

## John M. Papanikolas

Department of Chemistry  
University of North Carolina at Chapel Hill  
Chapel Hill, NC 27599-3290

(919) 962-1619 (Tel)  
(919) 662-2388 (Fax)  
John\_Papanikolas@unc.edu

Research Interests: Ultrafast Spectroscopy, Ultrafast Microscopy, Ultrafast Imaging, Excited State Dynamics of Individual Nanostructures and Nanodevices, Charge and Energy Transport in Molecular Assemblies, Computer Simulation (Monte Carlo, Molecular Dynamics, and Finite Difference Methods)

### Professional Experience:

2013- Professor, University of North Carolina at Chapel Hill  
2017- Program Director, National Science Foundation  
2009- Deputy Director, UNC-Energy Frontier Research Center  
2004- 2013 Associate Professor, University of North Carolina at Chapel Hill  
1997- 2004 Assistant Professor, University of North Carolina at Chapel Hill

### Education:

1994- 1997 Postdoctoral Associate, University of Colorado at Boulder/JILA (Advisor: Stephen R. Leone)  
1987- 1994 Ph.D. Chemical Physics, University of Colorado at Boulder/JILA (Advisor: W. Carl Lineberger)  
1983- 1987 B.A. Chemistry, Bowdoin College

## PUBLICATIONS

1. Zachary A. Morseth, Toan V. Pho, Kirk S. Schanze, John R. Reynolds, and John M. Papanikolas, "*Electron Transfer Dynamics in an Isoindigo Loaded Poly(thiophene) Assembly*", J. Phys. Chem. B, **2017**, Submitted.\*
2. M. Kyle Brennman, Michael R. Norris, Robert A. Binstead, Robert J. Brown, Wnjing Song, Leila Alibabaei, Javier J. Concepcion, Melissa K. Gish, Joseph L. Templeton, John M. Papanikolas and Thomas J. Meyer, "*The Roles of Injection and Cross-Surface Dynamics in a Ruthenium-Based Chromophore-Catalyst Assembly on TiO<sub>2</sub>*", J. Am. Chem. Soc., **2017**, Submitted.\*
3. Melissa K. Gish, Alexander M. Lapides, M. Kyle Brennaman, Joseph L. Templeton, Thomas, J. Meyer, and John M. Papanikolas, "*Ultrafast Recombination Dynamics in Dye-Sensitized SnO<sub>2</sub>/TiO<sub>2</sub> Core/Shell Films*", J. Phys. Chem. Lett., **2017**, Accepted.\*
4. Gyu Leem, Benjamin D. Sherman, Alex J. Burnett, Zachary A. Morseth, Kyung-Ryang Wee, John M. Papanikolas, Thomas J. Meyer, and Kirk S. Schanze, "*Light-Driven Water Oxidation Using Polyelectrolyte Layer-by-Layer Chromophore-Catalyst Assemblies*", ACS Energy Lett., **2017**, Accepted.\*
5. Ralph L. House, Catherine M. Heyer, Gerald J. Meyer, John M. Papanikolas, and Thomas J. Meyer, "*The University of North Carolina Energy Frontier Research Center: Center for Solar Fuels*", ACS Energy Lett., **2017**, Accepted.\*
6. M. Kyle Brennaman, Robert J. Dillon, Leila Alibabaei, Melissa K. Gish, Christopher J. Dares, Dennis L. Ashford, Ralph L. House, Gerald J. Meyer, John M. Papanikolas, and Thomas J. Meyer, "*Finding the Way to Solar Fuels with Dye Sensitized Photoelectrosynthesis Cells*", J. Am. Chem. Soc., **2017**, Accepted.\*
7. Christopher J. Gagliardi, Li Wang, Prateek Dongare, M. Kyle Brennaman, John M. Papanikolas, Thomas J. Meyer and David W. Thompson, "*Direct Observation of Light-Driven, Concerted Electron Proton Transfer*", Proc. Nat. Acad. Sci, **2017**, Accepted.\*
8. Zachary A. Morseth, Toan V. Pho Alexander T. Gilligan Robert J. Dillon, Kirk S. Schanze, John R. Reynolds,

- and John M. Papanikolas, *"Role of Macromolecular Structure in the Ultrafast Energy and Electron Transfer Dynamics of a Light-Harvesting Polymer"*, J. Phys. Chem. B, 120, **2016**, 7937-7948.\*
9. Robert W. Call, Leila Alibabaei, Animesh Nayak, Robert J. Dillon, Robin R. Knauf, John M. Papanikolas, Jillian L. Dempsey, Rene Lopez, *"Growth and Post-Deposition Treatments of SrTiO<sub>3</sub> Films for Dye Sensitized Photoelectrosynthesis Cell Applications"*, Appl. Mat. Int., 8, **2016**, 12282-12290.\*
  10. David F. Zigler, Zachary A. Morseth, Li Wang, Dennis L. Ashford, M. Kyle Brennaman, Erik M. Grumstrup, Erinn C. Brigham, Melissa K. Gish, Robert J. Dillon, Leila Alibabaei, Gerald J. Meyer, Thomas J. Meyer, and John M. Papanikolas, *"Disentangling the Physical Processes Responsible for the Kinetic Complexity in Interfacial Electron Transfer of Excited Ru(II) Polypyridyl Dyes on TiO<sub>2</sub>"*, J. Am. Chem. Soc., 138, **2016**, 4426-4438.\*
  11. Toan V. Pho, Matthew V. Sheridan, Zachary A. Morseth, Benjamin D. Sherman, Thomas J. Meyer, John M. Papanikolas, Kirk S. Schanze, and John R. Reynolds, *"Efficient Light-Driven Oxidation of Alcohols using an Organic Chromophore-Catalyst Assembly Anchored to TiO<sub>2</sub>"*, App. Mat. Inter., 8, **2016**, 9125-9133.\*
  12. Gyu Leem, Zachary A. Morseth, Kyung-Ryang Wee, Junlin Jiang, M. Kyle Brennaman, Byron H. Farnum, John M. Papanikolas, and Kirk S. Schanze, *"Polymer-Based Ruthenium(II) Polypyridyl Chromophores on TiO<sub>2</sub> for Solar Energy Conversion"*, Chem. Asian. J., 11, **2016**, 1257-1267.\*
  13. Emma E.M. Cating, Christopher W. Pinion, Erika M. Van Goethem, Michelle M. Gabriel, James F. Cahoon and John M. Papanikolas, *"Imaging spatial variations in the dissipation and transport of thermal energy within individual silicon nanowires using ultrafast microscopy"*, Nano Lett., 16, **2016**, 434-439.\*
  14. M. Kyle Brennaman, Michael R. Norris, Melissa K. Gish, Erik M. Grumstrup, Leila Alibabaei, Dennis L. Ashford, Alex M. Lapedes, John M. Papanikolas, Joseph L. Templeton and Thomas J. Meyer, *"Ultrafast, Light-Induced Electron Transfer in a Perylene Diimide Chromophore-Donor Assembly on TiO<sub>2</sub>"*, J. Phys. Chem. Lett., 6, **2015**, 4736-4742.\*
  15. Subhadip Goswami, Melissa Gish, Julian Wang, Russell W. Winkel, John M. Papanikolas, and Kirk S. Schanze, *" $\pi$ -Conjugated Organometallic Isoindigo Oligomer and Polymer Chromophores: Singlet and Triplet Excited State Dynamics and Application in Polymer Solar Cells"*, Appl. Mat. Int., 7, **2015**, 26828-26838.\*
  16. Gyu Leem, Shahar Keinan, Junlin Jiang, Zhuo Chen, Toan Pho, Zachary A. Morseth, Zhenya Hu, Egle Puodziukynaite, Zhen Fang, John M. Papanikolas, John R. Reynolds, and Kirk S. Schanze, *"Ru(bpy)<sub>3</sub><sup>2+</sup> Derivatized Polystyrenes Constructed by Nitroxide-Mediated Radical Polymerization. Relationship Between Polymer Chain Length, Structure and Photophysical Properties"*, Polymer Chemistry, 6, **2015**, 8184-8193.\*
  17. Erik M. Grumstrup, Michelle M. Gabriel, Emma E. M. Cating, Erika M. Van Goethem, John Papanikolas, *"Pump-Probe Microscopy: Visualization and Spectroscopy of Ultrafast Dynamics at the Nanoscale"*, Chem. Phys., 458, **2015**, 30-40.\*
  18. Dennis L. Ashford, Melissa K. Gish, Aaron K. Vannucci, M. Kyle Brennaman, Joseph L. Templeton, John M. Papanikolas, and Thomas J. Meyer, *"Molecular Chromophore-Catalyst Assemblies for Solar Fuel Applications"*, Chem. Rev., 115, **2015**, 13006-13049.\*
  19. Byron H. Farnum, Zach A. Morseth, M. Kyle Brennaman, John M. Papanikolas and Thomas J. Meyer, *"Application of Degenerately Doped Metal Oxides in the Study of Photoinduced Interfacial Electron Transfer"*, J. Phys. Chem. B, 119, **2015**, 7698-7711.\*
  20. Zachary A. Morseth, Li Wang, Egle Puodziukynaite, Gyu Leem, Alexander T. Gilligan, Thomas J. Meyer Kirk S. Schanze, John R. Reynolds and John M. Papanikolas, *"Ultrafast Dynamics in Multifunctional Ru(II)-Loaded Polymers for Solar Energy Conversion"*, Acc. Chem. Res., 48, **2015**, 818-827.\*

