NITASH P. BALSARA

Charles W. Tobias Professor of Electrochemistry
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EMPLOYMENT

7/14-present	Charles W. Tobias Chair in Electrochemistry, Department of Chemical and Biomolecular Engineering, University of California, Berkeley 94720.
7/00-present	Professor, Department of Chemical and BiomolecularEngineering, University of California, Berkeley, California 94720.
7/13-7/19	Vice-Chair for Graduate Education, Department of Chemical and Biomolecular Engineering, University of California, Berkeley 94720.
7/00-5/09	Faculty Associate Scientist Materials Sciences Division and Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, Berkeley, California 94720.
5/09-present	Senior Faculty Scientist Materials Sciences Division and Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, Berkeley, California 94720.
5/14-present	Co-Founder and Consultant, Blue Current, a battery start-up in Berkeley.
5/07	Co-Founder of Seeo, a battery start-up in Berkeley. Acquired by Bosch in Aug 2015.
08/92-6/00	9/98-6/00 Professor 9/96-8/98 Associate Professor 1/92-8/96 Assistant Professor Department of Chemical Engineering and Chemistry Polytechnic University, Brooklyn, New York 11201.
07/90 - 12/91	Post-doctoral researcher, Exxon Research and Engineering Company, Annandale, New Jersey. Advisors: David J. Lohse and William W. Graessley
04/88 - 06/90	Post-doctoral researcher, Department of Chemical Engineering

and Materials Science, University of Minnesota.
Advisors: Matthew Tirrell and Timothy P. Lodge

EDUCATION

PhD, Chemical Engineering (May, 1988)
Rensselaer Polytechnic Institute
Advisor: E. Bruce Nauman

MS, Chemical Engineering (May, 1984)
Clarkson University
Advisor: Shankar Subramanian

B Tech, Chemical Engineering (May, 1982)
Indian Institute of Technology at Kanpur, India
Advisor: K.S. Gandhi

AWARDS

- Distinguished Alumni Award, Indian Institute of Technology, Kanpur, 2019.
- Energy Secretary's Achievement Award to the Joint Center for Energy Storage Research (JCESR) Scientific and Operational Leadership Team, 2018. Balsara was a member of the leadership team led by George Crabtree of Argonne National Laboratory.
- Platinum Jubilee Professor of the Indian Academy of Sciences, 2014.
- Awarded the Charles W. Tobias Endowed Chair in Electrochemistry at the University of California, Berkeley, 2014.
- Fellow of the Neutron Scattering Society of America, 2014.
- R&D 100, awarded by R&D Magazine for the development of "Nanostructured Polymer Electrolytes for Rechargeable Lithium Batteries" developed jointly by Lawrence Berkeley National Laboratory and Hany B. Eitouni and Mohit Singh of Seeo, Inc., 2008.
- Charles M.A. Stine Award, American Institute of Chemical Engineers Award for Materials Engineering and Science, 2005.
- Fellow of the American Physical Society, 2001.
- Hendrick C. Van Ness Lectureship, Rensselaer Polytechnic Institute, 1998.
- Camille Dreyfus Teacher-Scholar Award, 1998.
- John H. Dillon Medal, American Physical Society Award for Polymer Physics, 1997.
- Engineer of the Year, American Institute of Engineers of Indian Origin, 1997.
- 3M Non-Tenured Faculty Award, 1996.
- Sigma Xi Distinguished Faculty Research Award, Polytechnic University, 1995.
- National Science Foundation Young Investigator Award, 1994.

Students Awards and Recognition

- Morgan Seidler, *winner*, Microscopy & Microanalysis Student Award, Microscopy Society of America, 2021.
- Alec S. Ho, *winner*, Best Presentation Award, Symposium on Overcoming the Challenges with Metal Anodes for High-Energy Batteries, Fall Materials Research Society Meeting, 2020.
- Michael D. Galluzzo, *finalist*, Excellence in Graduate Polymer Research Award Symposium, Materials Engineering and Sciences Division (Polymers), American Institute of Chemical Engineers, 2020.
- Deep B. Shah, *winner*, Best Poster Award, Gordon Research Conference on Batteries, 2020.
- Whitney S. Loo, *finalist*, Excellence in Graduate Polymer Research Award Symposium, Materials Engineering and Sciences Division (Polymers), American Institute of Chemical Engineers, 2019.
- Whitney S. Loo, *finalist*, Padden Award, Student Award Symposium, Division of Polymer Physics, American Physical Society, 2019.
- Ksenia Timachova, *finalist*, Padden Award, Student Award Symposium, Division of Polymer Physics, American Physical Society, 2018.
- Ksenia Timachova, *finalist*, DSM Student Award Symposium, Division of Polymer Chemistry, American Chemical Society, 2017.
- Danielle M. Pesko, *finalist*, Padden Award, Student Award Symposium, Division of Polymer Physics, American Physical Society, 2017.
- Katherine J. Harry, *honorable mention*, Cubiccotti Award, Electrochemical Society (San Francisco Bay Area Section) Award for Graduate Student Research Accomplishment, 2016.
- Katherine J. Harry, *winner*, Padden Award, Student Award Symposium, Division of Polymer Physics, American Physical Society, 2015.
- Scott A. Mullin, *winner*, Padden Award, Student Award Symposium, Division of Polymer Physics, American Physical Society, 2011.
- Enrique D. Gomez, *finalist*, Padden Award, Student Award Symposium, Division of Polymer Physics, American Physical Society, 2008.
- Megan L. Ruegg, *winner*, ICI Student Award, Division of Polymeric Materials Science and Engineering and Division of Polymer Chemistry, American Chemical Society, 2006.
- Hany B. Eitouni, *finalist*, Padden Award, Student Award Symposium, Division of Polymer Physics, American Physical Society, 2006.
- Timothy Rappl, *winner*, Neutron Scattering Society of America's Prize for Outstanding Student Research, 2004.
- Amy A. Lefebvre, *finalist*, ICI Student Award, Student Award Symposium, Division of Polymeric Materials Science and Engineering, American Chemical Society, 1999.
- Horng J. Dai, *finalist*, Padden Award, Division of Polymer Physics, Student Award Symposium, American Physical Society, 1997.
- Nitash P. Balsara, *finalist*, Sherwin-Williams Student Award, Division of Polymeric Materials Science and Engineering and Division of Polymer Chemistry, American Chemical Society, 1987.

PUBLICATIONS

Book

1. "Electrochemical Systems", Fourth Edition, J. Newman and N.P. Balsara, John Wiley & Sons, Inc.: Hoboken, New Jersey, ISBN 9781119514602, **2020**.

Journal Articles

338."Ion Transport in Batteries with Polymer Electrolytes", X. Yu, P. Lennartz, R. Sahore, N. Dudney, G. Brunklaus, N. P. Balsara, *Macromolecular Engineering, 2nd Edition*, K. Matyjaszewski, Y. Gnanou, M. Muthukumar, N. Hadjichristidis, Editors, **2021**.

337. "Crystallization and Self-Assembly of Shape-Complementary Sequence-Defined Peptoids", S,Xuan, X. Jiang, N.P. Balsara, R.N. Zuckermann, *Polymer Chemistry*, **2021**.
DOI: 10.1039/d1py00426c

336. "3D Detection of Lithiation and Lithium Plating in Graphite Anodes during Fast Charging", .A.S. Ho, D.Y. Parkinson, D.P. Finegan, S.E. Trask, A.N. Jansen, W. Tong, N.P. Balsara, *ACS Nano*, vol. 15(6), pgs. 10480–10487, **2021**.
DOI: 10.1021/acsnano.1c02942

335. "High-Resolution Imaging of Unstained Polymer Materials", *ACS Applied Polymer Materials*, vol. 3, pg. 2849−2864, **2021**.
DOI: 10.1021/acsapm.1c00217

334. "Evolution of Protrusions on Lithium Metal Anodes Stabilized by a Solid Block Copolymer Electrolyte Studied Using Time-Resolved X-ray Tomography", V.D. Veeraraghavan, L. Frenck, J.A. Maslyn, W.S. Loo, D.Y. Parkinson, N.P. Balsara, *ACS Applied Materials & Interfaces*, vol. 13, pgs. 27006−27018, **2021**.
DOI: 10.1021/acsami.1c04582

333. "Minimizing Crinkling of Soft Specimens Using Holey Gold Films on Molybdenum Grids for Cryogenic Electron Microscopy", X. Jiang, S. Xuan, R.N. Zuckermann, R.M. Glaeser, K.H. Downing, N.P. Balsara, *Microscopy and Microanalysis*, pgs. 1-9, **2021**.
DOI:10.1017/S1431927621000520

332. "Electrochemical Properties of Poly(ethylene oxide) Electrolytes above the Entanglement Threshold", K.W. Gao, N.P. Balsara, *Solid State Ionics*, vol. 366, article 115609, **2021**.
DOI:doi.org/10.1016/j.ssi.2021.115609

331. "Effect of Crystallization of the Polyhedral Oligomeric Silsesquioxane Block on Self-Assembly in Hybrid Organic-Inorganic Block Copolymers with Salt", *Giant*, vol. 6, article 100055, **2021**.
DOI: doi.org/10.1016/j.giant.2021.100055

330. “Limiting Current in Nanostructured Block Copolymer Electrolytes”, J.A. Maslyn, L. Frenck, V.D. Veeraraghavan, A. Müller, A.S. Ho, N. Marwaha, W.S. Loo, D.Y. Parkinson, A.M. Minor, N.P. Balsara, *Macromolecules*, vol. 54(9), pp. 4010–4022, **2021**.
DOI: doi.org/10.1021/acs.macromol.1c00425

329. “Improved Li^+ Transport in Polyacetal Electrolytes: Conductivity and Current Fraction in a Series of Polymers”, R. L. Snyder, Y. Choo, K.W Gao, D.M. Halat, B.A. Abel, S. Sundararaman, D. Prendergast, J..A Reimer, N.P. Balsara, G.W. Coates, *ACS Energy Letters*, vol. 6, pp. 1886-1891, **2021**.
DOI: doi.org/10.1021/acsenergylett.1c00594

328. “Effect of hydration on morphology of thin phosphonate block copolymer electrolyte membranes studied by electron tomography”, X. Jiang, J. Sun, R.N. Zuckermann, N.P. Balsara, *Polymer Science and Engineering*, vol. 61(4), pp. 1104-1115, **2021**.
DOI: doi.org/10.1002/pen.25646

327. “Effect of Added Salt on Disordered Poly(ethylene oxide)-Block-Poly(methyl methacrylate) Copolymer Electrolytes”, N.J. Shah, S. Dadashi-Silab, M.D. Galluzzo, S. Chakraborty, W.S. Loo, K. Matyjaszewski, N.P. Balsara, *Macromolecules*, vol. 54(3), pp. 1414-1424, **2021**.
DOI:doi.org/10.1021/acs.macromol.0c02493

