

- (24) “How to avoid torsional barriers on the approach to a conical intersection: Ultrafast photocyclic ring closure of *ortho*-terphenyl and 1,2-diphenylcyclohexene,” M. Smith, J. Snyder, and A. E. Bragg, *in preparation*.
- (23) “Exciton conformational dynamics of poly(3-hexylthiophene) (P3HT) in solution from time-resolved resonant-Raman spectroscopy,” W. Yu, J. Zhou, and A. E. Bragg, *Journal of Physical Chemistry Letters* **3**, 1321-1329 (2012).
- (22) “Nanometer-scale phase separation and preferential solvation in THF-water mixtures: Ultrafast electron hydration and recombination dynamics following CTTS excitation of  $I^-$ ,” A. E. Bragg, G. U. Kanu, and B. J. Schwartz, *Journal of Physical Chemistry Letters* **2**, 2797-2804 (2011).  
(Results highlighted in *Nature Chemistry*, **3**, 906 (2011))
- (21) “Watching the solvation of atoms in liquids one solvent molecule at a time,” A. E. Bragg, W. J. Glover, and B. J. Schwartz, *Physical Review Letters*, **104**, 233005 (2010).
- (20) “Charge carrier dynamics in semiconducting mercury cluster anions,” R. M. Young, G. B. Griffin, O. T. Ehrler, A. Kammrath, A. E. Bragg, J. R. R. Verlet, O. Cheshnovsky, and D. M. Neumark, *Physica Scripta*, **80**, 048102 (2009).
- (19) “Linear response breakdown in the solvation dynamics induced by atomic electron-transfer reactions,” A. E. Bragg, M. C. Cavanagh, and B. J. Schwartz, *Science*, **321**, 1817 (2008).  
(Article discussed in a “Perspective” written by Professor Richard Stratt, Brown University)
- (18) “Ultrafast charge-transfer-to-solvent dynamics of iodide in tetrahydrofuran. 2. Photoinduced electron transfer to counterions in solution,” A. E. Bragg and B. J. Schwartz, *Journal of Physical Chemistry A* **112**, 3530-3543 (2008).
- (17) “The ultrafast charge-transfer-to-solvent dynamics of iodide in tetrahydrofuran. 1. Exploring the roles of solvent and solute electronic structure in condensed-phase charge-transfer reactions,” A. E. Bragg and B. J. Schwartz, *Journal of Physical Chemistry B* **112**, 483-494 (2008).
- (16) “Dynamics of charge-transfer-to-solvent precursor states in  $I^-(H_2O)_n$  ( $n = 3-10$ ) clusters studied with photoelectron imaging,” A. Kammrath, J. R. R. Verlet, A. E. Bragg, G. B. Griffin, D. M. Neumark, *Journal of Physical Chemistry A* **109**, 11475-11483 (2005).
- (15) “Comment on ‘Characterization of excess electrons in water-cluster anions by quantum simulations,’” J. R. R. Verlet, A. E. Bragg, A. Kammrath, O. Cheshnovsky, and D. M. Neumark, *Science* **310**, 1769b (2005).