21. Michelle M. Gabriel, Erik M. Grumstrup, Justin R. Kirschbrown, Christopher W. Pinion, Joseph D. Christesen, David F. Zigler, Emma E. M. Cating, James F. Cahoon and John M. Papanikolas, *"Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy"* in *Ultrafast Phenomena 2015*, edited by K. Yamanouchi, S. Cundiff, R. de Vivie-Riedle, M. Kuwata-Gonokami, L. DiMauro, L. (Proceedings of the 19th International Conference, Springer) **2015**, 671-675. [Conference Proceedings]\*
22. Dennis L. Ashford, M. Kyle Brennaman, Robert J. Brown, Shahar Keinan, Javier J. Conception, John M. Papanikolas, Joseph L. Templeton, and Thomas J. Meyer, *"Varying the Electronic Structure of Surface Bound Ruthenium(II) Polypyridyl Complexes"*, *Inorg. Chem.*, 54, **2015**, 460-469.\*
23. Gyu Leem, Zachary A. Morseth, Egle Puodziukynaite, Junlin Jiang, Fang Zhen, Alexander Gilligan, John R. Reynolds, John M. Papanikolas, and Kirk S. Schanze, *"Light-Harvesting and Charge Separation in a  $\pi$ -Conjugated Antenna Polymer Bound to TiO<sub>2</sub>"*, *J. Phys. Chem. C*, 118, **2014**, 28535-28541.\*
24. Byron H. Farnum, Zach A. Morseth, M. Kyle Brennaman, John M. Papanikolas and Thomas J. Meyer, *"Driving Force Dependent, Photo-induced Electron Transfer at Degenerately Doped, Optically Transparent Semiconductor Nano-particle Interfaces"*, *J. Am. Chem. Soc.*, 136, **2014**, 15869-15872.\*
25. Erik M. Grumstrup, Michelle M. Gabriel, Christopher W. Pinion, James K. Parker, James F. Cahoon and John M. Papanikolas, *"Reversible Strain-Induced Electron-Hole Recombination in Silicon Nanowires Observed with Femtosecond Pump-Probe Microscopy"*, *Nano Letters*, 14, **2014**, 6287-6292.\*
26. Michelle M. Gabriel, Erik M. Grumstrup, Justin R. Kirschbrown, Christopher W. Pinion, Joseph D. Christesen, David F. Zigler, Emma E. M. Cating, James F. Cahoon and John M. Papanikolas, *"Imaging Charge Separation and Carrier Recombination in Nanowire p-n Junctions Using Ultrafast Microscopy"*, *Nano Letters*, 14, **2014**, 3079-3087.\*
27. Erik M. Grumstrup, Michelle M. Gabriel, Emma M. Cating, Christopher W. Pinion, Joseph D. Christesen, Justin R. Kirschbrown, Ernest L. Vallorz, III, James F. Cahoon and John M. Papanikolas, *"Ultrafast Carrier Dynamics in Individual Silicon Nanowires: Characterization of Diameter-Dependent Carrier Lifetime and Surface Recombination with Pump-Probe Microscopy"*, *J. Phys. Chem. C*, 118, **2014**, 8634-8640.\*
28. Erik M. Grumstrup, Emma M. Cating, Michelle M. Gabrielle, Christopher W. Pinion, Joseph D. Christesen, Justin R. Kirschbrown, Ernest L. Vallorz, III, James F. Cahoon and John M. Papanikolas, *"Ultrafast Carrier Dynamics of Silicon Nanowire Ensembles: The Impact of Geometrical Heterogeneity on Charge Carrier Lifetime"*, *J. Phys. Chem. C*, 118, **2014**, 8626-8633.\*
29. Stephanie E. Bettis, Kenneth Hanson, Li Wang, Melissa K. Gish, Javier J. Conception, Zhen Fang, Thomas J. Meyer and John M. Papanikolas, *"Photophysical characterization of chromophore/water oxidation catalyst containing layer-by-layer assembly on nanocrystalline TiO<sub>2</sub> using ultrafast spectroscopy"*, *J. Phys. Chem. A*, 118, **2014**, 10301-10308.\*
30. Egle Puodziukynaite, Li Wang, Kirk S. Schanze, John M. Papanikolas and John R. Reynolds, *"Poly(Fluorene-co-Thiophene)-Based Ionic Transition-Metal Complex Polymers for Solar Energy Harvesting and Storage Applications"*, *Polymer Chemistry*, 5, **2014**, 2363-2369.\*
31. Stephanie E. Bettis, Derek M. Ryan, Melissa K. Gish, Leila Alibabaei, Thomas J. Meyer, Marcey L. Waters, John M. Papanikolas, *"Photophysical Characterization of a Helical Peptide Chromophore-Water Oxidation Catalyst Assembly on a Semiconductor Surface Using Ultrafast Spectroscopy"*, *J. Phys. Chem. C*, 118, **2014**, 6029-6037.\*
32. Byron H. Farnum, Zachary A. Morseth, Alexander M. Lapidés, Adam J. Rieth, Paul G. Hoertz, M. Kyle Brennaman, John M. Papanikolas, Thomas J. Meyer, *"Photo-induced Interfacial Electron Transfer within a Mesoporous Transparent Conducting Oxide Film"*, *J. Am. Chem. Soc.*, 136, **2014**, 2208-2211.\*

