

JENNIFER E. LAASER

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EDUCATION AND TRAINING

- Present** **University of Minnesota (Minneapolis, MN)**
Postdoctoral Research Associate
– Advisor: Timothy Lodge
– Research topic: Complexation of polyelectrolytes with block copolymer micelles
- 2013** **University of Wisconsin-Madison (Madison, WI)**
Ph.D., Physical Chemistry
– Advisor: Martin T. Zanni
– Thesis topic: Nonlinear Spectroscopy of Materials and Biophysical Interfaces
- 2008** **Yale University (New Haven, CT)**
B.S., Chemistry (highest honors)

HONORS AND AWARDS

- 2013** Casey Excellence in Research Award, University of Wisconsin-Madison
AAAS Mass Media Fellowship
- 2009** Outstanding Chemistry Teaching Award, University of Wisconsin-Madison
- 2008** National Science Foundation Graduate Research Fellowship
Hertz Foundation Fellowship Finalist
Pei Wang Fellowship, University of Wisconsin-Madison
Dow Chemical Company Fellowship, University of Wisconsin-Madison
Werner-Bergmann Prize for the Outstanding Senior in Chemistry, Yale University
- 2007** Phi Beta Kappa

PUBLICATIONS

- 2014** **J. E. Laaser**, J. R. Christianson, T. A. Oudenhoven, Y. Joo, P. Gopalan, J. R. Schmidt, and M. T. Zanni. Dye Self-association Identified by Intermolecular Couplings Between Vibrational Modes as Revealed by Infrared Spectroscopy, and Implications for Electron Injection. *Journal of Physical Chemistry C*, 118(11):5854–5861, 2014
- J. E. Laaser**, D. R. Skoff, J.-J. Ho, Y. Joo, A. L. Serrano, J. D. Steinkruger, P. Gopalan, S. H. Gellman, and M. T. Zanni. Two-Dimensional Sum-Frequency Generation Reveals Structure and Dynamics of a Surface-Bound Peptide. *Journal of the American Chemical Society*, 136(3):956–962, 2014 ** **Featured in C&ENews (Jan. 13, 2014)**
- 2013** D. R. Skoff, **J. E. Laaser**, S. S. Mukherjee, C. T. Middleton, and M. T. Zanni. Simplified and economical 2D IR spectrometer design using a dual acousto-optic modulator. *Chemical Physics*, 422(30):8–15, 2013

B. Ding, **J. E. Laaser**, Y. Liu, P. Wang, M. T. Zanni, and Z. Chen. Site-specific Orientation Determination of an α -helical Peptide Ovispirin-1 from Isotope-Labeled SFG Spectroscopy. *Journal of Physical Chemistry B*, 117(47):14625–14634, 2013

J. E. Laaser and M. T. Zanni. Extracting Structural Information from the Polarization Dependence of One- and Two-Dimensional Sum Frequency Generation Spectra. *Journal of Physical Chemistry A*, 117(29):5875–5890, 2013

R. D. Mehlenbacher, M.-Y. Wu, M. Grechko, **J. E. Laaser**, M. S. Arnold, and M. T. Zanni. Photoexcitation Dynamics of Coupled Semiconducting Carbon Nanotube Thin Films. *Nano Letters*, 13(4):1495–1501, 2013

2011 W. Xiong, **J. E. Laaser**, R. D. Mehlenbacher, and M. T. Zanni. Adding a dimension to the infrared spectra of interfaces using heterodyne-detected 2D sum-frequency generation (HD 2D SFG) spectroscopy. *Proceedings of the National Academy of Sciences of the United States of America*, 108(52):20902–20907, 2011

J. E. Laaser, W. Xiong, and M. T. Zanni. Time-domain SFG spectroscopy using mid-IR pulse shaping: Practical and intrinsic advantages. *Journal of Physical Chemistry B*, 115(11):2536–2546, 2011

2010 P. Paoprasert, **J. E. Laaser**, W. Xiong, R. A. Franking, R. J. Hamers, M. T. Zanni, J. R. Schmidt, and P. Gopalan. Bridge-Dependent Interfacial Electron Transfer from Rhenium-Bipyridine Complexes to TiO₂ Nanocrystalline Thin Films. *Journal of Physical Chemistry C*, 114:9898–9907, 2010

H. K. Gerardi, K. J. Breen, T. L. Guasco, G. H. Weddle, G. H. Gardenier, **J. E. Laaser**, and M. A. Johnson. Survey of Ar-Tagged Predissociation and Vibrationally Mediated Photodetachment Spectroscopies of the Vinylidene Anion, C₂H₂⁻. *Journal of Physical Chemistry A*, 114:1592–1601, 2010

2009 W. Xiong, **J. E. Laaser**, P. Paoprasert, R. A. Franking, R. J. Hamers, P. Gopalan, and M. T. Zanni. Transient 2D IR Spectroscopy of Charge Injection in Dye-Sensitized Nanocrystalline Thin Films. *Journal of the American Chemical Society*, 131(50):18040–18041, 2009