326. “Dynamic Structure and Phase Behavior of a Block Copolymer Electrolyte under Dc Polarization”, M.D. Galluzzo, W.S. Loo, E. Schaible, C. Zhu, and N.P. Balsara, *ACS Applied Materials and Interfaces*, vol. 3, issue 10, pp. 9645-9655, **2020**.
DOI: doi.org/10.1021/acsami.0c16209

325. “Effect of Salt Concentration Profiles on Protrusion Growth in Lithium-Polymer-Lithium Cells”, L. Frenck, V.D. Veeraraghavan, J.A. Maslyn, A. Muller, A.S. Ho, W.S. Loo, A.M. Minor, N.P. Balsara, *Solid State Ionics*, vol. 382, pp. 115517, **2020**.
DOI: https://doi.org/10.1016/j.ssi.2020.115517

324. “Uncovering the Relationship between Diameter and Height of Electrodeposited Lithium Protrusions in a Rigid Electrolyte”, A.S. Ho, P. Barai, J.A. Maslyn, L. Frenck, W.S. Loo, D.Y. Parkinson, V. Srinivasan, N.P. Balsara, *ACS Applied Energy Materials*, vol. 3, issue 10, pp. 9645-9655, **2020**.
DOI: https://doi.org/10.1021/acsaem.0c0117

323. “Impact of Frictional Interactions on Conductivity, Diffusion, and Transference Number in Ether- and Perfluoroether-based Electrolytes,” L.S. Grundy, D.B. Shah, H.Q. Nguyen, K.M. Diederichsen, H. Celik, J.M. DeSimone, B.D. McCloskey, and N.P. Balsara, *Journal of The Electrochemical Society*, vol. 167, issue 12, article 120450, **2020**.
DOI: https://doi.org/10.1149/1945-7111/abb34e

322. “Continuum Description of the Role of Negative Transference Numbers on Ion Motion in Polymer Electrolytes, H.K. Kim, N.P. Balsara, V. Srinivasan, *Journal of The Electrochemical Society*, vol. 167, Issue 11, article 110559, **2020**.
DOI: https://doi.org/10.1149/1945-7111/ aba790

321. “Reversible changes in grain structure and conductivity in a block copolymer electrolyte” S. Chakraborty, X. Jiang, Z.J. Hoffman, G.K. Sethi, C. Zhu, N.P. Balsara, and I. Villaluenga, *Macromolecules*, vol. 53, issue 13, pp. 5455-5464, **2020**.
DOI: https://doi.org/10.1021/acs.macromol.0c00466

320. "Preferential Stripping of a Lithium Protrusion Resulting in Recovery of a Planar Electrode", J.A. Maslyn, K.D. McEntush, K.J. Harry, L. Frenck, W.S. Loo, D.Y. Parkinson, N.P. Balsara, *Journal of The Electrochemical Society*, vol. 167, issue 10, article 100553, **2020**.
DOI: https://doi.org/10.1149/1945-7111/ab9d62

319. “Miscible Polyether/Poly(ether-acetal) Electrolyte Blends”, K.W. Gao, W.S. Loo, R.L. Snyder, B.A. Abel, Y. Choo, A. Lee, S.C.M. Teixeira, B.A. Garetz, G.W. Coates, N.P. Balsara, *Macromolecules*, vol. 53, issue 14, pp. 5728-5739, **2020**.
DOI: https://doi.org/10.1021/acs.macromol.0c00747

318. "Comparing experimental phase behavior of ion-doped block copolymers with theoretical predictions based on selective ion solvation", K.J. Hou, W.S. Loo, N.P. Balsara, J. Qin, *Macromolecules*, vol. 53, pp. 3956-3966, **2020**.
DOI: 10.1021/acs.macromol.0c00559

317. “Polymer Dynamics in Block Copolymer Electrolytes Detected by Neutron Spin Echo”, W.S. Loo, A. Faraone, L.S. Grundy, K.W. Gao, N.P. Balsara, *Macro Letters*, vol. 9, pp. 639-645, **2020**.
DOI: 10.1021/acsmacrolett.0c00236

316. “Lithium-Sulfur Batteries with a Block Copolymer Electrolyte Analyzed by X-ray Microtomography”, D. Devaux, I. Villaluenga, X. Jiang, Y.H. Chang, D.Y. Parkinson, N.P. Balsara, *Journal of The Electrochemical Society*, vol. 167 (6), article 060506, **2020**.

315. "Segmental Dynamics Measured by Quasi-Elastic Neutron Scattering and Ion Transport in Chemically-Distinct Polymer Electrolytes", K.I. Mongcopa, D.A. Gribble, W.S. Loo, M. Tyagi, S.A. Mullin, N.P. Balsara, *Macromolecules*, vol. 53, pp. 2406−2411 **2020**.
DOI: 10.1021/acs.macromol.0c00091

314. “Diffusion and Migration in Polymer Electrolytes”, Y. Choo, D.M. Halat, I. Villaluenga, K. Timachova, N.P. Balsara, *Progress in Polymer Science*, vol. 103, article 101220, **2020**.
DOI: 10.1016/j.progpolymsci. 2020.101220

313. “Lithium Salt Distribution and Thermodynamics in Electrolytes based on Short Perfluoropolyether-block-Poly(ethylene oxide) Copolymers", M. Chintapalli, K. Timachova,

K.R. Olson, S.J. Mecham, J.M. DeSimone, N.P. Balsara, *Macromolecules*, vol. 53, pp. 1142−1153, **2020**.
DOI: 10.1021/acs.macromol.9b01637

312. "Measurement of Three Transport Coefficients and the Thermodynamic Factor in Block Copolymer Electrolytes with Different Morphologies", M.D. Galluzzo, W.S. Loo, A. Wang, A. Walton, J.A. Maslyn, N.P. Balsara, *Journal of Physical Chemistry B*, vol. 124 (5), pp 921-935, **2020**.
DOI: 10.1021/acs.jpcb.9b11066

311. "Optimizing the Monomer Structure of Polyhedral Oligomeric Silsesquioxane (POSS) for Ion Transport in Hybrid Organic-Inorganic Block Copolymers", K.W. Gao, X. Jiang, Z.J. Hoffman, G.K. Sethi, S. Chakraborty, I. Villaluenga, N.P. Balsara, *Journal of Polymer Science*, vol. 58 (2), pp 363-371, **2020**.
DOI: 10.1002/pol.20190073

310. "Impact of Salt Concentration on Non-Uniform Lithium Electrodeposition through Rigid Block Copolymer Electrolytes", L. Frenck, J.A. Maslyn, W.S. Loo, D. Parkinson, N.P. Balsara, *ACS Applied Materials and Interfaces*, vol. 11 (51), pp 47878-47885, **2019**.
DOI: 10.1021/acsami.9b15606

309. "Factors That Control the Formation of Dendrites and Other Morphologies on Lithium Metal Anodes", L. Frenck, G.K. Sethi, J.A. Maslyn, N.P. Balsara, *Frontiers in Energy Research*, vol. 7, article 115, **2019**.
DOI: 10.3389/fenrg.2019.00115

308. "Atomic-level Engineering and Imaging of Polypeptoid Crystal Lattices", S. Xuan, X. Jiang, R.K. Spencer, N.K. Li, D. Prendergast, N.P. Balsara, and R. N. Zuckermann, *Proceedings of the National Academy of Sciences*, vol. 116 (45), pp 22491-22499, **2019**.
DOI: 10.1073/pnas.1909992116

307. "Investigating the Effect of Added Salt on the Chain Dimensions of Poly(ethylene oxide) through Small-Angle Neutron Scattering", W.S. Loo, K.I. Mongcopa, D.A. Gribble, A.A. Faraone, N.P. Balsara, vol. 52 (22), pp8724-8732, *Macromolecules*, **2019**.
DOI: 10.1021/acs.macromol.9b01509

306. "Extended Cycling through Rigid Block Copolymer Electrolytes Enabled by Reducing Impurities in Lithium Metal Electrodes", J.A. Maslyn, L. Frenck, W.S. Loo, D. Parkinson, N.P. Balsara, *ACS Applied Energy Materials*, vol. 2 (11), pp 8197-8206, **2019**.
DOI: 10.1021/acsaem.9b01685

305. "Comparing Experimental Measurements of Limiting Current in Polymer Electrolytes with Theoretical Predictions", D.A. Gribble, L. Frenck, D.B. Shah, J.A. Maslyn, W.S. Loo, K.I.S. Mongcopa, D.M. Pesko, N.P. Balsara, *Journal of the Electrochemical Society*, vol. 166 (14), pp A3228-A3234, **2019**.
DOI: 10.1149/2.0391914jes

304. “Comparing Measurements of Limiting Current with Theoretical Predictions up to the Solubility Limit”, D.B. Shah, H.K. Kim, H.Q. Nguyen, V. Srinivasan, and N.P. Balsara, *Journal of Physical Chemistry C*, vol. 123(39), pp 23872-23881, **2019**.
DOI: 10.1021/acs.jpcc.9b07121

303. “Composition Dependence of the Flory–Huggins Interaction Parameters of Block Copolymer Electrolytes and the Isotaksis Point”, W.S Loo, G.K. Sethi, A.A. Teran, M.D. Galluzzo, J.A Maslyn, H.J. Oh, K.I. Mongcopa, N.P, Balsara, vol. 52 (15), pp 5590-5601, *Macromolecules*, **2019**.
DOI: 10.1021/acs.macromol.9b00884

302. “Ohm’s Law for Ion Conduction in Lithium and Beyond-Lithium Battery Electrolytes”, M.D. Galluzzo, J.A. Maslyn, D.B. Shah, N.P. Balsara, *Special Issue: Chemical Physics of Charged Macromolecules, invited review, Journal of Chemical Physics*, vol. 151, pp 020901, **2019**.
DOI: 10.1063/1.5109684

301. "Diffraction Imaging of Nanocrystalline Structure in Organic Semiconductor Molecular Thin Films" O. Panova, C. Ophus, C. Takacs, K. Bustillo, L. Ballhorn, A. Salleo, N. Balsara, and A. Minor, *Nature Materials*, vol. 18, pp 860-865, **2019**.
DOI: 10.1038/s41563-019-0387-3

300. “Effect of Processing and End Groups on the Crystal Structure of Polypeptoids Studied by Cryogenic Electron Microscopy at Atomic Length Scales”, X. Jiang, S. Xuan, J. Kundu, D. Prendergast, R.N. Zuckermann, N.P. Balsara, *Soft Matter*, vol. 15, pp 4723-4726, **2019**.
DOI: 10.1039/c9sm00633h

