

Christopher J. Fecko

Department of Chemistry
University of North Carolina at Chapel Hill
Campus Box 3290
Chapel Hill, NC 27599
Tel: 919-962-0528; Fax: 919-962-2388
E-mail: cfecko@unc.edu

EDUCATION

- 1998-2004 Massachusetts Institute of Technology, Cambridge, MA (Ph.D. Chemistry)
 Advisor: Dr. Andrei Tokmakoff, Professor of Chemistry
 Dissertation: Spectroscopic investigations of hydrogen bonding in liquid water
- 1994-1998 Swarthmore College, Swarthmore, PA (B.A. Chemistry and B.A. Physics)
 Advisor: Dr. Thomas A. Stephenson, Professor of Chemistry
 Thesis: Collision induced electronic transitions from the $E(0_g^+)(v=0)$ state of iodine

PROFESSIONAL EXPERIENCE

- 2007-present Assistant Professor
 Department of Chemistry and Program in Molecular and Cellular Biophysics
 University of North Carolina, Chapel Hill, NC
- 2004-2007 Postdoctoral Associate
 School of Applied and Engineering Physics, Cornell University, Ithaca, NY
 Advisors: Dr. Watt W. Webb, Professor of Applied and Engineering Physics
 Dr. John Lis, Professor of Molecular Biology and Genetics
- 1999-2004 Graduate Research Assistant
 Department of Chemistry, Massachusetts Institute of Technology, Cambridge MA
- 1998-1999 Graduate Teaching Assistant
 Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA
- 1998 Scientific Intern
 The Liposome Company, Princeton, NJ
 Supervisor: Dr. Walter R. Perkins
- 1996-1998 Undergraduate Research Assistant
 Department of Chemistry, Swarthmore College, Swarthmore, PA

PUBLICATIONS

17. C.J. Fecko, K.M. Munson, A. Saunders, G. Sun, T.P. Begley, J.T. Lis and W.W. Webb. Comparison of femtosecond laser and continuous wave UV sources for protein-nucleic acid crosslinking. *Photochem. Photobiol.* **83**, 1394 (2007).

16. J. Yao, M.B. Ardehali, C.J. Fecko, W.W. Webb and J.T. Lis. Intranuclear distribution and local dynamics of RNA polymerase II during transcription activation. *Mol. Cell* **28**, 978 (2007).
15. G. Sun, C.J. Fecko, R.B. Nicewonger, W.W. Webb and T.P. Begley. DNA protein crosslinking: Model systems for pyrimidine-aromatic amino acid crosslinking. *Organic Lett.* **8**, 681 (2006).
14. J.D. Eaves, J.J. Loparo, C.J. Fecko, S.T. Roberts, A. Tokmakoff and P.L. Geissler. Hydrogen bonds in water are broken only fleetingly. *Proc. Natl. Acad. Sci.* **102**, 13019 (2005).
13. C.J. Fecko, J.J. Loparo, S.T. Roberts and A. Tokmakoff. Local hydrogen bonding dynamics and collective reorganization in water: Ultrafast infrared spectroscopy of HOD/D₂O. *J. Chem. Phys.* **122**, 054506 (2005).
12. C.J. Fecko, J.D. Eaves, J.J. Loparo, S.T. Roberts, A. Tokmakoff and P.L. Geissler. Dynamics of hydrogen bonds in water: Vibrational echoes and two-dimensional infrared spectroscopy. in *Ultrafast Phenomena XIV*, eds. Kobayashi, T., Okada, T., Kobayashi T., Nelson, K.A., DeSilvestri, S. (Springer-Verlag, Berlin, 2005) p. 535.
11. J.J. Loparo, C.J. Fecko, J.D. Eaves, S.T. Roberts and A. Tokmakoff. A unified analysis of ultrafast vibrational and orientational dynamics of HOD in D₂O. in *Ultrafast Phenomena XIV*, eds. Kobayashi, T., Okada, T., Kobayashi T., Nelson, K.A., DeSilvestri, S. (Springer-Verlag, Berlin, 2005) p. 410.
10. J.J. Loparo, C.J. Fecko, J.D. Eaves, S.T. Roberts and A. Tokmakoff. Reorientational and configurational fluctuations in water observed on molecular length scales. *Phys. Rev. B.* **70**, 180201 (2004).
9. C.J. Fecko, J.J. Loparo and A. Tokmakoff. Generation of 45 femtosecond pulses at 3 μm with a KNbO₃ optical parametric amplifier. *Opt. Comm.* **241**, 521 (2004).
8. C.J. Fecko, J.D. Eaves, J.J. Loparo, A. Tokmakoff and P.L. Geissler. Ultrafast hydrogen bond dynamics in the infrared spectroscopy of water. *Science.* **301**, 1698 (2003).
7. J.D. Eaves, C.J. Fecko, A.L. Stevens, P. Peng and A. Tokmakoff. Polarization-selective femtosecond Raman spectroscopy of low-frequency motions in hydrated protein films. *Chem. Phys. Lett.* **376**, 20 (2003).
6. C.J. Fecko, J.D. Eaves and A. Tokmakoff. Isotropic and anisotropic Raman scattering from molecular liquids measured by spatially masked optical Kerr effect spectroscopy. *J. Chem. Phys.* **117**, 1139-1154 (2002).
5. C.J. Fecko, M.A. Freedman and T.A. Stephenson. Collision-induced electronic energy transfer from $v = 0$ of the E(0_g⁺) ion-pair state in I₂: Collisions with He and Ar. *J. Chem. Phys.* **116**, 1361-1369 (2002).
4. C.J. Fecko, M.A. Freedman and T.A. Stephenson. Collision-induced electronic energy transfer from $v = 0$ of the E(0_g⁺) ion-pair state in I₂: Collisions with I₂(X). *J. Chem. Phys.* **115**, 4132-4138 (2001).
3. W.R. Perkins, I. Ahmad, X. Li, D.J. Hirsh, G.R. Masters, C.J. Fecko, J. Lee, S. Ali, J. Nguyen, J. Schupsky, C. Herbert, A.S. Janoff and E. Mayhew. Novel therapeutic nanoparticles (lipocores): Trapping poorly water soluble compounds. *Int. J. Pharm.* **200**, 27-39 (2000).

