amount: $1500
Research Title: Water Sanitation by Solar Disinfection for residents of Obunga Slums in Kisumu (Co-PI)

ii. **Donor:** US Environmental Protection Agency (2018)
Amount: $ 14,766
Research Title: Biosynthesis and Application of Nanostructured Composites (Co-PI)

iii. **Donor**: Royal Society of Chemistry (2017)
Amount: £2000
Organization of the 9th International Conference for the Kenya Chemical Society

iv. **Donor**: Internal Research Grant by USIU-A-(2017)
Amount: KSh. 1,000,000.00
Research Title: Fabrication of Polyamic Acid nanofilter Cartridges for Water Purification to Cotrol Waterborne Diseases in Kenya- **PI.**

v. **Donor**: Internal Research Grant by USIU-A-(2017)
Amount: KSh. 1,000,000.00
Research Title: Chronic Esposure to *Cartha eduls F(MIRAA AKA Khat)* extract on testicular functions **Co-PI.**

vi. **Donor**: Carnegie African Diaspora Fellowship Program 2016/2017
Amount: International Air fare, accommodation and food for the fellow

vii. **Donor**: Royal Society of Chemistry (2016)
Amount: £4000
Research Title: Development of a Nano-Immunosensor for detection of Methanol in Alcoholic Drinks in Kenya-**PI**

viii. **Donor**: Internal Research Grant by USIU-A-(2016)
Amount: KSh. 400,000.00
Research Title: Screening for Antimicrobial and Anthelminthic Activities of Selected Kenyan Medicinal Plants **Co-PI.**

ix. **Donor**: Internal Research Grant by USIU-A-(2016)
Amount: KSh. 400,000.00
Research Title: Isolation and Screening of Potential Bioplastics Producing Halophiles from Kenyan Soda Lake Bogoria -**Co-PI.**

x. **Donor:** Grand Challenges Canada (2013)
Amount: CAD 100,000
Research Title: Development of Rapid and Sensitive Nano-kits for Detection of Bilharzia in Kenya-**PI**

xi. **Donor:** TWAS (2014)
Amount: USD 17,000
Research Title: A Nano-immunosensor for sensitive detection of Schistosomiasis-**PI**

Publications:

1) Mwamburi Samuel M, Mbatia Betty N, Remmy Kasili, Kirwa Edward M, **Noah Naumih** (2019). Production of polyhydroxyalkanoates by hydrocarbonaclastic bacteria. African Journal of Biotechnology, Vol. 18(17), pp. 352-364. DOI: 10.5897/ajb2019.16763
2) Kevin Odhiambo, Jane Murungi, Ruth Wanaju, **Naumih Noah** (2019). The effect of Croton *macrostachyus, Plectranthus barbatus* Leaf on Aqueous extracts and inorganic fertilizer on growth and nutrients concentrations of *Brassica oleracea L* in greenhouse at Nairobi. Asian Journal of Agricultural Extension, Economic and Sociology 2019, 29(3) 1-10. http://www.sciencedomain.org/issue/4361
3) **Naumih Noah**, (2018). Green Synthesis, Characterization and Applications of silver and gold nanoparticles. A book chapter in the Green synthesis, characterizations and applications of Nanoparticles book. https://www.elsevier.com/books/green-synthesis-characterization-and-applications-of-nanoparticles/shukla/978-0-08-102579-6
4) Joseph Odundo, **Naumih M. Noah**, Dickson Andala, Janet Kiragu and Eric Masika (2018). Electrochemical Nano-immunosensor for rapid and sensitive diagnosis of Bilharzia in Kenya. South African Journal of Chemistry 2018, **71**, 127–134, <http://journals.sabinet.co.za/content/journal/chem/>.
5) **Naumih N. Noah**, Ibrahim Kimotho, Mildred Nawiri (2018). Nanostructured Poly-amic acid Membranes for anti-microbially enhanced water treatment cartilages. Proceedings of Academics World International Conference, Nanotechnology and Advanced Materials Cape Town South Africa, Page 1-6
6) Ernest O. Nachaki, Peter M. Ndangili, **Noah M. Naumih** and Eric Masika (2018). Nickel-Palladium-Based Electrochemical Sensor for Quantitative Detection of Formaldehyde ChemistrySelect 2018, 3, 384 –392
7) **Naumih Noah,** Michael Ndikau, (2015). Fostering Green Nanotehcnology in Kenya: A Matter of Small Scale with Big Impact. A book chapter in Harnessing Nanotechnology for Sustainable Development in Africa book. https://www.worldcat.org/title/harnessing-nanotechnology-for-sustainable-development-in-africa/oclc/1006521693
8) Michael Ndikau, **Naumih M. Noah**, Dickson M. Andala, and Eric Masika (2017). Green Synthesis and Characterization of Silver Nanoparticles Using *Citrullus lanatus* Fruit Rind Extract. International Journal of Analytical Chemistry Volume 2017, Article ID 8108504, 9 pages https://doi.org/10.1155/2017/8108504
9) Francis J. Osonga, Joab O. Onyango, Samuel K. Mwilu, **Naumih M. Noah**, Jürgen Schulte, Ming Ann, Omowunmi A. Sadik, 2017. Synthesis and characterization of novel flavonoid derivatives via sequential phosphorylation of quercetin. Tetrahedron Letters, Volume 58, Issue 15, 12 April 2017, Pages 1474-1479. https://doi.org/10.1016/j.tetlet.2017.02.085