299. “Structure and Thermodynamics of Hybrid Organic-Inorganic Diblock Copolymers with Salt” G.K. Sethi, H.Y. Jung, W.S. Loo, S. Sawhney, M.J. Park, N.P. Balsara, and I. Villaluenga, *Macromolecules*, vol. 52, pp 3165-3175, **2019**.
DOI: 10.1021/acs.macromol.9b00042

298. “Difference between Approximate and Rigorously Measured Transference Numbers in Fluorinated Electrolytes”, D.B. Shah, H.Q. Nguyen, L.S. Grundy, K.R. Olson, S.J. Mecham, J.M. DeSimone, and N.P. Balsara, *Physical Chemistry Chemical Physics*, vol. 21, pp 7857-7866, **2019**. DOI: 10.1039/C9CP00216B

297. “Dissolution of Lithium Metal in Poly(ethylene oxide)”, M.D. Galluzzo, D.M. Halat, W.S. Loo, S.A. Mullin, J.A. Reimer, N.P. Balsara, *ACS Energy Letters*, vol. 4, pp 903-907, **2019**.
DOI: 10.1021/acsenergylett.9b00459

296. “Ion Diffusion across a Disorder-to-Order Phase Transition in a Poly(ethylene oxide)-*b*-Poly(silsesquioxane) Block Copolymer Electrolyte”, K. Timachova, G.K. Sethi, R. Bhattacharya, I. Villaleunga, N.P. Balsara, *Invited paper for a themed collection: Charge*

Transporting Nanostructured Polymers for Electrochemical Systems, Molecular Systems Design and Engineering, vol. 4 (2), pp 357-364, **2019**.
DOI: 10.1039/C8ME00077H

295. "Organizing Thermodynamic Data obtained from Multicomponent Polymer Electrolytes: Salt-Containing Polymer Blends and Block Copolymers",W.S. Loo, N.P. Balsara, *Journal of Polymer Science, Part B: Polymer Physics*, XX, **2019**.
DOI: 10.1002/polb.24800

294. "Resolving the Morphology of Peptoid Vesicles at the One Nanometer Length-Scale using Cryogenic Electron Microscopy", X. Jiang, R.K. Spencer, J. Sun, C. Ophus, R.N. Zuckermann, K.H. Downing, Nitash P. Balsara, *Journal of Physical Chemistry B*, vol. 123 (5), pp 1195–1205, **2019**. (ACS Editor's choice)
DOI: 10.1021/acs.jpcb.8b11752

293. "Confined versus Unconfined Crystallization in Block Copolymer/Salt Mixtures Studied by Depolarized Light Scattering", X. Li, W.S. Loo, X. Jiang, X. Wang, M.D. Galluzzo, K. I. Mongcopa, A.A. Wang, N.P. Balsara, B.A. Garetz, *Macromolecules*, vol. 52, pg. 982-991, **2019**.
DOI: 10.1021/acs.macromol.8b02142

292. "Theoretical Interpretation of Ion Velocities in Concentrated Electrolytes Measured by Electrophoretic NMR", K. Timachova, J. Newman, and N.P. Balsara, *Journal of the Electrochemical Society*, vol. 166 (2), pg. A264-A267, **2019**.
DOI: 10.1149/2.0591902jes

291. "Detection of the Order-to-Disorder Transition in Block Copolymer Electrolytes Using Quadrupolar 7Li NMR Splitting", L.S. Grundy, G.K. Sethi, M.D. Galluzzo, W.S. Loo, J.A. Maslyn, A.A. Teran, J.L. Thelen, K. Timachova, J.A. Reimer, L.A. Madsen, N.P. Balsara, *ACS Macro Letters*, vol. 8, pg. 107-112, **2019**.
DOI: 10.1021/acsmacrolett.8b00809

290. "3D Printed Absorber for Capturing Chemotherapy Drugs before they Spread through the Body" H.J. Oh, M.S. Aboian, M.Y.J. Yi, J.A. Maslyn, W.S. Loo, X. Jiang, D.Y. Parkinson, M.W. Wilson, T, Moore, C.R. Yee, G.R. Robbins, F.M. Barth, J.M. DeSimone, S.W. Hetts, N.P. Balsara, *ACS Central Science*, vol. 5(3), pg. 419-427, **2019**.
DOI: 10.1021/acscentsci.8b00700

289. "Liquid-Crystalline Phase Behavior in Polypeptoid Diblock Copolymers", D.R. Greer, M.A. Stolberg, S. Xuan, X. Jiang, N.P. Balsara, and R.N. Zuckermann, *Macromolecules*, vol. 51, pg. 9519−9525, **2018**.
DOI: 10.1021/acs.macromol.8b01952

288. "Growth of Lithium Dendrites and Globules through a Solid Block Copolymer Electrolyte as a Function of Current Density", J.A. Maslyn, W.S. Loo, K.D. McEntush, H.J. Oh, K.J. Harry,

D.Y. Parkinson, N.P. Balsara, *Journal of Physical Chemistry B*, vol. 122(47), pg. 26797–26804, **2018**.
DOI: 10.1021/acs.jpcc.8b06355

287. "Rate Constants of Electrochemical Reactions in a Lithium-Sulfur Cell Determined by Operando X-Ray Absorption Spectroscopy", D.R. Wang, D.B. Shah, J.A. Maslyn, W.S. Loo, E.J. Nelson, M.L. Latimer, J. Feng, K.H. Wujcik, D. Prendergast, T.A. Pascal, N.P. Balsara, *Journal of the Electrochemical Society*, vol. 165(14), pg. A3487-A3495, **2018**.
DOI: 10.1149/2.0981814jes

286. "Polymer and Composite Electrolytes, D.H. Hallinan, I. Villaluenga, N.P. Balsara, *Materials Research Science Bulletin*, Special Issue: Frontiers of Solid-State Batteries, invited review, 43(10), pg. 759-767, **2018**.
DOI: 10.1557/mrs.2018.212

285. "Comparing Cycling Characteristics of Symmetric Lithium-Polymer-Lithium Cells with Theoretical Predictions", D.M. Pesko, S. Sawhney, Z.Feng, J. Newman, V. Srinivasan, N.P. Balsara, *Journal of the Electrochemical Society*, vol. 165(13), pg. A3186-A3194, **2018**.
DOI: 10.1149/2.0921813jes

284. "Comparing Two Electrochemical Approaches for Measuring Transference Numbers in Concentrated Electrolytes", D.M. Pesko, S. Sawhney, J. Newman, N.P. Balsara, *Journal of the Electrochemical Society*, vol. 165(13), pg. A3014-A3021, **2018**.
DOI:10.1149/2.0231813jes

283. "Imaging Unstained Synthetic Polymer Crystals and Defects on Atomic Length-scales using Cryogenic Electron Microscopy", X. Jiang, D.R. Greer, J. Kundu, C. Ophus, A.M. Minor, D. Prendergast, R.N. Zuckermann, N.P. Balsara, K.H. Downing, *Macromolecules*, 51 (19), pg 7794–7799, **2018**.
DOI: 10.1021/acs.macromol.8b01508

282. "Determination of Redox Reactions in Lithium-Sulfur Batteries", K.H. Wujcik, D.R. Wang, A.A. Teran, E. Nasybulin, T.A. Pascal, D. Prendergast, N.P. Balsara, *Advances in Electrochemical Science and Engineering*, Vol. XVIII, Electrochemical Engineering: The Pathway from Discovery to Product, R.C. Alkire, P.N. Bartlett, M.T. Koper, editors, Chapter 3, Wiley-VCH, pp 41-74, **2019**.

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24. "Thermodynamics of Mixing for Blends of Model Ethylene-Butene Copolymers", W.W. Graessley, R. Krishnamoorti, N.P. Balsara, L.J. Fetters, D.J. Lohse, D.N. Schulz, J.A. Sissano, R.J. Butera, *Macromolecules*, vol. 27, pg. 3896-3901, **1994**.

23. "Shear Effects on Solvated Block Copolymer Lamellae: Polystyrene-Polyisoprene in Dioctyl Phthalate", N.P. Balsara, B. Hammouda, *Physical Review Letters*, vol. 72, pg. 360-363, **1994**.

22. "In-situ Small Angle Neutron Scattering from a Block Copolymer Solution under Shear", N.P. Balsara, B. Hammouda, P.K. Kesani, S.V. Jonnalagadda, G. Straty, *Macromolecules*, vol. 27, pg. 2566-2573, **1994**.

21. "The Structural Origin of Thermodynamic Interactions in Blends of Saturated Hydrocarbon Polymers", R. Krishnamoorti, W.W. Graessley, N.P. Balsara, D.J. Lohse, *Macromolecules*, vol. 27, pg. 3073-3081, **1994**.

20. "Deuteration Effects and Solubility Parameter Ordering in Blends of Saturated Hydrocarbon Polymers", W.W. Graessley, R. Krishnamoorti, N.P. Balsara, L.J. Fetters, D.J. Lohse, D.N. Schulz, J.A. Sissano, *Macromolecules*, vol. 27, pg. 2574-2579, **1994**.

19. "The Effect of Saturation on the Thermodynamics of Polystyrene-Polyisoprene Block Copolymers", N.P. Balsara, C.C. Lin, H.J. Dai, R. Krishnamoorti, *Macromolecules*, vol. 27, pg. 1216-1220, **1994**.

18. "Small Angle Neutron Scattering from Partially Deuterated Polymers and their Blends", N.P. Balsara, D.J. Lohse, W.W. Graessley, R. Krishnamoorti, *Journal of Chemical Physics*, vol. 100, pg. 3905-3910, **1994**.

17. "The Compositional Dependence of the Thermodynamic Interactions in Blends of Model Polyolefins", R. Krishnamoorti, W.W. Graessley, N.P. Balsara, D.J. Lohse, *Journal of Chemical Physics*, vol. 100, pg. 3894-3904, **1994**.

16. "Thermodynamic Interactions and Correlations in Mixtures of Two Homopolymers and a Block Copolymer", N.P. Balsara, S.V. Jonnalagadda, C.C. Lin, C.C. Han, R. Krishnamoorti, *Journal of Chemical Physics*, vol. 99, pg. 10011-10020, **1993**.

15. "Thermodynamics of Random Copolymer Mixtures by SANS", D.J. Lohse, N.P. Balsara, L. J. Fetters, D.N. Schulz, J.A. Sissano, W.W. Graessley, R. Krishnamoorti, pg. 175-183 in *'Advances in Polyolefins'*, T.C. Chung, ed., Plenum, New York, **1993**.

