

Macduff Odhiambo Okuom, Ph.D.

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CITIZENSHIP: United States of America

PROFESSIONAL PREPARATION:

Ph.D., Chemistry, University of Missouri-Rolla, Rolla MO, August 2005

Advisor: Frank, D. Blum, PhD

Dissertation: Polymer dynamics in bulk, adsorbed and solution by NMR methods

M.S., Chemistry, University of Nebraska-Lincoln, Lincoln NE, December 1999

B.S., Chemistry, Kenyatta University, Nairobi-Kenya, December 1987

APPOINTMENTS:

2016-present	University of Nebraska-Omaha, Department of Chemistry, Omaha, Nebraska
2011-Present	Doane University, Department of Chemistry and University of Nebraska – Lincoln, Center for Nanohybrid Functional Materials, Postdoctoral Research Associate
2006-2007	University of Pittsburgh, Department of Chemistry Pittsburgh, PA, Research Associate
2000-2005	University of Missouri-Rolla, Department of Chemistry Rolla, MO, Research/Teaching Assistant
1996-2000	University of Nebraska-Lincoln, Department of Chemistry Lincoln, NE, Research/Teaching Assistant
1994-1995	Midwest laboratories, Omaha, NE Laboratory Technician
1992-1994	Analytical Laboratories Inc., Edison, NJ Laboratory Technician
1991-1994	Nancy Thompson Library, Kean University, Union, NJ; Graduate assistant
1989-1991	Kenya National Examination Council, Nairobi, Kenya: Examiner
1987-1991	Ngiya Girls' High School, Ngiya-Kenya Teacher
1986	Ahero Girls' High School, Student Teacher

Special Skills:

Experienced in Polymer synthesis by anionic, free radical, ATRP, emulsion methods.

Experienced at synthesis of small organic molecules.

Experienced at using Bruker TOPSPIN NMR and Varian VXR and INOVA NMR.

Experienced analysis using DSC, TGA, UV-VIS, Fluorimetry, SEM and CD.

Proficient with computer systems (Mac and PC) including various software applications (MS Word, MS Excel, MS PowerPoint, Origin, Chemdraw) and search data bases (e.g. SciFinder, Google Scholar).

Teaching and Research interests:

Teaching in College: General, Physical, Organic and Polymer Chemistry.

Research: Polymer physics and NMR methods of characterization of compounds.

Courses Taught:

Organic Chemistry Laboratory I and II

Introduction to Chemistry
 General Chemistry laboratory and recitation
 Physical Chemistry laboratory

Professional Associations:

American Chemical Society. (1994-Present)
 Secretary, Nebraska Local Section ACS (2013-2014)
 Biophysical Society (1998-2000)
 National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE) (2005-present).
 2001-2002: Member, Chancellors Advisory Committee on Recruitment and Retention of African American Students, University of Missouri- Rolla

Symposia:

2013 FIRST Conference	Proctor and Gamble	Cincinnati, OH	September 2013
2007 BEST Symposium	Dow Chemical Company	Midland, MI	October 2007

Publications:

- Okuom, M. O. and Holmes, A. E. DETECHIP: The Development of a Molecular Sensing Device. *Dekker Encyclopedia of Nanoscience and Nanotechnology* 2015. DOI: 10.1081/E-ENN3-120053285
- Okuom, M. O., Burks, R. Naylor, C. and Holmes, A. E., "Applied Circular Dichroism: A Facile Spectroscopic Tool for Configurational Assignment and Determination of Enantiopurity," *Journal of Analytical Methods in Chemistry*, vol. 2015, Article ID 865605, 6 pages, 2015. doi:10.1155/2015/865605
- Okuom, M., Wilson, M., Groathouse, J., Lee, J., Symonsbergen, D., Gustafson, C., Trauernicht, M., Barcena, H., Reicks, C., Sikich, S., Burks, R. and Holmes' A.: Synthesis of a fluorophore with improved optical brightness. *Int. J. Org. Chem.* 2013 DOI: 10.4236/ijoc.2013.34037
- Okuom, M. O, Wilson, M.V., Jackson, A and Holmes, A. E.: Intermolecular interaction between eosin Y and caffeine using NMR Spectroscopy. *Inter. J. of Spectroscopy* (2013), <http://dx.doi.org/10.1155/2013/245376>
- Okuom, M. O., Metin, B. and Blum, F. D.: Segmental Dynamics of Bulk and Anopore-Adsorbed Poly (Methyl Acrylate)-A Deuterium NMR Study *Langmuir* (24), 2539, 2008.
- Purdue, M. J.; MacElroy, J. M. D.; O'Shea, D. F.; Okuom, M. O.; and Blum F.D.: A Comparative Study of the Properties of Polar and Nonpolar Solvent/Solute/Polystyrene Solutions in Microwave Fields Via Molecular Dynamics. *J. Chem. Phys.* (125), 114902, 2006.
- Purdue, M. J.; MacElroy, J. M. D.; O'Shea, D. F.; Okuom, M. O.; and Blum F.D.: Molecular Dynamics of Polystyrene Solutions in Microwave Fields. *J. Chem. Phys.* (124), 204904, 2006.
- Okuom, M. O. and Holmes, Andrea E.: DETECHIP: Developing a molecular sensing device. *Nanotechnology 2014: Graphene, CNTs, Particles, Films & Composites, Technical Proceedings of the NSTI Nanotechnology Conference and Expo*, Washington, DC, United States, June 15-18, 2014 (2014), 2, 211-214
- Blum, F. D.; Metin, B. and Okuom, M.: Dynamics of adsorbed PMA-D₃ – Effect of the substrate. *Polym. Preprints* 49(1), 667, 2008
- Okuom, M. O.; and Blum, F. D.: Deuterium NMR studies of segmental dynamics of anopore-adsorbed poly (methyl acrylate). *Polym. Preprints* 46(1), 375, 2005.

- Okuom, M. O.; and Blum, F. D.: Self diffusion of N, N-dimethylformamide in Polystyrene measured by Pulsed field gradient NMR. *Polym. Preprints* 45(2), 791, 2004.
- Okuom, M. O.; Yang, J.; and Blum, F. D.: Deuterium NMR Studies of Bulk and Silica-Adsorbed Polystyrene. *Polym. Preprints* 44 (1), 334, 2003.

Presentations:

Posters:

2013: Nanotechnology 2013: Graphene, CNTs, Particles, Films & Composites, Technical Proceedings of the NSTI Nanotechnology Conference and Expo, Washington, DC, United States, June 15-18

Title: DETECHIP: developing a molecular sensing device

2005: 229th American Chemical Society, National meeting, March 2005, San Diego, CA.

Title: Deuterium NMR studies of segmental dynamics of nanopore-adsorbed poly (methyl acrylate)

2004: 228th American Chemical Society, National Meeting, August 2004, Philadelphia, PA.

Title: Self diffusion of N, N-dimethylformamide in Polystyrene measured by Pulsed-field gradient NMR.

2003: 225th American Chemical Society, National Meeting, March 2003, New Orleans, LA.

Title: Deuterium NMR studies of Bulk and Silica-Adsorbed Polystyrene.

2000: 219th American Chemical Society, National Meeting March 2000, San Francisco, CA.

Title: Nuclear Quadrupolar Interaction in Amino Acid and Peptide Hydrohalides.

44th Biophysical Society Annual Meeting, February 2000, New Orleans, LA.

Title: Nuclear Quadrupolar Coupling in L-tyrosine Hydrohalides

Talks:

2016: 136th Anniversary, Nebraska Academy of Science Meeting, April 22, 2016, Lincoln, NE.

Title: Quantifying *Pseudomonas Aeruginosa* using fluorescence spectroscopy

2015: 249th American Chemical Society, National meeting, March 2015, Denver, CO.

Title: Preparation of antibacterial surfaces by liquid-infused nanoporous polymer.

2005: Seminar: Chemistry Department. University of Missouri-Rolla

Title: Investigating polymer dynamics in Bulk, adsorbed and solution states using NMR methods.

1999: American Chemical Society Regional Meeting, Quincy, Ill.

Title: ³⁷Cl and ⁸¹Br NMR Studies of L-tyrosine Hydrohalides.

Advisors:

Post-Doc Mentor: Andrea E. Holmes, PhD.

PhD advisor: Frank D. Blum, PhD.

M.S. advisor: G. S. Harbison, PhD.