10) Shisia K. Silvanus, **Naumih Noah**, Nyambaka H and Andala D.M (2016). Sustainable Use of Water Resources. Exceed swindon, Braunschweig, Germany Pp 41-44
11) Shisia K. Silvanus, **Naumih Noah**, Nyambaka Hudson, Andala Dickson Mubera (2016). Efficiency of Fabricated CNT-IPSF/Fe2O4 Nanocomposites in removal of Phenanthrenes from contaminated water. International Journal of Scientific & Technology Research, Volume 5, Issue 9, 83-92
12) **Naumih M Noah**, Joseph Odundo, Dickson Andala, Kimani Gachuhi and Joseph Mwatha (2016). Screen Printed Electrodes (SPE) based nano-immunosensor for detection of bilharzia in Kenya. Madridge J Nanotechnol Nanosci. Page 47. Conference proceedings. https://madridge.org/journal-of-nanotechnology-and-nanoscience/nanotech-2016-scientificsession-proceedings/2638-2075.a1.002-s0025.pdf
13) Odundo Joseph, **Noah Naumih,** Andala Dickson, Kiragu Janet, Ndikau Michael, Kimani Gachuhi, Joseph Mwatha (2016). Spectro-electrochemical Characterization of Anti-Schistosoma-Gold Nanoparticle Conjugate for use in Immunoassays. The Journal of Kenya Chemical Society, Volume 1, Issue 1 35 -45
14) Idris Yazgan, **Naumih M Noah**, Ousmane Toure, Siyi Zang, Omowunmi A. Sadik, (2014). Biosensor for selective detection of *E. coli* in Spinach using the strong affinity of derivatized mannose with fimbrial lectin. *Biosensor and Bioelectronics Vol 61, 266-273*
15) Omowunmi A. Sadik, **Naumih M. Noah**, Veronica Okello (2013). Catalytic reduction of hexavalent chromium using palladium nanoparticles: an undergraduate nanotechnology laboratory Journal of Chemical Education, **2014**, 91(2), 269-273.
16) Veronica A. Okello , Samuel Mwilu , **Naumih M. Noah** , Ailing Zhou , Jane Chong , Michael T. Knipfing , David Doetschman , and Omowunmi A. Sadik (2012). Reduction of Hexavalent Chromium using Naturally-Derived Flavonoids. Environ. Sci. Technol., 2012, 46 (19), pp 10743–10751
17) **Naumih M. Noah**, Marcells M. Omolle, Samantha S Stern, Siyi S Zhang, Omowunmi A OA Sadik, Euodia H EH Hess, Jasmina J Martinovic, Priscilla G L PG Baker, Emmanuel I EI Iwuoha (2012),Conducting polyamic acid membranes for sensing and site-directed immobilization of proteins. Anal Biochem **428**(1):54-63.
18) **Naumih M Noah**, Marcells Omole, Anas Almaletti, Jae Lim, Omowunmi A. Sadik, (2011). Metal Enhanced Electrochemical Cyclooxygenase-2 (COX-2) Sensor for Biological Applications, Electroanalysis, 23(10) 2392-2399.
19) **Naumih M Noah**, Samuel K. Mwilu, Omowunmi A. Sadik, Alim A. Fatah, Richard D. Arcilesi (2011). Immunosensors for quantifying Cyclooxygenase 2 pain biomarkers, Clinica Chimica Acta, 412(15-16)1391-1398.
20) **Naumih M Noah**, Saamia Alam, Omowunmi A. Sadik (2011). Detection of inducible nitric oxide synthase using a suite of electrochemical, fluorescence, and surface plasmon resonance biosensors, Analytical Biochemistry, 413(2)157-163.
21) Elizabeth Osibote, **Naumih Noah**, Omowunmi Sadik, Dennis McGee, Modupe Ogunlesi (2011). Electrochemical sensors, MTT and immunofluorescence assays for monitoring the proliferation effects of cissus populnea extracts on Sertoli cells, Reproductive Biology and Endocrinology, 9(1)65.