2. M. Khalil, N. Demirdoven, O. Golonzka, C.J. Fecko and A. Tokmakoff. A phase-sensitive detection method using diffractive optics for polarization-selective femtosecond Raman spectroscopy. *J. Phys. Chem. A* **104**, 5711-5715 (2000).
1. M. Khalil, O. Golonzka, N. Demirdoven, C.J. Fecko and A. Tokmakoff. Polarization-selective femtosecond Raman spectroscopy of isotropic and anisotropic vibrational dynamics in liquids. *Chem. Phys. Lett.* **321**, 231-237 (2000).

CONFERENCE PRESENTATIONS

8. C.J. Fecko, J.T. Lis and W.W. Webb. Imaging nucleosome dynamics during transcription. (oral presentation) 51st Annual Meeting of the Biophysical Society, Baltimore, MD, March 2007.
7. C.J. Fecko, G. Sun, K.M. Munson, A. Saunders, H. Chen, M.A. Foster, T.P. Begley, J.T. Lis and W.W. Webb. Protein-DNA crosslinking with ultrashort UV pulses. (oral presentation) 230th Meeting of the American Chemical Society, Washington D.C. August 2005.
6. C.J. Fecko, J.D. Eaves, J.J. Loparo, P.L. Geissler and A. Tokmakoff. Vibrational dynamics of liquid water observed by vibrational echo peak shift spectroscopy. (oral presentation) 225th Meeting of the American Chemical Society, New Orleans, LA. March 2003.
5. C.J. Fecko, J.D. Eaves, J.J. Loparo and A. Tokmakoff. Time-resolved IR and Raman spectroscopy of water. (poster presentation) Gordon Research Conference on Water and Aqueous Solutions, Plymouth, NH. August 2002.
4. C.J. Fecko, J.D. Eaves and A. Tokmakoff. Isotropic and anisotropic low-frequency Raman scattering of molecular liquids. (poster presentation) Gordon Research Conference on the Chemistry and Physics of Liquids, Plymouth, NH. August 2001.
3. C.J. Fecko, J.D. Eaves and A. Tokmakoff. Polarization selective low frequency Raman spectroscopy of liquids. (oral presentation) American Chemical Society New England Regional Meeting, Durham, NH. June 2001.
2. C.J. Fecko, J.D. Eaves and A. Tokmakoff. Polarization selective low frequency Raman spectroscopy of liquids. (poster presentation) 10th International Conference on Time-resolved Vibrational Spectroscopy, Okazaki, Japan. June 2001.
1. C.J. Fecko, A.L. Stevens, J.D. Eaves and A. Tokmakoff. Direct measurement of low-frequency dynamics of hydrated protein films using femtosecond Raman spectroscopy. (poster presentation) 221st Meeting of the American Chemical Society, San Diego, CA. April 2001.

PROFESSIONAL MEMBERSHIPS AND HONORS

Phi Beta Kappa
American Chemical Society
Biophysical Society
Sigma Xi Scientific Research Society