

Sarah L. Perry

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Department of Chemical Engineering
University of Massachusetts Amherst
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Research Interests

My research utilizes self-assembly, molecular design, and microfluidic technologies to generate biologically relevant microenvironments for the study and application of biomacromolecules. Individually, microfluidics represent an enabling technology for the time-resolved analysis of enzyme structural dynamics, while control over molecular interactions in self-assembling polyelectrolyte systems can be used to examine the interplay between biomacromolecules and the intracellular environment. Together, these capabilities can be coupled to generate artificial organelle-like structures for use in applications ranging from biochemistry to bioenergetics, biocatalysis, and biomedicine. Furthermore, this work has tremendous pedagogical potential to inspire students to work at the intersection of chemistry, biology, and engineering.

Academic Positions

Assistant Professor – Department of Chemical Engineering – University of Massachusetts Amherst, 2014 – present

Postdoctoral Researcher – Institute for Molecular Engineering – University of Chicago, 2012 – 2014

Prof. Matthew Tirrell, Advisor

Postdoctoral Researcher – Department of Bioengineering – University of California at Berkeley, 2011 – 2012

Prof. Matthew Tirrell, Advisor

Education

Ph.D. – Chemical & Biomolecular Engineering – University of Illinois at Urbana-Champaign, 2010

Title: "Microfluidic Platforms for the Characterization of *In Meso* Membrane Protein Crystallization"

Prof. Paul J.A. Kenis, Advisor

M.S. – Chemical Engineering – University of Arizona, 2005

Title: "Development of Novel Gas Phase Passivation Chemistries for Silicon Surfaces"

Prof. Anthony J. Muscat, Advisor

B.S. – Chemistry – University of Arizona, 2003

Magna cum Laude

B.S. – Chemical Engineering – University of Arizona, 2002

Magna cum Laude, Honors College Degree

Research Experience

University of Chicago Institute for Molecular Engineering (Chicago, IL) March 2012 – August 2014

Investigated the structure and self-assembly of biomimetic polyelectrolyte and coacervate systems for use in the development of biomimetic microenvironments for applications in biophysics, medicine, and biocatalysis.

University of California at Berkeley Bioengineering (Berkeley, CA) January 2011 – February 2012

Investigated nucleic acid/surfactant films for the transfection and reprogramming of stem cells.

University of Illinois Chemical & Biomolecular Engineering (Urbana, IL) August 2005 – December 2010

Investigated the crystallization and *in situ* X-ray analysis of membrane proteins using microfluidic technology. Examined the phase behavior of self-assembling lipidic systems for use in membrane protein crystallization.

University of Arizona Chemical & Environmental Engineering (Tucson, AZ) January 2001 – August 2005

Investigated the chemistry of gas phase surface preparation for semiconductor applications.

Researched fluid microdynamics associated with "Lab on a Chip" for the semiconductor industry.

Portland State University Research Intern (Portland, OR) June – August 1997

Performed laboratory research on efficient, plant-mimicking, solid-state solar cells.

PUBLICATIONS, PATENTS, AND PRESENTATIONS

Publications

(*indicates corresponding authorship)