33. Zhuo Chen, Erik M. Grumstrup, Alexander T. Gilligan, John M. Papanikolas, Kirk S. Schanze, "Light Harvesting Polymers: Ultrafast Energy Transfer in Polystyrene Based Arrays of  $\pi$ -Conjugated Chromophores", J. Phys. Chem. B, 118, **2014**, 372-378.\*
34. Li Wang, Dennis L. Ashford, David W. Thompson, Thomas J. Meyer, and John M. Papanikolas, "Watching Photoactivation in a Ru(II) Chromophore-Catalyst Assembly on TiO<sub>2</sub> by Ultrafast Spectroscopy", J. Phys. Chem. C, 117, **2013**, 24250-24258.\*
35. Joseph D. Christesen, Christopher W. Pinion, Erik M. Grumstrup, John M. Papanikolas and James F. Cahoon, "Synthetically Encoding High-Resolution Shapes in Silicon Nanowires for Photonics", Nano Letters, 13, **2013**, 6281-6286.\*
36. Li Wang, Egle Puodziukynaite, Erik M. Grumstrup, Aaron C. Brown, Shahar Keinan, Kirk S. Schanze, John R. Reynolds, and John M. Papanikolas, "Ultrafast Formation of a Long-Lived Charge-Separated State in a Ru-loaded Poly(3-hexylthiophene) Light-harvesting Polymer", J. Phys. Chem. Lett., 4, **2013**, 2269-2273.\*
37. Erik M. Grumstrup, Zhuo Chen, Ryan P. Vary, Andrew M. Moan, Kirk S. Schanze, John M. Papanikolas, "Frequency Modulated Femtosecond Stimulated Raman Spectroscopy (FM-FSRS) of Ultrafast Energy Transfer in a Donor-Acceptor Co-Polymer", J. Phys. Chem. B, 117, **2013**, 8245-8255.\*
38. Zach E. Lampert, C. Lewis Reynolds Jr, John M. Papanikolas, and Mohamed Aboelfotoh, "Morphology and Chain Aggregation Dependence of Optical Gain in Thermally Annealed Films of the Conjugated Polymer poly[2-methoxy-5-(2'-ethylhexyloxy)-p-phenylenevinylene]", J. App. Phys, 113, **2013**, 233509.\*
39. Zach E. Lampert, Simon E. Lappi, John M. Papanikolas, C. Lewis Reynolds Jr., "Intrinsic Optical Gain in Thin Films of a Conjugated Polymer Under Picosecond Excitation", Appl. Phys. Lett., 103, **2013**, 033303.\*
40. Jiaying Lin, Xiangqian Hu, Peng Zhang, Andre Van Rynbach, David N. Beratan, Caleb A. Kent, Brian P. Mehl, John M. Papanikolas, Thomas J. Meyer, Wenbin Lin, Spiros S. Skourtis and Marios Constantinou, "Triplet Excitation Energy Dynamics in Metal-Organic Frameworks", J. Phys. Chem. C, 117, **2013**, 22250-22259.\*
41. Justin R. Kirschbrown, Ralph L. House, Brian P. Mehl, James K. Parker and John M. Papanikolas, "Hybrid Standing Wave and Whispering Gallery Modes in Needle-Shaped ZnO Rods as Studied by Two-Photon Emission Microscopy and Finite Difference Frequency Domain Methods", J. Phys. Chem. C, 117, **2013**, 10653-10660.\*
42. Michelle M. Gabriel, Justin R. Kirschbrown, Joseph D. Christesen, Christopher W. Pinion, David F. Zigler, Erik M. Grumstrup, Brian P. Mehl, Emma E. M. Cating, James F. Cahoon and John M. Papanikolas, "Direct Imaging of Free Carrier and Trap Carrier Motion in Silicon Nanowires by Spatially-Separated Femtosecond Pump-Probe Microscopy", Nano Lett., 13, **2013**, 1336-1340.\*
43. Matthew K. Brennaman, Cavan N. Fleming, Cheryl A. Slate, Scafford A. Serron, Stephanie E. Bettis, John M. Papanikolas and Thomas J. Meyer, "Distance Dependence of Intra-Helix Rull\* to OsII Polypyridyl Excited State Energy Transfer in Oligoproline Assemblies", J. Phys. Chem. B, 117, **2013**, 6352-6363.\*
44. Zach E. Lampert, John M. Papanikolas and C. Lewis Reynolds, Jr., "Enhancement of Optical Gain and Amplified Spontaneous Emission Due to Waveguide Geometry in the Conjugated Polymer poly[2-methoxy-5-(2'-ethylhexyloxy)-p-phenylene vinylene]", App. Phys. Lett., 102, **2013**, 073303.\*
45. Brian P. Mehl, Justin R. Kirschbrown, Michelle M. Gabriel, Ralph L. House and John M. Papanikolas, "Pump-Probe Microscopy: Spatially Resolved Carrier Dynamics in ZnO Rods and the Influence of Optical Cavity Resonator Modes", J. Phys. Chem. B, 117, **2013**, 4390-4398.\*
46. Kenneth Hanson, Dale J. Wilger, Sean T. Jones, Daniel P. Harrison, Stephanie E. Bettis, Hanlin Luo, John M. Papanikolas, Marcey L. Waters and Thomas J. Meyer, "Electron Transfer Dynamics of Peptide-

*Derivatized Rull-polypyridyl Complexes on Nanocrystalline Metal Oxide Films*", Biopolymers: Peptide Science, **100**, **2013**, 25-37.\*

