

## Binyomin Abrams

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CONTACT INFORMATION	590 Commonwealth Ave - Room 299 Department of Chemistry Boston University Boston, MA 02215	<i>Voice:</i> (617) 353-2480 <i>Fax:</i> (617) 353-6466 <i>E-mail:</i> abramsb@bu.edu <i>Web:</i> people.bu.edu/abramsb/research/ people.bu.edu/abramsb/courses/
RESEARCH INTERESTS	I strive to develop a career based on a balance between top-level undergraduate instruction and research in chemical education. Summaries of many of my chemical education projects can be found on my research website: <a href="http://people.bu.edu/abramsb/research/">people.bu.edu/abramsb/research/</a> .	
EDUCATION	<b>New York University</b> , New York, New York USA Ph.D., Theoretical Physical Chemistry, August 2008 <ul style="list-style-type: none"><li>• Thesis: “Novel Approaches to Free Energy Calculations via Adiabatic Molecular Dynamics”</li><li>• Advisor: Mark E. Tuckerman</li></ul> <b>Rensselaer Polytechnic Institute</b> , Troy, New York USA M.S., Organic Chemistry (Organometallics), May 2003 <ul style="list-style-type: none"><li>• Thesis: “Carbonylation-driven Alkyl-Isomerization of Indenylruthenium Alkyl Complexes”</li></ul> B.S.( <i>magna cum laude</i> ), Chemistry, December 2002	
HONORS AND AWARDS	<i>Metcalf Award for Excellence in Teaching</i> : Boston University, 2015. <i>Templeton Prize for Excellence in Student Advising</i> : Boston University CAS, 2010. <i>Sokol Fellow</i> , New York University, 2007-2008. <i>MacCracken Fellow</i> , New York University, 2003. <i>Rensselaer Medal</i> , Rensselaer Polytechnic Institute, 1998.	
SERVICE AND LEADERSHIP	Director of General Chemistry, BU Department of Chemistry, 2019-Present. Senior Faculty Fellow, <i>CTL Faculty Fellows</i> , BU Center for Teaching and Learning, 2019-2020. Associate Director, <i>Natural Sciences Division</i> , BU Core Curriculum, 2015-2019. Member, <i>Undergraduate Program Committee</i> , BU Department of Chemistry, 2009-Present. Director, <i>BU Chemistry Writing Program</i> , BU Department of Chemistry, 2009-Present. Member, <i>Premedical and Predental Advisory Board</i> , Boston University, 2009-2019. <i>Masters of Art in Teaching of Chemistry Liaison</i> , BU School of Education, 2010-Present. <i>Trustee</i> , Chabad House Bowery, 2010-Present. Member, <i>PROSTARS Summer Bridge</i> , BU CAS, 2012. Faculty Consultant, <i>McGraw-Hill Higher Education</i> , 2013-2015. Consultant, <i>New England Hebrew Academy</i> (Brookline, MA), 2010-Present. Member, <i>Faculty Teaching Awards Committee</i> , BU Office of the Provost, 2015-2016. Member, <i>Trustee Scholar Selection Committee</i> , BU Office of the Provost, 2015-2018. Member, <i>BU Hub Implementation Task Force Satellite Committee</i> , BU Provost Office, 2016-2017. Member, <i>BU Laboratory Safety Committee</i> , BU Office of Research Compliance, 2017-2019. Faculty Representative, <i>Faculty Council</i> , BU Office of the Provost, 2018-2020.	

ACADEMIC  
EXPERIENCE

**Boston University**, Boston, Massachusetts USA

*Master Lecturer*, Chemistry

**August, 2018 - present**

*Director of General Chemistry*, Chemistry

**July, 2019 - present**

*Associate Director*, Core Curriculum

**August, 2015 - June, 2019**

*Senior Lecturer*, Chemistry

**August, 2013 - July, 2018**

*Lecturer*, Chemistry

**August, 2008 - July, 2013**

Includes lecturing in 10 undergraduate courses, advising of undergraduate students, maintaining an undergraduate research program in both chemical education and theoretical chemistry, and departmental service (curriculum development, student advising, MAT Chemistry Liaison, Undergraduate Policy Committee, Commencement Committee). Mentoring of other faculty on teaching practices, course development, and more. Metcalf Award for Excellence in Teaching (2015) and Templeton Prize for Excellence in student advising (2010).