14. "Birefringence and Diffraction of Light in Ordered Block Copolymer Materials", B.A. Garetz, M.C. Newstein, H.J. Dai, S.V. Jonnalagadda, N.P. Balsara, *Macromolecules*, vol. 26, pg. 3151-3155, **1993**.

13. "Effect of Deuterium Substitution on Thermodynamic Interactions in Polymer Blends", W.W. Graessley, R. Krishnamoorti, N.P. Balsara, L.J. Fetters, D.J. Lohse, D.N. Schulz, J.A. Sissano, *Macromolecules*, vol. 26, pg. 1137-1143, **1993**.

12. "Thermodynamic Interactions in Model Polyolefin Blends Obtained by Small Angle Neutron Scattering", N.P. Balsara, L.J. Fetters, N. Hadjichristidis, D.J. Lohse, C.C. Han, W.W. Graessley, R. Krishnamootri, *Macromolecules*, vol. 25, pg. 6137-6147, **1992**.

11. "Relationship Between Birefringence and the Structure of Ordered Block Copolymer Materials", N.P. Balsara, B.A. Garetz, H.J. Dai, *Macromolecules*, vol. 25, pg. 6072-6074, **1992**.

10. "Birefringence Detection of the Order-to-Disorder Transition in Block Copolymer Liquids", N.P. Balsara, D. Perahia, C.R. Safinya, M. Tirrell, T.P. Lodge, *Macromolecules*, vol. 25, pg. 3896-3901, **1992**.

9. "Dynamic Light Scattering from Microstructured Block Copolymer Solutions", N.P. Balsara, P. Stepanek, M. Tirrell, T.P. Lodge, *Macromolecules*, vol. 24, pg. 6227-6230, **1991**.

8. "Diffusion in Microstructured Block Copolymer Solutions", N.P. Balsara, C.E. Eastman, M. Foster, T.P. Lodge, M. Tirrell, *die Makromolecular Chemie, Macromolecular Symposium*, vol. 45, pg. 213-235, **1991**.

7. "Micelle Formation of BAB Triblock Copolymers in Solvents that Preferentially Dissolve the A Block", N.P. Balsara, M. Tirrell, T.P. Lodge, *Macromolecules*, vol. 24, pg. 1975-1986, **1991**.

6. "Phase Equilibria and the Landau-Ginzburg Functional", E.B. Nauman, N.P. Balsara, *Fluid Phase Equilibria*, vol. 45, pg. 229-250, **1989**.

5. "Compositional Quenching: A Process for Forming Polymer-in-Polymer Microdispersions and Cocontinuous Networks", E.B. Nauman, M. Ariyapadi, N.P. Balsara, J. Furno, T. Grocela, S.H. Liu, R. Mallikarjun, *Chemical Engineering Communications,* vol. 66, pg. 29-55, **1988**.

4. "Periodic Minimizing Solutions of the Landau-Ginzburg Functional", E.B. Nauman, N.P. Balsara, *Quarterly of Applied Mathematics*, vol. 46, pg. 375-379, **1988**.

3. "The Entropy of Inhomogeneous Polymer-Solvent Systems", N.P. Balsara, E.B. Nauman, *Journal of Polymer Science, Polymer Physics Edition*, vol. 26, pg. 1077-1086, **1988**.

2. "A Novel Approach to Polymeric Microdispersions", E.B. Nauman, S.T. Wang, N.P. Balsara, *Polymer*, vol. 27, pg. 1637-1640, **1986**.

1. "The Influence of Buoyancy on Thermophoretic Deposition of Aerosol Particles in a Horizontal Tube", N.P. Balsara, R.S. Subramanian, *Journal of Colloid and Interface Science*, vol. 118, pg. 3-14, **1986**.

PATENTS

16. J.M. DeSimone, A. Pandya, D. Wong, N.P. Balsara, J. Thelen, D. Devaux, “Ion Conducting Fluropolymer Carbonates for Alkali Metal Ion Batteries”, filed by the University of North Carolina at Chapel Hill and the Regents of the University of California on March 31, 2014. Patent Number 9755273. Published on September 5, 2017.

15. N.P. Balsara, I. Villaluenga, D.H.C. Wong, J.M. DeSimone, “Hybrid Solid Single-Ion-Conducting Electrolytes for Alkali Batteries”, filed by the Regents of the University of California, November 2, 2016. Publication Number 20170141430. Published on May 18, 2017.

14. K.J. Harry, N. Schauser, N.P. Balsara, “Electrochemical Deposition of Refined Lithium Metal from Polymer Electrolytes”, filed by the Regents of the University of California, October 15, 2016. Publication Number 20170110714. Published on April 20, 2017.

13. B.M. Wiers, N.P. Balsara, J.R. Long, “Solid lithium electrolyte via addition of lithium salts to metal-organic frameworks”, filed by the Regents of the University of California, August 8, 2013. Published as US20140045074 on March 29, 2016.

12. X.C. Chen, J. Yang, A. Chin, A. Patel, S. Hetts, N. Balsara, “Copolymer Membrane for High-Dose Chemotherapy Delivery Transarterial Chemoemblization”, filed by the Regents of the University of California, October 12, 2015. Published on April 14, 2016. US Patent Application 20160101218.

11. D.T. Wong, N.P. Balsara, "Block Copolymer Battery Separator", filed by the Regents of the University of California, September 20, 2013. Published on July 31, 2014. PCT Number: PCT/US2012/030132

10. A.E.K. Javier, N.P. Balsara, S.N. Patel, D.T. Hallinan, "Block Copolymer with Simultaneous Electric and Ionic Conduction for Use in Lithium Ion Batteries", filed by the Regents of the University of California, March 22, 2012. Published as US 8552144B2 on Oct 8, 2013.

9. A.E. Ozcam, A.K. Jha, N.P. Balsara, "Styrene-Siloxane Triblock Copolymers as Membranes for Selective Transport of Alcohols and Other Organic Compounds in Aqueous Mixtures", filed by the Regents of the University of California, November 11, 2011. Published on May 24, 2016. PCT Number: PCT/US2012/064534.

8. N.P. Balsara, A.K. Jha, L. Chen, "Nanostructured Polymer Membranes for Selective Alcohol Transport", filed by the Regents of the University of California, March 12, 2010. US Patent Application 61/313618. Published as US 8440765B2 on May 14, 2013.

7. M. Singh, I. Gur, H.B. Eitouni, N.P. Balsara, “Multiple Electrolyte Electrochemical Cells,” filed by Seeo, Inc., November 6, 2009. Publication date: September 15, 2015. PCT Number: PCT/US2009/063643

6. N.P. Balsara, H.B. Eitouni, I. Gur, W. Hudson, M. Singh, “Protected Lithium Metal Electrodes for Rechargeable Batteries,” filed by Seeo, Inc., April 21, 2009. Publication date: Feb 10, 2011, US Patent Application 12/988474. PCT Number: PCT/US2009/041180

5. W. Hudson, H.B. Eitouni, M. Singh, N.P. Balsara, I. Gur, “Electrodes with Solid Polymer Electrolytes,” filed by Seeo, Inc., February 13, 2009. Publication date: Jan 6, 2011, US Patent Application 12/867665, PCT Number: PCT/US2009/034156.

4. N.P. Balsara, H.B. Eitouni, I. Gur, M. Singh, W. Hudson, “Gel Polymer Electrolytes for Batteries,” filed by Seeo, Inc., January 16, 2009. Publication date: Nov 18, 2014, US Patent Application: 12/812,214, PCT Number: PCT/US2009/031356.

3. M. Singh, I. Gur, H.B. Eitouni, N.P. Balsara, “A Solid Electrolyte Material Manufacturable by Polymer Processing Methods,” filed by Seeo Inc., November 14, 2008. Publication date: Sep 18, 2012, US Patent Application: 12/271,829.

2. S. Mullin, A. Panday, N.P. Balsara, M. Singh, H.B. Eitouni, E.D. Gomez, "High Elastic Modulus Polymer Electrolytes," filed by the Regents of the University of California on April 3, 2007. Publication date: Oct 22, 2013. US Patent Application 12/225, 934. PCT Number: PCT/US2007/008435.

1. M.J. Park, N.P. Balsara, "Nanostructured Polymer Membranes for Proton Conduction", filed by the Regents of the University of California on June 30, 2008. Publication date: Jun 18, 2013, US Patent Application: 12/667,219, PCT Number: PCT/US2008/008159.

STUDENTS

Post Doctoral Research Scientists

Current Post Docs:
Xiaopeng Yu, Synthesis of Novel Ion Conductors, February 2020-present.
Saheli Chakraborty, Synthesis of Polymer Electrolytes, May 2018-present.
Louise Frenck, Lithium Metal Electrodes, October 2017-present.
David Halat, NMR Studies of Ion Transport, August 2018-present (co-advised by Jeffrey Reimer)
Youngwoo Choo, Solvation Studies in Polymer Electrolytes, August 2018-present.

Graduated Post Docs:
24. Hee Jeung Oh, Polymer Membranes for Drug Capture, August, 2014-December 2019 (Pennsylvania State University).
23. Kim Mongcopa, Dynamics in Polymer Electrolytes, January 2017-October 2018 (C3Nano, California).
22. Irune Villaluenga, Synthesis and Characterization of Composite Solid Electrolytes, January 2013-March 2018 (Blue Current, Berkeley, California).
21. Mahesh Bhatt, Block Copolymers for Simultaneous Electron and Ion Transport, December 2013-December 2016. (C-Crete Technologies, Houston, Texas)
20. Didier Devaux, Characterization of Solid Electrolytes and Electrodes, February 2013-August 2016. (Centre National de la Recherche Scientifique (CNRS), Grenoble Institute of Technology, France)
19. Chelsea Chen, Synthesis and Characterization of Proton-Conducting Membranes, May 2012-July, 2016 (Dow Chemicals, Natick, Massachusetts).
18. Nikos Petzetakis, Synthesis and Characterization of Membranes for Biofuel Purification, November 2012-October 2015. (Dow Chemicals, Freeport, TX)
17. Pepa Cotanda, Synthesis and Characterization of Membranes for Artificial Photosynthesis, December 2012-September 2015. (Dow Chemicals, Freeport, TX)
16. Sebnem Inceoglu, Synthesis of Block Copolymers for Selective Ion and Alcohol Transport, January 2011-February, 2015.
15. Inna Gurevitch, Synthesis and Characterization of Block Copolymer/Ceramic Composite Electrolytes, November 2011-June 2014.
14. Anna E. Javier, Block Copolymers for Electron and Ion Transport, June 2010-December 2013. (Henkel Corp., Pittsburgh, CA)
13. Dan Hallinan, Block Copolymer Electrolytes for Lithium Batteries, July 2009-December, 2012 (Florida State University).
12. Guillaume Sudre, Characterization of Block Copolymers for Selective Hydroxide Ion Transport, February 2011-December 2012 (Claude Bernard University, Lyon, France).
11. Evren Ozcam, Optimized Membranes for Selective Alcohol Transport, December 2010-November 2012. (3M, Minneapolis, Minnesota)
10. Ashish K. Jha, Characterization of Membranes for Selective Transport of Alcohol, December 2008-July 2011. (Clorox, Pleasanton, California)
9. Xin Wang, Ion Transport in Hydrated Polymers, August 2007-January, 2011. (DSM, China)

