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Charles B. Nettles II

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EDUCATION

Doctor of Philosophy in Chemistry

August 2011-December 2016

Emphasis in Analytical Chemistry Expected Graduation: August 2016

Dissertation Title: Material Characterization using Fluorophotometers

Dissertation Director: Dongmao Zhang, Ph.D.

Mississippi State University, MS.

Bachelor of Science in Chemistry

Mississippi University for Women, MS

August 2008-May 2011

PUBLICATIONS

- 1. Perera, G. S.; Yang, G.; Nettles, C. B.; Perez, F.; Hollis, T. K.; Zhang, D., Counter-ion Effects on Electrolyte Interactions with Gold Nanoparticles. The Journal of Physical Chemistry C 2016, 120 (41), 23604-23612.
- 2. Siriwardana, K.; Nettles, C. B.; Vithanage, B. C. N.; Zhou, Y., Zou, S.; Zhang, D., On-Resonance Fluorescence, Resonance Rayleigh Scattering, and Ratiometric Resonance Synchronous Spectroscopy of Molecular- and Quantum Dot-Fluorophores. Analytical Chemistry 2016, 88 (18), 9199-9206.
- 3. Nettles, C. B.; Zhou, Y.; Zou, S.; Zhang, D., UV-Vis Ratiometric Resonance Synchronous Spectroscopy for Determination of Nanoparticle and Molecular Optical Cross Sections. Analytical Chemistry 2016, 88 (5), 2891-2898.
- 4. Zhang, D.; Nettles, C. B., A Generalized Model on the Effects of Nanoparticles on Fluorophore Fluorescence in Solution. The Journal of Physical Chemistry C 2015, 119 (14), 7941-7948.
- 5. Nettles, C. B.; Hu, J.; Zhang, D., Using Water Raman Intensities To Determine the Effective Excitation and Emission Path Lengths of Fluorophotometers for Correcting Fluorescence Inner Filter Effect. Analytical Chemistry 2015, 87 (9), 4917-4924.
- 6. Perera, G. S.; Nettles, C. B.; Zhou, Y.; Zou, S.; Hollis, T. K.; Zhang, D., Direct Observation of Ion Pairing at the Liquid/Solid Interfaces by Surface Enhanced Raman Spectroscopy. Langmuir 2015, 31 (33), 8998-9005.

PRESENTATIONS

Nettles II, Charles B.; Zhang, Dongmao. "Using Water Raman Intensities to Determine the Effective Excitation and Emission Pathlengths of Fluorophotometers for Correcting Fluorescence Inner Filter Effect" Talk at 71st Southwest Regional Meeting/67th Southeastern Regional Meeting of the American Chemical Society. Memphis, TN, November 4-7, 2015.

- Nettles II, Charles B.; Hu, Juan; Zhang, Dongmao. "Using Water Raman Intensities to Determine the Effective Excitation and Emission Pathlengths of Fluorophotometers for Correcting Fluorescence Inner Filter Effect" Talk at 5th Annual Lester Andrews Graduate Research Symposium. Mississippi State University, Mississippi State, MS, May 19-20, 2015.
- Nettles II, Charles B.; Zhang, Dongmao. "Fluorescence Optimization for Studies Utilizing Strong Absorbers and Scatterers that have a Critical Effect on Excitation and Emission Pathlengths" Invited Speaker at Mississippi University for Women. Columbus, MS, March 4, 2015.
- **Nettles II, Charles B.**; Hollis, Keith; Zhang, Dongmao. "Comparative Study of the Interactions of 1,3-Bis(3'-Butylimidazolium)Benzene Chloride, Bromide, and Iodide Salts with Gold Nanoparticles in Water" Talk at 66th Southeastern Regional Meeting of the American Chemical Society. Nashville, TN, October 16-19, 2014.
- **Nettles II, Charles B.**; Zhang, Dongmao. "Modification of Protein Fluorescence by AuNPs: Inner-Filter Effect, Surface Enhancement, and Fluorescence Quenching" Poster at 39th Annual Meeting of Federation of Analytical Chemistry and Spectroscopy Societies. Kansas City, MO, September 30 October 5, 2012.
- Nettles II, Charles B.; Li, Xiaoxia; Ansar, Siyam; Vangala, Karthikeshwar; Zhang, Dongmao. "Equilibrium Competitive Ligand Adsorption onto Gold Nanoparticle for Organothiol Quantifications" Talk at 43rd Annual Southeastern Regional American Chemical Society Undergraduate Research Conference. Statesboro, GA, April 7-8, 2011.

