

## NATHAN I. HAMMER

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### CONTACT INFORMATION

Department of Chemistry and Biochemistry  
180 Coulter Hall  
The University of Mississippi  
University, MS 38677, USA

Voice: +1 (662) 915-3989  
Fax: +1 (662) 915-3700  
Email: nhammer@olemiss.edu  
Internet: <http://www.thehammerlab.com>

### EDUCATION

Ph. D.	Physical Chemistry	2003	University of Tennessee	"Dipole-Bound Anions"
	Advisor: Prof. Robert N. Compton (rcompton@utk.edu)			
B. S.	Chemistry (Honors)	1998	University of Tennessee	Summa Cum Laude

### APPOINTMENTS

2013 - present	Associate Professor of Chemistry, The University of Mississippi
2007 - 2013	Assistant Professor of Chemistry, The University of Mississippi
2005 - 2007	Intelligence Community Postdoctoral Research Fellow, Departments of Chemistry and Polymer Science & Engineering, University of Massachusetts, Amherst Advisors: Prof. Mike D. Barnes (mdbarnes@chem.umass.edu) and Prof. Todd S. Emrick (tsemrick@mail.pse.umass.edu)
2003 - 2005	Postdoctoral Research Associate, Department of Chemistry, Yale University Advisor: Prof. Mark A. Johnson (mark.johnson@yale.edu)
1998 - 2003	Teaching and Research Assistant, Department of Chemistry, University of Tennessee
1998	Research Assistant, Departments of Chemistry, University of Tennessee and Radiology and Radiological Sciences, Vanderbilt University

### RESEARCH INTERESTS

Electronic, infrared, and Raman spectroscopy of single molecules, nanoparticles, and small clusters of molecules and ions to study the effects of noncovalent interactions on their evolving electronic and structural properties. Chemical education in the physical sciences to integrate theory with experiment.

### TEACHING EXPERIENCE

Chemistry 105, General Chemistry I (Honors), Chemistry 106, General Chemistry II  
Chemistry 251, Introduction to Undergraduate Individual Research (Honors)  
Chemistry 331/535, Physical Chemistry I, Chemistry 332/538, Physical Chemistry II  
Chemistry 337, Physical Chemistry Laboratory  
Chemistry 351, Undergraduate Individual Research (Honors)  
Chemistry 463, Senior Undergraduate Research  
Chemistry 532, Advanced Physical Chemistry: Thermodynamics  
Chemistry 536, Advanced Physical Chemistry: Reaction Dynamics  
Chemistry 662/762, Theory of Molecular Structure, Spectroscopy  
Chemistry 697/797, Thesis/Dissertation Research

### SELECTED SERVICE

Co-Organizer, 51<sup>st</sup> Annual Southeastern Undergraduate Research Conference, Martin, TN (2019)  
Co-Organizer, 50<sup>th</sup> Annual Southeastern Undergraduate Research Conference, Oxford, MS (2018)  
Ole Miss Local Section of the American Chemical Society Chair-Elect ('10, '14, '17) and Chair ('11, '15, '18)  
Session Co-Organizer, 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans (2018)  
University of Mississippi Faculty Research Development Fellow (2017-)  
Session Co-Organizer, 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco (2017)  
Session Co-Organizer, "Recent Advances in Chemical Physics" 67<sup>th</sup> SERMACS, Memphis, TN (2015)  
UM Bachelor of Science in Chemistry (ACS Certified) Program Coordinator (2014 -)  
UM Department of Chemistry and Biochemistry Coordinator of Undergraduate Research (2015 -)  
UM STEM Faculty Recruitment, Retention, and Development Working Group (2012)  
UM STEM Student Recruitment, Retention, and Career Placement Working Group (2012)  
UM Department of Chemistry and Biochemistry Awards Committee Chair (2011 -)  
UM Undergraduate External Fellowship Committee (2011 - 2017)  
Ole Miss Physical Chemistry Summer Research Program and NSF REU Director (2009 -)  
UM Department of Chemistry and Biochemistry Seminar Coordinator (2009 - 2013)  
Founding Member of Ole Miss Climate Change Study Group (2008) & MS Biophysical Consortium (2007)  
Member of Departmental Graduate Recruitment, General Chemistry, Undergraduate Recruitment, and Chair, Analytical, Organic, Inorganic, Physical (chaired) & Instructional Professor Search Committees  
University of Tennessee Graduate Student Vice President (2000 - 2001) and President (2001 - 2002)

**SELECTED AWARDS AND FELLOWSHIPS**

Lambda Sigma Honors Society Excellence in Teaching Award (2019)  
UM College of Liberal Arts Award for Research, Scholarship and Creative Achievement for Senior Faculty (2018)  
UM Student Members of the American Chemical Society Faculty Award (2018)  
Professionalism and Integrity Program Research Exemplar (U.S. Office of Research Integrity, 2017)  
Ole Miss Local Section of the American Chemical Society Service Award (2012)  
National Science Foundation Faculty Early Career Development (CAREER) Award (2010)  
Alpha Omicron Pi Favorite Professor (2009)  
University of Mississippi Faculty Research Fellow (2008)  
Intelligence Community (IC) Postdoctoral Research Fellow (2005 – 2007)  
Yates Graduate Dissertation Fellow (2002 – 2003), Hilton A. Smith Graduate Fellow (2001 – 2002)  
John E. Bloor Award in Physical Chemistry (2001), Eugene John Barber Fellowship in Chemistry (2000)  
First Year Graduate Student Achievement Award (1999), Research Merit Award (2002)  
University of Tennessee Citation for Extraordinary Campus Leadership and Service (2002)  
Tennessee, Ned McWherter, A.D. Melaven-Rhenium, and Calvin A. Buehler Scholar (1994 – 1998)  
University of Tennessee Chemistry Department Recognized Graduating Senior (1998)  
University of Tennessee Analytical Chemistry Division ACS Undergraduate Award (1996)

**EXTERNAL FUNDING**

“REU Site: Ole Miss Physical Chemistry Summer Research Program” *Principal Investigator*, NSF  
(**CHE-1757888**) \$299,682, '18 – '21  
“Center for Emergent Molecular Optoelectronics (CEMOs)” *Senior Personnel*, NSF  
(**OIA-1757220**) \$1,116,475 out of \$5,238,194 total, '18 – '23  
“RII Track-2 FEC: Feeding and Powering the World - Capturing Sunlight to Split Water and Generate  
Fertilizer and Fuels” *Principal Investigator*, NSF EPSCoR (**OIA-1539035**) \$1,058,666 out of \$6,000,000  
total, '15 – '19  
“MRI: Acquisition of a Raman Spectrometer for Research and Training at the University of Mississippi”  
*Principal Investigator*, NSF (**CHE-1532079**) \$201,666, '15 – '18  
“REU Site: Ole Miss Physical Chemistry Summer Research Program” *Principal Investigator*, NSF  
(**CHE-1460568**) \$270,000, '15 – '19  
“REU Site: Ole Miss Physical Chemistry Summer Research Program” *Principal Investigator*, NSF  
(**CHE-1256713**) \$300,000, '12 – '16  
“CAREER: Spectroscopically Tracking the Evolution of Noncovalent Interactions from the Single  
Molecule Level to the Condensed Phases” *Principal Investigator*, NSF Faculty Early Career Development  
(CAREER) Program (**CHE-0955550**) \$650,000, '10 – '17  
“Dynamics of Strand-Crossover Formation In Cadherin” *Co-PI* (with *Principal Investigator* Prof. Susan  
Pedigo, UM), NSF (**MCB-0950494**) \$560,832, '10 – '13  
“Modeling and Simulation of Complex Systems” *Senior Personnel*, NSF (**EPS-0903787**) \$329,172 out of  
\$20,000,000 total, '09 - '14  
“Exploring the Chemistry of Food: Engaging the Ole Miss Local Section and Oxford, MS Community” *Principal  
Investigator* (with Susan Pedigo), **American Chemical Society** \$2,500, '15 – '16  
“Ole Miss ACS Chemistry Book Club” *Co-PI* (with Susan Pedigo), **American Chemical Society** \$3,000, '13 – '14  
“Engaging Younger Chemists to Create a Sustainable Local Section” *Principal Investigator*, **American  
Chemical Society** \$2,500, '11 – '12  
“A Leadership Retreat for Undergraduate and Graduate Students” *Co-PI* (in partnership with Prof. Kate  
Stumpo, University of Tennessee-Martin), **American Chemical Society** \$3,000, '11 – '12

**DIRECTED DISSERTATIONS AND THESES**

Dr. John Kelly, Ph.D. in Chemistry, 2016, “Characterization of Charge Accommodation in Biologically  
Important Hydrogen-Bonded Clusters” ([pdf](#))  
Dr. Louis McNamara, Ph.D. in Chemistry, 2015, “The Spectroscopic Characterization of Newly Developed  
Emissive Materials and the Effect of Environment on Their Photophysical Properties” ([pdf](#))  
Dr. Debra Jo Scardino Sage, Ph.D. in Chemistry, 2012, “Theoretical and Spectroscopic Studies  
of Molecular Systems for Charge Transfer and Energy Storage and Transfer” ([pdf](#))  
Dr. Ashley Wright, Ph.D. in Chemistry, 2012, “Investigations of Noncovalent Interactions Using Raman  
Spectroscopy and Electronic Structure Computations” ([pdf](#))