In the role of Associate Director of the Core Curriculum for the Natural Sciences was responsible for developing a new, groundbreaking interdisciplinary course for the Core Curriculum in collaboration with faculty from neuroscience, computer science, and physics. Course management and oversight, and programmatic innovation.

*Director of General Chemistry* position was created in Spring 2019 and involves oversight and organization of 14 Chemistry courses that fall under the category of general chemistry. Work with faculty in all courses on learning outcomes assessment, course pedagogy, implementation of evidence-based teaching practices, and coordination.

**Touro College**, New York, New York USA

*Adjunct Professor*

**January, 2007 - May, 2008**

Includes lecturing in two courses in freshmen mathematics.

**Chicago State University**, New York, New York USA

*Adjunct Professor*

**August, 2005 - May, 2006**

Lecturing two courses in freshmen chemistry to nursing students. Chicago State University Student at Large program in conjunction with National Institute of Technology (New York, NY).

**New York University**, New York, New York USA

*Research Assistant*

**July, 2003 - July, 2008**

Performed research (Advisor: Mark Tuckerman) in the field of classical molecular dynamics, focusing on free energy calculations using adiabatic molecular dynamics. Sokol Research Fellowship (2007-2008). Teragrid-TAC grant.

*Lab Director / Teaching Assistant*

**September, 2003 - July, 2005**

Managed over 20 teaching assistants and responsible for the education of more than 500 undergraduate students, per semester. Duties included the setup, operation, and safety, of the general chemistry labs.

**Rensselaer Polytechnic Institute**, Troy, New York USA

*Research Assistant*

**January, 1999 - June, 2003**

Performed research in the field of synthetic organometallic chemistry. Lab safety compliance officer.

*Teaching Assistant*

**September, 1999 - May, 2003**

Recitation instructor for general and organic chemistry. Work in lab development. Duties included: discussion sessions, lecturing, exam writing, proctoring of exams, and grading.

PUBLICATIONS

**Lab Manuals**

Abrams, B. *Analytical Chemistry Lab Manual*, Kendall Hunt Publishing Company, Dubuque, IA, 2010 (2nd edition, 2018).

Abrams, B. *Quantitative General Chemistry Lab Manual*, Kendall Hunt Publishing Company, Dubuque, IA, 2010 (2nd edition, 2018).

Rugg, B. and Abrams, J.B. *General Chemistry I Laboratory Manual, 1st ed.*, Kendall Hunt Publishing Company, Dubuque, IA, 2005. *Second Edition: 2006*.

Rugg, B. and Abrams, J.B. *General Chemistry II Laboratory Manual, 1st ed.*, Kendall Hunt Publishing Company, Dubuque, IA, 2005. *Second Edition: 2006*.

## Papers

“An Effective and Inexpensive HPLC Analog for First-Year Students: Burette Chromatography of food dyes in drinks,” Brian Stankus, Rosemary White, and Binyomin Abrams, *J. Chem. Educ.* **96**, 739-744 (2019).

“Teaching Fundamental Skills in Microsoft Excel to First-Year Students in Quantitative Analysis,” Samuel J. Rubin and Binyomin Abrams, *J. Chem. Educ.* **92**, 1840-1845 (2015).

“Towards an all-atom model for meta-poly(phenylene ethynylene) class of foldamers using the CHARMM27 force field: studies of the structure and unfolding pathway of foldamers of various lengths,” Morris Cohen, Nathan Gallup, Adam Moser, and Binyomin Abrams, *The Nucleus*. **91**, 8 (2013).

“Efficient and Direct Generation of Multidimensional Free Energy Surfaces via Adiabatic Dynamics without Coordinate Transformations,” J.B. Abrams and M.E. Tuckerman, *J. Phys. Chem. B*. **112**, 15742-15757 (2008).