- (14) “Electronic relaxation dynamics of water-cluster anions,” A. E. Bragg, J. R. R. Verlet, A. Kammrath, O. Cheshnovsky, and D. M. Neumark, *Journal of the American Chemical Society* **127**, 15283-15295 (2005).
- (13) “Observation of large water-cluster anions with surface-bound excess electrons,” J. R. R. Verlet, A. E. Bragg, A. Kammrath, O. Cheshnovsky, and D. M. Neumark, *Science* **307**, 93-96 (2005). (Ranked among papers listed with *Science* magazine’s “Top 10 accomplishments in science,” 2004.)
- (12) “Time-resolved intraband electronic relaxation dynamics of  $\text{Hg}_n^-$  clusters ( $n=7-13, 15, 18$ ) excited at 1.0 eV,” A. E. Bragg, J. R. R. Verlet, A. Kammrath, O. Cheshnovsky, and D. M. Neumark, *Journal of Chemical Physics* **122**, 054314 (2005).
- (11) “Hydrated electron dynamics: From clusters to bulk,” A. E. Bragg, J. R. R. Verlet, A. Kammrath, O. Cheshnovsky, and D. M. Neumark, *Science* **306**, 669-671 (2004). (Article discussed in a “Perspective” written by Professor Ken Jordan, University of Pittsburgh; ranked among papers listed with *Science* magazine’s “Top 10 accomplishments in science,” 2004.)
- (10) “Time-resolved relaxation dynamics of  $\text{Hg}_n^-$  ( $11 \leq n \leq 16, n = 18$ ) clusters following intraband excitation at 1.5 eV,” J. R. R. Verlet, A. E. Bragg, A. Kammrath, O. Cheshnovsky, and D. M. Neumark, *Journal of Chemical Physics* **121**, 10015-10025 (2004).
- (9) “Femtosecond time-resolved photoelectron spectroscopy,” A. Stolow, A. E. Bragg, and D. M. Neumark, *Chemical Reviews* **104**, 1719-1757 (2004).
- (8) “ $\text{C}_6^-$  electronic relaxation dynamics probed via time-resolved photoelectron imaging (TRPEI),” A. E. Bragg, J. R. R. Verlet, A. Kammrath, and D. M. Neumark, *Journal of Chemical Physics* **121**, 3515-3526 (2004).
- (7) “Excited-state detachment dynamics and rotational coherences of  $\text{C}_2^-$  via time-resolved photoelectron imaging,” A. E. Bragg, R. Wester, A. V. Davis, A. Kammrath, and D. M. Neumark, *Chemical Physics Letters* **376**, 767-775 (2003).
- (6) “Time-resolved study of the symmetric  $\text{S}_\text{N}2$ -reaction  $\text{I}^- + \text{CH}_3\text{I}$ ,” R. Wester, A. E. Bragg, A. V. Davis, and D. M. Neumark, *Journal of Chemical Physics* **119**, 10032-10039 (2003).

- (5) “Vibrational relaxation in  $\text{I}_2^-(\text{Ar})_n$  ( $n = 1, 2, 6, 9$ ) and  $\text{I}_2^-(\text{CO}_2)_n$  ( $n = 1, 4, 5$ ) clusters excited by femtosecond stimulated emission pumping,” A. V. Davis, R. Wester, A. E. Bragg, and D. M. Neumark, *Journal of Chemical Physics* **119**, 2020-2031 (2003).
- (4) “Time-resolved photoelectron imaging of the photodissociation of  $\text{I}_2^-$ ,” A. V. Davis, R. Wester, A. E. Bragg and D. M. Neumark, *Journal of Chemical Physics* **118**, 999-1002 (2003).
- (3) “Cluster calorimetry by femtosecond stimulated emission pumping: Excitation and evaporative cooling of  $\text{I}_2^-(\text{CO}_2)_n$ ,” R. Wester, A. V. Davis, A. E. Bragg, and D. M. Neumark, *Physical Review A* **65**, 051201(R) (2002).
- (2) “Vibrational relaxation in clusters: Energy transfer in  $\text{I}_2^-(\text{CO}_2)_4$  excited by femtosecond stimulated emission pumping,” A. V. Davis, R. Wester, A. E. Bragg, and D. M. Neumark, *Journal of Chemical Physics* **117**, 4282-4292 (2002).
- (1) “Electronic relaxation dynamics of carbon cluster anions: Excitation of the  $\tilde{C} \leftarrow \tilde{X} 0_0^0$  transition in  $\text{C}_6^-$ ,” C. Frischkorn, A. E. Bragg, A. V. Davis, R. Wester, and D. M. Neumark, *Journal of Chemical Physics* **115**, 11185-11192 (2001).