- Kristina Cuellar, M.S. in Chemistry, 2014, "Noncovalent Interactions Involving Microsolvated Networks of Trimethylamine-N-Oxide" ([pdf](#))
- Cameron Smith, ACS-certified B.S. in Chemistry (Honors), 2018, "Studies of Carbonaceous Materials using Raman Spectroscopy" ([pdf](#))
- Allyson Henke, ACS-certified B.S. Forensic in Chemistry (Honors), 2018, "An Analysis of Commercial Oxidative Hair Dyes Using Raman Spectroscopy" ([pdf](#))
- Alex Wallace, ACS-certified B.S. in Chemistry (Honors), 2018, "Studying the Effects of Hydrogen Bonding in 1H-1,2,3-Triazole and Its Derivatives" ([pdf](#))
- Andrew Kamischke, ACS-certified B.S. in Forensic Chemistry (Honors), 2018, "Raman Spectroscopic and Computational Study of Hydrogen Bond Interactions between Guanidine Hydrochloride, Trimethylamine N-oxide (TMAO), Urea, and Water" ([pdf](#))
- Katelyn Allen, ACS-certified B.S. in Chemistry (Honors), 2017, "A Raman Spectroscopic and Computational Study on the Effects of Electron Withdrawing Groups on Halogen Bonding" ([pdf](#))
- Sarah Sutton, ACS-certified B.S. in Chemistry (Honors), 2017, "An Integrative Synthetic, Spectroscopic, and Computational Study of the Free Radical Chlorine Dioxide and its Interactions with Hydrogen Bonded Networks" ([pdf](#))
- Lemuel Tsang, ACS-certified B.S. in Chemistry (Honors), 2017, "Raman Spectroscopic Studies of Novel Gold-Containing Nanomaterials" ([pdf](#))
- Rachael Nelson, ACS-certified B.S. in Chemistry (Honors), 2017, "Photophysical Characterization of Newly-Synthesized Emissive Materials" ([pdf](#))
- Ashley Williams, ACS-certified B.S. in Chemistry (Honors), 2017, "Spectroscopic and Computational Studies of the Hydrogen Bonding Interactions of Hydroxyethyl Ethers" ([pdf](#))
- Gretchen Harknett, B.A. in Biochemistry (Honors), 2017, "An Analysis of Stimuli Responsive Biomaterials using Raman Spectroscopy and Computational Studies" ([pdf](#))
- April Steen ACS-certified B.S. in Chemistry/B.S. in Biology (Honors), 2015, "Using Technology to Engage Students in the STEM Field" ([pdf](#))
- Wells Prather, ACS-certified B.S. in Chemistry (Honors), 2015, "Non-Covalent Interactions of Trimethylamine N-Oxide (TMAO) and Urea in Water" ([pdf](#))
- Peyton Reves, ACS-certified B.S. in Chemistry (Honors), 2015, "A Raman Spectroscopic and Computational Study of the Effects of Halogen Bonding on Pyrimidine Containing Systems" ([pdf](#))
- Anna Craig, B.A. in Chemistry (Honors), 2015, "A Raman Spectroscopic Study of the Effects of Hydrogen Bonding on 1,2,3-Triazole" ([pdf](#))
- Ashton Nicholson, B.A. in Biochemistry (Honors), 2014, "Raman Spectroscopic and Computational Analysis of the Effects of Noncovalent Interactions on DMSO" ([pdf](#))
- Joey Golden, ACS-certified B.S. in Chemistry/B.A. in Biology/B.A. in Mathematics (Honors), 2013, "Effects of Micro-Solvation on Room Temperature Ionic Liquids" ([pdf](#))
- Annie McClellan, ACS-certified B.S. in Chemistry/B.A. in Biology (Honors), 2013, "Spectroscopic Study of Charge Transfer Induced Blue Shifting of Pyrimidine/Water Mixtures on Silver Substrate" ([pdf](#))
- Nikki Reinemann, ACS-certified B.S. in Chemistry/B.S. in Chemical Engineering (Honors), 2013, "Elucidation of B-N and B-P Stretching Vibrations Using Raman Spectroscopy and Electronic Structure Calculations" ([pdf](#))
- Ramsey Frey, B.A. in Chemistry (Honors), 2013, "Enlightenment Science and Nano-Science: Creating Order out of Magic" ([pdf](#))
- Matthew McDowell, ACS-certified B.S. in Chemistry (Honors), 2011, "Design and Construction of a Reflectron Time of Flight Mass Spectrometer for Multiphoton Ionization and Vibrational Spectroscopic Studies of Mass-Selected Clusters" ([pdf](#))
- Anna Hailey, B.S. in Chemical Engineering/B.A. in Chemistry/B.A. in Chinese (Honors), 2011. "New Catalysts for the Photocatalytic Reduction of Carbon Dioxide to C1 Organic Compounds" ([pdf](#))
- Jonathan Wolfe, ACS-certified B.S. in Chemistry (Honors), 2010, "Developing the Techniques for Raman, Surface-Enhanced Raman Scattering (SERS), and Fluorescence Spectroscopies of Organic Molecules in Isolation" ([pdf](#))
- Ryan Gregg, B.S. in Forensic Chemistry (Honors), 2010, "Development of a Laser-Induced Breakdown Spectrometer for Lead-Free Gunshot Residue Analysis" ([pdf](#))
- Austin Howard, ACS-certified B.S. in Chemistry/B.A. in Physics (Honors), 2009, "Upgrade of a Raman Spectrometer with Modern Computer Control and Data Acquisition for Studies of Hydrogen Bonding in Pyrimidine" ([pdf](#))

**AWARDS OF DIRECTED STUDENTS**

- Barry M. Goldwater Scholarship: Dana Reinemann (2012), Anna Hailey (2010)  
 NSF Graduate Research Fellowship: Dana Reinemann (Vanderbilt, 2015), Anna Hailey (Princeton, 2012)  
 UM Chemistry Outstanding Senior Chemistry Graduate: Allyson Henke (2018)  
 UM Chemistry Outstanding Physical Chemistry Graduate Student: Shane Autry (2017)  
 UM Chemistry Graduate Research Award: John Kelly (2016)  
 UM Chemistry Undergraduate Research Award: Sarah Sutton (2017), Katelyn Allen (2017), Peyton Reves (2015), Kristina Cuellar (2012), Dana Reinemann (2011), Matt McDowell (2010)  
 UM Analytical Chemistry Award: Logan Powell (2018), Allyson Henke (2017), Andrew Kamische (2017), April Steen (2014)  
 UM Biochemistry Award: Sarah Sutton (2016)  
 UM Physical Chemistry Award: Allyson Henke (2017), Anna Craig (2015), Annie McClellan (2012), Dana Reinemann (2011)  
 UM Forensic Chemistry Award: Allyson Henke (2018), Andrew Kamische (2018)  
 UM Inorganic Chemistry Award: Dana Reinemann (2013)  
 UM Taylor Medalist: Allyson Henke (2018), Anna Craig (2014), Joseph Golden (2012), Ramsey Frey (2012), Anna Hailey (2010), Austin Howard (2009)  
 UM Outstanding Engineering Student: Dana Reinemann (Chemical Engineering Junior 2011, Senior 2012), Anna Hailey (College of Engineering Senior 2011 and Chemical Engineering Senior 2011)  
 Mississippi EPSCoR State Meeting Student Poster Awards: Dana Reinemann (1<sup>st</sup> place 2012), Annie McClellan (3<sup>rd</sup> place 2012), Anna Hailey (1<sup>st</sup> place 2010)  
 UM Most Outstanding Senior Honors Thesis: Austin Howard (2009)

**PUBLICATIONS****Peer-Reviewed Journal Articles & Proceedings (h-index: 29, i10-index: 50, citations: 3716, updated 2/19/19)**

----- Directed High School and Undergraduate Students Italicized -----

103. R. M. Rajapakse, N. H. Attanayake, D. Karunathilaka, A. E. Steen, N. I. Hammer, D. R. Strongin, and D. L. Watkins, "Advances in Electro-copolymerization of NIR Emitting and Electronically Conducting Block Copolymers," *Journal of Materials Chemistry C*, in press (2019).
102. S. Autry, J. N. Gayton, W. Meador, S. Parkin, G. Hill, N. I. Hammer, and J. H. Delcamp, "Indolizine-Cyanine Dyes: Near Infrared Emissive Cyanine Dyes with Increased Stokes Shifts," *Journal of Organic Chemistry*, 84, 687 (2019). DOI: 10.1021/acs.joc.8b02521 ([link](#))
101. R. Chatterjee, B. Sajjadi, W.-Y. Chen, D. L. Mattern, N. O. Egiebor, N. I. Hammer, and V. Raman, "Low Frequency Ultrasound Enhanced Dual Amination of Biochar: A Nitrogen-Enriched Sorbent for CO<sub>2</sub> Capture," *Energy & Fuels* (2019). DOI: 10.1021/acs.energyfuels.8b03583 ([link](#))
100. Y. Wusimanjiang, J. Yadav, V. Arau, A. E. Steen, N. I. Hammer, and S. Pan "Blue Electrogenated Chemiluminescence from Halide Perovskite Nanocrystals," *Journal of Analysis and Testing* (2019). DOI: 10.1007/s41664-018-0082-4 ([link](#))
99. S. Autry, J. N. Gayton, R. C. Fortenberry, N. I. Hammer, and J. H. Delcamp, "Counter Anion Effect on the Photophysical Properties of Emissive Indolizine-Cyanine Dyes in Solution and Solid State," *Molecules*, 23, 3051 (2018). DOI: 10.3390/molecules23123051 ([link](#))
98. S. J. Cassidy, I. Brettell-Adams, L. E. McNamara, M. F. Smith, M. Bautista, H. Cao, M. Vasiliu, D. L. Gerlach, F. Qu, N. I. Hammer, D. A. Dixon, and P. A. Rugar, "Boranes with Ultra High Stokes Shifts Fluorescence," *Organometallics*, 37, 3732 (2018). DOI: DOI: 10.1021/acs.organomet.8b00460 ([link](#))
97. B. Sajjadi, J. W. Broome, W.-Y. Chen, D. Mattern, N. O. Egiebor, N. Hammer, C. L. Smith, "Urea Functionalization of Ultrasound-Treated Biochar: A Feasible Strategy for Enhancing Heavy Metal Adsorption Capacity," *Ultrasonics Sonochemistry*, 51, 50 (2018). DOI: 10.1016/j.ultsonch.2018.09.015 ([link](#))
96. S. G. Zetterholm, G. A. Verville, L. Boutwell, C. Boland, J. C. Prather, J. Bethea, J. Cauley, K. Warren, S. A. Smith, D. H. Magers, N. I. Hammer, "Noncovalent Interactions between Tri-methylamine N-oxide (TMAO), Urea, and Water," *Journal of Physical Chemistry B*, 122, 8805 (2018). (featured on cover) DOI: 10.1021/acs.jpcc.8b04388 ([link](#))
95. C. R. Hutchison, S. N. Johnson, C. Williams, C. L. Hussey, G. S. Tschumper and N. I. Hammer, "Intermolecular interactions and vibrational perturbations within 1-ethyl-3-methylimidazolium thiocyanate / water mixtures," *Journal of Physical Chemistry C*, 122, 27673 (2018). (featured on cover) DOI: 10.1021/acs.jpcc.8b07114 ([link](#))

