

**Curriculum Vitae: Arthur E. Bragg, Assistant Professor of Chemistry, Johns Hopkins University**

Address:

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**Education and Training**

Albion College	Chemistry	B.A., 1999
University of California, Berkeley	Chemistry	Ph.D., 2004
University of California, Los Angeles	Chemistry	Postdoc, 2005–2010

**Research and Professional Experience**

2010-present      Assistant Professor, Department of Chemistry, Johns Hopkins University  
March-June, 2010      Part-time Lecturer, Department of Chemistry & Biochemistry, UCLA

**Representative Publications**

- [1] Magnanelli TJ and Bragg AE. Time-resolved Raman spectroscopy of polaron pairs in poly-(3-hexylthiophene) (P3HT) aggregates. *J. Phys. Chem. Lett.* 2015 **6**, 438-445.
- [2] Donohoo-Vallett PJ and Bragg AE.  $\pi$ -delocalization and the vibrational spectroscopy of conjugated materials: Computational insights on the Raman frequency dispersion of thiophene, furan, and pyrrole oligomers and polymers. *J. Phys. Chem. B* 2015 **119**, 3583-3594.
- [3] Yu W, Donohoo-Vallett PJ, Zhou J, Bragg AE. Ultrafast photo-induced nuclear relaxation of a conformationally disordered conjugated polymer probed with transient absorption and femtosecond stimulated Raman spectroscopies. *J. Chem. Phys.* 2014 **141**, 044201.
- [4] Zhou J, Guo X, Katz HE and Bragg AE. Molecular switching via multiplicity-exclusive E/Z photoisomerization pathways. *J. Am. Chem. Soc.* 2015 **137**, 10841-10850.
- [5] Guo X, Zhou J, Siegler M, Bragg AE and Katz HE. Visible light-triggered molecular photoswitch based on reversible E/Z Isomerization of a 1,2-Dicyanoethene Derivative. *Angew. Chem.* 2015 **54**, 4782.
- [6] Zhou J and Bragg AE. Structural relaxation of photoexcited quaterthiophenes probed with vibrational specificity. *J. Phys. Chem. Lett.* 2015 **6**, 3496-3512.
- [7] Yu W, Zhou J, Bragg AE. Exciton conformational dynamics of poly(3-hexylthiophene) (P3HT) in solution from time-resolved resonant-Raman spectroscopy. *J. Phys. Chem. Lett.* 2012 **3**, 1321-1328.
- [8] Molloy MS, Snyder JA, Bragg AE. Structural and solvent control of nonadiabatic photochemical bond formation: Photocyclization of *o*-terphenyl in solution. *J. Phys. Chem. A* 2014 **118**, 3913-3925.
- [9] Smith MC, Snyder JA, Striefel BC, Bragg AE. Ultrafast Excited-State Dynamics of *ortho*-Terphenyl and 1,2-Diphenylcyclohexene: The Role of “Ethylenic Twisting” in the Nonadiabatic Photocyclization of Stilbene Analogs. *J. Phys. Chem. Lett.* 2013 **4**, 1895-1900.
- [10] Snyder JA and Bragg AE. Structural control of nonadiabatic bond formation: Photochemical formation and stability of substituted 4a,4b-dihydrotriphenylenes. *J. Phys. Chem. A* 2015 **119**, 3972.

**Synergistic Activities**

*1. Awards received.*

- NSF CAREER Award, 2015
- The Chancellor's Award for Postdoctoral Research, UCLA, 2010
- The Amgen Award for Postdoctoral Research, Molecular Biology Institute/Department of Chemistry & Biochemistry, UCLA, 2010

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- Postdoctoral Research Excellence Award, Molecular Biology Institute/Department of Chemistry & Biochemistry, UCLA, 2010
- Excellence in Postdoctoral Research, American Chemical Society, Division of Physical Chemistry, 2009
- National Science Foundation Graduate Research Fellowship, 1999-2002
- Barry M. Goldwater Scholarship, 1997-1999

2. *Conference and meeting participation* (in last two years):

- “Structure, dynamics and delocalization in conjugated polymers revealed with Raman spectroscopy.” Presentation at 248th National Meeting of the American Chemical Society (San Francisco; August 13, 2014); symposium on “Computational Spectroscopy,” Division of Physical Chemistry.
- “Structural and solvent control of nonadiabatic photochemical bond formation.” Presentation at Gordon Research Conference on *Atomic and Molecular Interactions* (July 17, 2014; Stonehill College).
- “Structure, dynamics, and delocalization in conjugated polymers revealed with Raman spectroscopy.” Presentation (poster) at Gordon Research Conference on *Vibrational Spectroscopy* (University of New England, Biddeford, ME, Aug. 3<sup>rd</sup>-8<sup>th</sup>, 2014).
- “Structural Dynamics and Heterogeneities of Localized Excited States in Conjugated Polymer Materials.” Invited presentation at Telluride Research Symposium on “*Quantum Dynamics & Spectroscopy in Material and Biological Systems*” (June 11<sup>th</sup>, 2015).
- “Structural Dynamics and Heterogeneities of Localized Excited States in Conjugated Polymer Materials.” Invited Presentation at the Meeting on Time-resolved Vibrational Spectroscopy (TRVS), Madison, WI (June 22<sup>nd</sup>, 2015).
- “Structural Dynamics and Heterogeneities of Localized Excited States in Conjugated Polymer Materials,” Contributed presentation at the 250<sup>th</sup> National Meeting of the American Chemical Society (Boston, MA; Aug. 16<sup>th</sup>-20<sup>th</sup>, 2015); symposium on “*Structure and dynamics in complex chemical systems: Gaining new insights through recent advances in time-resolved spectroscopies,*” Division of Physical Chemistry.
- Organizer of symposium on “*Structure and dynamics in complex chemical systems: Gaining new insights through recent advances in time-resolved spectroscopies,*” Division of Physical Chemistry, 250<sup>th</sup> National Meeting of the American Chemical Society (Aug. 16<sup>th</sup>-20<sup>th</sup>, 2015)