22) Marcells A. Omole, **Naumih M.Noah**, Lisa Zhou, Anas Almaletti, Omowunmi A Sadik, Helen N. Asemota, Elvira S William, Jason Gilchrist (2009). Spectroelectrochemical characterization of pain biomarkers, Analytical Biochemistry, 395(1)54-60.
23) M. A Sheikh, **N. M Noah**, K. Tsuha, T. Oomori (2007). Occurrence of tributyltin compounds and characteristics of heavy metals in sediments from Tanzania, Int. J. Environ on. Sci. Tech, 4(1)49-59.
24) **Naumih M Noah**, Tamotsu Oomori (2006). Evaluation of Heavy metal pollution on the coastal marine environments of Okinawa Island, Japan., Bulletin Faculty of Science, University of the Ryukyus, 81, 93-104.

Presentations at conferences

1. **Naumih M. Noah** 2018. Invited Speaker on Potential of Green Nanotechnology in Kenya at the Pan African Chemistry Network Congress in Nairobi on 6 – 8 November 2018.
2. **Naumih M. Noah,** Ibrahim Kimotho, Mildred Nawiri, 2018. **Oral presentation on Nanostructured Polyamic Acid Membranes for Anti-Microbially Enhanced Water Treatment Cartilages** at the International Conference of Nanoscience, Nanotechnology and Advanced Materials in Cape Town South Africa on 24th to 25th May, 2018.
3. **Naumih M. Noah**, Michael Ndikau, Dickson Andala, 2016. Oral presentation on Green Synthesis of Silver Nanoparticles using Citrullus lanatus fruit rind extract and their Microbial applications in the EAMARC III conference , USIU-A, Nairobi, November, 2016
4. **Naumih M Noah**, Dickson Andala, Joseph Odundo, Kimani Gachuhi, Joseph Mwatha, 2016. Oral presentation on Screen Printed Electrodes based nano-immunosensor for detection of Bilharzia in Kenya at the International Nanotechnology Conference & Expo, Baltimore, USA, 4th – 6th April, 2016.
5. **Naumih M. Noah** and Omowunmi A. Sadik, 2015. Oral Presentation on New Concepts on Pain detection using Biochemical Principles in the East Africa Multidisplinary Conference (EAMRC II), USIU-Africa, November 2015
6. **Naumih M Noah**, Dickson Andala, Joseph Odundo, Kimani Gachuhi, Joseph Mwatha, 2015. Oral presentation on A Nanoimmunosensor for rapid and sensitive diagnosis of Bilharzia in Kenya at Kenya Chemical Society, Chiromo Campus, University of Nairobi, 5th to 8th May, 2015.
7. **Naumih M Noah**, Dickson Andala, Joseph Odundo, Kimani Gachuhi, Joseph Mwatha, 2015. A poster presentation on A Nanoimmunosensor for rapid and sensitive diagnosis of Bilharzia in Kenya at Pittcon Conference, New Orleans, LA, USA, 8th to 13th March, 2015.
8. **Naumih M Noah**, Dickson Andala and Michael Ndikau, 2014. Poster presentation on Green synthesis of Silver Nanoparticles using watermelon rind extract and their microbial applications at the 5th International IUPAC on green chemistry, Durban, South Africa, 17th – 21st August, 2014.