94. A. Peddapuram, H. Cheema, L. E. McNamara, Y. Zhang, N. I. Hammer, and J. H. Delcamp, "Quinoxaline-based Dual Donor, Dual Acceptor Organic Dyes for Dye-Sensitized Solar Cells," *Applied Sciences*, 8, 1421 (2018). DOI: 10.3390/app8091421 ([link](#))
93. A. Baumann, H. Cheema, A. Sabuj, L. E. McNamara, A. Peddapuram, Y. Zhang, S. T. Nguyen, D. L. Watkins, N. I. Hammer, N. Rai and J. H. Delcamp, "Iodine Binding with Thiophene and Furan Based Dyes for DSCs," *Physical Chemistry Chemical Physics*, 20, 17859 (2018). DOI: 10.1039/c8cp03065k ([link](#))
92. A. O. Weldeab, A. Steen, D. J. Starckenburg, J. S. Dal Williams, J. Xue, N. I. Hammer, R. K. Castellano, and D. L. Watkins, "Tuning the Structural and Spectroscopic Properties of Donor-Acceptor-Donor Oligomers via Mutual X-Bonding, H-Bonding, and  $\pi$ - $\pi$  Interactions," *Journal of Materials Chemistry C*, 6, 11992-12000 (2018). DOI: 10.1039/C8TC00074C ([link](#))
91. P. S. Shinde, P. Fontenot, J. P. Donahue, J. L. Waters, P. Kung, L. E. McNamara, N. I. Hammer, A. Gupta, and S. Pan, "Synthesis and Thin Film Coating of MoS<sub>2</sub> from [Mo<sub>3</sub>S<sub>7</sub>(S<sub>2</sub>CNEt<sub>2</sub>)<sub>3</sub>]I for Enhanced Photoelectrochemical Performance and Stability of Cu<sub>2</sub>O Photocathode Toward Efficient Solar Water Splitting," *Journal of Materials Chemistry A*, 6, 9569 (2018). DOI: 10.1039/C8TA01771A ([link](#))
90. P. S. Shinde, P. Fontenot, J. P. Donahue, J. L. Waters, P. Kung, L. E. McNamara, N. I. Hammer, A. Gupta, and S. Pan, "Rapid Screening of Photoanode Materials using SPECM Technique and Formation of Z-scheme Solar Water Splitting System by Coupling p- and n-type Heterojunction Photoelectrodes," *ACS Applied Energy Materials*, 1, 2283 (2018). DOI: 10.1021/acsaem.8b00381 ([link](#))
89. A. J. Huckaba, H. Shirley, R. W. Lamb, S. Guertin, S. Autry, H. Cheema, K. Talukdar, T. Jones, J. W. Jurss, A. Dass, N. I. Hammer, R. H. Schmehl, C. E. Webster, J. H. Delcamp, "A Mononuclear Tungsten Photocatalyst for H<sub>2</sub> Production," *ACS Catalysis*, 8, 4838 (2018). DOI: 10.1021/acscatal.7b04242 ([link](#))
88. Y. Zhang, H. Cheema, L. E. McNamara, L. A. Hunt, N. I. Hammer, and J. H. Delcamp, "Ullazine Donor-Pi bridge-Acceptor Organic Dyes for DSCs," *Chemistry – A European Journal* 24, 5936 (2018). DOI: 10.1002/chem.201800030 ([link](#))
87. S. Nguyen, T. Ellington, K. E. Allen, J. Gorden, A. Rheingold, G. S. Tschumper, N. I. Hammer, and D. L. Watkins, "Systematic Experimental and Computational Studies of Substitution and Hybridization in Solid-State Halogen Bonded Assemblies," *ACS Crystal Growth and Design* 18, 3244 (2018). DOI: 10.1021/acs.cgd.8b00398 ([link](#))
86. R. Chatterjee, B. Sajjadi, D. L. Mattern, W.-Y. Chen, T. Zubatiuk, D. Leszczynska, J. Leszczynski, N. O. Egiebora, and N. I. Hammer, "Ultrasound Cavitation Intensified Amine Functionalization: A Feasible Strategy for Enhancing CO<sub>2</sub> Capture Capacity of Biochar," *Fuel*, 225, 287 (2018). DOI: 10.1016/j.fuel.2018.03.145 ([link](#))
85. C. A. Carpenter, P. Brogdon, L. E. McNamara, G. S. Tschumper, N. I. Hammer, and J. H. Delcamp, "A Robust Pyridyl-NHC Ligated Rhenium Photocatalyst for CO<sub>2</sub> Reduction in the Presence of Water and Oxygen," *Inorganics*, 6, 22 (2018). DOI:10.3390/inorganics6010022 ([link](#))
84. H. Cheema, A. Peddapuram, R. E. Adams, L. McNamara, L. Hunt, N. Le, D. L. Watkins, N. I. Hammer, R. H. Schmehl, and J. H. Delcamp, "Molecular Engineering of NIR Absorbing Thienopyrazine Double Donor Double Acceptor Organic Dyes for DSCs," *The Journal of Organic Chemistry*, 82, 12038 (2017). DOI: 10.1021/acs.joc.7b01750 ([link](#))
83. L. E. McNamara, T. A. Rill, A. J. Huckaba, V. Ganeshraj, J. Gayton, R. A. Nelson, E. A. Sharpe, A. Dass, N. I. Hammer and J. H. Delcamp, "Indolizine-Squaraines: NIR Fluorescent Materials with Molecular Engineered Stokes Shifts," *Chemistry - A European Journal*, 23, 12494 (2017). DOI: 10.1002/chem.201702209 ([link](#))
82. K. M. Dreux, L. E. McNamara, J. T. Kelly, A. M. Wright, N. I. Hammer, and G. S. Tschumper, "Probing dative and dihydrogen bonding in ammonia borane with electronic structure computations and Raman under nitrogen spectroscopy," *Journal of Physical Chemistry A*, 121, 5884 (2017). (Featured on cover) DOI: 10.1021/acs.jpca.7b03509 ([link](#))
81. J. D. Cope, J. A. Denny, R. W. Lamb, L. E. McNamara, N. I. Hammer, C. E. Webster, and T. K. Hollis, "Synthesis, Characterization, Photophysics and a Ligand Rearrangement of CCC-NHC Pincer Nickel Complexes: Colors, Polymorphs Emission and Raman Spectra," *Journal of Organometallic Chemistry*, 845, 258 (2017). DOI: 10.1016/j.jorganchem.2017.05.046 ([link](#))
80. Y. Zhang, S. A. Autry, L. E. McNamara, S. T. Nguyen, N. Le, P. Brogdon, D. L. Watkins, N. I. Hammer, and J. H. Delcamp, "Near-Infrared Fluorescent Thienothiadiazole Dyes with Large Stokes Shifts and High Photostability," *Journal of Organic Chemistry*, 82, 5597-5606 (2017). DOI: 10.1021/acs.joc.7b00422 ([link](#))
79. T. L. Ellington, P. L. Reves, B. L. Simms, J. L. Wilson, D. L. Watkins, G. S. Tschumper, and N. I. Hammer, "Quantifying the effects of halogen bonding by haloaromatic donors on the acceptor pyrimidine," *ChemPhysChem*, 18, 1267-1273 (2017). (Featured on inside cover) DOI: 10.1002/cphc.201700114 ([link](#))

78. S. C. Sutton, W. E. Cleland, Jr., N. I. Hammer, "Introducing Students to a Synthetic and Spectroscopic Study of the Free Radical Chlorine Dioxide," *The Journal of Chemical Education*, **94**, 515-520 (2017). DOI: 10.1021/acs.jchemed.6b00599 ([link](#))
77. K. M. Williams, M. Gruner, J. Gensheimer, A. Wright, M. Blair, S. A. Autry, and N. I. Hammer, "Partial displacement of a triamine ligand from a platinum(II) complex after reaction with N-acetylmethionine," *Inorganica Chimica Acta*, **458**, 163-170 (2017). DOI: 10.1016/j.ica.2017.01.010 ([link](#))
76. N. N. Sreeramulu, L. McNamara, N. I. Hammer, and H. Rathnayake, "A versatile synthesis to novel binary reactive groups functionalized silsesquioxane microparticles," *Science Advances Today*, **3**, 25266 (2017). ([link](#))
75. J. Wang, J. Waters, P. Kung, S. Kim, J. T. Kelly, L. E. McNamara, N. I. Hammer, A. Gupta, S. Pan, "A Facile Electrochemical Reduction Method for Improving Photocatalytic Performance of  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> Photoanode for Solar Water Splitting," *ACS Applied Materials & Interfaces*, **9**, 381-390 (2017). DOI: 10.1021/acsami.6b11057 ([link](#))
74. J. T. Kelly, A. K. McClellan, L. V. Joe, A. M. Wright, L. T. Lloyd, G. S. Tschumper, and N. I. Hammer, "Competition between Hydrophilic and Argyrophilic Interactions in Surface Enhanced Raman Spectroscopy (SERS)," *ChemPhysChem*, **17**, 2782-2786 (2016). (Featured on the inside cover) DOI: 10.1002/cphc.201600678 ([link](#))
73. A. J. Huckaba, A. Yella, L. E. McNamara, A. E. Steen, J. S. Murphy, C. A. Carpenter, G. D. Punekey, N. I. Hammer, M. K. Nazeeruddin, M. Grätzel, and J. H. Delcamp, "Molecular Design Principles of Near-Infrared Absorbing and Emitting Indolizine Dyes," *Chemistry - A European Journal*, **22**, 15536-15542 (2016). DOI: 10.1002/chem.201603165 (2016). ([link](#))
72. S. Ananthakrishnan, J. Strain, A. Mitul, L. E. McNamara, A. Iefanova, N. I. Hammer, Q. Qiao, and H. Rathnayake, "P3HT-block-Poly(anthracene-9,10-diyl) Donor-Donor Polymer Dyad for Organic Photovoltaics," *Journal of Polymer Science, Part A: Polymer Chemistry*, **54**, 3032-3045 (2016). DOI: 10.1002/pola.28189 ([link](#))
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1. R. N. Compton and N. I. Hammer, "Multipole-Bound Molecular Anions" in *Advances in Gas-Phase Ion Chemistry Volume 4*, edited by N. Adams and L. Babcock (Elsevier Science, 2001), 257-291. ([link](#))