3. *Reviewing/editorship activities.* The PI currently reviews for *The Journal of Chemical Physics*, *The Journal of Physical Chemistry*, *The Journal of the American Chemical Society*, *Journal of Organic Chemistry*, and *Nature Communications*.
4. *Teaching:* The PI has developed a graduate course on time-dependent spectroscopy which serves to: (1) teach graduate students and advanced undergraduates a modern perspective on spectroscopy, thus allowing them to understand non-linear and coherent methods; (2) introduce students with varied research interests to spectroscopic methods now commonly used to interrogate chemical systems and materials, and (3) provide students joining the PI’s research laboratory with a background knowledge of time-dependent spectroscopy. This course is appropriate for students who have taken a junior-level physical chemistry course. The lecture notes developed for this class fill the void between conventional and advanced spectroscopy texts.
5. *Outreach activities:* The PI and his graduate students have developed educational outreach activities that center on rudimentary concepts in spectroscopy – including demonstrations and activities illustrating basic principles of light (diffraction), as well as the relationship between light absorption/emission, color, and molecular and atomic properties. Outreach relationships have been established through the JHU School of Education and Center for Educational Outreach, and the PI’s lab routinely hosts outreach events and lab tours for local K-12 science teachers and AP Chemistry classes. A key component of the group’s outreach has involved developing/adapting inexpensive

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UV-Visible absorption spectrometers based on webcams for use with newly developed curriculum for Baltimore City classrooms.

**Collaborators and Co-Editors**

*Coauthors and Collaborators*

Coauthors in recent years include other researchers at Johns Hopkins or student researchers within the PI's own research group (listed separately below):

Mr. Benjamin C. Striefel (Graduate student, Dept. of Chemistry, Johns Hopkins University)

Dr. Xin Guo (Post-doctoral scholar, Dept. of Material Science, Johns Hopkins University)

Dr. Maxime Siegler (Crystallographer, Dept. of Chemistry, Johns Hopkins University)

Professor Howard Katz (Dept. of Material Science, Johns Hopkins University)

In the last four years the PI has also coauthored papers and abstracts with his post-doctoral advisor's group. Coauthors include:

Mr. Godwin Kanu (Graduate student, Dept. of Chemistry and Biochemistry, UCLA)

Professor Benjamin J. Schwartz (Dept. of Chemistry and Biochemistry, UCLA)

Research collaborators in the last 4 years:

Professor Susanna Thon, Department of Electrical and Computer Engineering, Johns Hopkins University

Professor Howard Katz, Department of Material Science, Johns Hopkins University

Professor J. D. Tovar, Department of Chemistry, Johns Hopkins University

Professor Holger Bettinger, Department of Chemistry, University of Tübingen (Germany)

Professor Rebekka Klausen, Department of Chemistry, Johns Hopkins University

Professor Craig Townsend, Department of Chemistry, Johns Hopkins University

*Co-Editors*      None

**Graduate and Postdoctoral Advisors and Advisees**

*Principle Investigator's Graduate and Postdoctoral Advisors*

*Graduate advisor:*      Professor Daniel M. Neumark (Dept. of Chemistry, UC Berkeley)

*Postdoctoral advisor:*      Professor Benjamin J. Schwartz (Dept. of Chemistry and Biochemistry, UCLA)

*Principle Investigator's Graduate-student Advisees and Post-doctoral Associates*

Dr. Paul Donohoo-Vallett (Post-doctoral associate 1/2014-9/2014; currently AAAS fellow with DOE)

Mr. Timothy Magnanelli (Dept. of Chemistry, Johns Hopkins University)

Ms. Molly (Smith) Molloy (Dept. of Chemistry, Johns Hopkins University)

Mr. Kenneth Smith (Dept. of Chemistry, Johns Hopkins University)

Mr. Joshua Snyder (Dept. of Chemistry, Johns Hopkins University)

Mr. Wenjian Yu (Dept. of Chemistry, Johns Hopkins University)

Mr. Jiawang Zhou (Dept. of Chemistry, Johns Hopkins University)