9. **Naumih M Noah**, Omowunmi A Sadik, 2013. Oral Presentation of Nano-remediation of Carcinogenic Hexavalent Chromium: an undergraduate nanotechnology laboratory at the International Workshop on Nanotechnology (IWoN, 2013), Serpong Indonesia, 2nd – 5th October, 2013.
10. **Naumih M Noah**, Omowunmi Sadik (2012). Oral presentation on the Development of an Electroimmunological Pain Biosensor presented at the 7th International Kenya Chemical Society held on 15th – 18th October at Maseno University.
11. **Naumih M Noah***,* Idris Yazgan**,** Omowunmi A Sadik *(2012). Oral Presentation on* Detection of pathogenic bacteria using modified carbohydrates as substrates at the 244th ACS National Meeting & Exposition on August 19-23, 2012, Philadelphia, Pennsylvania
12. **Naumih M Noah**, Saamia Alam, Omowunmi A. Sadik (2011) Oral Presentation on the Detection of Inducible Nitric Oxide Synthase using a suite of electrochemical, fluorescence and surface Plasmon resonance biosensors., Pittcon, Atlanta, Georgia, Unpublished
13. **Naumih M Noah**, Samuel K. Mwilu, Omowunmi A. Sadik (2010) Poster presentation on SPR and Capillary Immunosensors for Characterization of Cyclooxygenase-2, a major Pain, Pittcon, Orlando, Florida, Unpublished
14. **Naumih M Noah**, Marcells Omole, Omowunmi A. Sadik (2009) Oral Presentation on the Development of a Pain Biosensor using Metal-enhanced Electrochemical Detection., Pittcon, Chicago, Illinois, Unpublished
15. **Naumih M Noah** and Omowunmi Sadik. September, 2008. Binghamton University, Chemistry Department Colloquium. Oral Presentation on Development of a Pain Biosensor
16. **Naumih M Noah** and Omowunmi Sadik. September, 2009. Binghamton University, Chemistry Department Colloquium. Oral Presentation on Biosensors as Tools for Monitoring Pain biomarkers
17. **Naumih M Noah**, Samuel Mwilu and Omowunmi Sadik. September, 2010. Binghamton University, Chemistry department Colloquium. Poster presentation SPR and Capillary biosensors for COX-2
18. **Naumih M Noah**, Tamotsu Oomori (2005) Poster presentation on the Evaluation of Heavy metal pollution on the coastal marine environments of Okinawa Island, Japan., Annual meeting of the Geochemical Society of Japan. Unpublished

Workshops Attended

1. Global Chemists Code of Ethics workshop 15th to 19th May, 2017, Tribe Hotel, Gigiri, Nairobi
2. Future Earth Initiative Workshop 21-22 November 2016 Kenya Institute of Curriculum Development
3. Regional Workshop on Policy and Diplomacy for Scientists: Introduction to responsible Research Practice in Chemical and Biological Sciences held in Pretoria, South Africa on 18th to 20th October, 2016.