### STUDENT PRESENTATIONS

149. Genevieve A. Verville, Mary Hannah Byrd, Andrew Kamischke, Shelly A. Smith, David Magers, and Nathan Hammer, "Noncovalent Interactions between Trimethylamine N-Oxide (TMAO), Guanidinium Chloride (Gdn-HCl), and Water," 51<sup>st</sup> Annual Southeastern Undergraduate Research Conference, Martin, TN, February 2019. (oral)
148. Benjamin Stratton and Nathan I. Hammer, "Theoretical and Experimental Vibrational Modes of the Borane Pyridine Complex," 51<sup>st</sup> Annual Southeastern Undergraduate Research Conference, Martin, TN, February 2019.
147. Ashley Williams, Steven Davis, and Nathan Hammer, "A Computational Investigation of 1-Hydroxyethyl Radical: Optimized Hydrated Cluster Structures, Energetics, and Vibrational Characterization," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.
146. Noelle Watson, Louis E. McNamara, Walter Cleland, Nathan Hammer, "Computational Studies of Chromium(III)-Imidazole Complexes," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.

145. Genevieve A. Verville, Mary Hannah Byrd, Andrew Kamischke, Shelley A. Smith, David H. Magers, and Nathan I. Hammer, "Raman Spectroscopic and Computational Study of Noncovalent Interactions between Guanidinium Chloride (Gdn-HCl), Trimethylamine N-oxide (TMAO), and Water," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.
144. April E. Steen, Suong T. Nguyen, Thomas L. Ellington, Jared H. Delcamp, Gregory S. Tschumper, Davita L. Watkins, and Nathan I. Hammer, "Synthesis and Photophysical Characterization of Bispyridyl Hybrid Oligomers: Examining Mixed Furan-Thiophene Systems via Spectroscopic and Computational Methods," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.
143. Thomas L. Powell and Nathan I. Hammer, "Spectroscopic and Computational Study of Metformin Hydrochloride utilizing Raman Under Nitrogen Spectroscopy to Examine Lattice Structure," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.
142. Louis McNamara, Dana N. Reinemann, Henry Valle, T. Keith Hollis, and Nathan Hammer, "Raman Spectroscopic, Computational, and X-ray crystallographic investigation of Intermolecular Interactions in Trimethylamine N-oxide," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.
141. Leigh Anna Hunt, Roberta R. Rodrigues, Jared H. Delcamp, and Nathan I. Hammer, "Fluorescence Lifetime Studies of Donor- $\pi$  Bridge-Acceptor (D- $\pi$ -A) Dyes for use in Dye-Sensitized Solar Cells," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.
140. Austin L. Dorris, Hal Vaughan, Daniell L. Mattern, and Nathan I. Hammer, "Low Energy Raman Spectroscopic and Computational Study of Newly-Developed Boron Acid Derivatives," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.
139. Virginia Baker, Jacqueline Gayton, Jared Delcamp, and Nathan Hammer, "A Computational and Spectroscopic Study of Cu(II)Imidazole<sub>4</sub>Cl<sub>2</sub>," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.
138. Margaret Baldwin, David Magers, Nathan Hammer, Gregory Tschumper, and Shelley Smith, "Characterizing the Nature of Intermolecular Interactions in Dimethyl Sulfoxide: A Computational and Spectroscopic Study," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018.
137. Shane A. Autry and Nathan I. Hammer, "Spectroscopic Characterization of Newly Developed Systems and Challenges to Overcome," Feeding and Powering the World 2018: Planning for the Future, Oxford, MS, June 2018. (oral)
136. Louis E. McNamara, Henry U. Valle, Frank R. Fronczek, T. Keith Hollis, Gregory S. Tschumper, and Nathan I. Hammer, "Intermolecular interactions between TMAO and water: Restructuring the water hydrogen bonding network," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018. (oral)
135. Thomas Logan Powell, Kimberly Stevens, John T. Kelly, and Nathan I. Hammer, "Probing hydrogen bonding in Nitrogen-containing heterocyclic molecules using Raman under nitrogen spectroscopy," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018. (oral)
134. April E. Steen, Kerri D. Scott, and Nathan I. Hammer, "Comparison of emission spectra from various light sources: A physical chemistry education outreach project," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018. (oral)
133. Thomas Logan Powell and Nathan I. Hammer, "Spectroscopic and computational study of metformin hydrochloride utilizing Raman under nitrogen spectroscopy to examine lattice structure," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
132. Genevieve A. Haltingen-Verville, Leigh Sumner, Kirkland Laughter, Saumen Chakraborty, and Nathan I. Hammer, "Raman spectroscopic investigations of DNA-gold hybrid nanoclusters," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
131. Shane Autry, Min Zhang, Eric Van Dornshuld, Vivek Dixet, T. Keith Hollis, Charles Edwin Webster, Nathan I. Hammer, "Characterization of the photophysical properties of CCC-N-heterocyclic carbene platinum pincer complexes at the single molecule level," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
130. April E. Steen, Suong Nguyen, Thomas L. Ellington, Gregory S. Tschumper, Davita L. Watkins, Nathan I. Hammer, "Synthesis and photophysical characterization of bipyridyl hybrid oligomers: Examining mixed Furan-thiophene systems using spectroscopy and DFT methods," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
129. Leigh Anna Hunt, Jacqueline N. Gayto, Tana Rill, Aron Huckaba, Louis E. McNamara, Jared H. Delcamp, and Nathan I. Hammer, "Single molecule spectroscopic studies of squaraine-based donor-acceptor-

- donor (D-A-D) dyes," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
128. Austin Dorris, Trey Vaughan, Daniell L. Mattern, and Nathan I. Hammer, "Spectroscopic and computational characterization of a new series of organoboron derivatives for use in Suzuki-Miyaura coupling reactions," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
  127. Ashley E. Williams and Nathan I. Hammer, "A spectroscopic and theoretical study of dipole-bound anions of indazole derivatives," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
  126. Leah Alex Wallace, Anna Craig, Jared H. Delcamp, Gregory S. Tschumper, and Nathan I. Hammer, "Studying the effects of hydrogen bonding in triazole and its derivatives," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
  125. Cameron Smith and Nathan I. Hammer, "Raman under nitrogen spectroscopy (RUNS) and surface-enhanced Raman spectroscopy under nitrogen (SERSUN) of carbonaceous materials," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
  124. Allyson Henke and Nathan I. Hammer, "Analysis of commercial oxidative hair dyes using surface-enhanced Raman spectroscopy," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
  123. Andrew Kamischke, Mary Byrd, Shelley Ann Smith, David Magers, and Nathan I. Hammer, "Raman spectroscopic and computational study of hydrogen bond interactions between urea, guanidine, and water," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
  122. Kyle Quist and Nathan I. Hammer, "Raman spectroscopic studies of interactions between metal ions and ceramics," 255<sup>th</sup> National Meeting of the American Chemical Society, New Orleans, LA, March 2018.
  121. Leah A. Wallace, Anna E. Craig, Jared H. Delcamp, Gregory S. Tschumper, and Nathan I. Hammer, "Studying the Effects of Hydrogen Bonding in Triazole and Its Derivatives," 50<sup>th</sup> Annual Southeastern Undergraduate Research Conference, Oxford, MS, February 2018.
  120. Cameron Smith, Riya Chatterjee, Baharak Sajjadi, Wei-Yin Chen, and Nathan I. Hammer, "Spectroscopic Studies of Carbonaceous Materials Using Raman Spectroscopy," 50<sup>th</sup> Annual Southeastern Undergraduate Research Conference, Oxford, MS, February 2018.
  119. Kyle Quist and Nathan I. Hammer, "Raman Spectroscopic Studies of Interactions between Metal Ions and Ceramics," 50<sup>th</sup> Annual Southeastern Undergraduate Research Conference, Oxford, MS, February 2018.
  118. Andrew D. Kamischke, Mary H. Byrd, Shelley A. Smith, David H. Magers, and Nathan I. Hammer, "Raman Spectroscopic and Computational Study of Hydrogen Bond Interactions Between Urea, Guanidine, and Water," 50<sup>th</sup> Annual Southeastern Undergraduate Research Conference, Oxford, MS, February 2018.
  117. Thomas L. Powell, Kimberly Stevens, John T. Kelly, and Nathan I. Hammer, "Probing Hydrogen Bonding in Nitrogen-Containing Heterocyclic Molecules using Raman Under Nitrogen Spectroscopy," 50<sup>th</sup> Annual Southeastern Undergraduate Research Conference, Oxford, MS, February 2018. (oral)
  116. Allyson R. Henke and Nathan I. Hammer, "Analysis of commercial oxidative hair dyes using surface-enhanced Raman Spectroscopy," 50<sup>th</sup> Annual Southeastern Undergraduate Research Conference, Oxford, MS, February 2018. (oral)
  115. Louis McNamara, "Time-Correlated Single Photon Counting (TCSPC) for Excited State Lifetime Measurements," Feeding and Powering the World 2017: Building the Knowledge Base, Oxford, MS, June 2017. (oral)
  114. Shane Autry, "Spectroscopic Characterization of the Physical and Photophysical Properties of Newly Developed Pincer Complexes," Feeding and Powering the World 2017: Building the Knowledge Base, Oxford, MS, June 2017. (oral)
  113. April Steen, "Photophysical Characterization of Bipyridyl Hybrid Oligomers: Examining Mixed Furan-Thiophene Systems Using Spectroscopy and DFT Methods," Feeding and Powering the World 2017: Building the Knowledge Base, Oxford, MS, June 2017. (oral)
  112. Leigh Anna Hunt, Roberta R. Rodrigues, Yanbing Zhang, Adithya Peddapuram, Louis McNamara, Jared H. Delcamp, and Nathan I. Hammer, "Measuring Electron Injection Efficiencies for Optimization of Dye-Sensitized Solar Cells," Feeding and Powering the World 2017: Building the Knowledge Base, Oxford, MS, June 2017.
  111. Ashley E. Williams, John T. Kelly, Steven R. Davis, and Nathan I. Hammer, "Spectroscopic and computational studies of the hydrogen bonding interactions of hydroxyethyl ethers," Feeding and Powering the World 2017: Building the Knowledge Base, Oxford, MS, June 2017.