8. Liang Chen, Synthesis of Membranes for Selective Transport of Alcohol, July 2009-July 2010. (Dow Chemicals, Midland, MI)
7. Ashutosh Panday, Nanostructured Block Copolymer Electrolytes, December 2006-July 2009. (University of Petroleum and Energy Studies, Dehradun, India)
6. Moon-Jeong Park, Synthesis and Characterization of Fuel Cell Membranes, January 2006-February 2009. (Postech, Pohang, Korea)
5. Ed Feng, "Simulations and Field Theory of Polymers", January 2006-June 2008. (Lawrence Livermore National Lab)
4. Mohit Singh, "Synthesis and Characterization of Polymer Electrolytes", March 2004-September, 2006. (Seeo, Inc., Hayward, CA)
3. Gregg Wilmes, "Nanoligthography using Templated Block Copolymers", January 2004-July 2006. (Eastern Michigan University)
2. Kyungyoul Baek, "Synthesis of Nanostructured Fuel Cell Membranes", March 2004-March 2006. (Korean Institute of Science and Technology)
1. Yumi Matsumiya, "Characterization of Polymer Electrolytes", August 2002-December 2003. (Institute for Chemical Research, Kyoto University, Japan)

Current PhD Students:
Gurmukh Sethi, "Thermodynamics and Ion Transport in Organic-Inorganic Block Copolymers", August 2016 - present.
Michael Galluzzo, "Current-Induced Phase Transitions in Block Copolymer Electrolytes", October 2016 - present.
Kevin Gao, "Polymer Blend Electrolytes for Lithium Batteries", October 2017-present.
Lorena Grundy, "NMR Characterization of Ion Transport in Solid Electrolytes", October 2017-present.
Neel Shah, "Complete Characterization of Block Copolymer Electrolytes", October 2018-present.
Alec Ho, "Fast-Charging Lithium Battery Anodes", October 2018-present.
Zach Hoffman, "Electrochemical Characterization of Fluorinated Electrolytes", October 2018-present.
Morgan Seidler, "Atomic-Scale Imaging of Charged Polymers", October 2019-present.
Darby Hickson, "Transport Characterization of Liquid Electrolytes at Low Temperatures", October 2019-present.

Graduated PhD Students:
40. Whitney Loo, "Effect of Morphology on Ion Transport in Block Copolymer Electrolytes", November 2015-August 2020. (Post-doc, University of Chicago)
39. Jacqueline Maslyn, "Lithium Metal Anodes in Rechargeable Batteries", November 2015-June 2020. (Zitara Technologies, San Francisco, California)
38. Deep Shah, "Ion Transport in Perfluoroether-Based Electrolytes", November 2015-June 2020. (Tesla, Palo Alto, California)
37. Rita Dunyang Wang, "Fundamental Studies of Lithium-Sulfur Reaction Intermediates", November 2013-August 2018 (Tesla, Palo Alto, California)
36. Danielle M. Pesko, "Complete Electrochemical Characterization of Polymer Electrolytes", November 2013-June 2018 (QuantumScape, San Jose, California).

35. Ksenia Timachova, “Ion Diffusion and Electrically Driven Transport in Homogeneous and Nanostructured Polymer Electrolytes”, November 2013-August 2018, (Lam Research Corporation, Freemont, California).
34. Douglas Greer, "Self-Assembly of Peptoid Block Copolymers", November 2012-December, 2017 (Intel, Portland, Oregon).
33. Alex Wang, "Block Copolymer Membranes for Xylose Dehydration ", November 2012-September 2017 (AGC Automotive Americas, Ypsilanti, Michigan).
32. Adriana Rojas, "Single-Ion-Conducting Block Copolymers", November 2012-August 2016.
31. Mahati Chintapalli, "Ion Transport in Block Copolymers", December 2016 (PARC, a Xerox Company, Palo Alto, California).
30. Chae-Young Shin, "Block Copolymer Membranes for Biofuel Purification", December 2016 (Zimitech, Berkeley, California).
29. Jacob Thalen, "Charge Transport in Block Copolymers", December 2016 (NIST, Gaithersburg, Maryland).
28. Kevin Wujcik, "Fundamental Studies of Lithium-Sulfur Cell Chemistry", October 2016 (Ford, Ann Arbor, Michigan).
27. Katherine Harry, "Lithium Dendrite Growth through Solid Polymer Electrolyte Membranes", June 2016 (Seeo Inc., San Mateo, California).
26. Nicholas Young, "Effect of Supercritical Carbon Dioxide on the Thermodynamics of Polymer Blends", March 2014 (Intel, Portland, Oregon)
25. Alexander A. Teran, "Thermodynamics and Transport Block Copolymer/Salt Mixtures", November 2013 (Blue Current, California)
24. Shrayesh N. Patel, "Simultaneous Electron and Ion Transport in Block Copolymers", May 2013 (University of Chicago)
23. David T. Wong, "Mesoporous Block Copolymer Separators", December 2012, (Exponent, Boston, MA)
22. Keith M. Beers, "Characterization of Self-Assembly and Charge Transport in Model Polymer Electrolyte Membranes", November 2012. (Exponent, Boston, MA)
21. Greg M. Stone, March 2012. (Malvern Instruments, Houston, TX)
20. Scott A. Mullin, "Morphology and Ion Transport in Block Copolymer Electrolytes", December 2011. (Seeo, Inc., Hayward, CA)
19. Nisita Wanakule, "Ion-Containing Block Copolymers", December, 2010. (ESPCI, Paris, France)
18. Alisyn J. Nedoma, "Phase Behavior in Blends of Asymmetrical Polyolefins", August, 2010. (Imperial College, London, UK)
17. Justin Virgili, co-advised by R.A. Segalman, "Studies of Block Copolymer Thin Films and Mixtures with an Ionic Liquid", August 2009. (Dow Chemicals, Midland, MI)
16. Jeffrey D. Wilbur, "Guided Wave Depolarized Light Scattering", January 2008. (Dow Chemicals, Midland, MI)
15. Amish J. Patel, "Dynamic Studies of a Block Copolymer Melt", December 2007. (University of Pennsylvania, Philadelphia, PA)
14. Enrique D. Gomez, "Electron Microscopy of Soft Matter", December 2007. (Pennsylvania State University, State College, PA)
13. David A. Durkee, co-advised by Alex Bell, "Soft Materials for Nanostructured Catalysts", August, 2007

12. Megan L. Ruegg, "Designing Surfactants for the Organization of Immiscible Polymers", August, 2007. (University of Houston, Houston, TX)
11. Hany B. Eitouni, "Electrochemical Self-Assembly of Organometallic Block Copolymers", December, 2005. (Seeo, Inc., Hayward, CA)
10. Benedict J. Reynolds, co-advised by C.J. Radke, "Dynamics of Block Copolymer Adsorption", May 2005.
9. Hyeok Hahn, "Block Copolymers and Nanotechnology", May 2004 (Chevron, Richmond, CA)
8. Amy A. Lefebvre, "Initial Stages of Phase Separation in Polymer Blends Near the Limit of Metastability", June, 2002. (Arkema Inc., Philadelphia, PA)
7. Joon Hyun Lee, "Thermodynamics and Surfactancy of Block Copolymers in Multicomponent Polyolefin Blends", June, 2002.
6. Mei Y. Chang, co-advised by B.A. Garetz, "Analysis of Microstructure in Ordered Block Copolymer Materials", July, 2000.
5. Won G. Kim, "Kinetics of the Disorder-to-Order Transition in a Block Copolymer Melt", June, 2000.
4. Hao Wang, "Microstructure and Ordering Kinetics of Block Copolymers under Shear Flow", June, 1999.
3. Horng J. Dai, "Grain Structure and Ordering Kinetics in Block Copolymers", June, 1998.
2. Hyun S. Jeon, "Thermodynamics and Morphology in Complex Polymer Fluids", January, 1997.
1. Chen C. Lin, "Thermodynamics in Block Copolymers and Multicomponent Polymer Blends, October, 1996.

MS Students
10. Naveen Venkatesh, “Charge Transport in Block Copolymers”, May 2015.
9. C. Esawaran "Synthesis of Model Block Copolymers by Glove Box and High Vacuum Anionic Polymerization", June 2000.
8. Jatin U. Mody, "The Effect of Cross-linking on the Order to Disorder Transition of a Diblock Copolymer, July, 1999.
7. Amy A. Lefebvre, "Nucleation in Multicomponent Polymer Blends", June, 1999.
6. Arvind Rajaram, "Dynamic and Static Light Scattering from Graft Copolymer Solutions", December, 1998.
5. Arvindakshan Krishnan, "Measurement of the Order Parameter in Symmetric Diblock Copolymers, May, 1997.
4. Feridun Demir, "Dynamic Light Scattering from Block Copolymer Solutions", May, 1997.
3. S.V. Jonnalagadda, "Synthesis of Block Copolymers by Anionic Polymerization, June, 1995.
2. Praveen K. Kesani, "Synthesis and Characterization of Block Copolymers, February, 1995.
1. Horng J. Dai, "Birefringence and Diffraction of Light in Ordered Block Copolymer Materials", August, 1994.

