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| **MULUGETA BADASA WAYU**  351 Sam Ridley Pkwy E M3  Smyrna, TN 37167  (615) 525–7067  [*mulugetawayu@gmail.com*](mailto:mulugetawayu@gmail.com) |

**Education**

**Ph.D., Molecular Biosciences**, Middle Tennessee State University, Murfreesboro, TN August 2015

Coursework includes advanced studies in Analytical Chemistry, Electrochemistry,

Biochemistry, and Molecular Cell Biology, as well as Spectroscopy, Bioinformatics and

Statistical Analysis.

**Dissertation Title**: Developing an Amperometric Method for Selective Detection of Hydrogen

Peroxide; Professor Charles C. Chusuei

**M.S., Chemistry,** Middle Tennessee State University, Murfreesboro, TN May 2012

Coursework includes Intermediate Analytical Chemistry, Intermediate Organic Chemistry,

Intermediate Physical Chemistry, Intermediate Inorganic Chemistry, Biochemistry, Topics

in Spectroscopy.

**Thesis Title**: Modification of Carbon Nanotubes using Zinc Oxide Nanoparticles for Electrochemical

Sensing; Professor Charles C. Chusuei

**B.S., Chemistry,** Addis Ababa University, Addis Ababa, Ethiopia July 2000

**Research and Teaching Experience**

**Tennessee State University, Nashville, TN** August, 2019 – Present

*Assistant Professor of Chemistry,* TaughtAnalytical Chemistry (lecture and laboratories)

**John Tyler Community College, Midlothian, VA** August2018-May 2019

*Adjunct Professor of Chemistry,* TaughtGeneral Chemistry (lecture and laboratories)

**The University of Richmond**, Richmond, VA May 2018-May 2019

*Postdoctoral Research Associate,* Advisor: Michael C. Leopold, Ph.D.

**Project Title**: Xerogel–Based Amperometric Biosensors Incorporating Nanoparticle Networks–Adaptable

Templates for Clinically Relevant Measurements.

**The University of Richmond**, Richmond, VA 2017–2018

*Visiting Lecturer of Chemistry,* TaughtGeneral Chemistry (lecture and laboratories) and Organic Chemistry laboratories.

**The University of Richmond**, Richmond, VA Spring 2017

*Adjunct Professor of Chemistry,* TaughtGeneral Chemistry and Organic Chemistry laboratories.

**The University of Richmond**, Richmond, VA November 2015-August 2017

*Postdoctoral Research Associate,* Advisor: Michael C. Leopold, Ph.D.

**Project Title**: Xerogel–Based Amperometric Biosensors Incorporating Nanoparticle Networks–Adaptable

Templates for Clinically Relevant Measurements.

**Middle Tennessee State University**, Murfreesboro, TN Fall 2015

*Adjunct Professor of Chemistry,* TaughtGeneral Chemistry laboratories.

**Middle Tennessee State University**, Murfreesboro, TN 2010 – 2015

*Graduate Teaching Assistant,* Taught Intermediate Analytical Chemistry, General Chemistry, and Physical

Chemistry laboratories.

*Research Mentor*: Mentored both graduate and undergraduate students, supervised and instructed on basic

laboratory techniques and data analysis explained important chemistry concepts and guided

thesis writings.

**Research and Teaching Experience (Cont’ed)**

**Essential Oils Research Center,** Addis Ababa, Ethiopia 2000 – 2005

*Research Chemist*. Distilled and extracted essential oils (plant products) using Soxtech Extractor. Characterization of these oils using UV–vis and GC–MS.