- 1) D. Priftis, L. Leon, Z. Song, S.L. Perry, K.O. Margossian, A. Tropnikova, J. Cheng, M. Tirrell, *Self-Assembly of α -Helical Polypeptides Driven by Complex Coacervation*, *Angewandte Chemie International Edition*, 2015, **54**(38), 11128-11132.
- 2) S.L. Perry,* C.E. Sing,* *PRISM-based Theory of Complex Coacervation: Excluded Volume versus Chain Correlation*, *Macromolecules*, 2015, **48**(14), 5040-5053.
- 3) A.S. Pawate, V. Šrajcar, J. Schieferstein, S. Guha, R. Henning, I. Kosheleva, M. Schmidt, Z. Ren, P.J.A. Kenis, S.L. Perry,* *Towards Time-Resolved Serial Crystallography in a Microfluidic Device*, *Acta Crystallographica, Section F: Structural Biology Communications*, 2015, **71**, 823-830.
- 4) K.Q. Hoffmann, S.L. Perry, L. Leon, D. Priftis, M. Tirrell, J.J. de Pablo, *A Molecular View of the Role of Chirality in Charge-Driven Polypeptide Complexation*, *Soft Matter*, 2015, **11**, 1525-1538.
- 5) S.L. Perry, L. Leon, K.Q. Hoffmann, M.J. Kade, D. Priftis, K.A. Black, D. Wong, R.A. Klein, C.F. Pierce, K.O. Margossian, J.K. Whitmer, J. Qin, J.J. de Pablo, M. Tirrell, *Chirality Selected Phase Behavior in Ionic Polypeptide Complexes*, *Nature Communications*, 2015, **6**, 6052.
- 6) S.L. Perry,* S. Guha, A.S. Pawate, R. Henning, I. Kosheleva, V. Šrajcar, P.J.A. Kenis, Z. Ren, *In Situ Serial Laue Diffraction on a Microfluidic Crystallization Device*, *Journal of Applied Crystallography*, 2014, **47**, 1975-1982.
- 7) D.V. Krogstad, S.H. Choi, N.A. Lynd, D.J. Andrus, S.L. Perry, J.D. Gopez, C.J. Hawker, E.J. Kramer, M. Tirrell, *Small Angle Neutron Scattering Study of Complex Coacervate Micelles and Hydrogels Formed from Ionic Diblock and Triblock Copolymers*, *Journal of Physical Chemistry B*, 2014, **118**, 13011-13018.
- 8) K.A. Black, D. Priftis, S.L. Perry, J. Yip, W.Y. Byun, M. Tirrell, *Protein Encapsulation via Polypeptide Complex Coacervation*, *ACS Macro Letters*, 2014, **3**, 1088-1091.
Highlighted on the C&EN Biological and Materials SCENES.
Highlighted in: *Charged Polymers Package Proteins*, *Chemical & Engineering News*, 2014, **92**(45), 30.
- 9) S.L. Perry,* Y. Li, D. Priftis, L. Leon, M. Tirrell, *The Effect of Salt on the Complex Coacervation of Vinyl Polyelectrolytes*, *Polymers*, 2014, **6**, 1756-1772.
- 10) J. Qin, D. Priftis, R. Farina, S.L. Perry, L. Leon, J.K. Whitmer, K.Q. Hoffman, M. Tirrell, J.J. de Pablo, *Interfacial Tension of Polyelectrolyte Complex Coacervate Phases*, *ACS Macro Letters*, 2014, **3**, 565-568.
- 11) D. Priftis, X. Xia, K.O. Margossian, S.L. Perry, L. Leon, J. Qin, J.J. de Pablo, M. Tirrell, *Ternary, Tunable Polyelectrolyte Complex Fluids Driven by Complex Coacervation*, *Macromolecules*, 2014, **47**(9), 3076-3085.
- 12) D.S. Khvostichenko, J.J.D. Ng, S.L. Perry, M. Menon, P.J.A. Kenis, *Effects of the Detergent β -Octylglucoside and Phosphate Salt Solutions on the Phase Behavior of Monoolein Mesophases*, *Biophysical Journal*, 2013, **105**(8), 1848-1859.
Featured on the journal cover. Cover art by S.L. Perry.
- 13) S.L. Perry,* S.G. Neumann, T. Neumann, J. Weinstein, K. Cheng, J. Ni, D.V. Schaffer, M. Tirrell, *Challenges in Nucleic Acid-Lipid Films for Transfection*, *AIChE Journal*, 2013, **59**(9), 3203-3213.
- 14) D.S. Khvostichenko, E. Kondrashkina, S.L. Perry, K. Brister, P.J.A. Kenis, *An X-ray Transparent Microfluidic Platform for Screening the Phase Behavior of Lipidic Mesophases*, *The Analyst*, 2013, **138**, 5384-5395.
- 15) S.L. Perry, S. Guha, A.S. Pawate, A. Bhaskarla, V. Agarwal, S. Nair, P.J.A. Kenis, *A Microfluidic Approach for Protein Structure Determination at Room Temperature via On-Chip Anomalous Scattering*, *Lab on a Chip*, 2013, **13**(16), 3183-3187.
Featured on the inside front cover.
Highlighted in the Lab on a Chip Top 10% web collection.
Selected as a Lab on a Chip HOT Article.
- 16) E. Kondrashkina, D.S. Khvostichenko, S.L. Perry, J. Von Osinski, P.J.A. Kenis, K. Brister, *Using Macromolecular-Crystallography Beamline and Microfluidic Platform for Small-Angle Diffraction Studies of Lipidic Matrices for Membrane-Protein Crystallization*, *Journal of Physics, Conference Series*, 2013, **425**(1), 012013.
- 17) S. Guha, S.L. Perry, A.S. Pawate, P.J.A. Kenis, *Fabrication of X-ray Compatible Microfluidic Platforms for Protein Crystallization*, *Sensors and Actuators B*, 2012, **174**, 1-9.

PUBLICATIONS, PATENTS, AND PRESENTATIONS (cont')

Publications (cont')

(*indicates corresponding authorship)

- 18) S.L. Perry, J.J.L. Higdon, P.J.A. Kenis, *Design Rules for Pumping and Metering of Highly Viscous Fluids*, Lab on a Chip, 2010, **10**(22), 3112-3124.
Highlighted amongst the top ten most accessed online articles for Lab on a Chip for October 2010.
- 19) S. Talreja, S.L. Perry, S. Guha, V. Bhamidi, P.J.A. Kenis, C.F. Zukoski, *Determination of the Phase Diagram for Soluble and Membrane Proteins*, Journal of Physical Chemistry B, 2010, **114**(13), 4432-4441.
- 20) S.L. Perry, J.D. Tice, G.W. Roberts, P.J.A. Kenis, *Microfluidic Generation of Lipidic Mesophases for Membrane Protein Crystallization*, Crystal Growth & Design 2009, **9**(6), 2566-2569.
Highlighted in: *Finding Crystallization Sweet Spots*, Chemical & Engineering News, 2009, **87**(22), 27.