Current Undergraduate Student Researchers
1. Hien Nguyen, Mentor: Deep Shah, Project: Complete Electrochemical Characterization of Fluroniated Electrolytes (September 2017-present)

2. Simar Sawhney, Mentors: Daniel Pesko, Gumi Sethi, Louise Frenck and Jacqueline Maslyn, Complete Electrochemical Characterization of Organic Polymer Electrolytes (September 2016-present)
3. Vijay Veeraraghavan, Mentors: Louise Frenck and Jacqueline Maslyn, Complete Electrochemical Characterization of Organic Polymer Electrolytes (September 2018-present)
4. Nandan Marwaha, Mentors: Louise Frenck and Jacqueline Maslyn, Complete Electrochemical Characterization of Organic Polymer Electrolytes (September 2018-present)

Graduated Undergraduate Student Researchers
16. Margherita Tonini, Mentor: Hee-Jeung Oh, Project: Studies of Polymer Membranes for Doxorubicin Adsorption (September 2017-May 2019)
15. Michael Yi, Mentor: Hee-Jeung Oh, Project: Analysis of Doxorubicin Adsorption in Chemotherapy Absorbers (September 2017-May 2019)
14. Daniel Gribble, Mentor: Louise Frenck, Project: Measurement of Limiting Current in Polymer Electrolytes (September 2017-May 2019)
13. Kyle McEntush, Mentor: Jacqueline Maslyn, Project: X-ray microtomography of lithium cells (September 2017-May 2019)
12. Amber Walton, Mentor: Michael Galluzzo, Project: Structure and Ion Transport in Block Copolymer Electrolytes (September 2018-May 2019)
11. Rohan Chakraborty, Mentor: Kim Mongcopa, Project: Ion Dynamics in Polymer Electrolytes (September 2016-May 2019)
10. Rajayshree Bhatacharya, Mentor: Ksenia Timachova, Project: Ion Diffusion in Polymer Electrolytes (September 2015-May 2017)
9. Alec Glisman, Mentor: Rita Wang, Project: Characterization of Lithium-Sulfur Batteries (September 2015-May 2016)
8. Alexandra Hasan, Mentor: Danielle Pesko, Project: Ion Conduction in Polymer Electrolytes (September 2015-May 2017)
7. Austin Luong, Mentor: Irune Villaluenga, Project: Single-Ion-Conducting Nanoparticles in Block Copolymers (September 2015-May 2016)
6. Aditya Raghunathan, Mentor: Kevin Wujcik, Project: Spectroscopy of Lithium Sulfur Battery Reaction Intermediates (September 2014-May 2015)
5. Thao Lee, Mentor: Mahati Chintapalli, Project: Effect of Grain Structure on Conductivity of Block Copolymer Electrolytes (September 2014-May 2016)
4. Nicole Schauser, Mentor: Katherine Harry, Project: Dendrite Growth on Lithium Anodes (September 2013-May 2016)
3. Naveen Venkatesh, Mentors: Shrayesh Patel and Jacob Thelen, Project: Ion and Electron Conduction in Block Copolymers (September 2013-May 2015)
2. Nicholas Mackay, Mentor: Sebnem Inceoglu and Adriana Rojas, Project: Single-Ion Conducting Block Copolymers (September 2013-May 2015)
1. Rodger Yuan, Mentor: Alex Teran, Project: Block Copolymer Electrolytes (September 2010 to May 2013)

VISITING SCHOLARS
8. Professor Moon Jeong Park (POSTECH, South Korea), March 2018-present
7. Professor Arijit Bose (University of Rhode Island), January 2017- August 2017

6. Louise Frenck (EDF R&D, France), December 2014-October 2015
5. Dr. Ching-Chen Wu (Green Energy and Environment Laboratories, Industrial Technology Research Institute, Taiwan), January 2012-December 2012
4. Dr. Andrew Jackson (National Institute of Standards and Technology, Gaithersburg, MD), May 2011-October 2011.
3. Dr. Wen-Sheng Chang (Green Energy and Environment Laboratories, Industrial Technology Research Institute, Taiwan) September, 2010-August 2011.
2. Professor Sung-Yun Yang (Chungam National University, South Korea) February, 2010-February, 2011.
1. Professor Bruce A. Garetz (New York University), January, 2003-June 2003.

LECTURES

269. Departmental Colloquium, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Department of Chemical and Biomolecular Engineering, Urbana-Champaign, Illinois, November 21, **2019**.
268. Departmental Colloquium, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Department of Chemical Engineering, New York University, New York, New York, November 1, **2019**.
267. Invited by Chemical Engineering Graduate Students at Stanford University, “The Pesko Condition, Polymer Electrolytes, and Lithium Batteries, Stanford, California, October 21, **2019**.
266. Invited Lecture, “Capturing Chemotherapy Drugs before they Spread through the Body”, Homecoming Weekend, University of California, Berkeley, California, October 18, **2019**,
265. Invited Lecture, “Predicting the Performance of Lithium Metal Anodes Stabilized by Polymer Electrolytes”, Symposium: Solid State Batteries, Annual Meeting of the Electrochemical Society, Atlanta, Georgia, October 13, **2019**.
264. Departmental Colloquium, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Department of Chemical Engineering, Clarkson University, Potsdam, New York, October 1, **2019**.
263. Invited Lecture, “Predicting the Performance of Lithium Metal Anodes Stabilized by Polymer Electrolytes”, Division of Physical Chemistry, American Chemical Society, San Diego, California, August 25, **2019**.
262. Invited Lecture, “Predicting the Performance of Lithium Metal Anodes Stabilized by Polymer Electrolytes”, Beyond Lithium Ion XII, Golden Colorado, June 25, **2019**.
261. Keynote Lecture, “Negative Diffusion Coefficients in Polymer Electrolytes”, European Polymer Congress, Crete, Greece, June 11, **2019**.
260. Invited Lecture, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Adolphe Merkel Institute, University of Fribourg, Switzerland, June 7, **2019**.
259. Invited Lecture, "Ohm’s Law and Polymer Electrolytes", High Polymer Research Group Conference on Energy, Sustainability, and the Environment, Devon, England, April 30, **2019**.
258. Departmental Colloquium, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Department of Chemical Engineering, Notre Dame, South Bend, Indiana, November 13, **2018**.
257. Invited Lecture, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Frontiers of Molecular Engineering Symposium, Royal Society of Chemistry, held at the University of Chicago, Chicago, Illinois, September 27, **2018**.
256. Departmental Colloquium, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Department of Chemical Engineering, Louisiana State University, Baton Rouge Louisiana, September 21, **2018**.
255. Invited Lecture, “X-ray Microtomography Studies of the Lithium-metal-block-copolymer Interface during Cycling”, Division of Physical Chemistry, American Chemical Society, Boston, Massachusetts, August 18, **2018**.
254. Invited Lecture, “Phase behavior of mixtures of block copolymers and a lithium salt”, Division of Polymer Chemistry, American Chemical Society, Boston, Massachusetts, August 20, **2018**.

252. Invited Lecture, “Ohm’s Law and Ion Transport in Polymer Membranes”, Gordon Conference on Membranes: Materials and Processes, Colby-Sawyer College, New London, New Hampshire, August 12, **2018**.
251. Invited Lecture, “Ion Transport in Polymer Electrolytes”, International Symposium on Polymer Electrolytes-16, Yokohama, Japan, June 24, **2018**.
250. Plenary Lecture, “Time-Resolved X-ray Microtomograhy, Lithium Batteries, and the Clean Energy Landscape”, Time, Work, and Function Workshop, University of Oslo, Oslo, Norway, June 14, **2018**.
249. Invited Lecture, “Lithium Deposition through a Polymer Electrolyte”, US-German Energy Storage Workshop, US Department of Energy, Washington DC, March 26, **2018**.
248. Invited Lecture, "Ohm’s Law and Ion Transport in Solid Polymer Electrolytes", Batteries Gordon Research Conference, Ventura, California, February 26, **2018**.
247. Invited Lecture, “Ohm’s Law, Polymer Electrolytes and Lithium Batteries”, Adolphe Merkle Institute, University of Fribourg, Fribourg, Switzerland, November 14, **2017**. (Postponned)
246. Invited Lecture, “Hybrid Electrolytes for Lithium Batteries”, Symposium: Electrochemical Science and Engineering on the Path from Discovery to Product, Annual Meeting of the Electrochemical Society, Baltimore, Maryland October 3, **2017**.
245. D.B. Robinson Seminar Series, “Ohm’s Law, Polymer Electrolytes and Lithium Batteries”, Department of Chemical and Materials Engineering, University of Alberta, Edmonton, Canada, September 20, **2017**.
244. Invited Lecture, “Polymer Electrolytes for Lithium Batteries”, Symposium honoring Dr. Jamie Garcia, recipient of the Young Industrial Polymer Science Award of the American Chemical Society, Washington DC, August 21, **2017**.
243. Invited Lecture, “Ohm’s Law and Negative Transference Numbers in Polymer Electrolytes”, Telluride Conference on Polymer Physics, Telluride, Colorado, June 28, **2017**.
242. Invited Lecture, “Ohm’s Law and Complete Characterization of Block Copolymer Electrolytes”, 21st International on Solid State Ionics, Padua, Italy, June 21, **2017**.
241. Invited Lecture, “Ohm’s Law, Polymer Electrolytes and Lithium Batteries”, Stanford Polymer Collective Spring Seminar, Stanford University, Stanford, California, May 10, **2017**.
240. Departmental Colloquium, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Department of Mechanical Engineering, University of Illinois, Chicago, Illinois, April 11, **2017**.
239. Invited Lecture, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Symposium honoring Professor M. Muthukumar, recipient of the Polymer Chemistry Award of the American Chemical Society, San Francisco, California, April 5, **2017**.
238. Invited Lecture, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, National Meeting of the American Physical Society, New Orleans, Louisiana, March 14, **2017**.
237. Departmental Colloquium, “Ohm’s Law, Lithium Batteries, and the Clean Energy Landscape”, Department of Chemical Engineering, Georgia Institute of Technology, Atlanta, Georgia, February 15, **2017**.
236. “Nanostructured Block Copolymers for Lithium Batteries and Biofuels Purification”, Plenary Session: Emerging Energy Applications of Nanoscale Science and Engineering, Annual Meeting of the American Institute of Chemical Engineers, San Francisco, California, November 14, **2016**.