4. National Workshop on the Overview of the trends in teaching and research in inorganic chemistry and its applications in Kenya held at Chiromo Campus, University of Nairobi on 12th – 13th May, 2016.
5. Kenya Chemical Society-Nairobi Chapter workshop on Chemistry for Sustainable Development, USIU-A, Nairobi, 23rd April, 2016
6. Nanotechnology for Development Policy Master Class held in Gondar, Ethiopia 11-13 August 2015.
7. Advanced Chemical Safety and Security Management Workshop held at University of Nairobi, Chiromo Campus from 28th to 30th April 2015.
8. The Kenya Chemical Society Nairobi Chapter workshop held on August 2014 at Jomo Kenyatta University of Technology.
9. Chemical and Allied Industries' Association Responsible Care Product Stewardship and GHS workshop held at Johannesburg on 5th – 6th June, 2014.
10. The Kenya Chemical Society Nairobi Chapter workshop held on 15th February 2014 at Kenyatta University
11. The Kenya Chemical Society Nairobi Chapter workshop held on 31st August 2013 at the Multimedia University of Kenya

Honors and Awards

1. Sponsored to attend the Global Chemists Code of Ethics workshop organized by the American Chemical Society (ACS) and held at Tribe Hotel, Gigiri, Nairobi on 15th to 19th May, 2017.
2. Nominated to attend a workshop on Building and Mobilizing Developing Country Capacity to participate effectively in the Earth Initiative.
3. Sponsored by the Organization for the Prohibition of Chemical Weapons (OPCW) to attend a Regional Workshop on Policy and Diplomacy for Scientists: Introduction to responsible Research Practice in Chemical and Biological Sciences held in Pretoria, South Africa on 18th to 20th October, 2016.
4. Sponsored by USIU-A to attend the International Nanotechnology Conference & Expo held in Baltimore, USA, 4th – 6th April, 2016.
5. Awarded a travel grant by the African Centre for Technology Studies (ACTS) to attend a Nanotechnology for Development Policy Master Class held in Gondar, Ethiopia 11-13 August 2015.
6. Awarded a travel grant by the Royal Society of Chemistry to attend the 5th International IUPAC conference on Green Chemistry held at Durban, South Africa from 17th to 21st, August, 2014.
7. Awarded an International Travel grant to travel to Chicago, US to attend the American Association for Clinical Chemistry from July 26-31, 2014.
8. Awarded an award for the outstanding poster contribution at the Science to Technology Day held at Binghamton University on April, 27th, 2012.

9. Awarded the Binghamton University Graduate excellence award in research on March 20th, 2012.
10. May, 2011, Research Travel award from the United States National Science foundation (US NSF) grant to travel to the University of Western Cape, South Africa to visit research collaborators.
11. 2008-2010, Graduate Fellowship, Chemistry Department, State University of New York at Binghamton, State University of New York at Binghamton, Awarded a graduate fellowship during the summers (June – August) of 2008, 2009 and 2010 to do research towards my Doctoral studies
12. 2004-2006, Japanese Government Scholarship, Japanese Government, University of the Ryukyus, Awarded a Japanese Government scholarship to study towards a master's degree in analytical Chemistry.

Specific Achievements

1. External examiner, Chiromo Campus, University of Nairobi, 2017 to present
2. External examiner, Masinde Muliro University of Science and Technology, 2016 to present
3. Appointed SPHS representative to the USIU-A senate
4. Appointed Chair of the SPHS Research Committee 2015/2016, 2016/2017 academic years
5. Member of SPHS Mentorship Committee 2015/2016, 2016/2017 academic years
6. Member of SPHS Curriculum Development Committee 2015/2016, 2016/2017 academic years
7. Member of SPHS Scientific Committee 2015/2016, 2016/2017 academic years
8. Invited to Associate DVC Academic Affairs, Associate DVC Student Affairs and Dean Search Committee for USIU-A
9. Appointed to the WSCUC 2018 Accreditation Self-Study team for USIU-A reaccreditation
10. Appointed as a Senator to represent the School of Pharmacy and Health Sciences at the USIU-A Senate
11. Appointed in to a select subcommittee for nominations of Kenya Chemical Society fellows.
12. Elected as the Kenya Chemical Society Nairobi Chapter Secretary General
13. Appointed as a reviewer by the Commission for University Education (CUE) to review a Bachelor of Science in Analytical Chemistry Curriculum for Multi-Media University of Kenya
14. Have authored/co-authored 13 peer reviewed papers in reputable journals (*Electroanalysis, Clinica Chimica Acta, Analytical Biochemistry and Reproductive Biology and Endocrinology, Environmental Science & Technology, Journal of Chemical education, Biosensor and Bioelectronics*)