Patents

- 1) P.J.A. Kenis, J.D. Tice, S.L. Perry, G.W. Roberts, *Microfluidic Device for Preparing Mixtures*, US Patent Number 7,976,789 B2, July 12, 2011.

Selected Invited Presentations (15 of 30)

- 1) S.L. Perry, *Nature-Inspired Materials Design*, Department of Veterinary and Animal Science, University of Massachusetts Amherst, February 2016.
- 2) S.L. Perry, *Nature-Inspired Materials Design*, Department of Physics, University of Massachusetts Amherst, January 2016.
- 3) S.L. Perry, *Patterning and Structure in Biomimetic Polypeptide-Based Coacervates*, Colloidal, Macromolecular & Polyelectrolyte Solutions Gordon Research Conference, Ventura, February 2016.
- 4) S.L. Perry, *Microfluidic Platforms for Dynamic Protein Crystallography*, Cornell Laboratory for Accelerator-Based Sciences and Education (CLASSE), Ithaca, October 2015.
- 5) S.L. Perry, *Chirality, Architecture, and Charge Patterning in Ionic Polypeptide Complexes*, International Symposium on Multivalent Interactions in Polyelectrolytes: New Physics, Biology and Materials, Chicago, October 2015.
- 6) S.L. Perry, *Nature-Inspired Materials Design*, Johnson & Johnson Science Series Seminar, August 2015.
- 7) S.L. Perry, P. McCall, S. Srivastava, D. Kovar, M.L. Gardel, M. Tirrell, *Biomimetic Effects on Actin Cytoskeletal Filament Growth*, ACS National Meeting, Boston, August 2015.
- 8) S.L. Perry, *Engineering Biomimetic Coacervate Environments for Protein-Based Applications*, New England Nanotechnology Association Meeting, Amherst, May 2015.
- 9) S.L. Perry, *Microfluidic and Biomimetic Approaches to Study and Control Biomolecule Function*, Department of Chemical Engineering, Stanford University, February 2014.
- 10) S.L. Perry, *Microfluidic and Biomimetic Approaches to Study and Control Biomolecule Function*, McKetta Department of Chemical Engineering, University of Texas at Austin, February 2014.
- 11) S.L. Perry, *Microfluidic and Biomimetic Approaches to Study and Control Biomolecule Function*, Department of Chemical & Biomolecular Engineering, University of Illinois at Urbana-Champaign, January 2014.
- 12) S.L. Perry, *Stereoregularity Inhibits Complex Coacervation of Polypeptides*, Distinguished Young Scholars Seminar, Department of Chemical Engineering, University of Washington, August 2013.
Awarded best speaker for the 2013 DYSS series.
- 13) S.L. Perry, *Microfluidic Platforms for Protein Crystallography*, Workshop on Dynamic X-ray Scattering in Structural Biology, Argonne National Laboratory, Argonne, IL, November 2011.
- 14) S.L. Perry, *Microfluidic Platforms for Protein Crystallization*, Practical Protein Crystallization Course, Uppsala University, September 2008.
- 15) S.L. Perry, G.W. Roberts, J.D. Tice, P.J.A. Kenis, *Microfluidic Platforms for Protein Crystallization*, National Synchrotron Light Source Seminar, Brookhaven National Laboratory, April 2008.

PUBLICATIONS, PATENTS, AND PRESENTATIONS (cont')

Selected Contributed Presentations (21 of 94, presenting author on 45)

