

Onyinyechi Vivian UHUO

uhuoonyinyechiv@gmail.com
+2347035766038

Physical Chemistry Unit,
Department of Chemistry
University of Ibadan
200132 Oduduwa Road
Ibadan, Oyo State, Nigeria.

RESEARCH INTEREST

Biosensor fabrication and application
Nanomaterial synthesis, characterization, and application
Electrochemical analytical method
Photocatalysis
Biophysical chemistry

OVERVIEW

I am a hardworking dedicated lecturer at the University of Ibadan, Ibadan, Nigeria, with strong background in chemistry. Through my many years of education and experience in biosensor fabrication for disease biomarker detection, coupled with my experience in research project supervision, writing and examinations, I believe have the skills necessary to successfully carry out this responsibility as an MSc thesis examiner.

EDUCATION

- | | | |
|------------|---|------------------------|
| PhD | University of the Western Cape, South Africa, Chemistry
Dissertation: Kesterite-amplified aptameric nanobiosensors for interferon gamma tuberculosis biomarker
Supervisors: Prof Emmanuel I. Iwuoha
Co-supervisor: Dr. Tesfaye Waryo | December 2022 |
| MSc | University of Ibadan, Nigeria, Chemistry
Dissertation: kinetics of the reaction of 5,5'-dithiobis(2-nitrobenzoate) with squirrel (<i>Sciurus carolinensis</i>) haemoglobin
Supervisor: Prof Jonathan Oyebamiji Babalola | 2014
(CGPA: 5.5/7) |
| BSc | Ebonyi State University, Nigeria, Industrial Chemistry
Second class upper division
Dissertation: biosorption of Ni ²⁺ and Cd ²⁺ from aqueous solutions using rice stalk
Supervisor: Prof Onwu Kalu Francis | 2011
(CGPA: 4.42/5) |

RESEARCH EXPERIENCE

Doctoral Fellow

Department of Chemistry, University of the Western Cape, South Africa 2018-2022
Kesterite-amplified aptameric nanobiosensors for interferon gamma tuberculosis biomarker
Supervisors: Prof Emmanuel I. Iwuoha and Dr. Tesfaye Waryo

- Synthesized and characterized kesterite-based nanomaterials.
- Optimized nanomaterials synthesis under different reaction conditions.
- Fabricated aptasensors for detecting interferon-gamma tuberculosis biomarker.
- Applied fabricated aptasensors for target detection in standard solutions and real samples.
- Employed optical, microscopic, spectroscopic, and electrochemical methods for nanomaterial and aptasensor characterization.
- Applied electrochemical methods for target detection in standard solutions and real samples.

Graduate Student

University of Ibadan, Nigeria, Chemistry 2012-2014
Kinetics of the reaction of 5,5'-dithiobis(2-nitrobenzoate) with squirrel (*Sciurus carolinensis*) haemoglobin
Supervisor: Prof Jonathan Oyebamiji Babalola

- Extraction of squirrel haemoglobin from squirrel whole blood, and conversion of oxyhaemoglobin to carbomonoxyhaemoglobin
- Determination of reactive sulphhydryl groups present in squirrel haemoglobin
- Monitored the kinetics of the reaction between 5,5'-dithiobis(2-nitrobenzoate) with CysF9[93] β sulphhydryl group of squirrel haemoglobin by UV-Visible spectrophotometry.
- Studied the effect of inositol hexakisphosphate (an allosteric effector) on the sulphhydryl reactivity of squirrel haemoglobin
- Studied the effect of pH on the sulphhydryl reactivity of squirrel haemoglobin
- Determined the kinetic parameters and reversibility of the sulphhydryl reactivity of squirrel haemoglobin

HONOURS AND AWARDS

Organization for the Prohibition of Chemical Weapons Fellowship 2020 - 2021
This fellowship sponsored a 3-month research between October 2020 and January 2021

Chemistry Department Postgraduate Scholarship (Bursary) for PhD 2018 - 2022
Department of Chemistry, University of the Western Cape, South Africa
Full funding for PhD degree

NOTAP-Industry Technology Transfer Fellowship (NITTF) Scheme 2018

Postgraduate School Teaching and Research Assistantship award August 2016
Postgraduate College, University of Ibadan, Nigeria

WORK EXPERIENCE

Lecturer

November 2016 - present

Biophysical Laboratory,
Physical Chemistry Unit
Department of Chemistry
University of Ibadan, Nigeria