### Conference presentations:

#### *Oral presentations:*

- (13) “Probing torsion-induced relaxation and reaction dynamics of poly-conjugated systems with time-resolved spectroscopies,” A. E. Bragg; invited to speak at the 60th Annual Meeting of the Western Spectroscopy Association (Pacific Grove, CA; January 2013).
- (12) “Torsion-induced non-adiabatic dynamics in small polyphenyls studied with time-resolved spectroscopies,” M. Smith, W. Yu, J. Zhou, and A. E. Bragg; 244th National Meeting of the American Chemical Society (Philadelphia, PA; August 22nd, 2012); “Electron and Energy Transfer Phenomena: At the Intersection of Electronic Structure Theory and Chemical Dynamics,” Division of Physical Chemistry.
- (11) “Resolving the solvation coordinate that accompanies electron-transfer reactions in liquids – one solvent molecule at a time,” A. E. Bragg, W. G. Glover, M. C. Cavanagh, S. C. Doan, and B. J. Schwartz; 239th National Meeting of the American Chemical Society (San Francisco, CA; March 22nd, 2010); “Dynamics in Clusters and Floppy Systems: Mutual Tests between Theory and Experiment,” Division of Physical Chemistry.

- (10) "Tracking the solvation dynamics that follow photo-initiated electron transfer reactions one solvent molecule at a time: Understanding a breakdown of linear response at the molecular level," A. E. Bragg, M. C. Cavanagh, and B. J. Schwartz; 238th National Meeting of the American Chemical Society (Washington DC; August 18th, 2009); "Postdoctoral Highlights," Division of Physical Chemistry.
- (9) "Counterion-dependent charge-transfer-to-solvent dynamics in tetrahydrofuran: Ultrafast electron-attachment dynamics of atomic species in solution," A. E. Bragg and B. J. Schwartz; 236th National Meeting of the American Chemical Society (Philadelphia, PA; August 20th, 2008); "Spectroscopic Probes of Chemical Dynamics in Gaseous and Condensed Phases," Division of Physical Chemistry.
- (8) "Electron-attachment dynamics of atomic species in solution beyond the diffusion limit: Ultrafast photoinduced formation of cation-electron 'tight-contact' pairs in liquid tetrahydrofuran (THF)," A. E. Bragg and B. J. Schwartz; Gordon Research Conference on Radiation Chemistry and Radiation-Driven Processes in Physics, Chemistry and Biology (Waterville, NH; July 9th, 2006).
- (7) "Atomic solvation dynamics and the breakdown of linear response," A. E. Bragg, M. C. Cavanagh, and B. J. Schwartz; 235th National Meeting of the American Chemical Society (New Orleans, LA; April 10th, 2008); "Optical Probes of Dynamics in Complex Environments - Non-equilibrium Dynamics and Solvation," Division of Physical Chemistry.
- (6) "Hydration dynamics of solvated electrons in THF-water mixtures," A. E. Bragg and B. J. Schwartz; 234th National Meeting of the American Chemical Society (Boston, MA; August 18th, 2007); "Hydration: From Clusters to Aqueous Solution - Electrons in Water," Division of Physical Chemistry.
- (5) " $(\text{Na}^+, e^-)$  contact pair formation dynamics following charge-transfer-to-solvent (CTTS) excitation of  $\text{Na}^+ \cdots \text{I}^-$  in tetrahydrofuran (THF)," A. E. Bragg and B. J. Schwartz; American Physical Society March Meeting 2007 (Denver, CO; March 7th, 2007); "Electron and Ion Solvation in Clusters and the Condensed Phase I," Division of Chemical Physics.
- (4) "The role of counterions in the charge-transfer-to-solvent (CTTS) dynamics of iodide salts in tetrahydrofuran (THF)," A. E. Bragg and B. J. Schwartz; 54th Annual Western Spectroscopy Association Conference (Pacific Grove, CA; February 1st, 2007).
- (3) "Hydrated electron dynamics: From cluster to bulk," A. E. Bragg, J. R. R. Verlet, A. Kammrath, O. Cheshnovsky, and D. M. Neumark; Pacificchem 2005 (Honolulu, HI; December 18th, 2005); "Frontiers in Structural and Functional Studies of Atomic and Molecular Clusters and Nanoparticles."