- 1) S.L. Perry, L.W. Chang, Y. Liu, B. Momami, J. Vélez, H.H. Winter, S.L. Perry, *Understanding and Controlling Transitions in Polyelectrolyte Complex Materials*, APS March Meeting, Baltimore, March 2016.
- 2) L.W. Chang, Y. Liu, B. Johnston, C. Johnston, J. Vélez, R. Letteri, T. Emrick, S.L. Perry, *Effect of Charge Patterning and Polymer Architecture on Polypeptide-Based Coacervates*, AIChE Annual Meeting, Salt Lake City, November 2015.
- 3) C. Johnston, B. Johnston, R. Letteri, T. Emrick, S.L. Perry, (poster) *Effects of Polymer Architecture and Zwitterionic Moieties on Complex Coacervation*, International Conference on Bioinspired and Zwitterionic Materials, Seattle, August 2015.
- 4) C. Johnston, R. Letteri, T. Emrick, S.L. Perry, *Effect of Polymer Architecture and Zwitterionic Moieties on Complex Coacervation*, ACS Colloids and Surface Science Symposium, Pittsburgh, June 2015.
- 5) S.L. Perry, V. Srajer, A.S. Pawate, J. Schieferstein, S. Guha, Z. Ren, P.J.A. Kenis, (poster) *Time Resolved Serial Protein Crystallography in a Microfluidic Device*, Physics & Chemistry of Microfluidics Gordon Conference, West Dover, June 2015.
- 6) S.L. Perry, P. McCall, S. Srivastava, D. Kovar, M.L. Gardel, M. Tirrell, *Biomimetic Coacervate Environments for Protein Analysis*, APS March Meeting, San Antonio, March 2015.
- 7) S.L. Perry, V. Srajer, A.S. Pawate, J. Schieferstein, S. Guha, Z. Ren, P.J.A. Kenis, *Time Resolved Serial Protein Crystallography in a Microfluidic Device*, AIChE Annual Meeting, Atlanta, November 2014.
- 8) S.L. Perry, V. Srajer, A.S. Pawate, J. Schieferstein, S. Guha, Z. Ren, P.J.A. Kenis, *Time Resolved Serial Crystallography in a Microfluidic Device*, ICCBM 15, Hamburg, Germany, September 2014.
- 9) S.L. Perry, L. Leon, M.J. Kade, K.A. Black, D. Priftis, D. Wong, R.A. Klein, C.F. Pierce, K.O. Margossian, K.Q. Hoffmann, J.K. Whitmer, J. Qin, J.J. de Pablo, M. Tirrell, *Chirality-Selected Phase Transitions in Ionic Polypeptide Complexes*, ACS Colloids and Surface Science Symposium, Philadelphia, June 2014.
- 10) S.L. Perry, L. Leon, K. Megley, D. Priftis, M.J. Kade, D. Wong, K.O. Margossian, M. Tirrell, *Stereoregularity Inhibits Complex Coacervation of Polypeptides*, MRS Fall Meeting, Boston, December 2013.
- 11) S.L. Perry, L. Leon, K. Megley, D. Priftis, M.J. Kade, D. Wong, K.O. Margossian, M. Tirrell, *Stereoregularity Inhibits Complex Coacervation of Polypeptides*, AIChE Annual Meeting, San Francisco, November 2013.
- 12) S.L. Perry, A.S. Pawate, J. Schieferstein, S. Guha, V. Srajer, Z. Ren, P.J.A. Kenis, *Microfluidic Platforms for Time Resolved Laue Crystallography*, AIChE Annual Meeting, San Francisco, November 2013.
- 13) S.L. Perry, L. Leon, K. Megley, D. Priftis, M.J. Kade, D. Wong, K.O. Margossian, M. Tirrell, *Homochirality Inhibits Complex Coacervation of Polypeptides*, ACS National Meeting, Indianapolis, September 2013.
- 14) S.L. Perry, A.S. Pawate, J. Schieferstein, S. Guha, V. Srajer, Z. Ren, P.J.A. Kenis, *Microfluidic Platforms for Time Resolved Laue Crystallography*, ACS National Meeting, Indianapolis, September 2013.
- 15) S.L. Perry, *Coacervation for Biomimetic Applications*, IME Seminar, University of Chicago, August 2013.
- 16) S.L. Perry, L. Leon, K. Megley, D. Priftis, M.J. Kade, D. Wong, K.O. Margossian, M. Tirrell (poster), *Homochirality Inhibits Complex Coacervation of Polypeptides*, Self-Assembly & Supramolecular Chemistry Gordon Research Conference and Seminar, Les Diablerets, Switzerland, May 2013.
- 17) S.L. Perry, S. Gajria, J. Weinstein, D.V. Schaffer, M. Tirrell, *The Challenge of Nucleic Acid-Surfactant Films for Transfection*, AIChE Annual Meeting, Pittsburg, October 2012.
- 18) S.L. Perry, S. Guha, A.S. Pawate, Z. Ren, P.J.A. Kenis, *Microfluidic Platforms for Time Resolved Laue Crystallography*, ICCBM 14, Huntsville, September 2012.
- 19) S.L. Perry, S. Gajria, T. Neumann, J. Ni, J. Weinstein, D. Schaffer, M. Tirrell, *Structure and Application of Nucleic Acid-Surfactant Films for Transfection in Human Cells*, BMES Annual Meeting, Hartford, October 2011.
- 20) S.L. Perry, J.J.L. Higdon, P.J.A. Kenis, *Microfluidic Strategies for Highly Viscous and/or Non-Newtonian Fluids*, AIChE National Meeting, Nashville, November 2009.
- 21) S.L. Perry, G.W. Roberts, S. Talreja, J.D. Tice, C.F. Zukoski, P.J.A. Kenis, *Microfluidic Platforms for Membrane Protein Crystallization*, AIChE National Meeting, Salt Lake City, November 2007.

TEACHING, MENTORSHIP, PROFESSIONAL EXPERIENCE, AND SERVICE

Teaching Experience

University of Massachusetts Amherst Chemical Engineering (Amherst, MA)

Co-Instructor – Introduction to Chemical Engineering (ENGIN 110), Fall 2014

This course is intended to provide beginning engineering students with a clear overview of the field of chemical engineering. Students will develop basic skills in problem solving, computation, process design, and communication that will help them in all future engineering courses.

Jointly taught classes and prepared materials for a class of ~140 students, while also organizing two teaching assistants and five undergraduate graders (with Prof. Neil Forbes).

