Yael S. Elmatad

Contact Information

New York University
Department of Physics
4 Washington Place Office 610
New York, NY 10003

Office: (212) 998-7720
E-mail: yael@nyu.edu
Web: http://files.nyu.edu/yse200/public

Citizenship USA

Education

University of California, Berkeley, Berkeley, CA USA

Ph.D., Physical Chemistry, August 2011

- Thesis Title: *Analysis & Simulation of Dynamics in Supercooled Liquids*
- Research Adviser: Professor David Chandler
- Research: Statistical physics of supercooled liquids from analysis of experimental data to simulations and analytics of kinetically constrained lattice models of glassformers.

New York University, *College of Arts & Science*, New York, NY USA

B.S., Chemistry, May 2006

- College of Arts & Science Valedictorian
- *Summa cum Laude*, with University and Departmental Honors
- Minor in Computer Science
- Minor in Mathematics
- Minor in Hebrew Language & Literature
- Research Adviser: Professor Zlatko Bačić
- Research: Equilibrium and vibrationally-averaged structure of small molecular clusters as well as clusters of H_2 in water clathrates for potential use for hydrogen storage.

Appointments

New York University, *College of Arts & Science*, New York, NY USA

- NYU Postdoctoral and Transition Program for Academic Diversity Fellowship
  Center for Soft Matter Research, Physics Department, Fall 2011-

International Experience

Visiting Research Scholar

- Juan Garrahan's Research Group
- March-April 2010
- School of Physics & Astronomy, University of Nottingham, Nottingham, UK

Publications

Elmatad, Y. S and R. L. Jack. Space-time Phase Transitions in the East Model with a Softened Kinetic Constraint. *J. Chem. Phys.*, **138**, 12A531, 2013.

Elmatad, Y. S and A. S. Keys. Manifestations of Dynamical Facilitation in Glassy Materials. *Phys.. Rev. E* **85,** 061502, 2012.

Elmatad, Y. S. Fragile-to-Strong Crossover in Supercooled Liquids Remains Elusive. *Proc. Natl. Acad. Sci.* **108,** E230, 2011.

Elmatad, Y. S., D. Chandler, and J. P. Garrahan. Corresponding States of Structural Glass Formers II. *J. Phys. Chem. B* **114,** 17113-17119, 2010.

Elmatad, Y. S., R. L. Jack, D. Chandler, and J. P. Garrahan. Finite-temperature Critical Point of a Glass Transition. *Proc. Natl. Acad. Sci.* **107,** 12793-12798, 2010.

Elmatad, Y. S., D. Chandler, and J. P. Garrahan. Corresponding States of Structural Glass Formers. *J. Phys. Chem. B* **113,** 5563-5567, 2009.

Elmatad, Y. S., M. Zitolo, D. Fera, and A. Jerschow. Examining Gas Kinetics in MATLAB. *Chem. Educator* **12,** 89-93, 2007.

Sebastianelli, F., M. Xu, Y. S. Elmatad, J. W. Moskowitz and Z. Bačić. Hydrogen Molecules in the Small Dodecahedral Cage of a Clathrate Hydrate: Quantum Translation-Rotation Dynamics of the Confined Molecules. *J. Phys. Chem. C* **111,** 2497-2504, 2007.

Xu, M., Y. S. Elmatad, F. Sebastianelli, J. W. Moskowitz and Z. Bačić. Hydrogen Molecules in the Small Dodecahedral Cage of a Clathrate Hydrate: Quantum Five-dimensional Calculations of the Coupled Translation-rotation Eigenstates. *J. Phys. Chem. B* **110,** 24806-24811, 2006.

Sebastianelli, F. Y. S. Elmatad, H. Jiang, and Z. Bačić. HF in Clusters of Molecular Hydrogen: II. Quantum solvation by H_2 Isotopomers, Cluster Rigidity, and Comparison with CO-doped Parahydrogen Clusters. *J. Chem. Phys* **125,** 164313, 2006.