“Equilibrium Statistical Mechanics, Non-Hamiltonian Molecular Dynamics, and Novel Applications from Resonance-Free Timesteps to Adiabatic Free Energy Dynamics,” J.B. Abrams, M.E. Tuckerman, and G.J. Martyna., *Lect. Notes. Phys.* **703**, 135-187 (2006).

“Efficient and precise solvation free energies via alchemical adiabatic molecular dynamics,” J.B. Abrams, L. Russo, and M.E. Tuckerman, *J. Chem. Phys.* **125**, 074115 (2006).

“Mapping the Backbone Dihedral Free-Energy Surfaces in Small Peptides in Solution Using Adiabatic Free-Energy Dynamics,” L. Rosso, J.B. Abrams, and M.E. Tuckerman, *J. Phys. Chem. B* **109**, 4162-4167 (2005).

## Editor and Reviewer

Sapling. *Interactive General Chemistry*, Macmillan (Reviewer, 2017).

Mosher. *Chemistry, The Practical Science, 2e*, WH Freeman (Reviewer, 2016).

MHHE. *ALEKS Chemistry* (Consultant, 2014 and 2015).

College Board Advanced Placement in Chemistry, *Chemistry Achievement Level Evaluator*, (Evaluator, 2014).

Tro, N. J. *Chemistry: Structure and Properties*, Pearson (Editor, 2013).

Tro, N. J. *Chemistry: Structure and Properties*, Pearson (Reviewer, 2013).

College Board Advanced Placement in Chemistry, *New AP Chemistry Curriculum*, (Reviewer, 2011).

Harris, D. C. *Exploring Chemical Analysis 5e*, W.H. Freeman (Reviewer, 2010).

*GRE Chemistry Study Guide*, Princeton Review, 2005 (Expert Editor, 2005).

Llyod, P. M. "Experiments in General Chemistry I", B. Abrams Editor. Kendall Hunt, Dubuque, IA, 2006 (Science Editor, 2006).

## IN PREPARATION

### Papers in Preparation

"Use of visual representations during instruction and their effects on student understanding of quantum concepts in general chemistry," Emily Allen, Peter Garik, and Binyomin Abrams\* (in preparation).

"Improved critical thinking and engagement through research-based writing instruction for first-year chemistry majors," Binyomin Abrams\* and Joseph Bizup (in preparation).

"HCl(aq) yes; NaCl(aq) no – importance of symbolism in creating meaningful microscopic understanding of chemical systems," Binyomin Abrams\* and Melissa Burrows (submitted, *J. Chem. Educ.*).

## TALKS AND PRESENTATIONS

### Chemical Education

*Invited Workshop*, "Skipping Bohr: a modern (math-free) quantum mechanics approach to teaching atomic structure", *ChemEd 2019, Naperville, IL, July 2019*.

*Chair of symposium*, "Transforming the Undergraduate Chemistry Laboratory to Teach Transferable Skills and Develop Young Scientists", *257th ACS National Meeting, Orlando, FL, April 2019*.

*Invited Talk*, "Stop writing/teaching lab reports: integrating authentic research-based writing into quantitative analysis courses", *257th ACS National Meeting, Orlando, FL, April 2019*.

*Contributed Talk*, "Using Learning Assistants to Mentor Skills in First-Year Chemistry Labs", *257th ACS National Meeting, Orlando, FL, April 2019*.

*Contributed Talk*, "Replacing the Bohr atomic model with an accessible picture of how atoms and light truly interact", *257th ACS National Meeting, Orlando, FL, April 2019*.

*Invited Panelist*, "Assessing Translation of Critical Pre-Requisite Concepts through the Undergraduate Curriculum in Chemistry (Phase 1)", *Boston University, 5th Annual Assessment Symposium, Boston, MA, March 2019*.

*Chair of symposium*, "Teaching Transferable Skills in the Chemistry Laboratory Curriculum: Real Research, Real Training", *Biennial Conference on Chemical Education, Notre Dame, IN, August 2018*.

*Invited Talk*, "Stop writing/teaching lab reports: integrating authentic research-based writing into quantitative analysis courses", *Biennial Conference on Chemical Education, Notre Dame, IN, August 2018*.

*Invited Talk*, "Metacognition 101: Success for First-Year College Students", *BU GROW, Boston, MA, July 2018*.