Recipient of the Residential First-Year Experience Student Choice Award.

University of Chicago Institute for Molecular Engineering (Chicago, IL)

Workshop Leader – Expanding Your Horizons Outreach Event, Spring 2013

Helped to develop, coordinate, and conduct a workshop for junior high school-aged girls on the topic of biomaterials for biomedical applications.

University of Illinois Chemical & Biomolecular Engineering (Urbana, IL)

Head Teaching Assistant – Undergraduate Thermodynamics (ChBE 321), Spring 2007

Helped to coordinate Teaching Assistants and acted as a substitute lecturer. Prepared materials for and taught weekly discussion sections. Also designed, prepared solutions for, and graded homework and exams.

Honored on the “List of Teachers Ranked as Excellent”

Teaching Assistant – Microchemical Systems (ChBE 594), Fall 2007

Graded group projects, presentations, and exams.

Teaching Assistant – Principles of Chemical Engineering (ChBE 221), Summer and Fall, 2006

Acted as a substitute lecturer. Also prepared materials for and taught a weekly discussion section, prepared, administered, and graded exams, and prepared solutions for and graded homework.

Guest Lecturer – Biochemical Engineering (ChBE 471), Fall 2008

Topic: Microfluidic Platforms for Membrane Protein Crystallization

Guest Lecturer – Microchemical Systems (ChBE 594), Spring 2007

Topic: Microchemical Systems for Protein Crystallization

Tutor – Undergraduate Chemical & Biomolecular Engineering, 2008 – 2010

Tutored undergraduate students in Chemical & Biomolecular Engineering for the Principles of Engineering, Thermodynamics, Kinetics & Reactor Design, and Mass Transport courses.

Instructor – Graduate Academy for College Teaching, 2007 – 2008

Acted as a small group facilitator for Teaching Assistants from Chemical Engineering and Bioengineering.

Taught a workshop titled *Ten Class Management Skills*.

University of Arizona Chemical & Environmental Engineering (Tucson, AZ)

Developed surface science teaching website (<http://muscat.chee.arizona.edu/>) 2002 – 2005

Website associated with Surface Science class (ChEE 437/537) taught by Prof. Anthony Muscat was intended initially as a supplement and eventually as an independent online class.

Tutor – Undergraduate Chemical & Environmental Engineering, 2003 – 2005

Tutor – Science, Mathematics, and English language for E.S.L. students at Mansfield Middle School, 1998 – 1999

Mentored Graduate Student Researchers

(UMass-Amherst unless otherwise noted)

Whitney Blocher (Chemical Engineering)	(Oct. 2015 – present)
Xiangxi “Zoey” Meng (Chemical Engineering, joint with Jessica Schiffman)	(Oct. 2015 – present)
Li-Wei Cheng (Chemical Engineering)	(Oct. 2014 – present)
Yalin Liu (Chemical Engineering)	(Oct. 2014 – present)
Shuo Sui (Chemical Engineering)	(Oct. 2014 – present)
Emre Sevgen (University of Chicago)	(July 2014 – Aug. 2014)

TEACHING, MENTORSHIP, PROFESSIONAL EXPERIENCE, AND SERVICE (cont')

Mentored Graduate Student Researchers (cont')

(UMass-Amherst unless otherwise noted)

Sudipto Guha (University of Illinois, Currently Research Engineer at Intel)	(Jan. 2009 – May 2013)
Surekha Gajria (University of California Santa Barbara, Currently Research Scientist at Konrad Hornschuch AG)	(Jan. 2011 – May 2012)
Daria Khvostichenko (University of Illinois, Currently Engineer at Schlumberger)	(Jan. 2009 – May 2013)

Doctoral Committee Mentorship

(UMass-Amherst unless otherwise noted)

Kiran Iyer (Chemical Engineering, M. Muthukumar advisor)	(Dec. 2015 – present)
Kieran Ramos (Physics, Lori Goldner advisor)	(Nov. 2015 – present)
Prabhat Tripathi (Chemistry, M. Muthukumar advisor)	(Oct. 2015 – present)
Charmaine Koo (Food Science, Sam Nugen advisor)	(Sept. 2015 – present)
Svetlana Morozova (Polymer Science and Engineering, M. Muthukumar advisor)	(Aug. 2015 – present)
Brian Momani (Chemical Engineering, H. Henning Winter advisor)	(Jun. 2015 – present)
Daniel Seeman (Chemistry, Paul Dubin advisor)	(Mar. 2015 – May 2015)
Stephen Strassburg (Polymer Science and Engineering, Dave Hoagland and Harry Bermudez advisors)	(Jan. 2015 – present)
Elizabeth Cummings (Chemical Engineering, Sue Roberts advisor)	(Dec. 2014 – present)
Matthew Skinner (Polymer Science and Engineering, Todd Emrick advisor)	(Dec. 2014 – present)
Bin Liu (Chemistry, S. "Thai" Thayumanavan advisor)	(Dec. 2014 – present)
Fatih Comert (Chemistry, Paul Dubin advisor)	(July 2014 – present)