47. Da Ma, Stephanie E. Bettis, Kenneth Hanson, Maria Minakova, Leila Alibabaei, William Fondrie, Derek M. Ryan, Garegin A. Papoian, Thomas J. Meyer, Marcey L. Waters and John M. Papanikolas, *"Interfacial Energy Conversion in Rull Polypyridyl-Derivatized Oligoproline Assemblies on TiO<sub>2</sub>"*, J. Am. Chem. Soc., **135**, **2013**, 5250-5253.\*
48. Brittany C. Westlake, Jared J. Paul, Stephanie E. Bettis, Shaun D. Hampton, Brian P. Mehl, Thomas J. Meyer and John M. Papanikolas, *"Base Induced Photo-Tautomerization in 7-Hydroxy-4-(Trifluoromethyl)-Coumarin"*, J. Phys. Chem. B, **116**, **2012**, 14889-14891.\*
49. Javier J. Concepcion, John M. Papanikolas and Thomas J. Meyer, *"Chemical Approaches to Artificial Photosynthesis"*, Proc. Nat. Acad. Sci., **109**, **2012**, 15560-15564.\*
50. Li Wang, Egle Puodziukynaite, Ryan P. Vary, Erik M. Grumstrup, Ryan M. Walczak, Olga Y. Zolotarskaya, Kirk S. Schanze John R. Reynolds and John M. Papanikolas, *"Competition Between Ultrafast Energy Flow and Electron Transfer in a Ru(II)-Loaded Polyfluorene Light-Harvesting Polymer"*, J. Phys. Chem. Lett., **3**, **2012**, 2453-2457.\*
51. Zach E. Lampert, Claude Reynolds, John M. Papanikolas and Mohamed Aboelfotoh, *"Controlling Morphology and Chain Aggregation in Semiconducting Conjugated Polymers: The Role of Solvent on Optical Gain in MEH-PPV"*, J. Phys. Chem. B, **116**, **2012**, 12835-12841.\*
52. Zhuo Chen, Li Wang, John M. Papanikolas and Kirk S. Schanze, *"Well-Defined Light Harvesting Polystyrenes Made From Controlled Radical Polymerization and Click Chemistry"* in Polymer Preprints (244th ACS National Meeting, ACS Publications) **2012**, Online. [Conference Proceedings]
53. Dale J. Wilger, Stephanie E. Bettis, Christopher K. Materese, Maria Minakova, Garegin A. Papoian, John M. Papanikolas and Marcey L. Waters, *"Tunable Energy Transfer Rates via Control of Primary, Secondary, and Tertiary Structure of a Coiled Coil Peptide Scaffold"*, Inorg. Chem., **51**, **2012**, 11324-11338.\*
54. Stephen A. Miller, Brantley A. West, Anna Curtis, John M. Papanikolas and Andrew M. Moran, *"Uncovering Molecule-TiO<sub>2</sub> Interactions with Nonlinear Spectroscopy"*, J. Chem. Phys., **135**, **2011**, 081101.\*
55. David J. Stewart, M. Kyle Brennaman, Stephanie E. Bettis, Li Wang, Robert A. Binstead, John M. Papanikolas, and Thomas J. Meyer, *"Competing Pathways in the photo-Proton-Coupled Electron Transfer Reduction of fac-[Re(bpy)(CO)<sub>3</sub>(4,4'-bpy)]<sup>+</sup> \* by Hydroquinone"*, J. Phys. Chem. Lett., **2**, **2011**, 1844-1848.\*
56. Brian P. Mehl, Justin R. Kirschbrown, Ralph L. House and John M. Papanikolas, *"The End is Different than the Middle: Spatially Dependent Dynamics in ZnO Rods Observed by Femtosecond Pump-Probe Microscopy"*, J. Phys. Chem. Lett., **2**, **2011**, 1777-1781.\*
57. Caleb A. Kent, Demin Liu, Liqing Ma, John M. Papanikolas, Thomas J. Meyer and Wenbin Lin, *"Light-Harvesting in Microscale Metal-Organic Frameworks by Energy Migration and Interfacial Electron Transfer Quenching"*, J. Am. Chem. Soc., **133**, **2011**, 12940-12943.\*
58. Ralph L. House, Justin R. Kirschbrown, Brian P. Mehl, Michelle M. Gabriel, Joseph A. Puccio, James K. Parker and John M. Papanikolas, *"Characterizing Electron-Hole Plasma Dynamics at Different Points in Individual ZnO Rods"*, J. Phys. Chem. C, **115**, **2011**, 21436-21442.\*
59. Brittany C. Westlake, M. Kyle Brennaman, Javier J. Concepcion, Jared J. Paul, Stephanie E. Bettis, Shaun D. Hampton, Stephen A Miller, Natalia V. Lebedeva, Malcolm D. E. Forbes, Andrew M. Moran, Thomas J.

- Meyer and John M. Papanikolas, "Concerted Electron-Proton Transfer in the Optical Excitation of Hydrogen Bonded Dyes", Proc. Nat. Acad. Sci., 108, **2011**, 8554-8558.\*
60. Thomas J. Meyer, John M. Papanikolas and Catherine M. Heyer, "Solar Fuels and Next Generation Photovoltaics: The UNC-CH Energy Frontier Research Center", Cat. Lett., 141, **2011**, 1-7.\*
61. Ralph L. House; Brian P. Mehl, Justin Kirschbrown, Scott C. Barnes and John M. Papanikolas, "Characterizing the Ultrafast Charge Carrier Trapping Dynamics in Single ZnO Rods Using Two-Photon Emission Microscopy", J. Phys. Chem. C., 115, **2011**, 10806-10816.\*
62. Caleb A. Kent, Brian P. Mehl, Liqing Ma, John M. Papanikolas, Thomas J. Meyer, and Wenbin Lin, "Energy Transfer Dynamics in Metal-Organic Frameworks", J. Am. Chem. Soc., 132, **2010**, 12767-12769.  
\*
63. Christopher J. Gagliardi, Brittany C. Westlake, John M. Papanikolas, Caleb A. Kent, Jared J. Paul, and Thomas J. Meyer, "Integrating Proton Coupled Electron Transfer (PCET) and Excited States", Coord. Chem. Rev., 254, **2010**, 2459-2471.\*
64. Brian P. Mehl, Ralph L. House, Abhineet Uppal, Chuan Zhang; Amanda J. Reams, Justin R. Kirschbrown, and John M. Papanikolas, "Direct Imaging of Optical Cavity Modes in ZnO Rods Using Second Harmonic Generation Microscopy", J. Phys. Chem. A., 114, **2010**, 1241-1246.\*
65. Ralph L. House, Brian P. Mehl, Chuan Zhang, Justin R. Kirschbrown, Scott C. Barnes and John M. Papanikolas, "Investigation of Ultrafast Carrier Dynamics in ZnO Rods Using Two-Photon Emission and Second-Harmonic Generation Microscopy" in Physical Chemistry of Interfaces and Nanomaterials VIII, edited by Oliver L.A. Monti and Oleg V. Prezhdo (Proceedings of SPIE Vol. 7396, SPIE, Bellingham, WA) **2009**, 7396-0G. [Conference Proceedings]
66. Cavan N. Fleming, M. Kyle Brennaman, John M. Papanikolas and Thomas J. Meyer, "Efficient, Long-Range Energy Migration in Rull Polypyridyl Derivatized Polystyrenes in Rigid Media. Antennae for Artificial Photosynthesis", Dalton Transactions, 2009, **2009**, 3903-3910.\*
67. Chrystal D. Bruce, Carribeth L. Bliem, and John M. Papanikolas, "Partial Derivatives: Are you kidding? Teaching thermodynamics using Virtual Substance" in Advances in Teaching Physical Chemistry, edited by M.D. Ellison and T.A. Schoolcraft (ACS Symposium Series 973, ACS Publications) **2008**, 194-206. [Book Chapter]\*
68. David J. Styers-Barnett, Stephen P. Ellison, Brian P. Mehl, Brittany C. Westlake, Ralph L. House, Cheol Park, Kristopher E. Wise, and John M. Papanikolas, "Exciton Dynamics and Biexciton Formation in Single-Walled Carbon Nanotubes Studied with Femtosecond Transient Absorption Spectroscopy", J. Phys. Chem. C, 112, **2008**, 4507-4516.\*
69. Thomas J. Meyer and John M. Papanikolas, "Ultrafast Energy Transport in Ru(II) and Os(II) Loaded Polymers" in Polymer Preprints (234th ACS National Meeting, ACS Publications) **2007**, Online. [Conference Proceedings]
70. Javier J. Concepcion, Mathew K. Brennaman, Jeremy R. Deyton, Nadia. V. Lebedeva, Malcolm D. E. Forbes, John. M. Papanikolas, Thomas J. Meyer, "Excited State Quenching by Coupled Electron Proton Transfer (EPT)", J. Am. Chem. Soc, 129, **2007**, 6968-6969.\*
71. Dana M Dattelbaum, Edward M Kober, John M Papanikolas, and Thomas J. Meyer, "Application of Time-resolved Near-infrared Spectroscopy (TRNIR) to the Metal-to-Ligand ChargeTransfer (MLCT) Excited State(s) of Os(phen)<sub>3</sub><sup>2+</sup>", Chem. Phys., 326, **2006**, 71-78.\*
72. Jon R. Schoonover, Dana M. Dattelbaum, Anton Malko, Victor I. Klimov, Thomas J. Meyer, David J. Styers-Barnett, Erika Z. Gannon, Jeremy C. Granger, W. Steven Aldridge III, and John M. Papanikolas,

