

# ELENA G STREKALOVA

Dual Citizenship: United States & Russia

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## AREA OF SPECIALTY

Statistical Physics • Computational Modeling • Computer Simulations • Analytic Theories

## EDUCATION BOSTON UNIVERSITY, BOSTON, MA

Doctor of Philosophy, Physics 2012

Master of Arts, Physics 2011

## UNIVERSITY OF MASSACHUSETTS BOSTON, BOSTON, MA

Master of Science, Chemistry, *summa cum laude* 2006

Bachelor of Science, Chemistry and Physics, Biology Minor *summa cum laude* 2006

## SKILLS

- UNIX/Linux, Mac OSX, Windows NT/XP, VPython, C, Unix shell scripting, HTML, Gnuplot, Mathematica, Photoshop, LaTeX.
- Monte Carlo, Molecular Dynamics and All-atom simulations.
- Supercomputers: Carried out massive simulations on IBM BladeCenter Linux Cluster and multi-core SGI computer clusters.

## EXPERIENCE MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MA

*Postdoctoral Associate* May 2012–present

- Apply density functional theory (DFT) to gain insights into physical properties of disordered mesoporous materials, such as cement.
- Use analytical theories to understand water adsorption isotherms in gel pores of cement.

## MUSEUM OF SCIENCE, BOSTON, MA

*Science Interpreter* 2004–present

- My mission: to transform America's relationship with science and technology by engaging visitors in subjects of biological optical effects of thin-films through interpretations and answering questions about butterflies.
- Trained 20+ volunteers and interns to work in the Butterfly Garden exhibit.
- Developed educational materials for the exhibit.
- Improved exhibit functionality by solving technical problems.
- Taught and engaged the elementary school children to rediscover physics, chemistry and biology by observing live butterflies.

## BOSTON UNIVERSITY, BOSTON, MA

*Research Assistant* 2007–2012

- Wrote an efficient C code for Monte Carlo simulations with Wolff cluster algorithm of the 2D coarse-grained model of water confined in a fixed matrix of particles to study liquid polyamorphism. The program allows to simulate more than 160,000 water molecules within 24 hours.
- Demonstrated the crucial effects of the structure of the confinement on liquid-liquid phase transition by using Discrete Molecular Dynamics simulations of the 3D spherically symmetric ramp potential model of water confined in a fixed matrix of particles.
- Reinforced the knowledge of the nature of the phase transitions in confined water by finite size scaling of the thermodynamic response functions and the 4th-order cumulants.

**UNIVERSITY OF MASSACHUSETTS BOSTON, BOSTON, MA***Teaching Assistant and Lab instructor*

2004–2006

- Taught general and organic chemistry laboratories.
- Developed blackboard and presentation skills.

**MASSACHUSETTS EYE AND EAR INFIRMARY, BOSTON, MA***Medical Research Assistant*

2003–2004

- Demonstrated the benefits of Gelfilm Myringoplasty by analyzing patients' medical records and databases.
- Handled sensitive and confidential patient information.
- Worked in conjunction with physicians, administrative staff and patients.

**HONORS, AWARDS and FELLOWSHIPS**

Provost Award, Science and Engineering poster competition	Boston University, Boston, MA	2011
University Honors	University of Massachusetts Boston, Boston, MA	2006
Ethel and Herman Rosansky Chemistry Scholarship	University of Massachusetts Boston, Boston, MA	2005
ACS award in Analytical Chemistry	University of Massachusetts Boston, Boston, MA	2004
Undergraduate Summer Research Fellowship	Princeton University, Princeton, NJ	2004
Litton Industries Merit Scholarship	University of Massachusetts Boston, Boston, MA	2003
Women Merit Scholarship	University of Massachusetts Boston, Boston, MA	2003
Director's List for consistent <i>summa cum laude</i> performance	University of Massachusetts Boston, Boston, MA	2002–2006
Dean's list	University of Massachusetts Boston, Boston, MA	2001–2006

**PUBLICATIONS**

**E. G. Strekalova**, J. Luo, H. E. Stanley, G. Franzese, S. V. Buldyrev, *Nanoparticle confinement in anomalous liquids* Physical Review Letters **109**, 105701 (2012)

**E. G. Strekalova**, M. G. Mazza, H. E. Stanley, and G. Franzese, *Hydrophobic nanoconfinement suppresses fluctuations in supercooled water*, Journal of Physics: Condensed Matter, **24**, 064111 (2012)

**E. G. Strekalova**, D. Corradini, M. G. Mazza, S. V. Buldyrev, P. Gallo, G. Franzese, and H. E. Stanley, *Effect of Hydrophobic Environments on the Hypothesized Liquid-Liquid Critical Point of Water*, Journal of Biological Physics, **38**(1) 97-111, (2011)

**E. G. Strekalova**, M. G. Mazza, H. E. Stanley, and G. Franzese, *Large Decrease of Fluctuations for Supercooled Water in Hydrophobic Nanoconfinement*, Physical Review Letters **106**, 145701 (2011)

G. Franzese, A. Hernando-Martinez, P. Kumar, M. G. Mazza, K. Stokely, **E. G. Strekalova**, F. de los Santos, H. E. Stanley, *Phase Transitions and Dynamics in Bulk and Interfacial Water*, Journal of Physics: Condensed Matter **22**, 284103 (2010)

M. G. Mazza, K. Stokely, **E. G. Strekalova**, H. E. Stanley, and G. Franzese, *Cluster Monte Carlo and numerical mean field analysis for the water liquid-liquid phase transition*, Computer Physics Communications **180**, 497–502 (2009)

**LANGUAGES** Russian, French

**INTERESTS** Skiing • Argentine Tango • Scuba diving • Piano • Travel • Photography

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