Masters Committee Mentorship

(UMass-Amherst unless otherwise noted)

Marcos Manganare (Molecular and Cellular Biology, Shelly Peyton advisor)	(May 2015 – June 2015)
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Mentored Undergraduate Student Researchers

(UMass-Amherst unless otherwise noted)

Marzbed Margossian (Joint with Paul Dubin)	(Oct. 2015 – present)
Shuaib Balogun (ACS Scholars Mentor)	(Oct. 2015 – present)
Rebecca Zollner	(Sept. 2015 – present)
Adam Murphy	(Sept. 2015 – present)
Rui Pereira	(Sept. 2015 – Dec. 2015)
Kush Basu	(May 2015 – present)
Brenton Drew Knudson	(Apr. 2015 – present)
Patrick Harney	(Apr. 2015 – present)
Appa Salvi (Hampshire College)	(Apr. 2015 – June 2015)
Brandon Johnston (Joint with Todd Emrick)	(Apr. 2015 – present)
Jon Veléz	(Mar. 2015 – present)
Ruoting Robert Wang (Joint with Jessica Schiffman)	(Mar. 2015 – present)
Colton Kenny	(Feb. 2015 – present)
Cameron Johnston (Joint with Todd Emrick, Currently Process Engineer at Toray Plastics)	(Oct. 2014 – June 2015)
Cristina Vieira Robalo	(Sept. 2014 – present)
Rasmia Shamsi	(Sept. 2014 – present)
Grace Counts (Washington University at St. Louis)	(May 2014 – Aug. 2014)
Amanuel Kibrom (University of Chicago)	(Jan. 2013 – Aug. 2014)
Eitamar Nadler (University of Chicago)	(Jan. 2013 – Aug. 2014)
Emma Patchak (University of Chicago)	(Aug. 2012 – Dec. 2013)
Yue Li (Zhejiang University, Currently U. Oklahoma Graduate Student)	(June 2012 – Aug. 2012)
Karen Cheng (University of California Berkeley)	(Jan. 2012 – Mar. 2012)

TEACHING, MENTORSHIP, PROFESSIONAL EXPERIENCE, AND SERVICE (cont')

Mentored Undergraduate Student Researchers (cont') *(UMass-Amherst unless otherwise noted)*

Jennifer Ni (University of California Berkeley, Currently U. Pittsburgh Medical Student) (Jan. 2011 – May 2011)
Andrew Choi (University of Illinois, Currently Process Engineer at DuPont) (Aug. 2008 – May 2008)
Griffin Roberts (University of Illinois, Currently U. Kansas Graduate Student) (June 2006 – Aug. 2008)
Diana Perry (University of Arizona, Currently Western U. Podiatry Student) (Aug. 2003 – May 2004)

Honors Committee Mentorship *(UMass-Amherst unless otherwise noted)*

Alexander Malanowski (Chemistry, Paul Dubin advisor) (Jan. 2015 – May 2015)

Other Teaching Experience

Taekwondo Instructor

ATA Martial Arts Center (South Deerfield, MA) 2014 – present
Chicago ATA (Chicago, IL) 2011 – 2014
Success Now Martial Arts (Darien, IL) 2011 – 2014
Master Schreiber's ATA Martial Arts (Martinez, CA) 2011 – 2012
Newberry's Black Belt Academy (Champaign, IL) 2005 – 2010
Honored as the Region 102W Certified Instructor of the Year 2009
American Taekwondo Club at the University of Arizona (Tucson, AZ) 2003 – 2005
Developed an internationally distributed black belt curriculum for students born without the use of both arms.
Honored as the University of Arizona Student Recreation Coach of the Year 2003 – 2004
Catalina Foothills School District After-School Program (Tucson, AZ) Spring 2000

Professional Affiliations

American Association for the Advancement of Science (AAAS)
American Institute of Chemical Engineers (AIChE)
Education Division Member
American Chemical Society (ACS)
American Physical Society (APS)
International Union of Crystallographers (IUCr)
Massachusetts Society of Professors (MSP)
Materials Research Society (MRS)
Society of Women Engineers (SWE)
Omega Chi Epsilon Chemical Engineering Honorary
Tau Beta Pi Engineering Honorary
Order of the Engineer

Collaborative and Research Affiliations

Institute for Applied Life Sciences (IALS)
Models to Medicine (M2M)
Center for Bioactive Delivery (CBD)
Center for Biological Physics
Center for Clinical and Translational Science (CCTS)
New England Complex Fluids Workgroup

TEACHING, MENTORSHIP, PROFESSIONAL EXPERIENCE, AND SERVICE (cont')

Departmental Service

Faculty Search Committee (UMass-Amherst Polymer Science & Engineering) 2015 – present

Responsible for recruitment, evaluation, and selection of faculty candidates in polymer physics.

ResearchFest Poster Judge (UMass-Amherst Chemistry) 2015

Responsible for judging scientific poster presentations and selecting student award winners.