*Contributed Talk*, "Replacing the Bohr atomic model with an accessible picture of how atoms and light truly interact", *Biennial Conference on Chemical Education, Notre Dame, IN, August 2018*.

*Invited Talk*, "Opening a faculty dialog on transforming chemistry instruction", *CSU Northridge*,

*Northridge, CA, January 2017.*

*Invited Talk, "Teaching effectively using technology", BU Center for Teaching and Learning, Boston, MA, August 2016.*

*Contributed Talk, "Allen, E., Abrams, B., Dill, D., Garik, P. The Value of Multiple Visual Representations for Student Learning of Quantum Concepts in General Chemistry", NARST National Meeting, Baltimore, Maryland, April 2016.*

*Invited Talk, "Ninety years of quantum mechanics: why are we still teaching the Bohr atom?", BU Alumni Association, Boston, MA, March 2016.*

*Invited Panelist, "Careers for post-graduates in chemistry", MIT, Cambridge, MA, January 2016.*

*Invited Talk, "Ninety years of quantum mechanics: why are we still teaching the Bohr atom?", Rhett Talk (Ted talk), Boston, MA, September 2015.*

*Contributed Talk, "Teaching using a hybrid course model: Crafting and using effective out-of-class activities that engage and prepare students", ACS National Meeting, Boston, MA, August 2015.*

*Contributed Talk, "Abrams, B., Bassina, N., Dill, D. Using learning assistants to effectively implement course transformations in general chemistry", ACS National Meeting, Boston, MA, August 2015.*

*Contributed Talk, "Real research / real genres: Integrating research-based writing into an introductory quantitative chemistry lab sequence for majors", ACS National Meeting, Boston, MA, August 2015.*

*Contributed Talk, "An accessible picture of what light is and how it interacts with matter", ACS National Meeting, Boston, MA, August 2015.*

*Invited Talk, "Effectively preparing students for college-level general chemistry", ALEKS Symposium on Learning using Technology, Boston, MA, May 2015.*

*Contributed Talk, "Allen, E., Abrams, B., Dill, D., Garik, P. Teaching Quantum Concepts with an Activity-Based Hybrid Classroom Paradigm.", National Association of Research on Science Teaching (NARST), Chicago, Illinois, April 2015.*

*Invited Panelist, "Teaching for Transfer Seminar", BU CAS Writing Program, Boston, MA, January 2015.*

*Contributed Talk, "Using the Inverted Classroom in Chemistry to Teach the Abstract Concepts of Atomic Structure and the Interaction of Light with Matter", National Science Teachers Association (NSTA) National Meeting, Boston, MA, April 2014.*

*Contributed Talk, "Real Research / Real Genres: Integrating Research-Based Writing into an Introductory Chemistry Sequence for Majors", Conference on College Composition and Communication, Indianapolis, IN, March 2014.*

*Invited Talk, "Teaching using a hybrid course model: crafting and using effective out-of-class activities that engage and prepare students", Boston University Center for Excellence and Innovation in Teaching (CEIT), Boston, MA, October 2013.*

*Invited Talk, "Teaching Writing in the Sciences: Effectively Incorporating Writing Instruction into Existing Courses", Boston University Center for Excellence and Innovation in Teaching (CEIT), Boston, MA, April 2013.*

*Contributed Talk, "Tracking the Explosive Growth of the Learning Assistant Program and its Transformative Impact on STEM Education at BU", Boston University Instructional Innovation Conference, Boston, MA, March 8, 2013.*

*Invited Talk, "Boston University's Chemical Writing Program: Designing and Implementing a Scalable Writing-Intensive Science Course CH111/CH112", George Washington University, Writing in the Disciplines, Washington, DC, February 25, 2013.*

*Invited Talk, "Crafting a successful undergraduate research proposal", Boston University CHEMIA, Boston, MA, February 20, 2013.*

*Contributed Talk, "Analytical chemistry as an honors-level alternative to the traditional freshmen chemistry lab", ACS 240th National Meeting, Boston, MA, August 2010.*

