Seare A. Berhe

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PROFESSIONAL PREPARATION

Institution	*Field of Study*	*Degree - Year*
University of Asmara	Chemistry	B.S. - 2002
University of North Texas	Organic Chemistry	Ph.D. - 2014
University of North Texas	Analytical Chemistry	Post-doc 2014/2015

APPOINTMENTS

2016-present **Lecturer**, University of North Texas

- Taught several chemistry courses: Organic Chemistry Proficiency, Sophomore Organic Chemistry I and II, Freshman General Chemistry I and II, General Chemistry for Honors College I and II.

2015- 2016 **Adjunct Faculty**, University of North Texas

- Taught several chemistry courses: Physical Organic Chemistry, Sophomore Organic Chemistry I and II, Freshman General Chemistry I and II, General Chemistry for Honors College I and II.

2014- 2015 **Postdoctoral Research Fellow**, University of North Texas

- Characterization of semiconductor thin films by TIR, MIR and SEM
- Study UV modification of low-k materials and fluorocarbon polymer etch residue.
- Al/Cu corrosion in IC packaging

2014- 2015 **Adjunct Faculty**, Richland College Dallas, TX and Collin College Frisco, TX

- Taught Freshman General Chemistry

2012 – 2014 **NMR Operator**, University of North Texas

- Routine maintenance (filling liquid nitrogen and helium) and calibration of NMR instruments.
- Bring the NMR instruments to working whenever there is a power outage.

2008-2013 **Doctoral Research (student).** University of North Texas

- Multistep Organic Synthesis of molecular semiconductor compounds
- Photoinduced vectorial electron transport in photogalvanic dye-sensitized solar cells
- Hydrothermal and electrochemical growth of nanostructured metal oxide films

2008 – 2012 **Teaching Assistant**, University of North Texas

- General and Organic Chemistry Laboratory, from 08/08- 08/12 (including summer)

2003 – 2007 **Teacher,**

- Math Finish Mission School – Asmara, Eritrea
- Math and basic computer skills at Hagos International School- Asmara, Eritrea

PROFESSIONAL WORKSHOPS & TRAINING

General chemistry performance expectation workshop, ACS, sept 16-18, 2016

- Discussions and developing of general chemistry performance expectations as a means to enhance the alignment of course design, instruction, and assessment

Team based learning, UNT, Nov 7, 2016

- Enhancing students engagement and preparation before coming to class

10th annual academic success lecture, TWU, Apr 29, 2016

- "Confessions of a converted lecturer"

Graduate Student Teaching Excellence Program (G*STEP), UNT- 2012/2013

- Learning modules, class observation, formal practicum and micro-teaching workshops

RESEARCH EXPERIENCE

- Multistep Organic Synthesis of molecular semiconductor compounds such as: modified fullerenes, acenequinones, azadipyrromethenes (aza-BODIPY).
- Preparation of thin films of nanostructured oxide semiconductors such as ZnO nanorods, NiO nanoparticle, NiO and TiO_2 nanotubes, and TiO_2 single-crystalline nanorods.
- Studied acceptor-quenching process using fullerene adducts and acenequinone compounds in excitonic solar cells.
- Photoinduced vectorial electron transport in photogalvanic dye-sensitized solar cells
- Characterization of semiconductor thin films by TIR, MIR and SEM
- Study UV modification of low-k materials and fluorocarbon polymer etch residue.
- Al/Cu corrosion in IC packaging
- Assembly and testing of polymer-oxide and dye-sensitized solar cells (liquid and solid-state), including current-voltage and quantum efficiency (IPCE).
- Characterization of molecular species and thin films: NMR, Scanning Electron Microscopy (SEM, including w/EDX), XPS, profilometry, thermal CVD, FT-IR, HPLC, cyclic voltammetry, fluorescence (steady state and lifetime measurements) and UV-Vis.