Chairperson, Distinguished Seminar Committee (UMass-Amherst Chemical Engineering) 2015 – present

Responsible for invitation and coordination of the department's invited Alumni and ExxonMobil Lectures.

Seminar Coordinator (UMass-Amherst Chemical Engineering) 2015 – present

Responsible for organizing and coordinating speakers for the weekly departmental seminar.

Undergraduate Program Committee (UMass-Amherst Chemical Engineering) 2014 – present

Responsible for departmental curriculum review and improvement, undergraduate laboratory planning, and ABET processes. Also organized a MATLAB training workshop for faculty and teaching assistants to enhance the use of MATLAB in the undergraduate curriculum.

IME Safety Committee (University of Chicago Institute for Molecular Engineering) 2012 – 2014

Acted as Chairperson, working to develop a best-in-class safety program for the newly-founded IME in collaboration with other researchers and safety personnel from both the University of Chicago and Argonne National Laboratory. Efforts include compiling information for efficient distribution to aid in setting up new labs at the IME, newcomer training information, website development, piloting an automated system for obtaining prescription safety glasses for the campus, and establishing a nitrile glove recycling program.

IME Seminar Committee (University of Chicago Institute for Molecular Engineering) 2012 – 2014

Acted as Chairperson, working to organize student, internal, and external speakers for the IME Seminar.

IME Website Development Committee (University of Chicago Institute for Molecular Engineering) 2012 – 2014

Served as the representative for the Tirrell Research Group, helping to coordinate the development of both the main website for the Institute for Molecular Engineering (<http://ime.uchicago.edu>) and the Tirrell-group website (<http://tirrell.ime.uchicago.edu>).

Graduate Student Advisory Council (University of Illinois Chemical & Biomolecular Engineering)

Acted as Webmaster (2008 – 2009) and as a Group Representative (2006 – 2007) to organize events that helped to educate and promote the welfare of the graduate students in the department. Also worked to provide a channel of communication and represent student views to faculty, staff, and administration.

Graduate Student Research Symposium (University of Illinois Chemical & Biomolecular Engineering) 2006

Organized an annual research symposium that provides a venue for students to practice presenting their research in poster or presentation format and compete for awards. The event also allows for networking with representatives from industrial companies and/or other universities who serve as judges.

College Service

Engineering Women's Faculty Forum (e-WFF) Webmaster (UMass-Amherst) 2015 – present

Responsible for the development and maintenance of the website for the Engineering Women's Faculty Forum.

University Service

Institute for Applied Life Sciences (IALS) Biophysical Characterization Core Facility Oversight Committee (UMass-Amherst) 2014 – present

Responsible for the planning, execution, management and hiring of this new core facility as part of IALS.

Provost's Laboratory Safety Working Group (University of Chicago) 2013 – 2014

Served as the representative for the Institute for Molecular Engineering, helping to improve laboratory safety and safety communication on campus with a goal of creating a culture of safety.

College Teaching Effectiveness Network Steering Committee (CTEN) (University of Illinois) 2007 – 2008

Organized seminars and workshops for graduate students teaching college-level classes and/or preparing for an academic career. Workshops address issues relevant to being an effective teacher at the college level.

TEACHING, MENTORSHIP, PROFESSIONAL EXPERIENCE, AND SERVICE (cont')

Professional Service

American Chemical Society

Co-Organizer for a symposium on *Molecular Engineering of Peptide Assembly*, Spring ACS Meeting 2017

Co-Organizer for a symposium on *Polyelectrolyte Coacervates, Precipitates, and Multilayers*, Fall ACS Meeting 2016

Co-Organizer for a symposium on *Complex Coacervation: Principles and Applications*, Fall ACS Meeting 2015

American Institute of Chemical Engineers

Co-Chair for the *Charged and Ion-Containing Polymers* session, AIChE Annual Meeting 2017

Co-Chair for the *8A Plenary: Emerging Areas in Polymer Science and Engineering*, AIChE Annual Meeting 2016

Chair for the *Biomimetic Materials* session, AIChE Annual Meeting 2016

Co-Chair for the *MSED Undergraduate Poster Session*, AIChE Annual Meeting 2016

Co-Chair for the *Biomaterials I* session, AIChE Annual Meeting 2015

Chair for the *Crystallization of Pharmaceutical and Biological Molecules* session, AIChE Annual Meeting 2014

Chair for the *Crystallization of Pharmaceutical and Biological Molecules* session, AIChE Annual Meeting 2013

Co-Chair for the *Crystallization of Pharmaceutical and Biological Molecules* session, AIChE Annual Meeting 2012

International Organization for Biological Crystallization Council (IOBCr) 2014 – present

Organized and supported interdisciplinary workshops and schools that foster professional contacts and mutual education between (bio-)crystallographers, (bio-)chemists, (bio-)physicists, and engineers, including the biannual International Conference on Crystallization of Biological Macromolecules (ICCBM).