## **Physical Chemistry**

*Invited Talk, "Advances in Conformation Sampling: Solutions to the 'Rough' Free-Energy Landscape Problem", Boston University Chemistry PChem Colloquium, Boston, MA, October 2009.*

*Invited Talk, "Free Energies from Adiabatic Dynamics", Boston University Water Group, Boston, MA, October 2008.*

*Contributed Talk, "Efficient, Transformation-Free, Conformational Sampling via Driven Adiabatic Free Energy Dynamics", MARM ACS Meeting, Queens, NY, May 2008..*

*Contributed Talk, "Efficient and precise solvation free energies via adiabatic dynamics", National Meeting of the ACS, San Francisco, CA, September 2006.*

*Contributed Talk, "Advances in Conformational Sampling and Free Energy Calculations via Adiabatic Dynamics", National Meeting of the ACS, Washington, D.C., September 2005.*

*Poster Presentation, "Advances in Conformational Sampling and Free Energy Calculations via Adiabatic Dynamics", Computer Simulations in Condensed Matter: International School of Solid State Physics - Ettore Majorana Foundation and Centre for Scientific Culture, Erice, Sicily, Italy, July 2005.*

*Contributed Talk, "Advances in Conformational Sampling and Free Energy Calculations via Adiabatic Dynamics", MARM ACS Meeting - Rutgers University, Piscataway, NJ, May 2005.*

*Poster Presentation, "Advances in Conformational Sampling and Free Energy Calculations via Adiabatic Dynamics", New York University, New York, NY, February 2005.*

*Ph.D. Qualifying Seminar, "Towards an Adiabatic Dynamics Method for Computing Solvation Free Energies", New York University, New York, NY, December 2004.*

## **Organometallic Chemistry**

*Invited Talk, "Introducing the Carbonylation-Driven Alkyl-Isomerization of Ind-enylruthenium Alkyl Complexes", Robert A. Laudise Symposium - Union College, (Schenectady, NY, September 2001.*

*Contributed Talk, "Introducing the Carbonylation-Driven Alkyl-Isomerization of Ind-enylruthenium Alkyl Complexes", NERM ACS Meeting, Durham, NH, August 2001.*

*Contributed Talk, "Role of  $\eta^3$ -Indenyliron Complexes during the Carbonylation and Isomerization of Indenyliron Alkyl Complexes", Robert A Laudise Symposium - Union College, Schenectady, NY, September 2000.*

TEACHING  
EXPERIENCE –  
UNDERGRADUATE  
(2008-PRESENT)

**CAS CH101** *General Chemistry I* Boston University  
Undergraduate Course (1st semester)  
*Fall and Summer, annually (2009-Present)*

**CAS CH102** *General Chemistry II* Boston University  
Undergraduate Course (2nd semester)  
*Spring and Summer, annually (2009-Present)*

*Freshman Chemistry for science concentrators who require a two-semester general chemistry course. Aqueous solutions and solubility, atoms, atomic structure, molecular structure, and quantum. Equilibrium, thermodynamics, electrochemistry, atomic structure and bonding, kinetics, and selected chemical systems. (320 students)*

**CAS CH109** *General and Quantitative Analytical Chemistry Lab I* Boston University  
Undergraduate Lab Course (1st semester)  
*Fall semester, annually (2008-2018)*

**CAS CH110** *General and Quantitative Analytical Chemistry Lab II* Boston University  
Undergraduate Lab Course (2nd semester)  
*Spring semester, annually (2009-2019)*

*Freshmen chemistry for students concentrating in the sciences, especially for those considering biochemistry-molecular biology (BMB) as a major, but who do not enroll in CH111/112. This course is not for chemistry majors or concentrators. The lab component focuses on quantitative analysis and an introduction to analytical chemistry while remaining topically-relevant to the framework of a general chemistry lab course. One hour pre-lab lecture and four hour lab required. (150 students)*

**CAS CH111** *Intensive General and Quantitative Analytical Chemistry Lab I* Boston University  
Undergraduate Lab Course (1st semester)  
*Fall semester, annually (2008-Present)*

**CAS CH112** *Intensive General and Quantitative Analytical Chemistry Lab II* Boston University  
Undergraduate Lab Course (2nd semester)  
*Spring semester, annually (2009-Present)*