Presentations

"Amorphous Glassy Materials: Solids or Liquids?"
- *Invited*, NYU, College of Arts and Science Scholars Lecture, March 2013.
- New York, NY

"The Glass Transition: A Facilitation Perspective"
- *Invited*, Columbia University, Physical Chemistry Seminar Series, October 2012.
- New York, NY

"Manifestations of dynamical facilitation in glassy materials "
- Presentation at American Physical Society Meeting, March 2012
- Boston, MA

"Finite-temperature critical point of a glass transition"
- Presentation at American Physical Society Meeting, March 2011
- Dallas, TX

"Jamming and the glass transition''
- Presentation for Youth Radio
- Oakland, CA

"Letting go of the reins: A finite temperature critical point in a glass-former model"
- Presentation to Itamar Procaccia Research Group, April 2010
- Weizmann Institute Rehovot, Israel

Mini Statistical Mechanics Meeting
- Poster Presenter, January 2007, 2008, 2009, 2010, 2011
- UC Berkeley Berkeley, CA

"Dynamic phase transitions in glass former models"
- Graduate Research Conference
- Presentation to College of Chemistry, April 2008

- UC Berkeley Berkeley, CA

Workshop on Metastability and Rare Events in Complex Systems
- Poster Presenter, February 2008
- The Erwin Schrödinger Institute, Vienna, Austria

National Awards

Office of Naval Research
- NDSEG, Graduate Fellowship, 2007-2010

Department of Energy
- Computational Science Graduate Fellowship, 2007 (Declined)

National Science Foundation
- Graduate Research Fellowship, 2006-2011

The Bill & Melinda Gates Foundation
- Gates Cambridge Scholarship, 2006 (Declined)

Iota Sigma Pi: National Honor Society for Women in Chemistry
- Undergraduate Award for Excellence in Chemistry, 2006
- Awarded to one graduating female chemistry undergraduate in the United States per year.

Barry M. Goldwater Scholarship and Excellence in Education Program
- Scholarship Recipient, 2005-2006

Arnold & Mabel Beckman Foundation
- Beckman Scholar, 2004-2005

National Science Foundation
- Research Experience for Undergraduates (REU), 2004-2005

University Awards

New York University, *Faculty of Arts & Science*, New York, NY USA
- NYU Postdoctoral and Transition Program for Academic Diversity Fellowship (Fall 2011)

University of California, Berkeley, Berkeley, CA USA
- Outstanding Graduate Student Instructor, 2008

New York University, *College of Arts & Science*, New York, NY USA
- Roland P. Beattie Memorial Award presented to class Valedictorian, 2006
- Phi Beta Kappa/Albert Borgman Prize for Best Honors Thesis in the Sciences, 2006
- Chemistry Departmental Scholar Award, 2006
- George Granger Brown Scholar in Chemistry, 2005
- Chemistry Department Research Conference Award Recipient, 2005
- Lillian Lindhardt-Solotoroff Award, 2005
- President's Service Award in Leadership (Personal), 2005
- President's Service Award in Programming (with Draper Chemical Society), 2005
- Chemistry Department Research Fellow, 2004
- New York State Applied Spectroscopy Society Undergraduate Award, 2004
- Dean's Undergraduate Research Fund Scholar, 2004
- Sokol Freshman Chemistry Scholar, 2002
- Thomas Sweeney Scholarship, 2002-2006

- Presidential Honors Scholar, 2002-2006
- Dean's List 2002-2006

Honor Societies

Iota Sigma Pi: National Honor Society for Women in Chemistry
- Inducted 2006

Phi Beta Kappa
- Inducted 2005

Phi Lambda Upsilon: National Chemistry Honor Society
- Inducted 2004

Leadership

Iota Sigma Pi (ISP), Hydrogen Chapter at UC Berkeley
- President, 2008-2009 and 2010-2011
- Vice President, 2009-2010
- ISP at UC Berkeley is a women's organization for chemists. We focus on career development events as well outreach projects to the UC community as well as the community at large. Events include women's tea hours where professors as well as women in industry come to speak to our group and brown bag lunches with female faculty members. We have worked with Girls Inc. of Alameda county to recruit volunteers for their afterschool programs for 4th grade girls. We also organize graduate-undergraduate mentorship programs at UC Berkeley.

NYU Draper Chemical Society
- President 2005-2006
- Secretary 2004-2005
- The Draper Society is the undergraduate chemistry society at NYU. I was one of the founding members of the society in 2004 and it's first secretary. I created and planned an undergraduate research fair which highlighted opportunities for research across disciplines. This event is now held yearly and for our efforts our group received a President's Service Award for programming. I created a partnership with a local high school that sent NYU students to act as classroom assistants. Additionally, we held a regular seminar where professors presented their work to our group. We also held workshops geared towards students interested in pursuing graduate studies. My work with the Draper Society earned me a President's Service Award for Leadership.

Phi Lambda Upsilon, Alpha Lambda Chapter at NYU
- Vice President 2005-2006
- Secretary 2004-2005
- Phi Lambda Upsilon is the national honor society in chemistry. Our group mostly worked with the Draper Society to put on joint programs. We also coordinated an upperclassman-freshman mentorship program.