15. Developed an undergraduate laboratory practical on "Environmental Nanotechnology" where the students learned how to synthesize and use palladium nanoparticles in the conversion of Chromium (VI) to Chromium (III).
16. Used GC, GC-MS, HPLC, MS, IC and NMR techniques in characterization of a newly synthesized subclass of phosphorylated flavonoid derivatives. The flavonoids derivatives were found to have enhanced aqueous solubility of about 2000 fold as compared to the parent molecules.
17. Developed and validated three immunosensors for detection of Cyclooxygenase-2 (COX-2) and inducible Nitric Oxide Synthase (iNOS), pain and cancer biomarkers. The principle of detection was based on the interaction of the enzymes and their antibodies. The detection limits were in the 10^{-4} ng/mL which was 4 orders of magnitude lower than that reported for ELISA.
18. Investigated the synthesized flavonoid derivatives as potential Cyclooxygenase-2 (COX-2) and inducible nitric oxide synthase (iNOS) inhibitors using prostaglandin E2 and nitrite assays and obtained up to 95% inhibitions.
19. Used Surface Plasmon Resonance (SPR) to determine the binding constant of COX-2 and iNOS
20. Used ELISA technique to develop immunoassays based on antibody antigen interaction to determine the viability of the interaction between COX-2 and iNOS enzymes with their antibodies.
21. Used electrochemical techniques such as cyclic voltammetry to develop and validate immunosensors for the detection of COX-2 and iNOS. Detection limits obtained were 4 orders of magnitude lower than that reported for ELISA
22. Performed synthesis and characterization of polyamic acid (PAA) for biomolecules immobilization and demonstrated that PAA can act as a template for the immobilization of biomolecules leading to signal amplification.
23. Been successful in conducting independent research, writing technical reports, and peer reviewed articles. Presented my research in international conferences such as Pittcon as well as in regional, national and local University internal workshops.
24. Demonstrated strong leadership and team work skills by mentoring six undergraduate students with whom we have published our work together and two of them graduated with honors thesis.

Analytical Chemistry Skills

- Gas Chromatorgraphy-Mass Spectrometry (GC-MS)
- Gas Chromatography (GC)
- High Performance Liquid Chromatography -Mass Spectrometry (HPLC-MS)
- Surface Plasmon Resonance (SPR)
- Ion Chromatography (IC)

- Flash Chromatography
- Quartz Crystal Microbalance (QCM)
- Electrochemical methods such as Cyclic voltammetry(CV), differential pulse voltammetry (DPV) and square wave voltammetry (SWV)
- Ultra violet and visible spectroscopy (UV/Vis).
- Enzyme Linked Immunosorbent Assay (ELISA)
- Cell culture and cell based assays
- Synthesis and Characterization of Nanoparticles