- Teaching different aspects of physical chemistry to first to third year undergraduate students
- Coordinating, monitoring, and supervising 100 level chemistry practical.
- Teaching different aspects of physical chemistry to master students of the department.
- Served as exam invigilator during numerous departmental examinations since 2016.
- Served as internal examiner for about 9 MSc students in 2021/2022 academic session with a team of 6 other lecturers.
- Evaluated students' performances, through grading of students' works and recording of marks.
- Trained BSc. and MSc students of Biophysical laboratory, University of Ibadan, Nigeria, on experimental/laboratory principles, hands-on instrumentation, and result analysis and presentation (2014-present).
- Supervised 4 BSc and 2 MSc projects for the award of BSc and MSc degrees in chemistry.
- Currently representing the department in the 2023 research and development fair for increased visibility of the faculty research and coordinating the departmental peer assisted study sessions for 2023 to enhance the students' understanding and performance in CHE 156 course.
- Responsible for guiding, mentoring, and encouraging master's students and facilitating their admission, examination, and dissertation as a member of the postgraduate committee.
- Assist in the smooth running of the University as a member of the congregation of the university governing council and senate.

Postgraduate School Teaching and Research Assistant

August - Nov 2016

Chemistry Department, University of Ibadan, Nigeria.

- Organized tutorial sessions to a group of 20 undergraduate students in 100 level.
- Assisted the lecturers in invigilating tests and exams.

Quality Control Analyst (Industrial Attachment)

June -Nov 2009

Seven-up Bottling Company, Enugu State, Nigeria.

- Evaluated product quality at different stages of the soft drink bottling process
- Confirmed quality of raw materials through standard quality control tests before use
- Carried out periodic quality control tests on stored products to determine product shelf-life

PUBLICATIONS

1. Yussuf, S. T., Ramoroka, M. E., Mdluli, S. B., Nwambaekwe, K. C., Ekwere, P. I., **Uhuo, O. V.**, Ikpo, C. O., and Iwuoha, E. I. (2023). Novel heterojunction superstrate $\text{Cu}_2\text{ZnInS}_{4-x}$ (CZIS) thin film kesterite solar cell with vertical arrays of hexagonal zno nanorods window layer. *Journal of Alloys and Compounds*. 935: 168211. <https://doi.org/10.1016/j.jallcom.2022.168211>