*"Ultrafast Energy Transfer Between the 3MLCT State of [Ru(II)(dmb)2(bpy)an]2+ and the Covalently Appended Anthracene"*, J. Phys. Chem. A, 109, **2005**, 2472-2475.\*

73. James H. Alstrum-Acevedo, Joseph M. DeSimone, Cynthia K. Schauer, and John M. Papanikolas, *"The Synthesis and Characterization of Energy-Conducting Polymers with Pendant Inorganic Chromophores"* in Organic/Inorganic Hybrid Materials, edited by Clément Sanchez, Ulrich Schubert, Richard M. Laine, and Yoshiki Chujo (Mater. Res. Soc. Symp. Proc. 847, MRS, Warrendale, PA) **2005**, EE8.10.1. [Conference Proceedings]
74. David Styers-Barnett, Stephen Ellison, Cheol Park, Kristopher Wise and John Papanikolas, *"Ultrafast Transient Absorption Spectroscopy Investigations of Excited State Dynamics in SWNT/Polymer Composites"* in Functional Carbon Nanotubes, edited by D.L. Carroll, B. Weisman, S. Roth, and A. Rubio (Mater. Res. Soc. Symp. Proc. 858E, MRS, Warrendale, PA) **2005**, HH.5. [Conference Proceedings]
75. David J. Styers-Barnett, Stephen P. Ellison, Cheol Park, Kristopher E. Wise, and John M. Papanikolas, *"Ultrafast Dynamics of Single-Walled Carbon Nanotubes Dispersed in Polymer Films"*, J. Phys. Chem. A, 109, **2005**, 289-292.\*
76. Wilhelm Glomm, Selina J. Moses, Matthew K. Brennaman, John M. Papanikolas, and Stefan Franzen, *"Detection of Adsorption of Ru(II) and Os(II) Polypyridyl Complexes on Gold and Silver Nanoparticles by Single Photon Counting Emission Measurements"*, J. Phys. Chem. B, 109, **2005**, 804-810.\*
77. Matthew K. Brennaman, Thomas J. Meyer, and John M. Papanikolas, *"[Ru(bpy)2dppz]2+ Light-Switch Mechanism in Protic Solvents as Studied Through Temperature-Dependent Lifetime Measurements"*, J. Phys. Chem. A, 108, **2004**, 9938-9944.\*
78. Cavan N. Fleming, Paul Jang, Thomas J. Meyer, and John M. Papanikolas, *"Energy Migration Dynamics in a Ru(II) and Os(II) Based Antenna Polymer Embedded in a Disordered, Rigid Medium"*, J. Phys. Chem. B, 108, **2004**, 2205-2209.\*
79. George B. Shaw, David J. Styers-Barnett, Erika Z. Gannon, Jeremy C. Granger, and John M. Papanikolas, *"Interligand Electron Transfer Dynamics in Os(bpy)32+: Exploring the Excited State Potential Surfaces Using Femtosecond Spectroscopy"*, J. Phys. Chem. A, 108, **2004**, 4998-5006.\*
80. Huan Xie, Alexander Tkachenko, Wilhelm R. Glomm, Joseph A. Ryan, Matthew K. Brennaman, John M. Papanikolas, Stefan Franzen, and Daniel L. Feldheim, *"Characterization of Peptide-modified Gold Nanoparticles by Fluorescence Spectroscopy and Time-correlated Single Photon Counting"*, Anal. Chem., 75, **2003**, 5797-5805.\*
81. Anthony M. Leone, Matthew K. Brennaman, Jennifer D. Tibodeau, John M. Papanikolas, Royce W. Murray, H. Holden Thorp, *"Photoinduced Electron Transfer in Nucleic Acid Molten Salts"*, J. Phys. Chem. B, 107, **2003**, 6469-6473.\*
82. Matthew K. Brennaman, James H. Alstrum-Acevedo, Paul Jang, Cavan N. Fleming, Thomas J. Meyer, and John M. Papanikolas, *"Turning the [Ru(bpy)2(dppz)]2+ Light-Switch On and Off with Temperature"*, J. Am. Chem. Soc., 124, **2002**, 15094-15098.\*
83. George B. Shaw and John M. Papanikolas, *"Triplet-Triplet Annihilation of Excited States of Polypyridyl Ru(II) Complexes Bound to Polystyrene"*, J. Phys. Chem. B, 106, **2002**, 6156-6162.\*
84. Cavan N. Fleming, Laurence M. Dupray, John M. Papanikolas, and Thomas J. Meyer, *"Energy Transfer Between Ru(II) and Os(II) Polypyridyl Complexes Linked to Polystyrene"*, J. Phys. Chem. A, 106, **2002**, 2328-2334.\*
85. George B. Shaw, Carter L. Brown, and John M. Papanikolas, *"Investigation of Interligand Electron Transfer in Polypyridyl Complexes of Os(II) Using Femtosecond Polarization Anisotropy Methods:*

*Examination of Os(bpy)3<sup>2+</sup> and Os(bpy)2(mab)2<sup>+</sup>*, J. Phys. Chem. A, 106, **2002**, 1483-1495.\*