PRESENTATIONS

2012 “Probing structure and dynamics at interfaces via heterodyne-detected 2D sum frequency generation,” 244th Meeting of the American Chemical Society, Philadelphia, PA (invited talk)

“Heterodyne-Detected 2D Sum Frequency Generation of Pt-CO: A Probe of Dynamics at Catalytic Interfaces,” 221st Meeting of the Electrochemical Society, Seattle, WA (invited talk)

2011 “Shaping SFG: Advantages of mid-IR pulse shaping for heterodyned and time-domain data collection,” 15th International Conference on Time-Resolved Vibrational Spectroscopy, Monte Verita, Switzerland (poster).

2010 “Transient 2D IR of Charge Transfer at the Organic/Inorganic Interface,” 5th International Conference on Coherent Multidimensional Spectroscopy, Minneapolis, MN (poster)

“Nonlinear Spectroscopy of Charge Transfer at the Organic/Inorganic Interface,” Gordon Conference on Vibrational Spectroscopy, Biddeford, ME (poster)

RESEARCH EXPERIENCE

- Sep. 2013** **University of Minnesota Department of Chemistry (Minneapolis, MN)**
- **present** *Postdoctoral Research Associate*
- PI: Timothy Lodge
- Research topic: synthesis and characterization of block copolymer micelles & micelle-polyelectrolyte complexes for gene delivery
- Nov. 2008** **University of Wisconsin-Madison Department of Chemistry (Madison, WI)**
- **Aug. 2013** *Graduate Research Assistant*
- PI: Martin T. Zanni
- Research topic: development of nonlinear optical methods for investigation of materials and biophysical interfaces, utilizing ultrafast laser techniques including transient absorption, two-dimensional infrared spectroscopy, and sum-frequency generation.
- Jan. 2007** **Yale University Department of Chemistry (New Haven, CT)**
- **May 2008** *Undergraduate Research Assistant*
- PI: Mark Johnson
- Research topic: gas-phase spectroscopy of small molecular ions; design of optical systems for use with nanosecond lasers; computer modeling of beam propagation; some quantum chemistry calculations.
- Summer 2006** **Stanford University Department of Chemistry (Stanford, CA)**
& **Summer 2005** *Undergraduate Research Assistant*
- PI: Richard N. Zare
- Research topic: quasiclassical trajectory simulations of inelastic scattering pathways in the H+D₂ reaction (2005); cavity-ring-down spectroscopy of scattering cross-sections of atmospheric gases (2006)

TEACHING EXPERIENCE

- Spring 2009** **University of Wisconsin-Madison Department of Chemistry (Madison, WI)**
Teaching Assistant for Chemistry 116
Accelerated general chemistry (thermodynamics), with Jim Weisshaar
- Fall 2008** **University of Wisconsin-Madison Department of Chemistry (Madison, WI)**
Teaching Assistant for Chemistry 115
Accelerated general chemistry (quantum mechanics), with Claude Woods
- Spring 2008** **Wilbur Cross High School (New Haven, CT)**
Tutor & Substitute Teacher for AP Chemistry
- Fall 2007** **Yale University (New Haven, CT)**
Peer Tutor/Undergraduate Teaching Assistant for Chemistry 118
Accelerated freshman chemistry, with Mark Johnson

MENTORING

- Undergraduates** Len Roche (2012-2013)

OUTREACH

- Apr. 2014 University of Minnesota WISE (Minneapolis, MN)**
Cool Chemistry Volunteer/Demonstrator
- 2013-2014 Twin Cities Regional Science Fair (Minneapolis, MN)**
Science Fair Judge (High School Projects)
- 2013 Milwaukee Journal Sentinel (Milwaukee, WI)**
AAAS Mass Media Fellow
- Worked as science journalism intern from Jun.-Aug. 2013
 - Translated current science research for the general public
 - List of clips/published stories available at <http://jlaaser.com/category/clips/>
- 2012-2013 The Daily Cardinal (Madison, WI)**
Science Staff Writer
- 2009-2013 UW-Madison Materials Science Center (Madison, WI)**
Interactive nanotechnology demonstrations for audiences aged 5-95
Past events include:
- Wisconsin State Fair (8/2012)
 - Wisconsin Science Festival (9/2011)
 - UW-Madison Engineering Expo (4/2011 & 4/2009)
- 2010-2013 J.C. McKenna Middle School (Evansville, WI)**
"Interview a Scientist" Project
- May 2011 National Science Olympiad (Madison, WI)**
Chemistry Lecture Demonstrations

OTHER

- Reviewing** Peer reviewer for *The Journal of Physical Chemistry*
- Affiliations** American Chemical Society (ACS)
American Physical Society (APS)
American Association for the Advancement of Science (AAAS)