2. Mabokela, T., Nwanya, A. C., Ndipingwi, M. M., Yussuf, S. T., Ekwere, P. I., **Uhuo, O. V.**, Ikpo C. I., Modibane, K. D., and Iwuoha, E. I. (2023). Nanostructured europium-doped layered lithium manganese oxide as a prospective cathode material for aqueous lithium-ion battery. *Electrochimica Acta*, 441, 141865. <https://doi.org/10.1016/j.electacta.2023.141865>
3. Ekwere, P. I., Ndipingwi, M., Ikpo, C. I., Nwambaekwe, K., **Uhuo, O. V.**, Yussuf, S., and Iwuoha, I. (2023). High Stability Asymmetric supercapacitor cell developed with novel microwave-synthesised graphene-stabilised ruthenium antimonide nanomaterial. *Journal of Energy Storage*, 63: 106853. <https://doi.org/10.1016/j.est.2023.106853>
4. **Uhuo, O. V.**; Waryo, T. T.; Douman, S. F.; Januarie, K. C.; Nwambaekwe, K. C.; Ndipingwi, M. M.; Ekwere, P.; Iwuoha, E. I. (2022). Bioanalytical Methods Encompassing Label-Free and Labeled Tuberculosis Aptasensors: A Review. *Analytical Chimica Acta*, 340326. <https://doi.org/10.1016/j.aca.2022.340326>.
5. Oranzie, M.; Douman, S.F.; **Uhuo, O.V.**; Mokwebo, K. V.; Sanga, N.; Iwuoha, E. I. (2022). Chronocoulometric signalling of BNP using a novel quantum dot aptasensor. *Analyst*, 147: 4829-4837. <http://dx.doi.org/10.1039/D2AN01357F>
6. Ekwere, P., Ndipingwi, M., Ikpo, C., Januarie, K., Mokwebo, K., Oranzie, M., Nwambaekwe, K., Uhuo, U., and Iwuoha, E. (2023). in *Nanoscience Volume 9*, ed. N. Revaprasadu and M. D. Khan, Royal Society of Chemistry, 2023, 9:35-77. <https://doi.org/10.1039/9781839169427-00035>
7. Mokwebo, V.; Douman, S. F.; **Uhuo, O. V.**; Januarie, K. C.; Oranzie, M.; Iwuoha, E. I. (2022). Electroanalytical Sensors for Antiretroviral Drugs Determination in Pharmaceutical and Biological Samples: A Review. *Journal of Electroanalytical Chemistry*, 920, 116621. <https://doi.org/10.1016/j.jelechem.2022.116621>.
8. Januarie, K. C.; **Uhuo, O. V.**; Iwuoha, E.; Feleni, U. (2022). Recent Advances in the Detection of Interferon-Gamma as a TB Biomarker. *Analytical and Bioanalytical Chemistry*, 414 (2), 907–921. <https://doi.org/10.1007/s00216-021-03702-z>.
9. Mengwi, M.; Ikpo, C. O.; Nwanya, A. C.; Januarie, K. C.; Ramoroka, M. E.; **Uhuo, O. V.**; Nwambaekwe, K.; Yussuf, S. T.; Iwuoha, E. I. (2022). Engineering the Chemical Environment of Lithium Manganese Silicate by Mn Ion Substitution to Boost the Charge Storage Capacity for Application in High Efficiency Supercapattery. *Electrochimica Acta*, 414, 140180. <https://doi.org/10.1016/j.electacta.2022.140180>.
10. Nwambaekwe, K. C.; John-Denk, V. S.; Douman, S. F.; Mathumba, P.; Yussuf, S. T.; **Uhuo, O. V.**; Ekwere, P. I.; Iwuoha, E. I. (2021). Crystal Engineering and Thin-Film Deposition Strategies towards Improving the Performance of Kesterite Photovoltaic Cell. *Journal of Materials Research and Technology*, 12, 1252–1287. <https://doi.org/10.1016/j.jmrt.2021.03.047>.

11. Franke, C.; Ajayi, R. F.; **Uhuo, O.**; Januarie, K.; Iwuoha, E. (2020). Metallodendrimer-Sensitised Cytochrome P450 3A4 Electrochemical Biosensor for TB Drugs. *Electroanalysis*, 32 (12), 3075–3085. <https://doi.org/10.1002/elan.202060384>.
12. Okonjo, K. O.; Fodeke, A. A.; Atolaiye, O. B.; Olatunde, A. M.; Ajaelu, C. J.; Ajelabi, O.; Adediji, A. T.; Adebayo, A. M.; **Uhuo, O. V.**; Babalola, O. J. (2019). R and R2 Quaternary Structures of Carbonmonoxyhemoglobins: Differential Effect of Inositol Hexakisphosphate on Their Affinity for Ellman's Reagent. *Biophysical Chemistry*, 247.1-12 <https://doi.org/10.1016/j.bpc.2019.02.002>.
13. Olatunde A. M., **Uhuo O. V.**, Babalola J. O. (2018). Binding of tetracycline to Bovine hemoglobin: Kinetic study and effect of pH, concentration and contact time. Proceedings of the 41st International conference and workshop exhibition of Chemical Society of Nigeria, Ibadan, 615-620.

PATENT

Uhuo, O. V.; Douman, S. F.; Iwuoha, E. I. (2022). Electrochemical Interferon-Gamma Aptasensor Test for TB (TB-IFG Aptasensor Test). Ref No.: 21-01-2022/09013 (in view).

CONFERENCE ATTENDED

1. 3rd Commonwealth Virtual Chemistry Poster Event. 28-29 September 2022. Commonwealth Chemistry Secretariat, Royal Society of Chemistry, Cambridge, UK.
2. 41st Annual International conference, workshop and exhibition of Chemical Society of Nigeria Ibadan **2018**: 615-620, 16-21 September, 2018
Paper Read: Olatunde, A. M., **Uhuo, O. V.** and Babalola, J. O. (2018). Binding of tetracycline to Bovine hemoglobin: Kinetic study and effect of pH, concentration and contact time.
3. 3rd International Conference on Scientific Research in Nigeria. 16 - 19 May 2017, Faculty of Science, University of Ibadan.
Paper Read: **Uhuo, O. V.**, Olatunde, A. M., Babalola, and J. O.: The sulphhydryl reactivities of squirrel carbomonoxyhaemoglobin and methaemoglobin with 5.5'-dithiobis(2-nitrobenzoate), DTNB.