Grant Review

Department of Defense, Defense Threat Reduction Agency (DTRA) May 2015

National Science Foundation, Division of Materials Research, Biomaterials (BMAT) Feb. 2015

University of Massachusetts Amherst Commonwealth Honors College 2015

Journal Editor

Co-Guest Editor for a special issue of *Advances in Colloid and Interface Science* on complex coacervation 2016

Journal Peer Review

ACS Macro Letters

Microfluidics and Nanofluidics

Coordination Chemistry Reviews

Micromachines

Current Organic Chemistry

Physical Chemistry Chemical Physics

Industrial & Engineering Chemistry Research

Proceedings of the National Academy of Sciences of the U.S.A.

Outreach

Girl Scouts of Western Massachusetts (UMass Amherst) 2016

Organized a fluids-based physics and engineering-based summer workshop for girls in grades 2-5.

Women in Engineering and Computing Career Day (UMass Amherst) 2015 – 2016

Coordinated laboratory tours for high school girls interested in Chemical Engineering.

Participated as a lunch-table discussion leader with high school girls interested in Chemical Engineering.

Eureka!/Girls Inc. (UMass Amherst) 2015

Co-organized a fluids-based physics and engineering-based summer workshop for girls ages 12-18.

Summer Engineering Institute (SENGI) (UMass Amherst) 2015

Developed a microfluidics-based particle sorting project for high school student participants in the residential summer camp program.

Expanding Your Horizons (University of Chicago) 2013

Helped to develop, coordinate, and conduct a workshop for junior high school-aged girls on the topic of biomaterials for biomedical applications.

AWARDS, GRANT WRITING, AND INTERESTS

Honors & Awards

University of Massachusetts Amherst

- Commonwealth Honors College Research Assistant Fellowship – Kush Basu and Brandon Johnston 2016
- Commonwealth Honors College Honors Research Grant – Ruoting “Robert” Wang 2015
- Commonwealth Honors College Research Assistant Fellowship – Cristina Vieira Robalo and Rasmia Shamsi 2015
- College of Engineering Faculty Advocate for Diversity 2015
- Residential First-Year Experience Student Choice Award Recipient 2015

University of Chicago (Postdoc)

- Best Speaker: Distinguished Young Scholars Seminar Series (University of Washington) 2013

University of Illinois (PhD)

- Council of Graduate Schools/ProQuest Distinguished Dissertation Award in Biological and Life Sciences Honorable Mention Recipient 2011
- 1st Place: Department of Chemical & Biomolecular Engineering Graduate Research Symposium 2009
- Baxter Innovation Award 2009
- AIChE Separations Division Graduate Student Award 2009
- Ruth L. Kirschstein National Research Service Award (Predoctoral Fellowship, NIH) 2008 – 2010
- IUCr Travel Award, Membrane Protein Crystallization Workshop (Brookhaven National Labs) 2008

University of Illinois (PhD, cont’)

- List of Teachers Ranked as Excellent Spring 2007
- Outstanding Poster Award: ACS Colloid Division – S.L. Perry, J.D. Tice, G.W. Roberts, and P.J.A. Kenis, *Microfluidic Platforms for Membrane Protein Crystallization*, ACS National Meeting, Chicago 2007
- Mavis Memorial Fund Scholarship Recipient for Merit in both Engineering Research and Education 2007
- School of Chemical Sciences Award for Teaching Excellence 2007
- University Fellowship Recipient 2005 – 2006

University of Arizona (MS)

- Intel Foundation/Semiconductor Research Corporation Master’s Scholarship Recipient 2003 – 2005
- National Science Foundation Graduate Research Fellowship Honorable Mention Recipient 2003

Research Proposals

- 1) *CHEM-ENG 590E Microfluidics and Microscale Analysis in Materials and Biology*, Teaching Excellence & Faculty Development Flex Grant, S.L. Perry (PI), \$500.
- 2) *Designing the Liquid-to-Solid Transition in Polyelectrolyte Complexes*, American Chemical Society Petroleum Research Fund New Doctoral Investigator Program, S.L. Perry (PI), \$110K.
- 3) *Complex Coacervation: Principles and Applications - A Special Symposium at the 2015 American Chemical Society Fall Meeting*, National Science Foundation, Division of Materials Research, Biomaterials Program (DMR-1547258), S.L. Perry (PI), P.L. Dubin (Co-I), \$5K.
- 4) *Bio-Inspired Thermostable Vaccine Formulations*, from the Armstrong Fund for Science at UMass-Amherst, S.L. Perry (PI), 2015 – 2017, \$30K.
- 5) *Microfluidic Membrane Protein Crystallization for High Resolution Proteomics*, Ruth L. Kirschstein National Research Service Award (Predoctoral Fellowship, F31 EB008330) from the National Institutes of Health, S.L. Perry (PI), P.J.A. Kenis and R.B. Gennis (Co-Sponsors), 2008 – 2010, \$133K.

Activities and Interests

Fifth-Degree Black Belt and Certified Instructor in Taekwondo

- Region 102W Certified Instructor of the Year 2009
- University of Arizona Student Recreation Coach of the Year 2003 – 2004
- World Champion 2002, 2012 – 2015