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WORK EXPERIENCE:

Assistant Professor and Interim Chair, Mathematics and Computer Science, Lincoln University,
Lincoln University, Pennsylvania: 8/2008-Present

Assistant Professor, Mathematics and Computer Science, Lincoln University, Lincoln University,
Pennsylvania: 8/2006-Present

Lecturer, Mathematics and Computer Science, Lincoln University, Lincoln University,
Pennsylvania: 8/2005-5/2006

Post-Doctoral Fellow, Materials Science Department, University of Delaware, Newark, Delaware:
3/2003-7/2005

Research Assistant, Institute of Energy Conversion, University of Delaware, Newark, Delaware:
6/1997-12/2002

Teaching Assistant, Department of Materials Science, University of Delaware, Newark,
Delaware: 1/1997-5/1997

Research Assistant, Department of Electrical Engineering and Materials Science Program,
Marquette University, Milwaukee, Wisconsin: 9/1992 - 12/1996

COURSES TAUGHT:

Mathematics for the Liberal Arts
Algebra I, Algebra & Applications & College Algebra
Finite Mathematics
Pre-Calculus
Calculus I & III
Numerical Methods

EDUCATION:

PhD, Materials Science and Engineering, Dec 2002 - **University of Delaware, Newark, DE**
“Physical Vapor Deposition and Analysis of CuAlSe_2 and $\text{CuIn}_{1-x}\text{Al}_x\text{Se}_2$ Thin Films for Solar
Cells Applications.”

MS, Materials Science and Engineering, May 1995 - **Marquette University, Milwaukee, WI**
“Effects of an Electrostatic Field and Impurities on the Nucleation and Growth of Calcium
Carbonate (CaCO_3).”

BA, Physics, May 1992 - **Saint Olaf College, Northfield, MN**

RESEARCH ACCOMPLISHMENTS:

Post-Doctoral:

- Co-authored a successful NSF proposal to build a next generation instrument for Inverse Photoemission Spectroscopy (IPES) to investigate electronic states above the Fermi level in organic thin films for photonic devices.
- Used a PHI 610 Auger Electron Spectroscopy (AES) and a PHI 5600 X-ray Photoelectron Spectroscopy (XPS) microprobe for depth profiling and interfacial analysis of various organic and inorganic thin film multi-layers for opto-electronic applications.
- Engaged in work to investigate conjugated oligo(phenylene ethynylene) molecules for molecular electronics devices using scanning tunneling microscopy (STM) at Brookhaven National Laboratory.

PhD:

- Conducted extensive research on compound thin film semiconductors (CuAlSe_2 and $\text{CuIn}_{1-x}\text{Al}_x\text{Se}_2$) including deposition, material characterization, and analysis of derived solar cells.
- Discovered potentially new phase of CuAlSe_2 .
 - Demonstrated first successful $\text{CuIn}_{1-x}\text{Al}_x\text{Se}_2$ solar cell with > 10% efficiency
 - Determined reaction pathways for CuAlSe_2 formation.

Masters:

- Conducted analysis of Quartz Crystal Resonators as sensors for organic volatile compounds (OVCs) in an aqueous environment – *Improved* sensitivity & selectivity.
- Used a network analyzer for phase and amplitude analysis with QCM sensors.
- Determined the effect of an electrostatic field on formation of CaCO_3 .
- Performed computer graphics work on various projects.

TECHNICAL SKILLS:

Hands on Experience with:

- Scanning Electron Microscope (SEM) with EDS.
- Transmission Electron Microscopy (TEM).
- Atomic Force Microscope (AFM).
- X-ray Diffractometer (XRD).
- Optical Spectrophotometer.
- Atomic Absorption Spectroscopy (AAS).
- Auger Electron Spectroscopy (AES).
- X-ray Photoelectron Spectroscopy (XPS).
- Scanning Tunneling Microscopy (STM).
- High vacuum systems, including a PVD system for thin film deposition.

Familiar with:

Ellipsometry; Raman Spectroscopy; Fourier Transform Infrared Spectroscopy (FTIR); Differential Scanning Calorimetry (DSC), Secondary Ion Mass Spectroscopy (SIMS).