110. Sarah C. Sutton, Walter E. Cleland, and Nathan I. Hammer, "Spectroscopic and computational study of chlorine dioxide/water interactions," Feeding and Powering the World 2017: Building the Knowledge Base, Oxford, MS, June 2017.
109. April E. Steen, Suong Nguyen, Thomas L. Ellington, Gregory S. Tschumper, Davita L. Watkins, and Nathan I. Hammer, "Synthesis and photophysical characterization of bipyridyl hybrid oligomers: Examining mixed furan-thiophene systems using spectroscopy and DFT methods," 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017.
108. Shane A. Autry, Mihn Zhang, V. Dixit, T. Keith Hollis, C. Edwin Webster, and Nathan I. Hammer, "Spectroscopic characterization of the physical and photo-physical properties of newly developed platinum pincer complexes," 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017.
107. Louis E. McNamara, Hamad Cheema, Jared H. Delcamp, and Nathan I. Hammer, "Photophysical investigation of electron ejection efficiencies of novel organic near-IR absorbing dyes into TiO<sub>2</sub> based semiconductor surfaces for dye-sensitized solar cell applications," 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017. (oral)
106. Katelyn A. Allen, Suong Nguyen, Thomas L. Ellington, Gregory S. Tschumper, Davita L. Watkins, and Nathan I. Hammer, "Raman spectroscopic and computational study of the electron withdrawing effects on halogen bonding," 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017.
105. Sarah C. Sutton, Walter E. Cleland, and Nathan I. Hammer, "Spectroscopic and computational study of chlorine dioxide/water interactions," 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017.
104. Ashley E. Williams, John T. Kelly, Steven R. Davis, and Nathan I. Hammer, "Spectroscopic and computational studies of the hydrogen bonding interactions of hydroxyethyl ethers," 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017.
103. Rachael A. Nelson, Louis E. McNamara, Tana Rill, Aron Huckaba, Jared H. Delcamp, and Nathan I. Hammer, "Investigating the photophysical properties of indolizine-squaraines," 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017.
102. Lemuel Tsang and Nathan I. Hammer, "Fundamental structural studies of thiolate-protected gold clusters using Raman spectroscopy" 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017.
101. Louis McNamara, Tana Rill, Jared Delcamp, Nathan I. Hammer, "Indolizines-Squaraine based NIR Emissive Materials: Characterization and Applications," Feeding and Powering the World 2016: Building the Network, Oxford, MS, July 2016. (oral)
100. Katelyn Allen, Suong Nguyen, John Kelly, Gregory S. Tschumper, Davita L. Watkins, and Nathan I. Hammer, "A Raman Spectroscopic and Computational Study of the Electron Withdrawing Effects on Halogen Bonding," Feeding and Powering the World 2016: Building the Network, Oxford, MS, July 2016.
99. Shane A. Autry, T. Keith Hollis, Nathan I. Hammer, "Spectroscopic Characterization of the Physical and Photo-Physical Properties of Newly Developed Platinum Pincer Complexes," Feeding and Powering the World 2016: Building the Network, Oxford, MS, July 2016.
98. Kim Hamilton-Wims, Nathan Hammer, and Jared H. Delcamp, "Research Experience for Community College Instructors in the Water-Energy-Food Nexus: Preparation of a Cobalt-Based Dye-Sensitized Solar Cell," Feeding and Powering the World 2016: Building the Network, Oxford, MS, July 2016.
97. Cameron L. Smith, Han Thuy An Truong, Wei-Yin Chen, and Nathan I. Hammer, "Raman Spectroscopic Characterization of Functionalized Graphene Nanomaterials," Feeding and Powering the World 2016: Building the Network, Oxford, MS, July 2016.
96. April E. Steen, Suong T. Nguyen, Thomas L. Ellington, Gregory S. Tschumper, Davita L. Watkins, and Nathan I. Hammer, "A Spectroscopic and Computational Study of Newly-Synthesized Mixed Furan-Thiophene Oligomers," Feeding and Powering the World 2016: Building the Network, Oxford, MS, July 2016.
95. Sarah Sutton, Walter E. Cleland, Jr., and Nathan I. Hammer, "Spectroscopic and Computational Study of Chlorine Dioxide/Water Interactions," Feeding and Powering the World 2016: Building the Network, Oxford, MS, July 2016.
94. Daniel Touzeau, Nalaka Liyanage, Nathan I. Hammer, and Jared H. Delcamp, "Synthesis and Characterization of an Indolizine-based Donor-Acceptor Molecule for Use in Dye Sensitized Solar Cells," Feeding and Powering the World 2016: Building the Network, Oxford, MS, July 2016.

93. Vy Tran and Nathan Hammer, "The Application of Surface-Enhanced Raman Spectroscopy (SERS) for Materials Characterization," Feeding and Powering the World 2016: Building the Network, Oxford, MS, July 2016.
92. Katelyn E. Allen, Suong Nguyen, John T. Kelly, Davita L. Watkins, and Nathan I. Hammer, "A Raman Spectroscopic and Computational Study of the Electron Withdrawing Effects on Halogen Bonding," Posters in the Rotunda, Jackson, MS, March 2016.
91. John T. Kelly and Nathan I. Hammer, "Indirect radiation damage to DNA by low-energy electron attachment to nucleobase subunits," 2016 University of Mississippi/ University of Mississippi Medical Center Research Day, Jackson, MS, March 2016.
90. April E. Steen, Kerri D. Scott, and Nathan I. Hammer, "Using Spectroscopy to Engage Students in STEM and Physical Chemistry," Research Day at the Capitol, Jackson, MS, February 2016.
89. Katelyn E. Allen and Nathan I. Hammer, "Spectroscopic Studies of the Physical and Photophysical Properties of Biological and Materials Building Blocks," Research Day at the Capitol, Jackson, MS, February 2016.
88. Sarah C. Sutton, Walter E. Cleland, Jr., and Nathan I. Hammer, "Spectroscopic and Computational Study of Chlorine Dioxide/Water Interactions," 48<sup>th</sup> Annual Southeast Undergraduate Research Conference, Atlanta, GA, February 2016.
87. Rachael A. Nelson, Louis E. McNamara, Steven J. Cassidy, Mallory Smith, Ian A. Adam, Paul A. Rupar, and Nathan I. Hammer, "Spectroscopic Investigations of a BoraFluorene Derivative," 48<sup>th</sup> Annual Southeast Undergraduate Research Conference, Atlanta, GA, February 2016.
86. Christopher B. Boland, Kayla Warren, John C. Prather, Jordan Cauley, Hannah K. Trent, Ashton T. Nicholson, David H. Magers, and Nathan Hammer, "Spectroscopic Studies of the Noncovalent Interactions Involving Osmolytes," 48<sup>th</sup> Annual Southeast Undergraduate Research Conference, Atlanta, GA, February 2016.
85. Ashley E. Williams, Nathan I. Hammer, "Spectroscopic and Computational Studies of the Hydrogen Bonding Interactions of Hydroxyethyl Ethers," 48<sup>th</sup> Annual Southeast Undergraduate Research Conference, Atlanta, GA, February 2016.
84. Jonathan A. Ishee, Peyton Reves, Jamey L. Wilson, Davita L. Watkins, Gregory S. Tschumper, and Nathan I. Hammer, "Raman Spectroscopic and Computational Studies of Halogen Bonded Pyrimidine Complexes," 48<sup>th</sup> Annual Southeast Undergraduate Research Conference, Atlanta, GA, February 2016. (oral)
83. Katelyn E. Allen, Suong Nguyen, John T. Kelly, Davita L. Watkins, and Nathan I. Hammer, "A Raman Spectroscopic and Computational Study of the Electron Withdrawing Effects on Halogen Bonding," 48<sup>th</sup> Annual Southeast Undergraduate Research Conference, Atlanta, GA, February 2016.
82. Vy T. Tran, John T. Kelly, Annie K. McClellan, Lawson T. Lloyd, Lynn V. Joe, Gregory S. Tschumper, and Nathan I. Hammer, "Elucidating the Competition for Charge Transfer between Solvents and Silver in Surface-Enhanced Raman Spectroscopy (SERS)," 48<sup>th</sup> Annual Southeast Undergraduate Research Conference, Atlanta, GA, February 2016.
81. Louis E. McNamara, Tana Rill, Emily A. Sharpe, Aron J. Huckaba, Jared H. Delcamp, and Nathan Hammer, "Characterizing the Effects of Noncovalent Interactions on the Photophysics of Newly Developed Near Infrared Emissive Materials," 67<sup>th</sup> Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Memphis, TN, November 2015. (oral)
80. John T. Kelly, Yi Wang, Kit H. Bowen, Gregory S. Tschumper, and Nathan Hammer, "Unraveling Proton Transfer in Stepwise Hydrated N-Heterocyclic Anions," 67<sup>th</sup> Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Memphis, TN, November 2015. (oral)
79. Vy T. Tran, Louis E. McNamara, John T. Kelly, and Nathan I. Hammer, "Investigating the Effects of Solvent on the Surface-Enhanced Raman Scattering (SERS) of Nitrogen Containing Molecules: Azabenzene and 1H-1,2,3 Triazole," 67<sup>th</sup> Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Memphis, TN, November 2015.
78. April E. Steen, Kerri D. Scott, and Nathan I. Hammer, "Using Spectroscopy to Engage Students in STEM and Physical Chemistry," 67<sup>th</sup> Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Memphis, TN, November 2015.
77. Hannah K. Trent, Ashton T. Nicholson, Gregory S. Tschumper, David H. Magers, and Nathan I. Hammer, "Raman Spectroscopic and Computational Analysis of the Effects of Noncovalent Interactions on DMSO," 67<sup>th</sup> Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Memphis, TN, November 2015.
76. Kayla Warren, John C. Prather, Jordan Cauley, David H. Magers, and Nathan I. Hammer, "Non-Covalent Interactions Between Trimethylamine N-Oxide (TMAO) and Urea in Water," 67<sup>th</sup> Annual Meeting of