86. Cavan N. Fleming, Kimberly A. Maxwell, Joseph M. DeSimone, Thomas J. Meyer, and John M. Papanikolas, *"Ultrafast Excited-State Energy Migration Dynamics in an Efficient Light-Harvesting Antenna Polymer Based on Ru(II) and Os(II) Polypyridyl Complexes"*, J. Am. Chem. Soc., 123, **2001**, 10336-10347.\*
87. Tanya Kikteva, Dmitry Star, Anthony M. D. Lee, Gary W. Leach, and John M. Papanikolas, *"Five Wave Mixing: Surface-Specific Transient Grating Spectroscopy as a Probe of Low Frequency Intermolecular Adsorbate Motion"*, Phys. Rev. Lett., 85, **2000**, 1906-1909.\*
88. Radoslaw Uberna, Munira Khalil, Richard M. Williams, John M. Papanikolas, and Stephen R. Leone, *"Phase and Amplitude Control in the Formation and Detection of Rotational Wave Packets in the E(1Σg<sup>+</sup>) State of Li2"*, J. Chem. Phys., 108, **1998**, 9259-9274.\*
89. John M. Papanikolas, Richard M. Williams, and Stephen R. Leone, *"Manipulating Ro-vibrational Wave Packet Composition in the Li2 E(1Σg<sup>+</sup>) Shelf State Using Intermediate State Selection and Shaped Femtosecond Laser Pulses"*, J. Chem. Phys., 107, **1997**, 4172-4178.\*
90. Richard M. Williams, John M. Papanikolas, Jacob Rathje, and Stephen R. Leone, *"Compositional Control in the Formation of Ro-vibrational Wave Packets in the E(1Σg<sup>+</sup>) Shelf State of Li2 via Quantum-State-Resolved Intermediate State Selection"*, J. Chem. Phys., 106, **1997**, 8310-8323.\*
91. Richard M. Williams, John M. Papanikolas, Jacob Rathje, and Stephen R. Leone, *"Quantum-State-Resolved 2-Level Femtosecond Rotational Coherence Spectroscopy: Determination of Rotational Constants at Medium and High J in Li2"*, Chem. Phys. Lett, 261, **1996**, 405-413.\*
92. John M. Papanikolas, Richard M. Williams, Paul D. Kleiber, Jeff Hart, Carsten Brink, Stephen Price, and Stephen R. Leone, *"Wave Packet Dynamics in the Li2 E(1Σg<sup>+</sup>) Shelf State: Simultaneous Observation of Vibrational and Rotational Recurrences with Single Ro-vibronic Control of an Intermediate State"*, J. Chem. Phys., 103, **1995**, 7269-7276.\*
93. John M. Papanikolas, Paul E. Maslen, and Robert Parson, *"Recombination and Relaxation of Molecular Ions in Size-Selected Clusters: Monte Carlo and Molecular Dynamics Simulations of I2<sup>-</sup> (CO2)<sup>n</sup>"*, J. Chem. Phys., 102, **1995**, 2452-2470.\*
94. John M. Papanikolas, Paul J. Campagnola, Vasil Vorsa, Maria E. Nadal, Heinrich K. Buchenau, Robert Parson, and W.C. Lineberger, *"Time-Resolved Studies of Cage Recombination Dynamics in Ionic Clusters"* in The Chemical Dynamics and Kinetics of Small Radicals, edited by K. Liu and A. Wagner (World Scientific, New Jersey) **1995**, 616-667. [Book Chapter]\*
95. Paul E. Maslen, John M. Papanikolas, Jim Faeder, Robert Parson, and S.V. Oneil, *"Solvation of Electronically Excited I2<sup>-</sup>"*, J. Chem. Phys., 101, **1994**, 5731-5755.\*
96. W. C. Lineberger, Maria E. Nadal, Paul J. Campagnola, V. Vorsa, Paul D. Kleiber, John M. Papanikolas, Paul E. Maslen, Jim Faeder, Robert Parson, and O.E. Poplawski, *"Time-Resolved Dynamics in Large Cluster Ions"* in Proceedings of The Robert A. Welch Foundation 38th Conference on Chemical Research: Chemical Dynamics of Transient Species **1994**, 175-186. [Conference Proceedings]
97. John M. Papanikolas, Vasil Vorsa, Maria E. Nadal, Paul J. Campagnola, Heinrich K. Buchenau, and W.C. Lineberger, *"I2<sup>-</sup> Photodissociation and Recombination Dynamics in Size-Selected I2<sup>-</sup> (CO2)<sup>n</sup> Cluster Ions"*, J. Chem. Phys., 99, **1993**, 8733-8750.\*
98. John M. Papanikolas, Vasil Vorsa, Maria E. Nadal, Paul J. Campagnola, James R. Gord, and W.C. Lineberger, *"I2<sup>-</sup> Photofragmentation/Recombination Dynamics in Size-Selected I2 (CO2)<sup>n</sup> Cluster Ions: Observation of Coherent I...I- Vibrational Motion"*, J. Chem. Phys., 97, **1992**, 7002-7005.\*



99. John M. Papanikolas, James R. Gord, Nancy E. Levinger, Douglas Ray, Vasil Vorsa, and W.C. Lineberger, *"Photodissociation and Geminate Recombination Dynamics of I<sub>2</sub><sup>-</sup> in Mass-Selected I<sub>2</sub>-(CO)<sub>2</sub><sup>n</sup> Cluster Ions"*, J. Phys. Chem., 95, **1991**, 8028-8040.\*
100. John Papanikolas, Gilbert C. Walker, Vasgen A. Shamamian, Ronald L. Christensen, and J. Clayton Baum, *"Effects of Hydrogen Bonding on the Low-Lying Electronic States of a Model Polyene Aldehyde"*, J. Am. Chem. Soc., 112, **1990**, 1912-1920.\*
101. Douglas Ray, Nancy E. Levinger, John M. Papanikolas, and W.C. Lineberger, *"Time-Resolved Measurements of the Photodissociation and Recombination Dynamics of I<sub>2</sub><sup>-</sup> in Mass Selected Cluster Ions"*, J. Chem. Phys., 91, **1989**, 6533-6534.\*

\* = Peer-Reviewed

## **PRESENTATIONS**

### **Invited Presentations**

1. "Visualizing Electronic Dynamics in Nanostructures with Ultrafast Microscopy", Material Research Society, Fall 2016, Boston, MA, **2016**.
2. "Visualizing Electronic Dynamics in Nanostructures with Ultrafast Microscopy", KAUST Solar Research Conference, KAUST, Saudi Arabia, **2016**.
3. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Department of Chemistry, University of Tennessee at Knoxville, Knoxville, TN, **2016**.
4. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems, Porto Heli, Greece, **2016**.
5. "Ultrafast Dynamics in Molecular Materials for Solar Energy Conversion", SLAC Ultrafast X-Ray Workshop, SLAC, Palo Alto, CA, **2016**.
6. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Chinese Academy of Sciences, Beijing, China, **2016**.
7. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Department of Chemistry and Material Science, Shanxi University, Taiyuan, China, **2016**.
8. "Visualizing Electronic Dynamics in Nanostructures with Ultrafast Microscopy", Department of Chemistry, University of Delaware, Newark, DE, **2016**.
9. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Department of Chemistry and Department of Material Science, Qiqihar University, Qiqihar, China, **2015**.
10. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", International Workshop on Nanomaterials for Energy and Biotechnology, Harbin, China, **2015**.
11. "Ultrafast Dynamics in Molecular Materials for Solar Energy Conversion", EFRC Science Forum, Washington, DC, **2015**.
12. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Frontiers in Optics and Laser Science Conference, San Jose, CA, **2015**.
13. "Ultrafast Dynamics in Molecular Materials for Solar Energy Conversion", UNC-SERC: Solar Energy Conference, Chapel Hill, NC, **2015**.
14. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Department of Chemistry, Pennsylvania State University, State College, PA, **2015**.

15. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Sixth North America-Greece-Cyprus Workshop on Paramagnetic Materials, Athens, Greece, **2015**.
16. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Department of Chemistry/JILA, University of Colorado at Boulder, Boulder, CO, **2015**.
17. "Using Femtosecond Pump-Probe Microscopy to Visualize Carrier Dynamics in Semiconductor Nanowires", The 45th Winter Colloquium on the Physics of Quantum Electronics, Snowbird, UT, **2015**.
18. "Ultrafast Dynamics in Molecular Assemblies for Solar Energy Conversion", KAUST Research Conference: Applied Functional Materials Chemistry, Jeddah, Saudi Arabia, **2014**.
19. "Using Femtosecond Pump-Probe Microscopy to Visualize Carrier Dynamics in Semiconductor Nanowires", Sino-Germany Bilateral Symposium on Nano-Photonics and Nano-Optoelectronics, Changsha, China, **2014**.
20. "Using Femtosecond Pump-Probe Microscopy to Visualize Carrier Dynamics in Semiconductor Nanowires", Collaborative Conference on Materials Research, Seoul, Korea, **2014**.
21. "Imaging Carrier Dynamics in Silicon Nanowires Using Ultrafast Microscopy", Materials Research Society Spring Meeting, San Francisco, **2014**.
22. "Using Ultrafast Pump-Probe Microscopy to Image Carrier Migration and Carrier Recombination in Si and ZnO Nanowires", Eastern Analytical Symposium and Exposition, Sommerset, NJ, **2013**.
23. "Energy and Electron Transfer in Light-Harvesting Molecular Assemblies", 22nd Winter Conference of the Inter-American Photochemical Society, Sarasota, FL, **2013**.
24. "Spatially Resolved Carrier Dynamics in ZnO Rods Observed Through Ultrafast Pump-Probe Microscopy", Joint School of Nanoscience and Nanoengineering, North Carolina A&T University, Greensboro, NC, **2012**.
25. "Ultrafast Dynamics with Spatial Specificity: Application of Femtosecond Microscopy to the Study of Carrier Dynamics in Photoexcited ZnO Nanorods", Department of Chemistry, Lehigh University, Bethlehem, PA, **2012**.
26. "Ultrafast Spatially Resolved Carrier Dynamics in Individual ZnO Rods", Department of Chemistry, University of Colorado at Boulder, Boulder, CO, **2012**.
27. "Ultrafast Spatially Resolved Carrier Dynamics in Individual ZnO Rods", Department of Chemistry, Colorado State University, Fort Collins, CO, **2012**.
28. "Ultrafast Pump-Probe Microscopy in Individual ZnO Rods", Department of Chemistry, Notre Dame University, South Bend IN, **2012**.
29. "Ultrafast Carrier Dynamics in Individual ZnO Rods", UNC-SERC Solar Energy Research Symposium, Durham NC, **2012**.
30. "Ultrafast Spatially Resolved Carrier Dynamics in Individual ZnO Rods", Department of Chemistry, Duke University, Durham, NC, **2011**.
31. "Ultrafast Spatially Resolved Carrier Dynamics in Individual ZnO Rods", Department of Chemistry, University of Maryland, College Park, MD, **2011**.
32. "Ultrafast Pump-Probe Microscopy in Individual ZnO Rods", Department of Chemistry, University of Central Florida, Orlando, FL, **2011**.
33. "Ultrafast Pump-Probe Microscopy in Individual ZnO Rods", Department of Chemistry, University of Florida, Gainesville, FL, **2011**.
34. "Ultrafast Pump-Probe Microscopy in Individual ZnO Rods", Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, NC, **2011**.

35. "Energy transport in Ru(II) and Os(II) loaded molecular assemblies", 240th National Meeting of the American Chemical Society, Boston, MA, **2010**.
36. "Ultrafast Dynamics in Complex Structures", Department of Chemistry, University of North Carolina at Greensboro, Greensboro, NC, **2010**.
37. "Ultrafast Dynamics in Complex Structures", Department of Chemistry, University of Rochester, Rochester, NY, **2010**.
38. "Energy Transport in Ru(II)- and Os(II)-Loaded Light Harvesting Polymers", Southeastern Section of the American Physical Society, Atlanta, GA, **2009**.
39. "Investigation of Ultrafast Carrier Dynamics in ZnO Rods Using Two-Photon Emission and Second-Harmonic Generation Microscopy", SPIE Nanoscience and Engineering: Physical Chemistry of Interfaces and Nanomaterials VIII, San Diego, CA, **2009**.
40. "Ultrafast Dynamics in the MLCT Excited States of Ru(II) and Os(II) Coordination Complexes", 235th National Meeting of the American Chemical Society, New Orleans, LA, **2008**.
41. "Ultrafast Dynamics in Complex Systems", Department of Chemistry, Wake Forest University, Winston-Salem, NC, **2008**.
42. "Ultrafast Dynamics in Single-Walled Carbon Nanotubes", Department of Chemistry/JILA, University of Colorado at Boulder, Boulder, CO, **2007**.
43. "Ultrafast Dynamics in Single-Walled Carbon Nanotubes", Department of Chemistry, Colorado State University, Fort Collins, CO, **2007**.
44. "Ultrafast Energy Transport Dynamics in Ru(II) and Os(II) loaded polymers", 234th National Meeting of the American Chemical Society, Boston, MA, **2007**.
45. "Ultrafast Electron-Hole Recombination Dynamics in SWNT/Polymer Composites", Department of Chemistry, Emory University, Atlanta, GA, **2006**.
46. "Ultrafast Dynamics in Single-Walled Carbon Nanotubes", Gordon Research Conference on Electron Donor Acceptor Interactions, Newport, RI, **2005**.
47. "Ultrafast Electron-Hole Recombination Dynamics in SWNT/Polymer Composites", Excited State Processes in Bio and Nanomaterials Conference, Santa Fe, NM, **2005**.
48. "Ultrafast Charge and Energy Transport in 1D Materials", Department of Physics, Trinity College, Dublin, Ireland, **2005**.
49. "Ultrafast Dynamics in Complex Systems", Department of Chemistry, Trinity College, Dublin, Ireland, **2005**.
50. "Ultrafast Dynamics in Complex Systems", Department of Chemistry/JILA, University of Colorado at Boulder, Boulder, CO, **2005**.
51. "Ultrafast Dynamics in Complex Systems", Department of Chemistry, Bowdoin College, Brunswick, ME, **2005**.
52. "Ultrafast Carrier Dynamics in Single-Walled Carbon Nanotubes/Polymer Composites", Sixth World Congress on Computational Mechanics (WCCM VI), Beijing, China, **2004**.
53. "Ultrafast Charge- and Energy-Transfer Dynamics in Functionalized Ru(II) Chromophores", 227th National Meeting of the American Chemical Society, Anaheim, CA, **2004**.
54. "Ultrafast Dynamics in Complex Systems", Department of Chemistry, College of William and Mary, Williamsburg, VA, **2004**.
55. "Ultrafast Dynamics in Complex Systems", Southeast Regional Meeting of the American Chemical Society, Atlanta, GA, **2003**.
56. "Investigation of Energy Transport in Functionalized Polymers Using Ultrafast Spectroscopic Methods",

Nano-Forum CH-US 2003: Swiss-US-Forum on Nanoscience and Nanotechnology with a focus on: Nanomechanics and Single Molecule Research, Basel, Switzerland, **2003**.

57. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, NC, **2002**.
58. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, University of Texas at Austin, Austin, TX, **2002**.
59. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, Northwestern University, Evanston, IL, **2002**.
60. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, North Carolina State University, Raleigh, NC, **2002**.
61. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, University of Wisconsin-Madison, Madison, WI, **2002**.
62. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, Duke University, Durham, NC, **2002**.
63. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, Florida State University, Tallahassee, FL, **2002**.
64. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry/JILA, University of Colorado, Boulder, CO, **2002**.
65. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, Colorado State University, Fort Collins, CO, **2002**.
66. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, University of Alabama, Birmingham, AL, **2001**.
67. "Excited State Relaxation Dynamics in Os(II) Polypyridyl Complexes", Inorganic Chemistry into the New Millennium, Santa Fe, NM, **2001**.
68. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, NC, **2001**.
69. "Energy Migration Dynamics in a Light-Harvesting Polymer", Department of Chemistry, Washington University at St. Louis, St. Louis, MO, **2001**.
70. "Ultrafast Excited-state Dynamics in a Supramolecular Array Based on Ru(II)/Os(II) Polypyridyl Coordination Complexes", 219th National Meeting of the American Chemical Society, San Francisco, CA, **2000**.
71. "Ultrafast Excited State Dynamics in a Light Antenna Nanoparticle Sensitizer", Southeast Regional Meeting of the American Chemical Society, Knoxville, TN, **1999**.
72. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, University of Georgia, Athens, GA, **1998**.
73. "Observing and Manipulating Chemical Systems on Ultrafast Timescales", FACSS Conference, Austin, TX, **1998**.
74. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, NC, **1997**.
75. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, University of California at Irvine, Irvine, CA, **1997**.
76. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, Brown University, Providence, RI, **1997**.
77. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry,

University of Maryland at College Park, College Park, MD, **1997**.

78. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, Michigan State University, East Lansing, MI, **1996**.
79. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, Virginia Tech University, Blacksburg, VA, **1996**.
80. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, University of California at Davis, Davis, CA, **1996**.
81. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, University of Wisconsin at Milwaukee, Milwaukee, WI, **1996**.
82. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, University of Texas at Austin, Austin, TX, **1996**.
83. "Observing and Manipulating Molecular Motion on Ultrafast Timescales", Department of Chemistry, Wayne State University, Detroit, MI, **1996**.
84. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Department of Chemistry, University of Delaware, Newark, DE, **2016**.

### **Contributed Presentations**

85. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Materials Research Society Spring Meeting, San Francisco, CA, **2015**.
86. "Visualization of Charge Carrier Motion in Semiconductor Nanowires with Ultrafast Pump-Probe Microscopy", Ultrafast Phenomena XIX, Okinawa, Japan, **2014**.
87. "Interfacial Excited State Dynamics of Ru(II)-Based Chromophores and Chromophore-Catalyst Assemblies on Metal Oxide Surfaces", EFRC Science Forum, Washington, DC, **2013**.
88. "Ultrafast Pump-Probe Microscopy in Individual ZnO Rods", 242th National Meeting of the American Chemical Society, Denver, CO, **2011**.
89. "Ultrafast Dynamics in Single-Walled Carbon Nanotubes", 235th National Meeting of the American Chemical Society, New Orleans, LA, **2008**.
90. "Ultrafast Dynamics in Single-Walled Carbon Nanotubes", Unconventional Photoactive Systems 13, Evanston, IL, **2007**.
91. "Molecular Dynamics Simulations For Teaching: Development of a Virtual Substance for Students to Study", 227th National Meeting of the American Chemical Society, Anaheim, CA, **2004**.
92. "Interligand Electron Transfer in Polypyridyl Os(II) Compounds", American Physical Society Meeting, Austin, TX, **2003**.
93. "Ultrafast Energy Transfer Dynamics Between a Polypyridyl Ru(II) Chromophore and a Covalently Attached Acceptor", American Physical Society Meeting, Austin, TX, **2003**.
94. "Investigations of Excited State Dynamics in Polypyridyl Complexes of Os(II) Using Femtosecond Transient Absorption Spectroscopy", 224th National Meeting of the American Chemical Society, Boston, MA, **2002**.
95. "Evidence for the Existence of a Two-state Equilibrium in the Photoexcited State of  $[\text{Ru}(\text{bpy})_2(\text{dppz})]^{2+}$ ", 224th National Meeting of the American Chemical Society, Boston, MA, **2002**.
96. "Synthesis and Ultrafast Energy Migration Dynamics in Chromophore Loaded Styrenic Polymers and Block Copolymers Based on Polypyridyl Ru(II) Complexes", 224th National Meeting of the American Chemical Society, Boston, MA, **2002**.
97. "Ultrafast Investigation of the Excited State Energy Migration Dynamics in a Light-Harvesting Polymer

Based on Ru(II) and Os(II) Polypyridyl Complexes", 24th Department of Energy Solar Photochemistry Research Conference, Lake Tahoe, CA, **2001**.

98. "Ultrafast Excited State Dynamics in a Supramolecular Light Antenna Assembly", XIX International Conference on Photochemistry, Durham, NC, **1999**.
99. "Control of the Ro-vibrational State Composition of a Wave Packet by Combining Ultrafast and CW Excitation: Application to Lithium Dimer", OSA/ILS-XI, Portland, OR, **1995**.
100. "Computer Simulations of I<sub>2</sub>-(CO<sub>2</sub>)<sub>n</sub> Photodissociation and Cage Recombination Dynamics", Gordon Conference on Molecular Energy Transfer, New Hampton, NH, **1993**.
101. "I<sub>2</sub>- Photodissociation and Recombination Dynamics in Size-Selected I<sub>2</sub>-(CO<sub>2</sub>)<sub>n</sub> Cluster Ions", Conference on Condensed Phase Reaction Dynamics, Newport, CA, **1992**.

#### **Outreach Activities/Presentations**

102. "The Energy Landscape: Options for the Future", The Science Boot Camp, Raleigh, NC, **2014**.
103. "The Energy Problem", Presentation to middle school students at Ravenscroft School, Cary, NC, **2013**.
104. "The Energy Landscape: Options for the Future", Global Education Symposium for North Carolina's K-12 Educators: Global Issues, Global Solutions, Chapel Hill, NC, **2012**.
105. "The Energy Problem: Scientific Challenges", Presentation to Carolina Friends Middle School and Laboratory Tour, Chapel Hill, NC, **2012**.
106. "The Energy Problem: Exploring the Energy Realities of the 21st Century", Exploring the Energy Realities of the 21st Century webinar sponsored UNC-Chapel Hill's Institute for the Environment, Chapel Hill, NC, **2010**.
107. "The Energy Problem", University of North Carolina Science Expo as part of the North Carolina Science Festival, Chapel Hill, NC, **2010**.
108. "The Energy Problem", Presentation to high school students participating in UNC's Climate Leadership and Energy Awareness Program, Climate LEAP, Chapel Hill, NC, **2010**.
109. "The Energy Problem", Presentation to North Carolina science teachers participating in UNC's Exploring the Future of Electricity Workshop hosted by UNC's Institute for the Environment, Chapel Hill, NC, **2010**.
110. "Solar Energy Science Activity", Led middle school science class in making solar cells, Carolina Friends School, Durham NC, **2010**.
111. "The Energy Landscape: Options for the Future", What's the Big Idea Seminar Series, Friday Center, Chapel Hill, NC, **2009**.
112. "The Energy Landscape: Options for the Future", Morehead Planetarium Science Forum, Morehead Planetarium, Chapel Hill, NC, **2009**.