

Curriculum Vitae

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CURRENT POSITION

July 2014 - *Associate Department Chair*, Department of Chemistry,
July 2011 - *Professor*, Department of Chemistry, Rice University,
Department of Chemical and Biomolecular Engineering, Rice University,
Primary Investigator, Center for Theoretical Biological Physics, Rice University,

PERSONAL

Born: September 3, 1967, Vinnitsa, Ukraine, USSR
US citizen

EDUCATION

M.S. in Chemistry, Moscow State University, June 1991, Adviser: Professor L.N. Sidorov.

M.S. in Chemistry, Cornell University, May 1996.

Ph.D in Chemistry, Cornell University, January 1998, Adviser: Professor B. Widom.

1980-1984: Moscow State University Correspondence Mathematical High School.

1984-1991: Moscow State University, Department of Chemistry, top place, first class diploma.

1988-1990: Landau Institute for Theoretical Physics, Academy of Sciences of the USSR,
Moscow: Passed 3 exams of the "Landau Theoretical Minimum":
Mathematics I, Mathematics II, and Classical Mechanics.

1991-1992: Postgraduate School, Department of Chemistry, Moscow State University.

1993-1994: Graduate School, Department of Chemistry, University of Kentucky.

1994-1998: Graduate School, Department of Chemistry, Cornell University.

POSITIONS

1988-1992: *Laboratory Technician*, Laboratory of Thermochemistry, Department of
Chemistry, Moscow State University.

January 1998-June 1998: *Visiting Scientist*, Department of Chemistry, Cornell University.

June 1998-August 2000: *Postdoctoral Research Associate*, Research group of
Prof. M.E. Fisher, Institute for Physical Science and Technology, University of
Maryland.

2000-2007 - *Assistant Professor*, Department of Chemistry,
Department of Chemical and Biomolecular Engineering, Rice University.
2007-2011 - *Associate Professor*, Department of Chemistry,
Department of Chemical and Biomolecular Engineering, Rice University.
Fall 2008- Summer 2009 - *Visiting Professor*, Department of Physics,
Ludwig-Maximilian University Munich, Germany.
Summer 2010 - *Visiting Professor*, Laboratory of Physical Chemistry, ESPCI, Paris, France.
Fall 2011, Spring 2017 - *Visiting Professor*, Fudan University, Shanghai, China.
Fall 2015 - *Visiting Professor*, Oxford University, Department of Physics, Oxford, UK
Visiting Professor, Imperial College, Department of Chemistry, London, UK

HONORS and AWARDS

- Second Prize Winner in Chemistry of All-Ukrainian Olympiads between high-school students (1982, 1983).
- Moscow State University N.N. Semenov Memorial Fellowship (1989-1991).
- Outstanding First-Year Graduate Student, ACCOUNTS OF CHEMICAL RESEARCH Graduate Student Prize (1993).
- Cornell University Howard Neal Wachter Memorial Prize for outstanding work in Physical Chemistry (1996-97).
- Camille and Henry Dreyfus New Faculty Award (2000).
- NSF CAREER Award (2002).
- Alfred P. Sloan Fellowship (2004).
- Hamill Innovation Award (2006).
- Humboldt Research Fellowship for Experienced Scientists(2008).
- IUPAC Young Observer (2011).
- Fellow of the American Physical Society (2015).

SYNERGISTIC ACTIVITIES

- Editorial Board: *Journal of Physics D* (from 2015).
- Editorial Board: *Biophysical Journal* (from 2016).

TEACHING EXPERIENCE

- University of Kentucky: Teaching Assistant for freshman General Chemistry, Spring/Fall 1993.
- Cornell University: Teaching Assistant for freshman Advanced General Chemistry, Fall 1994, Spring/Fall 1995, Spring 1996.
- Cornell University: Teaching Assistant for graduate Statistical Physics, Spring 1998.
- Rice University: Lecturer for graduate Classical and Statistical Thermodynamics, Spring 2001, Spring 2002, Spring 2003, Spring 2004, Spring 2015, Spring 2016, Spring 2017.
- Rice University: Lecturer for undergraduate Physical Chemistry (Introduction to Quantum Mechanics), Fall 2001, Fall 2002, Fall 2003, Fall 2006.
- Rice University: Lecturer for undergraduate Physical Chemistry (Classical and Statistical Thermodynamics), Spring 2005, Spring 2006, Spring 2007, Spring 2008.
- Rice University: Lecturer for graduate Chemical Kinetics, Fall 2005, Fall 2007, Fall 2016.

- Rice University: Lecturer for graduate Biophysical Chemistry, Fall 2006, Spring 2009, Spring 2011.
- Rice University: Lecturer for graduate Quantum Mechanics, Fall 2009, Fall 2010, Fall 2014.
- Rice University: Lecturer for graduate Physical Organic Chemistry, Spring 2012, Spring 2013, Spring 2014.
- Rice University: Lecturer for graduate Chemical Physics of Condensed and Biological Matter, Fall 2012.

RESEARCH INTERESTS and EXPERIENCE

Theoretical and Experimental Physical Chemistry, Theoretical Biophysics and Statistical Mechanics.

Specifically:

- Dynamics of cancer progression
- Mechanisms of Kinetic Proofreading in Biological Systems
- Ionic liquids and their applications
- Transport of polymers and small metabolites through biological channels.
- Protein-DNA interactions.
- Dynamics of singlet fission processes.
- Photo-induced redding in fluorescent proteins.
- Electron transport in fluorescent proteins.
- Formation of morphogen gradients in the biological development
- Dynamics of breaking weak chemical bonds.
- Mechanisms and Dynamics of Artificial Molecular Motors, Rotors and Nanocars
- Protein nucleation and crystallization.
- Mechanisms and dynamics of cytoskeleton protein filaments.
- Critical properties of ionic systems. Lattice models of electrolytes.
- Theory of biological molecular motors.
- Dynamics of polymers in dense media. Repton model of polymers.
- Asymmetric simple exclusion processes. Driven lattice gases.
- Stochastic and nonequilibrium thermodynamics.
- Fluctuations in the structure of equilibrium interfaces.
- Hydrophobic interactions.
- Infrared spectroscopy of inorganic molecules.
- Mass-spectroscopy and thermochemistry of high-temperature superconductors and fullerenes.

H-INDEX: 40 (July 2017)

Publications: 157 papers in peer-reviewed articles, 7 invited review articles, 3 book chapters, 1 book.

PERSONAL REFERENCES

Professor Benjamin Widom

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