- the Southeastern Region of the American Chemical Society (SERMACS), Memphis, TN, November 2015.
75. Sarah C. Sutton, Walter E. Cleland, and Nathan I. Hammer, "Spectroscopic and Computational Study of Chlorine Dioxide/Water Interactions," 67<sup>th</sup> Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Memphis, TN, November 2015.
  74. Katelyn E. Allen, Hunter A. Dulaney, Jonah W. Jurss, and Nathan I. Hammer, "Reinvestigation of the Resonance Raman Spectrum of the Blue Ruthenium Dimer," 67<sup>th</sup> Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Memphis, TN, November 2015.
  73. John T. Kelly, Kit Bowen, Gregory Tschumper, and Nathan I. Hammer "Unraveling Proton Transfer in Stepwise Hydrated N-Heterocyclic Anions," 70th International Symposium on Molecular Spectroscopy, University of Illinois at Urbana-Champaign, June 2015. (oral)
  72. Louis E. McNamara, Nalaka Liyanage, Adithya Peddapuram, Joseph S. Murphy, Jared H. Delcamp, and Nathan I. Hammer "Spectroscopic Investigation of Newly-developed Near Infrared Emitting Dyes," 70th International Symposium on Molecular Spectroscopy, University of Illinois at Urbana-Champaign, June 2015. (oral)
  71. Peyton L. Reves, Davita L. Watkins, Gregory S. Tschumper, and Nathan I. Hammer "Raman Spectroscopic and Computational Studies of Halogen Bonded Pyrimidine Complexes," 8th Annual Mississippi Biophysical Consortium Meeting, Oxford, MS, June 2015.
  70. Katelyn E. Allen, Nathan I. Hammer, and Gregory S. Tschumper "Assessing the Ability of Turbomole Basis Sets to Accurately Describe Noncovalent Interactions Between Pyrimidine and Water," 8th Annual Mississippi Biophysical Consortium Meeting, Oxford, MS, June 2015.
  69. Louis E. McNamara, Dana N. Reinemann, Henry U. Valle, T. Keith Hollis, Gregory S. Tschumper, and Nathan I. Hammer "Characterizing the Effects of Intermolecular Interactions Between Trimethylamine N-oxide (TMAO) Molecules" 8th Annual Mississippi Biophysical Consortium Meeting, Oxford, MS, June 2015. (oral)
  68. John T. Kelly, Kit Bowen, Gregory Tschumper, and Nathan I. Hammer "Investigating Excess Charge Accommodation in Biological Building Blocks with Solution-Phase and Gas-Phase Spectroscopy," 8th Annual Mississippi Biophysical Consortium Meeting, Oxford, MS, June 2015. (oral)
  67. John T. Kelly, Kit Bowen, Gregory Tschumper, and Nathan I. Hammer "Characterizing the effects of noncovalent interactions on hydrated azabenzene clusters: Charge localization and charge transfer," 249th National Meeting of the American Chemical Society, Denver, CO, March 2015.
  66. Louis McNamara, Dana Reinemann, Henry Valle, John Prather, Peyton Reves, David Magers, Thedford Hollis, Gregory Tschumper, and Nathan Hammer "Spectroscopic study of the effects of local environment and deuteration on the structure of trimethylamine N-oxide (TMAO)," 249th National Meeting of the American Chemical Society, Denver, CO, March 2015.
  65. Jordan Cauley, Leeann Smith, Wells Prather, Nathan I. Hammer, and David H. Magers "Noncovalent Interactions in Networks of Trimethylamine-N-oxide, Urea, and Water," 70<sup>th</sup> Southwest Regional Meeting of the American Chemical Society, Fort Worth, Texas, November 2014.
  64. John T. Kelly and Nathan I. Hammer "Spectroscopic and Computational Characterization of Hydrated Pyrimidine Anions," 69<sup>th</sup> International Symposium on Molecular Spectroscopy, University of Illinois at Urbana-Champaign, June 2014. (oral)
  63. Louis E. McNamara and Nathan I. Hammer "Spectroscopic Investigation of the Effects of Environment on Newly Developed Emissive Materials," 69<sup>th</sup> International Symposium on Molecular Spectroscopy, University of Illinois at Urbana-Champaign, June 2014. (oral)
  62. John T. Kelly, Nathan I. Hammer, Gregory S. Tschumper, "Spectroscopic and Computational Characterization of the Interaction Between Biological Building Blocks and Excess Electrons," 2014 Mississippi State EPSCoR Meeting, Starkville, MS, April 2014.
  61. Kristina A. Cuellar, Katherine L. Munroe, David H. Magers, and Nathan I. Hammer, "Noncovalent Interactions in Micro-Solvated Networks of Trimethylamine N-Oxide (TMAO)," 2014 Mississippi State EPSCoR Meeting, Starkville, MS, April 2014.
  60. Louis E. McNamara, Nathan I. Hammer, Hemali Rathnayake, "Probing the Chiral Heterogeneity of Perylene Diimide (PDI) Nano-Ribbons Using Single Molecule Fluorescence Detected Circular Dichroism (FD CD)," 2014 Mississippi State EPSCoR Meeting, Starkville, MS, April 2014.
  59. Inga P. Juchheim and Nathan Hammer, "Computational Chemistry in Chemical Education," 2014 Mississippi State EPSCoR Meeting, Starkville, MS, April 2014.
  58. Peyton L. Reves, Davita L. Watkins, Gregory S. Tschumper, Nathan I. Hammer, "Investigations of Halogen Bonding Interactions in Solutions of Pyrimidine and Bromobenzene," 2014 Mississippi State EPSCoR Meeting, Starkville, MS, April 2014.

57. Ashton Nicholson, Kristina Cuellar, David H. Magers, Nathan I. Hammer, "Raman Spectroscopic and Computational Analysis of the Effects of Noncovalent Interactions on DMSO," 2014 Mississippi State EPSCoR Meeting, Starkville, MS, April 2014.
56. April E. Steen, Louis E. McNamara, Nathan I. Hammer, "Comparison of Emission Spectra from Different Lighting Sources: A Physical Chemistry Outreach Project," 2014 Mississippi State EPSCoR Meeting, Starkville, MS, April 2014.
55. Anna E. Craig, Aron J. Huckaba, Jared H. Delcamp, Gregory S. Tschumper, Nathan I. Hammer, "Raman Spectroscopic and Computational Study of the Liquid Structure of 1H-1,2,3-Triazole," 2014 Mississippi State EPSCoR Meeting, Starkville, MS, April 2014.
54. John T. Kelly, Nathan I. Hammer, Gregory S. Tschumper, "Towards the Origins of Radiation Damage in Biology: Experimental and Computational Study of Excess Charge Localization in Pyrimidine/Water Hydrogen Bonded Networks," 2013 Mississippi State EPSCoR Meeting, Hattiesburg, MS, April 2013.
53. Kristina A. Cuellar, Katherine L. Munroe, David H. Magers, and Nathan I. Hammer, "Investigations of Noncovalent Interactions in Micro-solvated Networks of Trimethylamine N-oxide," 2013 Mississippi State EPSCoR Meeting, Hattiesburg, MS, April 2013.
53. Loan Tran, Kristina Cuellar, John T. Kelly, Gregory S. Tschumper, and Nathan I. Hammer, "Effects of Microsolvation on Pyrazine, Pyridazine, and S-Triazine," 2013 Mississippi State EPSCoR Meeting, Hattiesburg, MS, April 2013.
52. Louis E. McNamara, Nathan I. Hammer, Hemali Rathnayake, "Probing the Chiral Heterogeneity of Perylene Diimide (PDI) Nano-Ribbons using Single Molecule Fluorescence Detected Circular Dichroism," 2013 Mississippi State EPSCoR Meeting, Hattiesburg, MS, April 2013.
51. Loan Tran, Kristina Cuellar, John T. Kelly, Gregory S. Tschumper, and Nathan I. Hammer, "Effects of Microsolvation on Pyrazine, Pyridazine, and S-Triazine," 245th National Meeting of the American Chemical Society, New Orleans, LA, April 2013.
50. Kristina A. Cuellar, Katherine L. Munroe, David H. Magers, and Nathan I. Hammer, "Investigations of Noncovalent Interactions in Micro-solvated Networks of Trimethylamine N-oxide," 245th National Meeting of the American Chemical Society, New Orleans, LA, April 2013.
49. Dana N. Reinemann, Gregory S. Tschumper, and Nathan I. Hammer, "Computational Study of Substituent Effects on B-N and B-P Dative Bond Containing Molecules," 245th National Meeting of the American Chemical Society, New Orleans, LA, April 2013.
48. Annie K. McClellan, Ashley M. Wright, Lynn V. Joe, Thomas Ellington, Gregory S. Tschumper, and Nathan I. Hammer, "Charge Transfer Induced Vibrational Blue Shifts in Pyrimidine Mixtures on Silver Substrates," 245th National Meeting of the American Chemical Society, New Orleans, LA, April 2013.
47. Annie K. McClellan, Lynn V. Joe, Ashley M. Wright, Ciara M. Frizzell, Gregory S. Tschumper, and Nathan I. Hammer, "Surface Enhanced Raman (SERS) Spectroscopic and Computational Studies of Charge Transfer Induced Vibrational Blue Shifts in Pyrimidine/Water Mixtures on Silver Substrates," 2012 Mississippi State EPSCoR Meeting, Oxford, MS, April 2012.
46. Ashley M. Wright, Gregory S. Tschumper, and Nathan I. Hammer, "Computational and Spectroscopic Studies of the Effects of Weak Intermolecular Interactions in Ammonia Borane," 2012 Mississippi State EPSCoR Meeting, Oxford, MS, April 2012.
45. Debra J. Scardino, Rajesh Kota, Daniell L. Mattern, and Nathan I. Hammer, "Single Molecule Spectroscopic and Computational Studies of Organic Rectifiers Composed of Pyrene and Perylenebisimide," 2012 Mississippi State EPSCoR Meeting, Oxford, MS, April 2012.
44. Joseph Golden, Kristina Cuellar, Charles L. Hussey, Gregory S. Tschumper, and Nathan I. Hammer, "Effects of Micro-Solvation on Room Temperature Ionic Liquids," 2012 Mississippi State EPSCoR Meeting, Oxford, MS, April 2012.
43. Kristina A. Cuellar, Katherine L. Munroe, David H. Magers, and Nathan I. Hammer, "Investigations of Noncovalent Interactions in Micro-solvated Networks of Trimethylamine N-oxide," 2012 Mississippi State EPSCoR Meeting, Oxford, MS, April 2012.
42. Lynn V. Joe, Siyam Ansar, Nuwan Kothalawala, Amal Dass, Dongmao Zhang, and Nathan I. Hammer, "Spectroscopic Characterization of Gold Nanomolecules," 2012 Mississippi State EPSCoR Meeting, Oxford, MS, April 2012.
41. Dana N. Reinemann, Ashley M. Wright, Jonathan D. Wolfe, Gregory S. Tschumper, and Nathan I. Hammer, "Vibrational Spectroscopy of Molecules Containing B-N and B-P Dative Bonds," 2012 Mississippi State EPSCoR Meeting, Oxford, MS, April 2012.
40. Talyr Hall, Xiaoyun Howard, Nagamani Vunnam, Nathan I. Hammer, and Susan Pedigo, "Dynamics of Strand-Crossover Formation in Cadherin," 2012 Mississippi State EPSCoR Meeting, Oxford, MS, April 2012.