Volunteer/Community Service

2014-2015 Columbus-Lowndes Public Library: Assisted with teen (young adult) chemical education programs. Planned and performed chemical demonstrations to inspire students to consider scientific career paths.

AWARDS

2004	Blazing Scholars Award, University of Alabama at Birmingham	
2004	Chemistry Scholar Fellowship Award, University of Alabama at Birmingham	
2011	Outstanding Chemistry Student Award, Mississippi University for Women	
2013	Research Assistantship for Development of Analytical Techniques for Proteomics, Mississippi	
	State University, MS	
2015	Graduate Student SERMACS Presentation Travel Assistance Grant	
2015	College of Arts & Sciences SERMACS Presentation Travel Support Award	
2016	Most Outstanding Teaching Assistant Upper Division Chemistry	

TEACHING AND LABORATORY EXPERIENCE

Instructor/Lab Coordinator

Mississippi State University, Mississippi State, Mississippi
 CH 4513/4523 Organic Chemistry I/II January 2018-present
 CH 4511-4521 Organic Laboratory I/II January 2018-present

Lecturer

• Mississippi State University, Mississippi State, Mississippi

CH 1213 Chemistry I August 2018-present CH 4513Organic Chemistry I June 2018-present

End Preparation Assurance Analytical Chemist

• PharMEDium, LLC

SME in UPLC/HPLC and UV-vis ID/Potencey May 2017-May 2018

Lecturer

• Mississippi State University, Mississippi State, Mississippi

CH 1213/1223 Chemistry I/II August 2016-May 2017 CH 1141 Professional Chemistry Paths August 2016-December 2016

Teaching Assistant and Laboratory Instructor:

• Mississippi State University, Mississippi State, Mississippi

CH 1211 Chemistry I Laboratory
CH 4511/4521 Organic Chem. Laboratory
CH 4411/4421 Physical Chem. Laboratory
August 2011-December 2011
January 2012-December 2012
August 2014-May 2016

• Mississippi University for Women

General Chemistry Lab Assistant August 2010-May 2011

Teaching labs included: Presented a 15-20 minute lecture over background, procedure and safety, attend weekly meetings to prepare the next experiment, met with the lab coordinator to adjust the procedure as needed, supervised 10-22 students during the experiment to ensure safety procedures were followed, graded lab reports, quizzes, homework and posted grades, and proctored the final exam for the laboratory course and graded final exams.

Physical Chemistry laboratory duties also include development of laboratory experiments designed for student exposure into cutting-edge chemical research. These experiments were based on two of the recently accepted research publications listed above: UV-Vis Ratiometric Resonance Synchronous Spectroscopy for Determination of Nanoparticle and Molecular Optical Cross Sections and Using Water Raman Intensities to Determine the Effective Excitation and Emission Path Lengths of Fluorophotometers for Correcting Fluorescence Inner Filter Effect.

Lab assistantship included: Preparation of all necessary chemicals prior to lab. Assisted students during lab to maintain a safe learning environment. Also assisted students to aid in understanding of chemical principles evaluated in lab experimentation.

• Mississippi State University Chemistry Summer Camp for High School Students

June 16-27, 2014 June 1-12, 2015 June 13-24, 2016

Summer camp synopsis: Two week summer camp designed to introduce high school students interested in STEM related careers to undergraduate chemistry courses and introductory research. The primary

research focus was nanoparticle characterization techniques and wet chemical methods. Required lesson planning for 3 hours of daily lecture and 4 hours of daily hands-on laboratory work related to lecture.

Student Tutor:

- Department of Chemistry, Mississippi State University, Mississippi State, Mississippi
 For all general and organic chemistry undergraduates

 August 2011-December 2012
- Department of Math and Science, Mississippi University for Women, Columbus, Mississippi For all general chemistry and calculus students

 January 2009-May 2011

ADDITIONAL RELEVANT TEACHING EXPERIENCE

• McWane Science Center, Birmingham, Alabama

Planned, coordinated, and performed scientific demonstrations for the general public pertaining to physics, chemistry, and biology. Demonstrations were designed to be highly informative but also engaging to children of ages 5 to 18, which implemented hands-on experimentation allowing audience member participation.

May 2005-August 2007

AFFILIATES

•	Society for Applied Spectroscopy	2012-2015
•	American Chemical Society	2013-2016
•	Chemistry Graduate Student Association (MSU)	
	Member	2011-2016
	Cohead of Chemistry TA Presentation Orientation	2012-2014
	Head of Presentation Organization Committee	2011-2013
	Vice-President	2013-2014

REFERENCES

References are available upon request.