*Intensive two-semester sequence for students concentrating in chemistry or in the sciences. The course provides a brief review of stoichiometry, gas-laws, and other fundamentals. The course provides extensive consideration of equilibrium, thermodynamics, atomic structure, and molecular structure. The lab component is a fast-paced introduction to analytical chemistry. Students gain skills in quantitative analysis techniques, statistics, and instrumental analysis. Through the Chemical Writing Assistant Program (CWAP), students who complete CH111 and CH112 receive equivalency for their research-based writing requirement (WR150). (85 students)*

**CAS CH174** *Principles of Organic Chemistry* Boston University  
Undergraduate Course (cross listed as MET CH176)  
*Spring 2010, Spring 2011*

*One-semester overview of Organic Chemistry designed for students who only require a brief, one-semester, course in organic chemistry. Topics include: structure, function, stereochemistry, reactivity, and mechanisms.*

**CAS CH201** *Quantitative Analytical Chemistry Lab* Boston University  
Undergraduate Course  
*Fall and summer, annually (2009-2019)*

*Advanced laboratory component to supplement CH101/102. Designed for chemistry, biochemistry, and molecular biology majors who took the CH101/102 and require advanced analytical chemistry to complete the sequence. Topics include titrations, sample preparation, statistics, Beer's Law, chromatography, instrumental analysis (UV, AAS, HPLC), and quantitative analysis.*

**CAS CH116** *General Chemistry 2 with Integrated Science Experience Lab* Boston University  
Undergraduate Course  
*Spring 2016, Spring 2017*

*Freshman Chemistry 2 for science concentrators, with an integrated chemistry/biology/neuroscience lab experience. Lab focuses on development of research skills, lab techniques, and an understanding of the integrated nature of the biological sciences and their dependence on chemistry fundamentals.*

**CAS CC212** *Core Natural Sciences 2: Reality* Boston University  
Undergraduate Course  
*Spring, 2016-2018*

*Studies the paradigm-shifting scientific theories that forced the twentieth century into a new understanding of our relation to the physical world, beginning with Quantum Theory and Relativity and then exploring the Second Law of Thermodynamics, emergent properties, and Neuroscience.*

**CAS FY103** *Techniques and Skills for Succeeding in STEM Courses* Boston University  
Undergraduate Course  
*Fall 2016, Spring 2017*

*The major goal of this course is to provide students with techniques and skills which they can use to succeed in STEM courses and beyond. Throughout these 8-weeks, a wide range of topics will be covered. These include, but are not limited to, metacognition, time management, and identification and dissection of effective study techniques. After this course, we hope that you will find yourself to be a much more effective individual in both the academic and professional realm.*

TEACHING  
EXPERIENCE –  
GRADUATE  
(2008-PRESENT)

**GRS CH903** *Pedagogical Innovation in Chemistry* Boston University  
Graduate Course  
*Fall 2018, Fall 2019*

*In this course, students investigate evidence-based practices in chemistry instruction, novel approaches to teaching topics traditionally considered problematic in chemistry education, strategies for dealing with common misconceptions in chemistry learning and teaching, and engagement strategies for developing chemical literacy in students.*

**GRS CH699** *Teaching College Chemistry* Boston University  
Graduate Course  
*Fall and Spring, annually (2008-present)*

*This course provides training and mentoring to graduate students in chemistry in their roles as teaching assistants. Graduate students learn essential skills in classroom management, working with students in lab and discussion sections, helping students who are struggling, and effective instructional techniques. Exercises include microteaching assignments, course preparation, and assessment strategies.*

**GRS CHXXX** *Chemistry Graduate Students Teaching Training Seminar* Boston University  
Graduate Course  
*Fall semester, annually (2018-present)*

*This multi-day workshop focuses on goals and expectations for teaching in the chemistry department. Workload management, equitable treatment of students, helping students who struggle, and effective presentation strategies are among the topics covered.*

MENTORING AND  
ADVISING

#### **Undergraduate Advising**

- Faculty advisor to between 15 and 25 chemistry and chemistry:biochemistry majors, as well as several students pursuing minors in chemistry.
- Work with faculty and students in the biology and neuroscience departments during summer



