

Chris Middleton

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RESEARCH

June 2002 – Present

Graduate Research Associate
The Ohio State University, Department of Chemistry
Research Director: Dr. Bern Kohler

Femtosecond electronic and vibrational studies of DNA and RNA photophysics. Ground-state vibrational cooling, excited state photophysics of pyrimidine bases.

December 1998 – June 2002

Undergraduate Research Associate
Syracuse University, Department of Chemistry
Research Director: Dr. Bruce S. Hudson

Theoretical and experimental (inelastic neutron scattering spectroscopy) studies of vibrations of hydrogen-bonding, highly-symmetric, and/or structurally-strained organic molecules in solid phase.

June 1999 – August 1999

Undergraduate Research Associate
University of Rochester, NSF Center for Photoinduced Charge Transfer, NSF Research Experience for Undergraduates Program
Research Director: Dr. Shaul Mukamel

Theoretical study of electronic excited states of the light harvesting complex (II) of purple bacteria using the collective oscillator approach.

TEACHING

Winter 2008

Chemistry 531, Physical Chemistry (Statistical Mechanics & Thermodynamics)
Course Professor: John Herbert

Autumn 2007	Chemistry 530, Physical Chemistry (Quantum Mechanics) Course Professor: James V. Coe
Spring 2007	Chemistry 541, Physical Chemistry Laboratory Course Professor: Heather C. Allen
Winter 2007	Chemistry 541, Physical Chemistry Laboratory Course Professor: Christopher Jaroneic
Autumn 2006	Chemistry 977, Seminar in Physical Chemistry: Lasers and Optics Course Professor: Walter R. Lempert
Winter 2002	Chemistry 541/542, Physical Chemistry Laboratory Course Professor: James V. Coe
Autumn 2002	Chemistry 541/542, Physical Chemistry Laboratory Course Professor: Bern Kohler

FELLOWSHIPS AND AWARDS

2008	3 rd Place, Edward F. Hayes Graduate Research Forum, Mathematical and Physical Sciences Section, The Ohio State University
2008	John S. Swenton Award for Outstanding Teaching by a Graduate Student
2003	GAANN Fellow, Department of Chemistry, The Ohio State University

PUBLICATIONS

96 total citations in ISI Web of Knowledge as of 2/2008

9. Patrick M. Hare, Chris T. Middleton, Kristin I. Mertel, John M. Herbert, and Bern Kohler, "Time-resolved infrared spectroscopy of the lowest triplet state of thymine and thymidine," *Chemical Physics*, 347, 383-392 (2008).
8. Chris T. Middleton, Boiko Cohen, and Bern Kohler, "Solvent and Solvent Isotope Effects on the Vibrational Cooling Dynamics of a DNA Base Derivative," *Journal of Physical Chemistry A*, 111, 10460-10467 (2007).
7. Gotard T. Burdzinski, Chris T. Middleton, Terry L. Gustafson, and Matthew S. Platz, "Solution Phase Isomerization of Vibrationally Excited Singlet Nitrenes to Vibrationally Excited 1,2-Didehydroazepine," *Journal of the American Chemical Society*, 128, 14804-14805 (2006).

6. Bruce S. Hudson, Dale A. Braden, Damian G. Allis, Tim Jenkins, Sergey Baronov, Chris Middleton, Robert Withnall, and Craig M. Brown, "The Crystalline Enol of 1,3-Cyclohexanedione and Its Complex with Benzene: Vibrational Spectra, Simulation of Structure and Dynamics and Evidence for Cooperative Hydrogen Bonding," *Journal of Physical Chemistry A*, 108, 7356-7363 (2004).
5. Deepak Singh, Bruce S. Hudson, Chris Middleton, and Robert R. Birge, "The Conformation and Orientation of the Retinyl Chromophore in Rhodopsin: A Critical Evaluation of Recent NMR Data on the Basis of Theoretical Calculations Results in a Minimum Energy Structure Consistent with all Experimental Data," *Biochemistry*, 40, 4201-4204 (2001).
4. Bruce S. Hudson, John Tse, Marek Z. Zgierski, Stewart Parker, Dale A. Braden, and Chris Middleton, "The Inelastic Incoherent Neutron Spectrum of Crystalline Oxamide," *Chemical Physics*, 261, 249-260 (2000).
3. Sergei Tretiak, Chris Middleton, Vladimir Chernyak, and Shaul Mukamel, "Bacteriochlorophyll and Carotenoid Excitonic Couplings in the LH2 System of Purple Bacteria," *Journal of Physical Chemistry B*, 104, 9540-9553 (2000).
2. Sergei Tretiak, Chris Middleton, Vladimir Chernyak, and Shaul Mukamel, "Exciton Hamiltonian for the Bacteriochlorophyll System in the LH2 Antenna Complex of Purple Bacteria," *Journal of Physical Chemistry B*, 104, 4519-4528 (2000).
1. Sergei Tretiak, Chris Middleton, Vladimir Chernyak, and Shaul Mukamel, "Localized and Delocalized Electronic Excitations in Biological and Artificial Antenna Complexes," *Photoinduced Charge Transfer*, Lewis Rothberg, Editor (World Scientific, Singapore), 116-127, (2000).

PRESENTATIONS

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| July 11, 2007 | Poster Presentation, Gordon Research Conferences, Photochemistry, Smithfield, RI
<i>"Femtosecond Mid-Infrared Spectroscopy of Pyrimidine DNA Bases: Intramolecular Vibrational Redistribution, Vibrational Cooling and Excited State Photophysics"</i> |
| June 21, 2007 | Oral Presentation, 62 nd International Symposium on Molecular Spectroscopy, Columbus, OH
<i>"Femtosecond Mid-Infrared Spectroscopy of Pyrimidine DNA Bases: Intramolecular Vibrational Redistribution, Vibrational Cooling and Excited State Photophysics"</i> |
| July 5, 2006 | Poster Presentation, Gordon Research Conferences, Vibrational Spectroscopy: Probing Structure and Dynamics, Biddeford, MA
<i>"Ultrafast Vibrational Cooling Dynamics in 9-Methyladenine Observed with UV Pump/UV Probe and UV Pump/Mid-IR Probe Transient Absorption Spectroscopy"</i> |

- June 23, 2006 Oral Presentation, 61st International Symposium on Molecular Spectroscopy, Columbus, OH
“Ultrafast Vibrational Cooling Dynamics In 9-Methyladenine Observed With UV Pump/UV Probe Transient Absorption Spectroscopy”
- June 24, 2002 Poster Presentation, American Conference on Neutron Scattering, Knoxville, TN
“Inelastic Neutron Scattering Studies of Hydrocarbons”

SERVICE

- 2003 – 2007 Co-Founder/Co-Organizer, Physical Chemistry Student Lecture Series
Including speakers from Iowa State University, Stanford University, University of California, Irvine, University of Illinois at Urbana-Champaign, University of Southern California and Wayne State University. Annual budget of \$2000, sponsored by OSU Department of Chemistry, Physical Division, Coherent, Inc. and Elsevier B.V.
- 2004 – 2006 Sponsored Award Judge, American Chemical Society Columbus Section – Chemical Sciences Award, State Science Day, Columbus, OH
- 2005 – 2006 Captain, *Laser Jocks*, Mathematical and Physical Science-Chemistry Softball League
Seasonal budget of \$500, sponsored by Coherent, Inc.
- 2003 – 2005 Event Supervisor, Ohio Science Olympiad, Columbus, OH
- 2003 Event Supervisor, National Science Olympiad, Columbus, OH
- 2003 Committee Member, The Edward Mack Award and Lecture (Recipient: Dr. Alan Marshall)