Postgraduate Students Supervision

1. Silvanus Kuboka Shisia (PhD Student): Fabrication and Characterization of Magnetoresponsive Carbon Nanotube-Infused Polysulfone Nano-composites for water purification- Graduated
2. Joseph Odundo Ochieng (PhD Student): Development of a Nano-immunosensor for rapid and sensitive detection of Bilharzia in Kenya
3. James Mwangi Njogu (PhD Student): Fabrication of rapid diagnostic casing kit using degradable cellulosic material as an alternative to plastic
4. Michael Ndikau (MSc. Student): Green Synthesis of Silver Nanoparticles using Watermelon Rind exctract (Graduated)
5. Nicholus Muthama Nzyuko (MSc. Student): A green synthesis of silica nanoparticles from rice husks for remediation of water contaminated by Chromium ions.
6. Robert Mitei (MSc Student): Development of a Nano-immunosensor for detection of Methanol in Alcoholic drinks in Kenya
7. Ernest Nachaki Ojiambo (MSc. Student): Fabrican of Nickel-palladium-Polyaniline based electrochemical Nanosensor for Quantitative detection of folrmaldehyde in water.

Undergraduate Students Supervised

1. Edith Aida: Determination of Benzoic Acid levels in fruit juices sold at Kenyatta University. (BSc in Analytical Chemistry)
2. Janet Wambui Kiragu: Conjugation of anti-schistosome antibodies to gold nanoparticles and their characterization (BSc In Industrial Chemistry, Kenyatta University)
3. Mueni Muthui: Analysis of heavy metals in skin creams (BSc, Kenyatta University)
4. Steve Okoth Odhiambo: Determination of Total Chlorine Residual in Domestic water in Kenyatta University (BSc in Industrial Chemistry, Kenyatta University)
5. Stephene Wekunda Siakilo: Synthesis of Silver Nanoparticles using Water Melon rind Extract (BSc. In Analytical Chemistry, Kenyatta University).
6. Moraa Bernadatte Ratemo: Assessment of selected heavy metals pollution in water, spinach and Kales samples collected from Ruai, Nairobi County (BSc in Analytical Chemistry, Kenyatta University)

7. Ali Abbas: Qualitative and quantitative sulphur analysis of the Turkana Crude Oil in Kenya (BSc. In Industrial Chemistry, Kenyatta University).
8. Nathano Odera Otieno: Preparation of Soap from Rice Bran (BSc in Industrial Chemistry, Kenyatta University)
9. Saamia Alam (BSc Honors Thesis), Binghamton University, NY, USA
10. Kavita Sign, Ryan Witham, Binghamton University, NY, USA
11. Anas Almalleti (BSc Honors Thesis), Binghamton University, NY, USA
12. Jae Lim (BSc Honors Thesis), Binghamton University, NY, USA
13. Naomi Addane, Bridging student, summer 2010

Collaborations

Prof. Maaza: iThemba Labs, Old Faure Rd, Cape Town 7100, South Africa, +27 21 843 1000

Membership Information:

- Member: Royal Society of Chemistry
- Member: Kenya Chemical Society
- Nanosciences African Network (NaNoAFNET) ,
- Junior Fellow of the UNESCO-UNISA AFRICA Chair in Nanosciences/Nanotechnology.

Community Service

- Volunteered in Science Olympiad 2008, 2009, 2010 and 2011 held at SUNY-Binghamton, New York
- Secretary- Graduate African Student Organization (GASO), SUNY-Binghamton, 2008-2009
- Organizing secretary, Kenya Chemical Society-Nairobi Chapter

Referees

1. **Prof. Omowunmi A. Sadik**
   Professor of Bioanalytical and Environmental Chemistry
   Chemistry Department,
   Binghamton University
   P.O Box 6000,
   Binghamton, NY, US
   Phone: 607-777-4132
   Fax: 607-777-4478
   Email: osadik@binghamton.edu
   Web page: http://chemiris.chem.binghamton.edu/SADIK/sadik.htm

2. **Prof. David Kinuthia Kariuki**
   Associate Professor,
   Chemistry Department,
   University of Nairobi
   P.O Box 30197 -00100
   Nairobi, Kenya
   Phone: 0722831418
   Email: kkariuki@uonbi.ac.ke

3. **Dr. Dickson Andala**
   Senior Lecturer,
   Chemistry Department,
   Multimedia University
   Nairobi, Kenya
   Phone: 0705204610
   Email: andalad@gmail.com