39. Kristina A. Cuellar, Katherine L. Munroe, David H. Magers and Nathan I. Hammer, "Investigations of Noncovalent Interactions in Micro-solvated Networks of Trimethylamine N-oxide," University of Memphis Undergraduate Research Conference, February 2012.
38. Katherine L. Munroe, David H. Magers, Kristina A. Cuellar, and Nathan I. Hammer, "Investigations of Noncovalent Interactions in Micro-solvated Networks of Trimethylamine N-oxide," 2011 Conference on Current Trends in Computational Chemistry, Jackson State University, MS, October 2011.
37. Annie K. McClellan, Lynn V. Joe, James C. Howard, Ashley M. Wright, Gregory S. Tschumper, and Nathan I. Hammer, "Surface enhanced Raman spectra (SERS) of pyrimidine/water mixtures," 242nd National Meeting of the American Chemical Society, Denver, CO, August 2011.
36. Debra J. Scardino, Rajesh Kota, Daniell L. Mattern, and Nathan I. Hammer, "Single Molecule Spectroscopic and Computational Studies of Two Organic Rectifiers," 242nd National Meeting of the American Chemical Society, Denver, CO, August 2011.
35. Ashley M. Wright, Gregory S. Tschumper, and Nathan I. Hammer, "Computational study of dihydrogen bonding in ammonia borane and its derivatives," 242nd National Meeting of the American Chemical Society, Denver, CO, August 2011.
34. Lynn V. Joe, Murrell Godfrey, Nathan I. Hammer, "Latent fingerprint analysis using single molecule surface enhanced Raman scattering (SERS)," 242nd National Meeting of the American Chemical Society, Denver, CO, August 2011.
33. Dana N. Reinemann, Ashley M. Wright, Jonathan D. Wolfe, Gregory S. Tschumper, and Nathan I. Hammer, "Elucidation of the B-N and B-P Stretching Frequencies in Organic Molecules," 242nd National Meeting of the American Chemical Society, Denver, CO, August 2011.
32. Ashley M. Wright, Gregory S. Tschumper, and Nathan I. Hammer, "Computational and Spectroscopic Study of the B-N Dative Bond in Ammonia Borane," 66th International Symposium on Molecular Spectroscopy, Columbus, OH, June 2011. (oral)
31. Dana N. Reinemann, Ashley M. Wright, Jonathan D. Wolfe, Gregory S. Tschumper, and Nathan I. Hammer, "Elucidation of the B-N stretching vibration in N-methyliminodiacetic acid boronates," 2011 Southeastern Regional Meeting of the American Institute of Chemical Engineers, Atlanta, GA, April 2011. (oral)
30. Ashley M. Wright, Nathan I. Hammer, and Gregory S. Tschumper, "Computational and Spectroscopic Study of Ammonia Borane," Southeast Theoretical Chemistry Association (SETCA), Jackson, MS, March 2011.
29. Annie K. McClellan, Lynn V. Joe, James C. Howard, Ashley M. Wright, Gregory S. Tschumper, and Nathan I. Hammer, "Surface enhanced Raman spectra (SERS) of pyrimidine/water mixtures," 2011 Mississippi State EPSCoR Meeting, Starkville, MS, April 2011.
28. Ashley M. Wright, Gregory S. Tschumper, and Nathan I. Hammer, "Computational and Spectroscopic Study of the B-N Coordinate Covalent Bond in Ammonia Borane," 2011 Mississippi State EPSCoR Meeting, Starkville, MS, April 2011.
27. Debra J. Scardino, Rajesh Kota, Daniell L. Mattern, and Nathan I. Hammer, "Single Molecule Spectroscopic and Computational Studies of Two Organic Rectifiers," 2011 Mississippi State EPSCoR Meeting, Starkville, MS, April 2011.
26. Katherine L. Munroe, David H. Magers, and Nathan I. Hammer, "Raman Spectroscopic Signatures of Noncovalent Interactions Between Trimethylamine N-oxide (TMAO) and Water," 2011 Mississippi State EPSCoR Meeting, Starkville, MS, April 2011.
25. Ashley M. Wright, Lynn V. Joe, Austin A. Howard, Gregory S. Tschumper, and Nathan I. Hammer, "Spectroscopic and computational studies of weak noncovalent interactions in crystalline pyrimidine," 2011 Mississippi State EPSCoR Meeting, Starkville, MS, April 2011.
24. Dana N. Reinemann, Ashley M. Wright, Jonathan D. Wolfe, Gregory S. Tschumper, and Nathan I. Hammer, "Vibrational Spectroscopy of N-Methyliminodiacetic Acid (MIDA)-Protected Boronate Ester: Examination of the B-N Dative Bond," 2011 Mississippi State EPSCoR Meeting, Starkville, MS, April 2011.
23. Dana N. Reinemann, Ashley M. Wright, Jonathan D. Wolfe, Gregory S. Tschumper, and Nathan I. Hammer, "Infrared, Raman, and SERS Spectroscopy of N-Methyliminodiacetic Acid (MIDA)-Protected Boronate Esters," 62nd Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), New Orleans, LA, December 2010. (oral)
22. Ashley M. Wright, Austin A. Howard, Gregory S. Tschumper, and Nathan I. Hammer, "Spectroscopic and computational investigations of noncovalent interactions between pyrimidine and hydrogen bonded networks," 62nd Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), New Orleans, LA, December 2010. (oral)

21. Debra J. Scardino, Rajesh Kota, Daniell L. Mattern, and Nathan I. Hammer, "Single Molecule Spectroscopic and Computational Studies of Two Organic Rectifiers," 62nd Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), New Orleans, LA, December 2010. (oral)
20. Anna K. Hailey, Guang Shi, Wei-Yin Chen, and Nathan I. Hammer, "New Catalysts for the Photocatalytic Conversion of Carbon Dioxide to Hydrocarbons," 62nd Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), New Orleans, LA, December 2010. (oral)
19. Ashley M. Wright, Lynn V. Joe, Austin A. Howard, Gregory S. Tschumper, and Nathan I. Hammer, "Spectroscopic and computational studies of weak noncovalent interactions in crystalline pyrimidine," 62nd Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), New Orleans, LA, December 2010.
18. Katherine L. Munroe, David H. Magers, and Nathan I. Hammer, "Raman Spectroscopic Signatures of Noncovalent Interactions Between Trimethylamine N-oxide (TMAO) and Water," 62nd Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), New Orleans, LA, December 2010.
17. Ashley M. Wright, Gregory S. Tschumper, and Nathan I. Hammer, "High level ab initio calculations on ammonia borane," 62nd Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), New Orleans, LA, December 2010.
16. Annie K McClellan, Lynn V. Joe, James C. Howard, Ashley M. Wright, Gregory S. Tschumper, and Nathan I. Hammer, "Surface enhanced Raman spectra (SERS) of pyrimidine/water mixtures," 62nd Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), New Orleans, LA, December 2010.
15. Ashley M. Wright, Austin A. Howard, Gregory S. Tschumper, and Nathan I. Hammer, "Raman Spectroscopic Investigations of Noncovalent Interactions between Pyrimidine and Hydrogen Bonded Networks," XXII International Conference on Raman Spectroscopy, Boston, MA, August 2010.
14. Dana N. Reinemann, Ashley M. Wright, Jonathan D. Wolfe, Gregory S. Tschumper, and Nathan I. Hammer, "Raman and SERS Spectroscopy of N-Methyliminodiacetic Acid (MIDA)-Protected Boronate Esters," XXII International Conference on Raman Spectroscopy, Boston, MA, August 2010.
13. Katherine L. Munroe, David H. Magers, and Nathan I. Hammer, "Raman Spectroscopic Signatures of Noncovalent Interactions Involving Trimethylamine N-oxide (TMAO)," XXII International Conference on Raman Spectroscopy, Boston, MA, August 2010.
12. Anna K. Hailey, Guang Shi, Wei-Yin Chen, and Nathan I. Hammer, "New Catalysts for the Photocatalytic Conversion of Carbon Dioxide to Hydrocarbons," 2010 Mississippi State EPSCoR Meeting, Jackson, MS, April 2010. (Won 1st Prize in Poster Competition)
11. Ashley M. Wright, Gregory S. Tschumper, Nathan I. Hammer, "High Level ab Initio Calculations on Ammonia Borane: Sensitivity of the B-N Dative Bond to Method and Basis Set," 2010 Mississippi State EPSCoR Meeting, Jackson, MS, April 2010.
10. Katherine L. Munroe, David H. Magers, and Nathan I. Hammer, "Computational and Raman Spectroscopic Studies Of Trimethylamine N-oxide (TMAO)/Water Mixtures," 2010 Mississippi State EPSCoR Meeting, Jackson, MS, April 2010.
9. Ryan A. Gregg, Brock Sain, Murrell Godfrey, and Nathan I. Hammer, "Development of a Laser-Induced Breakdown Spectrometer for Lead-Free Gunshot Residue Analysis," 2010 Mississippi State EPSCoR Meeting, Jackson, MS, April 2010.
8. Dana N. Reinemann, Ashley M. Wright, Gregory S. Tschumper, and Nathan I. Hammer, "Computational and Raman Spectroscopic Studies of N-methyliminodiacetic acid (MIDA) - Protected Boronate Esters," 2010 Mississippi State EPSCoR Meeting, Jackson, MS, April 2010.
7. Matthew D. McDowell, Debra Jo Scardino, Emily J. Carrell, Jacob D. Graham, and Nathan I. Hammer, "The Multiphoton Ionization Spectrum of Methyl Iodide Revisited: Fragmentation Patterns from Highly Excited States," 2010 Mississippi State EPSCoR Meeting, Jackson, MS, April 2010.
6. Jonathan Wolfe, Ashley Wright, Dana Reinemann, and Nathan I. Hammer, "Surface Enhanced Raman Scattering (SERS) Spectroscopy of Molecules Containing B-N Dative Bonds," 2010 Mississippi State EPSCoR Meeting, Jackson, MS, April 2010.
5. Debra Jo Scardino, Ashley M. Wright, Rajesh Kota, Daniell L. Mattern, and Nathan I. Hammer, "Single Molecule Spectroscopic and Computational Studies of Two Organic Rectifiers," 2010 Mississippi State EPSCoR Meeting, Jackson, MS, April 2010.
4. Suzanne Sereduck and Nathan I. Hammer, "Computational and Raman Spectroscopic Studies of Allyboronic Acid Pinacol Ester – Water Interactions," 2010 Mississippi State EPSCoR Meeting, Jackson, MS, April 2010.