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| **Additional Experience** |
| **Simplicity and Creativity**, Antioch, TN, USA. 2006–2009  Production line associate. |
| **Dell, Inc.,** Nashville, TN, USA. 2005–2006  System Administrator. |

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| **Publications** |
| 1. N. Labban, **M. Wayu**, C. Steele, T. Munoz, J.A. Pollock, W.S. Case, and M.C. Leopold “First Generation Amperometric Biosensing of Galactose with Xerogel-Carbon Nanotube Layer-by-Layer Assemblies,” *Nanomaterials* **2019,** *9(1),* 42. |
| 1. **M. Wayu**, M.J. Pannell, N. Labban, W.S. Case, J.A. Pollock, and M.C. Leopold, “Functionalized Carbon Nanotube Adsorption Interfaces for Electron Transfer Studies of Galactose Oxidase,” *Bioelectrochemistry* **2019,** 125, 116-126. |
| 1. M. Pannell,\* E. Doll,\* N. Labban,\* **M. Wayu**, J.Pollock, and M.C. Leopold, “Versatile Sarcosine and Creatinine Biosensing Schemes Utilizing Layer-by-Layer Construction of Carbon Nanotube-Chitosan Composite Films,” *J. Electroanal. Chem.* **2018**, 814, 20-30. |
| 1. **Wayu, M.B**.; †Schwarzmann, M.A.; †Gillespie, S.D.; Leopold, M.C.\* “Enzyme-free uric acid electrochemical sensors using β–cyclodextrin modified carboxylic acid functionalized carbon nanotubes.” *J. Mater. Sci.* **2017,** *52(10),* 6050 - 6062. |
| 1. **Wayu, M.B**.; DiPasquale, L.T.; Schwarzmann, M.A.; Gillespie, S.D.; Leopold, M.C. *“*Electropolymerization of –cyclodextrin onto multi-walled carbon nanotube composite films for enhanced selective detection of uric acid” *J. Electroanal. Chem.* **2016**, *783*, 192–200. |
| 1. **Wayu, M.B**.; Pannell, M.J.; Dattelbaum, J.D.; Leopold, M.C. “Layered Xerogel Films Incorporating Monolayer-Protected Cluster Networks on Platinum Black Modified Electrodes for Enhanced Sensitivity in 1st Generation Uric Acid Biosensing” *ChemElectroChem.* **2016,** *3*, 1245–1252. |
| 1. Deb, A. K.; Das, S. C.; Saha, A.; **Wayu, M.B.**; Marksberry, H.M.; Baltz, R. J.; Chusuei, C. C., “Ascorbic acid, acetaminophen, and hydrogen peroxide detection using a dendrimer– encapsulated Pt nanoparticle carbon nanotube composite.” *J. Appl. Electrochem.* **2016**, *46(3)*, 289–298. |
| 1. **Wayu, M.B**.; King, J.E.; Johnson, J.A.; Chusuei, C.C. “A Zinc Oxide Carbon Nanotube-Based Sensor for *in situ* Monitoring of Hydrogen Peroxide in Swimming Pools.” *Electroanal.* **2015*,*** 27*,* 2552–2558. |
| 1. **Wayu, M.B.**; Spidle, R.T.; Devkota, T.; Deb, A.K..; Delong, R.K.; Ghosh, K.C.; Wanekaya, A.K.; Chusuei, C.C. “Morphology of hydrothermally synthesized ZnO nanoparticles tethered to carbon nanotubes affects electrocatalytic activity for H2O2 detection.” *Electrochim. Acta* **2013,** *97***,** 99–104. |
| 1. Chusuei, C. C.; **Wayu, M.** “Characterizing Functionalized Carbon Nanotubes for Improved Fabrication in Aqueous Solution Environments.” *In Electronic Properties of Carbon Nanotubes/Book 5*. J.M. Marulanda, Ed. InTech, **2011** (ISBN 978–953–307–499–3), pp. 55–66. |

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| **Patent** |
| Chusuei, C. C.; **Wayu, M.**; Wanekaya, A. W.; Spidle, R. T. Patent on an “Electrochemical Sensing Nanocomposite for Hydrogen Peroxide Detection” (Publication number: 20150129426; Published on May 14, 2015. |

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| **Awards/Honors** |
| 1. Distinguished Master’s Thesis Award nominee for 2011–2013 Academic Years selected by College of Graduate Studies to be the Middle Tennessee State University representative for the 2014 Conference of Southern Graduate Schools. |
| 1. Graduate Research Achievement Award for 2011–2012 Academic Years from Chemistry Department, Middle Tennessee State University (received April 19th, 2012). |