*orientation advising to provide guidance to students about first-year chemistry course selection.*

- *Collaboration with the College of Arts and Sciences advisors to develop materials and training for advising undeclared students about chemistry course selection.*

#### **Undergraduate Research Students** (*Chemical Education*)

<i>Brian Stankus</i>	<i>2009-2011</i>	<i>Development of modular analytical chemistry labs for freshmen</i>
	<i>2011-2013</i>	<i>Workshops for freshmen students in the sciences (Presently: Ph.D. Chemistry, Brown University)</i>
<i>Sanghee Lim</i>	<i>2010-2011</i>	<i>Development of 'Electroanalytical determination of complex ion equilibrium formation constants' lab (Presently: BU Medical School Ph.D./M.D.)</i>
<i>Samuel Rubin</i>	<i>2012-2015</i>	<i>Teaching fundamental skills in Excel to freshmen (Presently: M.D., BU School of Medicine)</i>
<i>Andrew Klufas</i>	<i>2016-2017</i>	<i>Techniques and Skills for Succeeding in STEM Courses (FY103) (Presently: M.D., BU School of Medicine)</i>
<i>Anna Manevich</i>	<i>2017-2019</i>	<i>Addressing deficiencies in the preparation of AP and general chemistry students for upper-level coursework in chemistry</i>
<i>Ethan Gelting</i>	<i>2018-2019</i>	<i>Office hours: studying student usage practices and outcomes from attending office hours in chemistry</i>
<i>Surya Pulukuri</i>	<i>2019-Present</i>	<i>Prepare with CARE – helping students prepare for upper-division chemistry courses</i>

#### **Undergraduate Research Students** (*Theoretical Chemistry*)

<i>Nathan Gallup</i>	<i>2010-2013</i>	<i>All-atom, flexible model of chloroform for the CHARMM27 force field (Summer UROP Fellowship, 2012; Honors Thesis) (Presently: Ph.D. Chemistry, UCLA)</i>
<i>Morris Cohen</i>	<i>2011-2013</i>	<i>Parameterization of mPPE foldamer (Summer UROP Fellowship, 2012; James Flack Norris &amp; Theodore William Richards Undergraduate Summer Scholarship, 2012; Honors Thesis) (Presently: Ph.D. Chemistry, University of Chicago)</i>
<i>Anna Booras</i>	<i>2013-2016</i>	<i>MD simulations of water-soluble mPPE foldamers (Summer UROP Fellowship 2013, 2014, 2015) (First place, 250th ACS Meeting COMP Poster session)</i>

#### **Graduate Dissertations**

<i>Emily Allen</i>	<i>2012-2015</i>	<i>Multiple visual representations for quantum concepts (Presently: Lecturer, BU CAS)</i>
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## Collaborations

<i>Joseph Bizup</i>	<i>2009-2014</i>	<i>BU Chemical Writing Program</i>
<i>Emily Allen Peter Garik (BU SED)</i>	<i>2012-2015</i>	<i>Multiple visual representations for quantum concepts; activities for teachers</i>
<i>Paul Lipton Kathryn Spilios</i>	<i>2014-2017</i>	<i>Integrated Science Experience (ISE) - Chem/Bio/Neuro lab courses</i>
<i>Paul Lipton</i>	<i>2014-2017</i>	<i>CC212 - Core Natural Sciences: Reality</i>
<i>Rosina Georgiadis</i>	<i>2017-Present</i>	<i>TAPintoChemistry</i>

## CURRENT SUPPORT

- BU PROVOST Assessment Grant (2019-2020)*  
“General Chemistry Concept Inventory for departmental assessment (Phase 2)”  
*P.I. Binyomin Abrams*  
*7/2019-6/2020 (\$5,000)*  
*For the deploying, assessing, and refining the GOAL concept inventory to assess general chemistry courses.*
- Digital, Learning, and Innovations Grant (2019-2021)*  
“Prepare with CARE”  
*P.I. Binyomin Abrams*  
*7/2019-1/2021 (\$15,000)*  
*For the development of resources for students for reviewing general chemistry and preparing upper-division chemistry courses.*