3. Debra Jo Scardino, Matthew D. McDowell, Emily J. Carrell, Jacob D. Graham, and Nathan I. Hammer, "The Multiphoton Ionization Spectrum of Methyl Iodide Revisited," 61st Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), San Juan, Puerto Rico, October 2009.
2. Dana N. Reinemann, Ashley E. Wright, Austin A. Howard, Gregory S. Tschumper, and Nathan I. Hammer, "Vibrational Spectroscopy of N-Methyliminodiacetic Acid (MIDA)-Protected Boronate Esters: Assignment of the B-N Dative Bond Stretching Frequency," 61st Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), San Juan, Puerto Rico, October 2009.
1. A. A. Howard and N. I. Hammer, "Raman Spectroscopic Investigation of Noncovalent Interactions in Pyrimidine," 60th Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Nashville, TN, November 2008. (oral)

## SELECTED PRESENTATIONS

- "Raman spectroscopy as a sensitive probe for noncovalent molecular interactions involving nitrogen atoms," 70th Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Augusta, GA, Nov. 2018. (invited)
- "Charge injection efficiencies of ullazine, indolizine, quinoxaline, and benzothiadiazole-based dyes for dye-sensitized solar cells from time-correlated single-photon counting (TCSPC) measurements," 70th Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Augusta, GA, Nov. 2018. (invited)
- "Feeding and Powering the World," 2018 Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS) Principal Investigators Workshop, Alexandria, VA, May 2018.
- "Harrowing Tales of Entropy" Science Café with Prof. Randy Wadkins, Lusa, Oxford, MS, January 2018.
- "The NSF EPSCOR RII Track-2 Award Program," 25th NSF EPSCoR National Conference, Missoula, MT, Nov. 2017. (Panelist)
- "Competitive partial charge transfer interactions with hydrogen-bonded solvent networks," Nanostructure Engineering & Surface Chemistry for Spectroscopy, Imaging & Alternative Energy Harvesting & Conversion, 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017. (invited)
- "Securing a tenure-track position at a research university: The hiring process," Looking Beyond Your Current Boundaries: What's the Next Step? Academic Route: PhD to Postdoc to Assistant Professor, 253<sup>rd</sup> National Meeting of the American Chemical Society, San Francisco, CA, April 2017. (invited)
- "The Importance of a Truly Cohesive Theme in a Research Experience for Undergraduates (REU) Program," Successful REU Programs, 251<sup>st</sup> National Meeting of the American Chemical Society, San Diego, CA, March 2016. (invited)
- "Tracking the Effects of Noncovalent Interactions on Osmolytes and Nitrogen Containing Biological Building Blocks," Western Kentucky University, April 2016, Jackson State University, March 2016.
- "Spectroscopically Tracking the Evolution of Noncovalent Interactions from the Single Molecule Level to the Condensed Phases," Tulane University, Nov. 2015, Memphis Section of the ACS, Sept. 2012, 2012 Mississippi Academy of Sciences Meeting, Feb. 2012, 2011 CAREER Award Regional Forum, Baton Rouge, LA, Nov. 2011.
- "Accurate Descriptions of the Effects of Noncovalent Interactions and Excess Charge on Nitrogen Containing Heterocyclic Molecules," University of Alabama-Birmingham, Feb. 2015; Auburn University, Nov. 2014; 248<sup>th</sup> National Meeting of the American Chemical Society, San Francisco, CA, Aug. 2014.
- "Effects of Noncovalent Interactions on the Osmolyte TMAO and the Biological Building Block Pyrimidine," University of Tennessee, March 2014, University of Charleston, November 2013, Georgia Southern University, November 2013, University of Georgia, April 2013; Johns Hopkins University, Oct. 2012; LSU, March 2011; University of Memphis, April 2011; Kentucky Lake Local Section of the ACS, April 2011; 4th Annual Mississippi Biophysical Consortium Meeting, June 2011; University of Alabama, September 2011; Mississippi State University Department of Chemistry, Oct. 2011.
- "Nanohydration of Biological Building Blocks," 2011 Mississippi EPSCoR Fall Forum, Oxford, MS, Sept. 2011.
- "Raman spectroscopic studies to investigate molecular properties and weak intermolecular interactions: Pyrimidine, TMAO, and Methylboronic acid MIDA ester," Mercer University, Nov. 2010; Georgia College & State University, Nov. 2010; University of South Alabama, Aug. 2009; University of Memphis, Feb. 2010.
- "Laser spectroscopy of single molecules and interacting molecular systems," Southeastern Louisiana University, Oct. 2008; East Tennessee State University, Oct. 2008; Western Kentucky University, Sept. 2008.
- "Single Molecule Spectroscopy," Inaugural Meeting of the Mississippi Biophysical Consortium, Oxford, MS, May 2008.

- "Spectroscopy of Single Molecules and Nanostructures: Probing the Individual Contributions to Bulk Observables," University of Alabama, Birmingham, AL, September 2007.
- "Conjugated Polymer - Quantum Dot Composite Nanostructures: Enhanced Properties and Stability," Intelligence Community Postdoctoral Research Fellowship Colloquium, Chantilly, VA, May 2007.
- "Photophysics and Enhanced Properties of Quantum Dot/Conjugated Organic Composite Nanostructures Revealed by Single Molecule Spectroscopy," University of Tennessee, Knoxville, TN, March 2007.
- "Modified Blinking Kinetics in Solid State Quantum Dot/Conjugated Organic Polymer Composite Nanostructures," Materials Research Society (MRS) Fall Meeting, Boston, MA, November 2006.
- "Suppression of Blinking in Solid State Quantum Dot/Conjugated Organic Polymer Composite Nanostructures," Frontiers in Optics 2006/Laser Science XXII, Rochester, NY, October 2006.
- "Novel-Polymer-Quantum Dot Composites for IR-based Photonic Quantum Information Processing and Sensor Applications," Intelligence Community Postdoctoral Research Fellowship Colloquium, Tysons Corner, VA, April 2006.
- "Elucidation of the Local Binding Motifs of Electrons Trapped on Water," 60th Annual International Symposium on Molecular Spectroscopy, The Ohio State University, Columbus, OH, June 2005.
- "Identification and elucidation of the local binding motifs of electrons trapped on water," Gordon Research Conference on Molecular Energy Transfer, Buellton, CA, January 2005.
- "Reactions of Dipole-Bound Anions," XX International Symposium on Molecular Beams, Lisbon, Portugal, June 2003.
- "Resonance Charge Transfer in Dipole Bound Anions," Japan-US Workshop on Resonances, Shonan Village, Hayama, Japan, December 2002.
- "Spectroscopy of Dipole-Bound Anions," 57th Annual International Symposium on Molecular Spectroscopy, The Ohio State University, Columbus, OH, June 2002.
- "Rydberg Charge Exchange Formation of Dipole Bound Anions," 2002 Division of Atomic, Molecular and Optical Physics Annual Meeting (DAMOP), The College of William and Mary, Williamsburg, VA, May 2002.
- "Studies of Electron Transfer Between Rydberg Atoms and Polar Molecules," 53<sup>rd</sup> Annual Meeting of the Southeastern Region of the American Chemical Society (SERMACS), Savannah, GA, September 2001.
- "Dipole Bound Anions: Rydberg Electron Transfer to a Series of Cyanogens," XXII International Conference on Photonic, Electronic and Atomic Collisions (ICPEAC), Santa Fe, NM, July 2001.
- "Effects of Electric Fields on Multiphoton Ionization of Rubidium Atoms at Low and High Densities," The Tenth International Symposium on Resonance Ionization Spectroscopy and Its Applications, Knoxville, TN, October 2000.
- "The Interaction of Free-Electron Laser Light with C<sub>60</sub>," Centennial Celebration Meeting of the American Physical Society, Atlanta, GA, March 1999.