RESEARCH COLLABORATIONS

Prof. Christopher J. Bardeen (University of Californa at Riverside)
Prof. Maria Quintana (National Engineering University of Peru)

PUBLICATIONS

Berhe, S. A.; Molinets, Z M.; Frodeman, M. N.; Miller, B.; Nesterov, V. N.; Haynes, K. M.; Perry, C. M.; Rodriguez, M. T.; McDougald, R. N.; Youngblood, W. J. *J. Porphyrins Phthalocyanines* **2015**, 19, 1021-1031 "Synthesis, Photophysical Characterization, and Photoelectrochemical Evaluation of a Palladium Porphyrin Sensitizer for TiO_2-Based Dye-Sensitized Solar Cells,"

Mukherjee, T.; **Berhe, S. A.**; Goswami, A.; Chyan, O.; Singh, J.K.; Ian Brown, I. *ACS Appl. Mater Interfaces*, **2015**, "UV-assisted Modification and Removal Mechanism of a Fluorocarbon Polymer Film on Low-k Dielectric Trench Structure"- Submitted for publication

Haynes, K. M.; Rivas, M.; Bazan, A.; Golden, T.; Quintana, M.; **Berhe, S. A**; Rodriguez, J.; Estrade, W.; Youngblood, W. J.; *ACS Appl. Mater Interfaces*, **2015**, *7*, 830–837 "Templated Electrodeposition and Photocatalytic Activity of Cuprous Oxide Nanorods Arrays"

Berhe, S. A.; Gobeze, H. B.; Pokharel, S. D.; Park, E.; Youngblood, W. J. *ACS Appl. Mater. Interfaces* **2014**, 6, 10696 −10705

Berhe, S. A.; Rodriguez, M. T; Park, Eunsol; Nesterov, Vladimir; Pan, Hongjun; Youngblood, W. J, *J. Inorg. Chem*, ***2014***, 53, 2346-2348 "Optoelectronic Tuning of Organoborylazadipyrromethenes via Effective Electronegativity at the Metalloid Center."

Berhe, S. A.; Nag, S.; Molinets, Z.; Youngblood, W. J. *ACS Appl. Mater. Interfaces* **2013**, *5*, 1181–1185 "Influence of Seeding and Bath Conditions in Hydrothermal Growth of Very Thin (~20 nm) Single-Crystalline Rutile TiO_2 Nanorod Films,"

Berhe, S. A.; Zhou, J. Y.; Haynes, K. M.; Rodriguez, M. T., Youngblood, W. J. *ACS Appl. Mater Interfaces*, **2012**, *6*, 10696–10705."Electron Transport in Acceptor-Sensitized Polymer--Oxide Solar Cells: The Importance of Surface Dipoles and Electron Cascade Effects,"

PRESENTATIONS

"Optoelectronic tuning of azadipyrrins: Hybridization effects in organoboron-chelated aza- BODIPYS" S. Berhe, W. J. Youngblood, 245th ACS National Meeting, April 2013, New Orleans,LA

"Seeding and bath conditions influence in hydothermal growth of very thin single crystalline rutile TiO2 nanorod films" S. Berhe, W.J. Youngblood. 245th ACS National Meeting at New Orleans

"Influence of Seeding and Bath Conditions in Hydrothermal Growth of Very Thin (~20 nm) Single-Crystalline Rutile TiO_2 Nanorod Films" S. Berhe, UNT, Graduate Exhibition, 03/13

"Electron Transport in Acceptor-Sensitized Polymer--Oxide Solar Cells: The Importance of Surface Dipoles and Electron Cascade Effects," S. Berhe, 4th year talk UNT, 01/13

"Acceptor Sensitizers for Oxide Semiconductors in Polymer Oxide Solar Cell" S. Berhe, UNT, Graduate recruitment, 03/12

"Fullerene Assisted Electron Transport in Hybrid Organic-Inorganic Solar Cells" S. Berhe, UNT Chemistry Department Centennial, 10/10

"Electron Transport by Fullerene Compounds in Hybrid Organic-Inorganic Solar Cells" S. Berhe. American Chemical Society Dallas-Fort Worth section 43rd annual in Meeting in Miniature, 04/10

AWARDS

James J. and Ruth I. Spurlock Scholarship Award for outstanding researcher of the department of chemistry (04/12), University of North Texas.

Graduate Assistantship Tuition Scholarship Award (08/12-07/13), University of North Texas Toulouse Graduate School.

Academic Achievement Scholarship (Fall,08- Spring,10), USC Scholarship(Fall,09- Spring,10), UNT scholarship (Fall, 10- Spring, 13)

Gustafson Award for highest undergraduate GPA from the department of chemistry, University of Asmara (1999 and 2000)

Dean's list for an excellent performance in my undergraduate studies, University of Asmara(1998 – 2001)

AFFILIATIONS

- Member, American Chemical Society (ACS)