PUBLICATIONS:

1. M.W. Haimbodi, S. Marsillac, W.N. Shafarman, and R.W. Birkmire, Challenges of growing CuAlSe₂ by physical vapor deposition, in A. Vaseashta, D. Dimova-Malinovska and J.M. Marshal (Eds.) *Nanostructured and Advanced Materials, NATO Science Series, II Mathematics, Physics and Chemistry, Vol. 204*, Springer, pp 343-346, (2005).
2. Moses W. Haimbodi, Adam M. Rawlett, Conan Wieland, Korhan Dermikan, Anshuman Anshuman, and Robert L. Opila (presenter), STM and XPS Investigation of Molecular Electronics Bonded to Substrates, in *Nanofabrication: Technologies, Devices, and Applications*. Edited by Lai, Warren Y.; Pau, Stanley; Lopez, O. Daniel. Proceedings of the SPIE, Volume 5592, pp. 100-107 (2005).
3. W. Shafarman, J. Titus, M. Haimbodi, M. Gossila, G. Hanket, S. Marsillac, T. Minemoto, P. Paulson, B. Sang, U. Singh, E. Eser, R. Birkmire, "Advances in CuInSe₂-based Solar Cells: From Fundamentals to Processing" submitted to NCPV and Solar Program Review Proceedings 2003.
4. S. Marsillac, P. D. Paulson, M.W. Haimbodi, R.W. Birkmire and W.N. Shafarman, "High efficiency solar cells based on Cu(InAl)Se₂ thin films," in *Applied Physics Letters.*, **81**, 7, pp 1350-1352 (2002).
5. P. D. Paulson, M.W. Haimbodi, S. Marsillac, R.W. Birkmire and W.N. Shafarman, "Cu(In_{1-x}Al_x)Se₂ Thin Films and Solar Cells," in *Journal of Applied Physics.*, **91**, pp 10153-10156 (2002).
6. Ashok Menon, Moses W. Haimbodi, Rongnong Zhou, and Fabien Josse, "Polymer Coated Quartz Crystal Resonator for Multi-information Sensing," in *Electronics Letters*, **33**, n4, pp 287-289 (1997).
7. Rongnong Zhou, Moses W. Haimbodi, Fabien Josse, and Dennis Everhart, "Polymer-coated QCR Sensors for the Detection of Organic Solvents in Water," in *Sensors and Actuators, B: Chemicals*, **35**, n1-3 pt 1, pp 176-182 (1996).

PROFESSIONAL MEETINGS:

1. M.W. Haimbodi (poster), S. Marsillac, W.N. Shafarman, and R.W. Birkmire, Cu-In-Al-Se Thin Films for Photovoltaics, *World Conference on Physics and Sustainable Development*, October 31-November 2, 2005, Durban, South Africa.
2. Moses W. Haimbodi, Adam M. Rawlett, Conan Wieland, Korhan Dermikan, Anshuman Anshuman, and Robert L. Opila (presenter), STM and XPS Investigation of Molecular Electronics Bonded to Substrates, *Optics East*, October 25-28, 2004, Philadelphia, PA, USA.
3. M.W. Haimbodi (poster), S. Marsillac, W.N. Shafarman, and R.W. Birkmire, Challenges of growing CuAlSe₂ by physical vapor deposition, *NATO Advanced Study Institute*, September 6-17, 2004, Sozopol, Bulgaria.
4. M.W. Haimbodi, E. Gourmelon, P. D. Paulson, R.W. Birkmire and W.N. Shafarman (presenter), Cu(InAl)Se₂ Thin Films and Devices Deposited by Multisource Evaporation, in *Proceedings of the 28th IEEE Photovoltaic Specialist Conference*, 2001, Anchorage, Alaska.
5. Rongnong Zhou, Moses Haimbodi (presenter), Dennis Everhart, and Fabien Josse, Polymer-Coated QCR Sensors for the Detection of Organic Solvents in Water, *The 6th International Meeting On Chemical Sensors*, July 22 - 25, 1996, Gaithersburg, MD, USA.

AWARDS/ACTIVITIES:

Lincoln University Faculty Development Award, 2009
Served on NSF Proposal Review Panel, 2007
NATO-ASI Poster Award, 2004
Graduate Assistantship, University of Delaware, 1997-2002
Teaching Assistantship, University of Delaware, 1997
United Nations Educational and Training Program Fellowship, 1992-1994
ELCA Scholarship, 1988-1992
Senator for International Students, Saint Olaf College, 1991
Presidential Certificate of Leadership, Saint Olaf College, 1991

RECENT ACTIVITIES: Howard University Nanoscale Facility (HNF) – Summer 2006-2008

Characterized electrophoretically obtained Ag nano-particles using Transmission and Scanning Electron microscopy (TEM, STEM & SEM).
Characterized DC-sputtered AgSi nano-composite films whose potential applications include their use as infrared (IR) detectors.
Initiated the assembly of a Microwave Enhanced Chemical Vapor Deposition (PECVD) system to grow nanowires.

PROFESSIONAL AFFILIATIONS:

Materials Research Society (MRS)