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| **Conference Presentations** |
| 1. **Wayu, M.B**.; Schwarzmann, M.A.; Gillespie, S.D.; Leopold M.C. “Non–enzymatic electrochemical sensing platforms using –cyclodextrin and multi-walled carbon nanotubes for selective detection of uric acid”, TechConnect World Innovation Conference & Expo, Washington, DC, USA, May 14 – 17, 2017; paper 414. |
| 1. **Wayu, M.B**.; DiPasquale, L.T.; Schwarzmann, M.A.; Gillespie, S.D.; Leopold, M.C. *“*Electropolymerization of –cyclodextrin onto multi-walled carbon nanotube composite films for enhanced selective detection of uric acid”, 68th Southeast Regional Meeting of the American Chemical Society at Columbia, SC, USA, October 23–26, 2016; paper 751. |
| 1. **Wayu, M**.; Pannell, M.J.; Dattelbaum, J.D.; Leopold, M.C. “Functional layer-by-layer design of monolayer-protected cluster doped xerogels on platinum black modified electrodes for optimized uric acid biosensor”. 252nd ACS National Meeting & Exposition, Philadelphia PA, USA, August 21–25, 2016; AEI–2. |
| 1. Pannell, M.J.; **Wayu, M**.; Dattelbaum, J.D.; Leopold, M.C. “Xerogel layering with monolayer protected cluster networks on platinum black modified electrodes for optimized uric acid biosensing”. 252nd ACS National Meeting & Exposition, Philadelphia PA, USA, August 21–25, 2016; ANYL–118. |
| 1. Chusuei, C. C. and **Wayu, M.** “Amperometric detection of hydrogen peroxide and uric acid using a zinc oxide-carbon nanotube composite”. 67th Southeastern/71st Southwest Regional Meeting of the American Chemical Society 2015, Memphis, TN, USA, November 4–7, 2015; paper 76. |
| 1. Shawtik, C. D.; **Wayu, M.**; Hussain, S. A.; Raja, R. P.; Chusuei, C. C. “Tethering zinc oxide nanoparticles to carboxylic acid functionalized multi-walled carbon nanotubes for effective detection of uric acid”. 66th Southeastern Regional Meeting of the American Chemical Society 2014, Nashville, TN, USA, October 16–19, 2014; Anal. Chem–364. |
| 1. **Wayu, M.**; Spidle, R. T.; Wanekaya, A.K.; Chusuei, C. C. “Chronoamperometric detection of hydrogen peroxide in swimming pool water samples”. 66th Southeastern Regional Meeting of the American Chemical Society 2014, Nashville, TN, USA, October 16–19, 2014; Materials Chem–160. |
| 1. **Wayu, M.**; Das, S. C.; Spidle, R. T.; Wanekaya, A.K.; Chusuei, C. C. “An enzyme-free hydrogen peroxide sensor from a zinc oxide multi-walled carbon nanotube hybrid”. 88th ACS Colloid & Surface Science Symposium, University of Pennsylvania Philadelphia PA, USA, June 22–25, 2014; paper 725. |
| 1. **Wayu, M.**; Spidle, R. T.; Devkota, T.; Deb, A. K.; Delong, R. K.; Ghosh, K.; Wanekaya, A.K.; Chusuei, C. C. “Developing a non–enzymatic hydrogen peroxide biosensor”. 247th ACS National Meeting & Exposition, Dallas, TX, USA, March 16–20, 2014; BIOL–193. |
| 1. Deb, A. K.; Saha, A.; **Wayu, M.**; Devkota, T.; Chusuei, C. C. “Amperometric detection with a dendrimer– encapsulated platinum nanoparticle–carbon nanotube composite”. 65th Southeast Regional Meeting of the American Chemical Society 2013, Atlanta, GA, USA, November 12–16, 531. |
| 1. **Wayu, M**.; Ryan T. S.; Tuphan, D.; Anup, K. D.; Robert, K. D.; Kartik, C. G.; Adam, K. W.; Chusuei, C.C. “Enhancing H2O2 detection via nanoscale ZnO shape selection”. 2013 University of Alabama–Huntsville–Middle Tennessee State University Biological Science Joint Symposium at Tims Ford State Park, Winchester, TN, USA, September 27–29 (2013) (<http://biosymposium.org/>) |
| 1. Devkota, T.; **Wayu, M.**; Spidle, R.; Wanekaya, A. K.; Chusuei, C. C.  “How low can you go? Maximizing H2O2 detection using zinc oxide-carbon nanotube composites”.  MTSU Scholars Day, Middle Tennessee State University, April 5th, 2013; paper 505. |
| Devkota, T.; Wayu, M.; Deb, A. K.; Saha, A.; Spidle, R.; Wanekaya, A. K.; Chusuei, C. C. “SelectiveDetection of Uric Acid, Acetaminophen and Hydrogen Peroxide using ZnO carbon nanotubecomposites”. 64th Southeast Regional Meeting of the American Chemical Society at Raleigh, NC, USA,November 14–17 (2012); SERM–1332. |
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| Conference Presentations (Cont’ed) |
| Wayu, M.; Spidle, R. T.; Ghosh, K.; Wanekaya, A.; Chusuei, C. C. “Zinc oxide-carbon nanotubecomposites for improved electrocatalytic detection of hydrogen peroxide”. 86th Colloid and SurfaceScience Symposium, Johns Hopkins University, June 10–13, 2012; paper 414. |
| Wayu, M., Spidle, R., Ghosh, K.,Delong, K. R., Wanekaya, A., Chusuei, C. C. *“*Characterization ofhydrothermally synthesized zinc oxide (ZnO) nanoparticles”. 2011, 241st ACS National Meeting & Exposition,Anaheim, CA, USA, March 27–31, 2011; COLL–287. |
| Chusuei, C. C.; McPhail, M.R.; Sells, J.A.; He, Z.; Wayu, M. “Electrochemical nitrosylation of carbonnanotubes to enhance amperometric detection of warfare agents in the water”. 2010 International Symposium on Spectral Sensing Research, Springfield, MO, USA, Tuesday, June 22nd, 2010; paper 128. |