PROFESSIONAL AFFILIATIONS

- Member, chemical Society of Nigeria (CSN)
- Member, International Society of Electrochemistry (ISE)

PROFESSIONAL SERVICES

Peer-reviewed articles for:

- Analytica Chimica Acta, Elsevier

- Analyst, Royal Society of Chemistry (RSC)
- Analytical and Bioanalytical Chemistry, Springer, Nature
- Biophysical Chemistry, Elsevier
- Electroanalysis, Wiley
- Electrochimica Acta, Elsevier
- Chemical Society of Nigeria (SCN)
- Journal of Electroanalytical Chemistry, Elsevier
- Journal of Materials Research and Technology, Elsevier

PERSONAL DEVELOPMENT TRAINING

1. 5-day summer school workshop of the African Center for Career Enhancement and Skills Support (ACCESS), on "Improving Graduate Employability Through Service-Learning", at IRGIB Africa University, Cotonou, Benin Republic. 27 March-01 April 2022.
2. Open Access Publishing- Transformational Agreements, Online Webinar, 23 August 2022, UWC library services.
3. The wonderful world of scanning electrochemical microscopy, 10 March 2021. Online webinar on the fundamentals, critical experimental parameters and recent applications of SECM, organized by InsideScientific and presented Prof. Dr. Janine Mauzeroll of McGill University.
4. A 3-day writing workshop, organized by Faculty of Natural Sciences, UWC, South Africa at Somerset West, Cape Town, on December 10-12, 2019.
5. Introduction to evidence-based health care, systematic reviews and Cochrane, Life Science Building, UWC, 02 Dec, 2019.
6. Workshop for international collaboration, UWC, South Africa, 6 November, 2019
7. A 3-day SPSS Workshop, University of the Western Cape (UWC), South Africa, 6-8 November, 2019.
8. Research Capacity Building Workshop, University of the Western Cape (UWC), South Africa, January 23, 2019.
9. Electrochemistry Seminar and Nova software workshop, Woodmead, Cape Town, South Africa, May 17, 2018.

SKILLS

Research skills

- Proficient in the use of several laboratory techniques such as:
 - Transition electron microscopy (TEM) for morphology and crystallographic studies, scanning electron microscopy (SEM) for surface morphology studies.
 - electrochemical techniques for electrochemical conductivity, capacitive and impedance studies, scanning electrochemical microscopy (SECM) for surface electrochemical conductivity studies.
 - X-ray diffractometry (XRD) for crystallographic studies, small angle XRD spectroscopy (SAXS) for structural, morphological studies and crystallinity studies.
 - UV-visible spectroscopy, fourier-transform infrared (FTIR) and attenuated total reflectance FTIR (ATR-FTIR) spectroscopy, photoluminescence (PL) spectroscopy and Raman spectroscopy for optical studies.

- Contact angle measurement for hydrophobicity studies.
- Microwave, precipitation and solvothermal synthesis method.
- Proficient in the use of result analysis softwares such as ImageJ for TEM and SEM image analysis; MATCH, Endeavour and VESTA for XRD analysis; Z-view and EC-Lab for electrochemical impedance spectroscopic analysis
- Expert in OriginLab and Microsoft excel data analysis and data representation.

Communication Skills

- Excellent written and spoken English language.
- Highly skilled in report writing through project assignments and supervisors, and research publication and presentation.
- Excellent presentation skills using data visualization tools.

Computer Skills: Proficient in the use of several softwares such as Microsoft office, Sigmaplots, OriginLab, Z-View, EC Lab, MATCH, Endeavour, Diamond and VESTA.

REFERENCES

1. Prof. Emmanuel I. Iwuoha, *CChem, CSci, FRSC*,
Senior Professor of Chemistry,
Director, SensorLab,
University of the Western Cape,
South African Research Chair for NanoElectrochemistry and Sensor Technology,
South Africa.
2. Prof. Jonathan Oyebamiji Babalola, *FRSC*
Professor of Physical Chemistry,
University of Ibadan,
Ibadan, Oyo State,
Nigeria.
3. Dr. Abimbola M. Olatunde,
Lecturer,
University of Ibadan,
Ibadan, Oyo State,
Nigeria.