## PREVIOUS SUPPORT

- BU PROVOST Assessment Grant (2018-2019)*  
“General Chemistry Concept Inventory for departmental assessment (Phase 1)”  
*P.I. Binyomin Abrams*  
*7/2018-6/2019 (\$5,000)*  
*For the development of a validated concept inventory to assess general chemistry courses.*
- Learning Technologies Development Grant (2017-2018)*  
“TAPintoChemistry”  
*P.I. Binyomin Abrams, Rosina Georgiadis*  
*3/2017-12/2018 (\$15,000)*  
*For the development of novel videos for practice of chemistry instruction.*
- BU PROVOST Interdisciplinary Course Development (2015-2016)*  
“Integrating Introductory Science at BU: the Integrated Science Experience (ISE)”  
*P.I. Binyomin Abrams*  
*3/2015-6/2016 (\$40,000)*  
*For the development of an integrated CH/BI lab course for freshmen students.*
- XSEDE XRAC GRANT (TG-CHE130105 Renewal)*  
“Simulations of water-soluble, helical meta-poly(phenylene ethynylene) foldamers: parametrization, structure, and function”  
*P.I. Binyomin Abrams*  
*1/2015-12/2015 (\$10,365, 299,302 SU)*

*BU PROVOST IDC SEED GRANT (2014)*

*“Integrating Introductory Science at BU: the Integrated Science Experience (ISE)”*

*P.I. Binyomin Abrams*

*7/2014-12/2014 (\$10,000)*

*For the development of two integrated CH/BI lab courses for freshmen and sophomore students.*

*XSEDE XRAC GRANT (TG-CHE130105)*

*“Simulations of water-soluble, helical meta-poly(phenylene ethynylene) foldamers: parametrization, structure, and function”*

*P.I. Binyomin Abrams*

*10/2013-10/2014 (\$22,880, 660,888 SU)*

*BU GUTS (2013-2014)*

*“Workshops and Activities for Incoming Students in the Sciences (WAISS)”*

*P.I. Binyomin Abrams*

*8/2013-5/2014 (\$1,000)*

*For the development of a series of workshops for helping freshmen acclimate to college-level science and math learning.*

*XSEDE STARTUP ALLOCATION GRANT (TG-CHE130056)*

*“Towards an All-Atom Model for m-Poly(phenylene ethynylene) Class of Foldamers using the CHARMM27 Force Field: Structure and Unfolding Pathway of Foldamers of Various Lengths”*

*P.I. Binyomin Abrams*

*4/2013-4/2014 (100,000 SU)*

*BU GUTS (2012-2013)*

*“Boston University Molecular Dynamics Instructional Tutorials (BUMDIT)”*

*P.I. Binyomin Abrams*

*11/2012-7/2013 (\$2,000)*

*For the development of a series of tutorials/workshops for teaching computational chemistry basics to undergraduate students and beginning graduate students.*

*XSEDE EDUCATION ALLOCATION GRANT (TG-CHE120026)*

*“Undergraduate Exploration of Chemical Computing”*

*P.I. Binyomin Abrams*

*1/2012-1/2013 (200,000 SU)*

*For instruction of undergraduate students in techniques for computational chemistry.*

*BU GUTS (2010-2011)*

*“Development of MACLab for Freshmen”*

*P.I. Binyomin Abrams*

*9/2010-6/2011 (\$1,300)*

*For the development of novel analytical lab modules for freshmen chemistry*

PROFESSIONAL  
AFFILIATIONS

*Member, American Chemical Society (ACS)*

*Member, American Association for the Advancement of Science (AAAS)*

SKILLS

- *Languages: English, French, and Hebrew; Written and Spoken.*
- *Computer Languages: Python, C++, Java, Pascal.*
- *Applications: L<sup>A</sup>T<sub>E</sub>X, spreadsheet, and presentation software*
- *Operating Systems: Unix/Linux, Mac, Windows.*

REFERENCES

*John Caradonna*  
*Professor, Department of Chemistry*  
*Boston University*  
*617.353.1692, caradonn@bu.edu*

*Paul Lipton*  
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