235. Invited Lecture, “Lithium Battery Start-Ups”, Session: Contemporary Issues and Case Studies in Electrochemical Innovation, Annual Meeting of the Electrochemical Society, Honolulu, Hawaii, October 3, **2016**.
234. Polymers and Advanced Materials Lectureship, “Polymer Electrolytes for Lithium Batteries”, Department of Polymer Science, University of Akron, Akron, Ohio, September 23, **2016**.
233. Invited Seminar, “Ion Transport, Lithium Batteries, and the Clean Energy Landscape”, Institut Polytechnique, Grenoble, France, September 16, **2016**.
232. Plenary Lecture, “Toward Complete Characterization of Polymer Electrolytes”, International Symposium on Polymer Electrolytes-15, Uppsala, Sweden, August 16, **2016**.
231. Invited Lecture, “Non-Flammable Electrolytes for Lithium Batteries”, Indo-US Workshop on Lithium-Ion Batteries, Indian Institute of Technology, Bombay, Mumbai, India, June 17, **2016**.
230. Invited Lecture, “Determining the Composition of Block Copolymer Microphases by Electron Microscopy”, Workshop on Spectral Mapping of Nanostructured Materials, Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, Minnesota, January 13, **2016**.
229. Invited Seminar, “Lithium Batteries and the Free Energy Landscape”, ExxonMobil Research and Engineering Co., Annandale, New Jersey, December 16, **2015**.
228. Invited Lecture, " Relationship Between Molecular Structure and Performance of Polymer Electrolytes for Lithium Batteries", Session: New Frontiers of Molecular Thermodynamics, Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah, November 10, **2015**.
227. Departmental Colloquium, "Nanostructured Block Copolymers for Batteries and Biofuel Purification", Department of Materials Science and Engineering, Northwestern University, Evanston, Illinois, October 27, **2015**.
226. Departmental Colloquium, "Batteries, Biofuels, and the Clean Energy Landscape", Department of Chemical Engineering, Texas Tech University, Lubbock, Texas, October 22, **2015**.
225. Invited Lecture, "Ohm's Law and Diffusion in Polymer Electrolytes with Multivalent Salts", International Symposium on Multivalent Interactions in Polyelectrolytes, Institute for Molecular Engineering, University of Chicago, October 2, **2015**.
224. Invited Lecture, "Nonflammable Electrolytes for Lithium Batteries", Taiwan Battery Association, Solid State Battery Forum, Tapei, Taiwan, September 21, **2015**.
243. Invited Lecture, "Segmental Interactions between Polymers and Small Molecules in Batteries and Biofuel Purification", Telluride Conference on Polymer Physics, Telluride, Colorado, June 23, **2015**.
242. Invited Lecture, "X-ray Absorption Spectroscopy of Lithium Sulfur Battery Reaction Intermediates", Symposium on Energy Storage, National Meeting of the American Chemical Society, Denver, Colorado, March 24, **2015**.
241. Invited Lecture, "Nanostructured Block Copolymers for Lithium Batteries", ACS Award in Polymer Chemistry Symposium honoring Nikos Hadjichristidis, National Meeting of the American Chemical Society, Denver, Colorado, March 23, **2015**.
240. Invited Lecture, "Segmental Interactions between Polymers and Small Molecules in Batteries and Biofuel Purification", National Meeting of the American Physical Society, San Antonio, Texas, March 2, **2015**.

239. Invited Lecture, "Nanostructured Block Copolymers for Lithium Batteries", Advances in Polymers for Fuel Cells Systems and other Energy Devices, Asilomar, California, February 10, **2015**.
238. Departmental Colloquium, "Batteries, Biofuels, and the Clean Energy Landscape", Department of Chemical and Biomolecular Engineering, University of California, Berkeley, California, January 21, **2015**.
237. Invited Seminar, "Block Copolymers for Lithium Batteries", Medtronic Energy & Component Center, Brooklyn Center, Minnesota, December 9, **2014**.
236. Invited lectures at seven different academic institutions in India as the Platinum Jubilee Professor of the Indian Academy of Sciences titled "Batteries, Biofuels, and the Clean Energy Landscape". Institute Lecture at the Indian Institute of Technology, Bombay, November 11; Indian Institute of Technology, Kanpur, November 14; Rajiv Gandhi Institute for Petroleum Technology, Raeberali, November 15; National Institute of Technology, Kozikhode November 17; National Institute of Technology, Suratkal, November 18; Indian Institute of Science, Bangalore, November 20; Sri Jayachamarajendra College of Engineering, November 21; **2014**.
235. Departmental Colloquium, "Block Copolymers for All-Solid Lithium Batteries", Department of Polymer Science and Engineering, University of Massachusetts, Amherst, Massachusetts, October 31, **2014**.
234. Invited Lecture, "In Situ X-Ray Absorption Spectroscopy of Lithium-Sulfur Battery Discharge/Charge Reaction Mechanisms", Annual Meeting of the Electrochemical Society, Cancun, Mexico, October 6, **2014**.
233. Departmental Colloquium, "Batteries, Biofuels, and the Clean Energy Landscape", Department of Chemical Engineering, Pennsylvania State University, State College, Pennsylvania, October 2, **2014**.
232. Departmental Colloquium, "Batteries, Biofuels, and the Clean Energy Landscape", Department of Chemical Engineering, University of Houston, Houston, Texas, September 19, **2014**.
231. Departmental Colloquium, "Batteries, Biofuels, and the Clean Energy Landscape", Department of Chemical Engineering, Rice University, Houston, Texas, September 18, **2014**.
230. Departmental Colloquium, "Batteries, Biofuels, and the Clean Energy Landscape", Department of Chemical Engineering, University of Texas, Austin, September 9, **2014**.
229. Invited Lecture, "Polymer Electrolytes for Lithium Batteries", Division of Energy Storage Materials and Technology, Industrial Technology Research Institute, Hsinchu, Taiwan, August 19, **2014**.
228. Invited Lecture, "Nanoporous Block Copolymer Electrolyte Membranes for Proton Transport", Division of Polymer Science and Engineering, Annual Meeting of the American Chemical Society, San Francisco, California, August 11, **2014**.
227. Invited Lectures on "Soft Materials for Batteries", Summer School on "Soft Matter-from Fundamental Aspects to Industrial Perspectives", Corsica, France, August 1, **2014**.
226. Invited Lecture, "X-ray Studies of Sulfur and Lithium Metal Electrodes", Symposium on "Scalable Energy Storage Beyond Li-ion", Argonne National Laboratory, Argonne, Illinois, June 3, **2013**.
225. Invited Lecture, "Block Copolymers for All-Solid Lithium Batteries", ExxonMobil Chemical Company, Baytown, Texas, May 9, **2014**.

224. Invited Lecture, "Polymers for Simultaneous Electron and Ion Transport", Symposium Honoring Professors Frank Bates and Tim Lodge, University of Minnesota, Minneapolis, April 12, **2014**.
223. Departmental Colloquium, "Block Copolymers for All-Solid Lithium Batteries", Department of Chemical Engineering, Tulane University, New Orleans, Louisiana, March 28, **2014**.
222. Invited Lecture, "Polymers for Simultaneous Electron and Ion Transport", Division of Energy and Fuels, Semi-Annual Meeting of the American Chemical Society, Dallas, Texas, March 16, **2014**.
221. Departmental Colloquium, "Block Copolymers for All-Solid Lithium Batteries", Department of Chemical Engineering, Columbia University, New York, New York, March 11, **2014**.
220. Invited Seminar, "Block Copolymers for Selective Transport of Neutral and Charged Species", 3M Tech Forum on Filtration and Separation, St. Paul, Minnesota, February 17, **2014**.
219. Departmental Colloquium, "Block Copolymers for All-Solid Lithium Batteries", Department of Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania, February 7, **2014**.
218. Department Colloquium, "Nanostructured Block Copolymers for Lithium Batteries", Department of Chemical and Biological Engineering, University of Colorado, Boulder, December 10, **2013**
217. Inaugural Keynote Speaker at Polypore Technology Summit, "Polymers for All-Solid Lithium Batteries", Polypore, Charlotte, North Carolina, November 21, **2013**.
216. Invited Lecture, "Block Copolymers for All-Solid Lithium Batteries", Division of Energy Storage Materials and Technology, Industrial Technology Research Institute, Hsinchu, Taiwan, November 19, **2013**.
215. Invited Lecture, "Characterization of Simultaneous Electron and Ion Transport in Polymers", Pacific Polymer Conference, Kaohsiung, Taiwan, November 18, **2013**.
214. Keynote Lecture, "Block Copolymers for All-Solid Lithium Batteries", Grid-Scale Battery Technology, Taiwan Bureau of Energy Special Symposium, Taipei, Taiwan, November 18, **2013**.
213. Invited Lecture, "Effect of Lithium Salt Addition on Self-Assembly of Block Copolymer Electrolytes", Polymers for Energy Storage and Generation, Annual Meeting of the American Institute of Chemical Engineers, San Francisco, California, November 5, **2013**.
212. Polymer Seminar Series, "Nanostructured Block Copolymers for Lithium Batteries", Massachusetts Institute of Technology, Cambridge, Massachusetts, September 25, **2013**.
211. Invited lecture at Dow Chemicals, "Effect of Supercritical CO2 on Thermodynamics of Polymer Blends", Midland Michigan, August 27, **2013**
210. Departmental Colloquium, "Nanostructured Block Copolymers for Lithium Batteries", Department of Materials Science and Engineering, University of California, Santa Barbara, May 3, **2013**.
209. Invited Lecture, "Nanostructured Block Copolymer Membranes as Lithium Battery Electrolytes", Annual Meeting of the American Physical Society, Baltimore Maryland, March 18, **2013**.
208. Departmental Colloquium, "Proton Transport in Polymer Electrolyte Membranes", Department of Chemical Engineering, Ohio State University, Columbus, Ohio, March 7, **2013**.

207. Invited Lecture, "Proton Transport in Hydrated Block Copolymer Membranes", Advances in Materials for Proton Exchange Membrane Fuel Cells Systems, Asilomar, California, Febuary 19, **2013**.
206. Invited Lecture, "Nanostructured Block Copolymer Membranes for Biofuel Production", Annual Meeting of the American Institute of Chemical Engineers, Pittsburgh, Pennsylvania, October 30, **2012**.
205. Physics Colloquium, "Block Copolymers for All-Solid Lithium Batteries", Physics Department of Physics and Astronomy, Simon Frazer University, British Columbia, Canada, October 26, **2012**.
204. Physics Colloquium, "Block Copolymers for All-Solid Lithium Batteries", Physics Department of Physics and Astronomy, University of Victoria, British Columbia, Canada, October 24, **2012**.
203. Invited Lecture, "Block Copolymer Electrolytes for All-Solid Lithium Batteries", Annual Meeting of the Electrochemical Society, Honolulu, Hawaii, October 8, **2012**.
202. Invited Lecture, "Neutron Scattering Studies of CO2 Foaming in Polymers", Dow Chemicals, Midland, Michigan, September 24, **2012**.
201. Departmental Seminar, "Nanostructured Polymers for Lithium Battery Electrodes and Electrolytes", Department of Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware, September 7, **2012**.
200. Plenary Lecture, "Characterization of Block Copolymer Electrolytes", International Symposium on Polymer Electrolytes, Selfoss, Iceland, August 26, **2012**.
199. Invited Lecture, "Effect of Ionic Clusters on Proton Transport", Fuel Cell Gordon Conference, Smithfield, Rhode Island, August 5, **2012**.
198. Invited Lecture, "Simultaneous Electron and Ion Transport in Block Copolymers", IUPAC World Polymer Congress, Blacksburg, Polymer Physics, Blacksburg, Virginia, June 26, **2012**.
197. Keynote Lecture, "Nanostructured Block Copolymer Electrolytes for Lithium Batteries", Nanotech Conference and Expo, Santa Clara, California, June 19, **2012**.
196. Departmental Seminar, "Nanostructured Electrolytes for Lithium Batteries", Department of Physics, Boston University, May 4, **2012**.
195. Invited Lecture. "Role of Block Copolymers in All-Solid Rechargeable Batteries", Joint Meeting of the International Battery Association and Pacific Power Source Symposium, Big Island, Hawaii, January 9, **2012**.
194. Invited Lecture, "Next Generation Battery Technology: EHS Impact", California Industrial Hygiene Council Conference, San Francisco, California, December 6, **2011**.
193. Invited Lecture, "Simultaneous Electron and Ion Conduction in a Block Copolymer", Session in Honor of Professor Matthew Tirrell's 60th Birthday, Annual Meeting of the American Institute of Chemical Engineers, Minneapolis, Minnesota, October 17, **2011**.
192. Plenary Lecture, "Microstructured Block Copolymer Membranes for Lithium Batteries and Alcohol Separation", Session on Emerging Areas in Polymer Science and Engineering, Annual Meeting of the American Institute of Chemical Engineers, Minneapolis, Minnesota, October 17, **2011**.
191. Invited Lecture, "Block Copolymers for Lithium Batteries", Sustainable Energy Education and Research Center, University of Tennessee, Knoxville, Tennessee, September 27, **2011**.
190. Invited Lecture, "Solid-State Batteries", American Vacuum Society, Northern California Chapter, San Jose, California, September 21, **2011**.