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| **Affiliation/Membership** |
| American Chemical Society 2011 – Present |

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| **References** |
| 1. Dr. Michael C. Leopold, Professor of Chemistry, Floyd D. and Elisabeth S. Gottwald, Department of Chemistry, Gottwald Center for the Sciences, University of Richmond, Richmond, Virginia 23173, Email: [mleopold@richmond.edu](mailto:mleopold@richmond.edu), Phone: [(804) 287–6329](tel:%28804%29%20287-6329) |
| 1. Dr. Charles C. Chusuei, Associate Professor of Chemistry, Department of Chemistry, Science Building, Room 3065, P. O. Box: 390, Middle Tennessee State University, Murfreesboro, TN 37132, Email: [Charles.Chusuei@mtsu.edu](mailto:Charles.Chusuei@mtsu.edu), Phone: (615) 898–2079 |
| 1. Dr. Ngee Sing Chong, Professor of Chemistry and Director of MIMIC, Department of Chemistry, Science Building, Room 3067, P. O. Box: 68, Middle Tennessee State University, Murfreesboro, TN 37132, Email: [Ngee.Chong@mtsu.edu](mailto:Ngee.Chong@mtsu.edu), Phone: (615) 898–5487 |
| 1. Dr. Andrienne C. Friedli, Professor of Chemistry and Director of Intellectual Property, Department of Chemistry, Science Building, Room 3016, P. O. Box: X076, Middle Tennessee State University, Murfreesboro, TN 37132, Email: [Andrienne.Friedli@mtsu.edu](mailto:Andrienne.Friedli@mtsu.edu), Phone: (615) 898–2071 |