NYU Model United Nations (MUN)
- President 2005-2006
- Treasurer 2003-2005
- As the treasurer of the MUN team I was responsible for handling all of the group's finances. This included handling the funding we received from the university to attend our two yearly national MUN conference (one at UPenn and one at Harvard). I trained members in parliamentary procedure and submitted budget proposals to ensure that our club continued to be funded. As the President, I acted as head delegate during conferences.

Teaching Experience

New York University, New York, NY USA

Professor

- Phys 140: Thermodynamics & Statistical Physics (Spring 2012 & 2013)
- Phys 123: Quantum Mechanics I (Fall 2012)

University of California, Berkeley, Berkeley, CA USA

Graduate Student Instructor (GSI)

- Chem 220A: Thermodynamics and Statistical Mechanics (Graduate Level)
  - Fall 2009 with Professor Phillip Geissler
  - Was the sole teaching assistant for 50+ student graduate level course. Responsible for weekly discussion session, holding office hours, transcribing lectures to post as notes for students on the course website, grading problem sets and exams, and writing solution sets. Responsible for presenting several lectures on internal molecular partition functions when Professor Geissler was out of town. Was also responsible for introducing new graduate students to computer programming.

- Chem 120B: Physical Chemistry (Undergraduate Level Thermodynamics & Statistical Mechanics)
  - Fall 2007 with Professor David Chandler
  - Was one of two teaching assistants for a class of about 70 students. Responsibilities included: grading exams and problem sets, holding discussion session and office hours, transcribing lectures to post as notes for students on the course website, and writing solution sets.
  - Received an Outstanding Graduate Student Instructor Award from UC Berkeley for my work in this course.

- Chem 4A: General Chemistry and Quantitative Analysis (Undergraduate Level)
  - Fall 2006 with Professor Martin Head-Gordon and Professor Luciano Moretto
  - Responsibilities included: 4h/week laboratory sections, grading lab reports and exams, and holding exam reviews and office hours.

New York University, New York, NY USA

Teaching Assistant (TA)

- Chem V25.0651 & V25.0652: Physical Chemistry I & II (Undergraduate Level Quantum & Statistical Mechanics)
  - Fall 2004 & Spring 2005 with Professor Zlatko Bačić & Professor Paul Gans
  - Introductory level of quantum mechanics (Fall) and thermodynamics and statistical mechanics (Spring) for 3rd and 4th year undergraduates.
  - One of two TAs for course of about 60 students. Responsibilities included: grading exams and problem sets, holding weekly discussion session, and holding office hours.

Clinic Instructor

- Chem V25.0125 & V25.0126: General Chemistry I & II (Undergraduate Level)
  - Fall 2003 & Spring 2004 with Professor John Halpin
  - Responsibilities included: holding weekly clinic sessions where students worked collaboratively in groups to solve problem sets. Was also responsible for writing the problem sets used during these clinic sessions.

Other

Hacker School, Brooklyn, NY USA

Attendee, Summer 2012

- Three month computer science workshop ("writers' retreat for hackers"). Focused on high performance computing (parallel programming) as well as investigated data science topics.

Community Service

Women in Science (WINS), New York University , 2011-Present

- Mentor female undergraduates majoring in science and technology fields. .

Girls Inc., Girls Inc. of Alameda County, SMART Program, 2008-2009

- Volunteered biweekly with Girls Inc. working with 4th graders in an Oakland, CA public school. SMART is an afterschool program that seeks to foster an interest in science and mathematics in young girls. As a volunteer, I worked with the instructor to encouraged young girls to be interested in scientific inquiry by teaching them about our environment and performing experiments with them.
- This project was spearheaded by Iota Sigma Pi, the women honor's society in chemistry where we recruited about 15 volunteers to participate.

University Neighborhood High School, NYC 2004-2006

- Volunteered weekly as a tutor in a chemistry classroom for high school students in a low-income neighborhood. Personally initiated the program as well as organized students through the NYU Draper Chemical Society to go on various days of the week. In total, about 20 volunteers went weekly to the school to help the teacher with demonstrations, lessons, and the students with problem sets.
- Additionally, volunteered with the school's Model United Nations team along with a few other members of the NYU Model United Nations team. Helped students with their position papers for the UNA-USA Model UN conference at the UN during weekly meetings. Also, acted as a chaperone for the students when they visited the UN to participate in the conference.

The Door, NYC 2002-2004

- After school tutor for low-income students, many of whom were recent immigrants. Volunteered weekly helping students with homework, mostly in science and math.
- Placement at The Door through the NYU Dean's Service Honor Corps

References

Available upon request