(2) “Time-resolved photoelectron imaging of intraband relaxation dynamics of  $\text{Hg}_n^-$ ,” A. E. Bragg, J. R. R. Verlet, A. Kammrath, O. Cheshnovsky, and D. M. Neumark; 59th Annual International Symposium on Molecular Spectroscopy (Columbus, OH; June 21st, 2004).

(1) “Intra- and interband relaxation dynamics of  $\text{Hg}_n^-$  clusters studied through time-resolved photoelectron imaging (TRPEI),” A. E. Bragg, J. R. R. Verlet, A. Kammrath, O. Cheshnovsky, and D. M. Neumark; 51st Annual Western Spectroscopy Conference (Pacific Grove, CA; January 30th, 2004).

*Posters:*

(8) “Understanding the details of solvation dynamics that follow photo-initiated electron-transfer reactions one solvent molecule at a time,” A. E. Bragg, S. C. Doan, M. C. Cavanagh, and B. J. Schwartz; Gordon Research Conference on Electronic Spectroscopy and Dynamics (Colby College, Waterville, ME; July 2009).

(7) “Understanding the details of solvation dynamics that follow photo-initiated electron-transfer reactions one solvent molecule at a time,” A. E. Bragg, S. C. Doan, M. C. Cavanagh, and B. J. Schwartz; Radiation Chemistry in the 21st Century – a Visionary Meeting (Notre Dame Radiation Laboratory, Notre Dame, IN; July 2009).

(6) “Charge-transfer-to-solvent (CTTS) dynamics of iodide salts in tetrahydrofuran (THF) and THF/water mixtures,” A. E. Bragg and B. J. Schwartz; 232nd National Meeting of the American Chemical Society (San Francisco, CA; September 13th, 2006); Poster Session, “Frontiers in Molecular Dynamics - Experiment,” Division of Physical Chemistry.

(5) “Relaxation dynamics of anionic mercury and water clusters via time-resolved photoelectron imaging studies,” A. E. Bragg, A. Kammrath, J. R. R. Verlet, O. Cheshnovsky, and D. M. Neumark; 227th National Meeting of the American Chemical Society (Anaheim, CA; March 2004); SciMix and Division of Physical Chemistry Poster Sessions.

(4) “Cluster electronic relaxation dynamics studied with anion time-resolved photoelectron imaging (TRPEI),” A. E. Bragg, J. R. R. Verlet, A. Kammrath, O. Cheshnovsky, and D. M. Neumark; Gordon Research Conference on Photoions, Photoionization, and Photodetachment (Queen’s College, Oxford University; September 2003).

(3) “Dynamics of electronically excited molecular anions via time-resolved photoelectron imaging (TRPEI),” A. E. Bragg, A. V. Davis, A. Kammrath, R. Wester, and D. M. Neumark; 50th Annual Western Spectroscopy Conference (Pacific Grove, CA; January 2003).

(2) “Excited state relaxation dynamics of linear carbon cluster anions,” A. E. Bragg, C. Frischkorn, A. V. Davis, R. Wester, and D. M. Neumark; Gordon Conference on Photoions, Photoionization, and Photodetachment (Williams College, Williams, MA; July 2001).

(1) “Excited state relaxation dynamics of linear carbon cluster anions,” A. E. Bragg, C. Frischkorn, A. V. Davis, R. Wester, and D. M. Neumark; 221st ACS National Meeting (San Diego, CA; March 2001); Division of Physical Chemistry Poster Session.