189. Invited Lecture, "Characterization of Microstructured Block Copolymer Electrolytes for Lithium Batteries", Annual Meeting of the American Chemical Society, Denver, Colorado, August 28, **2011**.
188. Invited Lecture, "Block Copolymer Membranes for Rechargeable Lithium Batteries", First International Symposium on Colloids and Materials, Amsterdam, Holland, May 8, **2011**.
187. Invited Lecture, "Ionic Conductivity of Model Block Copolymer Electrolyte Membranes in Contact with Humid Air", Polymers for Energy Delivery and Storage Session, Annual Meeting of the American Chemical Society, Anaheim, California, March 27, **2011**.
186. Invited Lecture, "Characterization of Microstructured Block Copolymer Electrolytes for Lithium Batteries", Fundamental Topics in the Physics and Theory of Novel Polymeric Systems, Annual Meeting of the American Chemical Society, Anaheim, California, March 27, **2011**.
185. Department Seminar, "Block Copolymers for Lithium Batteries", Department of Chemistry and Biochemistry, Santa Clara University, Santa Clara, California, February 11, **2011**.
184. Invited Lecture, "Block Copolymer Electrolytes for Lithium Batteries", Materials Research Outreach Program, University of California, Santa Barbara, February 3, **2011**.
183. Invited Lecture, "Block Copolymers for Lithium Batteries", Symposium on "Functional Block Copolymer Assemblies", International Chemical Congress of Pacific Basin Societies, December 17, **2010**.
182. Invited Seminar, "Water Clusters and Proton Transport in Fuel Cell Membranes Studied by SANS", Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, Tennessee, November 11, **2010**.
181. Invited Lecture, "Polymers for Lithium Batteries", Eighth Hellenic Polymer Society Symposium honoring Professor Nikos Hadjichristidis, Crete, Greece, October 24, **2010**.
180. Invited Lecture, "Solid-State Batteries with Lithium Metal Electrodes", Symposium on "Scalable Energy Storage Beyond Li-ion: Materials Perspective", Oak Ridge National Laboratory, Oak Ridge, Tennessee, October 7, **2010**.
179. Invited Participant, "Advanced Materials and Devices for Stationary Electrical Energy Storage Workshop", Objective: Provide guidance on research themes necessary for enabling grid storage, US Department of Energy, Office of Electricity and Advanced Research Projects Agency-Energy (ARPA-E), Albuquerque, New Mexico, July 21, **2010**.
178. Invited Lecture, "Dry Block Copolymer Electrolytes for Lithium Batteries", International Meeting on Lithium Batteries, Montreal, Canada, June 30, **2010**.
177. Invited Lecture, "Ion Transport in Block Copolymers", Gordon Research Conference, Polymer Physics, Mount Holyoke, Massachusetts, June 29, **2010**.
176. Materials Research Lecture, "Batteries, Fuel Cells, and a Start-up", Department of Chemical Engineering, California Institute of Technology, Pasadena, California, May 6, **2010**.
175. Departmental Seminar, "Batteries, Fuel Cells, and a Start-up", Department of Chemical Engineering, University of Illinois, Urbana, Illinois, May 5, **2010**.
174. Departmental Seminar, "Keeping Fuel Cell Membranes Wet at Elevated Temperatures", Highlands Seminar Series, Department of Chemistry, Virginia Polytechnic Institute, Blacksburg, Virginia, April 2, **2010**.
173. Invited Lecture, "Ion Transport in Block Copolymers", Annual Meeting of the American Chemical Society, San Francisco, California, March 23, **2010**.

172. Invited Lecture, "Imaging the Electrode-Electrolyte Interface in Lithium Polymer Batteries", Annual Meeting of the American Physical Society, Portland, Oregon, March 16, **2010**.
171. Invited Lecture, "Batteries, Fuel Cells, and a Start-up", Gordon Conference on Colloidal, Macromolecular and Polyelectrolyte Solutions, Ventura, California, February 22, **2010**.
170. Invited Lecture, "Batteries, Fuel Cells, and a Start-up", Golden Jubilee Symposium on Fabrication on Small Scales, Indian Institute of Technology, Kanpur, December 10, **2009**.
169. Departmental Seminar, "Batteries, Fuel Cells, and a Start-up", Department of Chemical Engineering, Yale University, New Haven, Connecticut, November 18, **2009**.
168. Invited Lecture, "Polymers for Electrochemical Applications", Defense Advanced Research Projects Agency (DARPA), Defense Sciences Research Council Meeting, Washington DC, November 4, **2009**.
167. Invited Lecture, "Batteries and Electrochemical Energy Storage", Meeting to Establish Vision of Lawrence Berkeley National Lab in area of Clean Energy, Santa Cruz, California, October 12, **2009**.
166. Plenary Lecture, International Symposium on Nano Structures, Fall Meeting of the Korean Polymer Society, Gwangju, South Korea, "Block Copolymer Electrolytes for Lithium Batteries", October 7, **2009**.
165. Invited talk, Annual Meeting of the American Chemical Society, Washington DC, Symposium on Polymers in Membrane Technology, "Keeping Fuel Cell Membranes Wet at Elevated Temperatures", August 19, **2009**.
164. Invited talk, Annual Meeting of the American Chemical Society, Washington DC, Symposium on Metal-Containing and Metallo-Supramolecular Polymers and Materials, "Block Copolymer Electrolytes for Lithium Batteries", August 18, **2009**.
163. Invited Lecture, Gordon Research Conference, Chemistry and Physics of Liquids, Holderness, New Hampshire, "Batteries, Fuel Cells, and a Start-up", August 3, **2009**.
162. Invited Lecture, NSF Sponsored Panel on Challenges and Opportunities in Manufacturing and Materials Processing, "Lithium Battery Manufacturing in the Emerging Energy Landscape", San Francisco, California, July 21, **2009**.
161. Invited Panel Discussion titled "Hot Technology, Cool Science" at the Berkeley Repertory Theater, "Battery-powered Commute?", Berkeley, California, May 6, **2009**.
160. Provost's Colloquium on Energy, University of Pennsylvania, Lecture 1: "Batteries, Fuel Cells, and the Energy Landscape", Lecture 2: "Fuel Cell Membranes that get Wetter as the Surrounding Air gets Hotter", April 23 and 24, **2009**.
159. Keynote Lecture, Australian Colloid and Interface Symposium, "Fuel Cell Membranes that get Wetter as the Surrounding Air gets Hotter", Adelaide, Australia, February 3, **2009**.
158. Keynote Lecture, The XVth International Congress on Rheology, "Independent Control over the Mechanical and Electrical Properties of Solid Polymer Electrolytes", Monterey, California, August 5, **2008**.
157. Invited Lecture, US-Poland Nanotechnology Workshop Sponsored by the US National Science Foundation, "Phase Behavior of Ion-Containing Block Copolymers", June 4, **2008**.
156. Invited Lecture, High Polymer Research Group Conference on Energy, Sustainability, and the Environment, "Block Copolymer Electrolytes for Batteries and Fuel Cells", Devon, England, April 28, **2008**.

155. Invited Lecture, Surface Science and Catalysis Seminar, Lawrence Berkeley National Laboratory, Berkeley, California, "Polymer Membranes the get Wetter as the Surrounding Air gets Hotter", March 20, **2008**.
154. Invited Lecture, Annual Meeting of the American Physical Society, New Orleans, Louisiana, "Block Copolymer Electrolytes for Batteries and Fuel Cells", March 13, **2008**.
153. Departmental Seminar, Department of Materials Science and Engineering, University of California, Berkeley, "Block Copolymer Electrolytes for Batteries and Fuel Cells", March 6, **2008**.
152. Departmental Seminar, Department of Chemistry, University of Wisconsin, Madison, Wisconsin, "Block Copolymer Electrolytes for Batteries and Fuel Cells", February 26, **2008**.
152. Departmental Seminar, Department of Chemical Engineering, University of California, Riverside, California, "Block Copolymer Electrolytes for Fuel Cells", February 15, **2008**.
151. Invited Lecture, Corporate Research, Arkema, Inc., King of Prussia, Pennsylvania, January 2, **2008**.
150. Departmental Seminar, Department of Chemical Engineering, North Carolina State University, Rayleigh, North Carolina, "Block Copolymer Electrolytes for Batteries and Fuel Cells", November 19, **2007**.
149. Invited Lecture, Users Meeting for Spallation Neutron Source and Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, "Ion Transport in Block Copolymer Electrolytes", October 9, **2007**.
148. Departmental Seminar, Department of Chemical Engineering, University of Oklahoma, Norman, Oklahoma, "Ion Transport in Block Copolymers", September 5, **2007**.
147. Invited Lecture, The Science and Technology of Well-Controlled Polymer Assemblies, "Block Copolymer Electrolytes for Lithium Battery Applications", Kyoto University, Japan, June 11, **2007**.
146. Departmental Seminar, Department of Chemical Engineering, Drexel University, Norman, Oklahoma, "Block Copolymer Electrolytes for Lithium Battery Applications", May 11, **2007**.
145. Invited Lecture, Workshop on Kinetics and Dynamics in Soft Condensed Matter, Argonne National Laboratory, "Structural Characterization of Block Copolymer Thin Films using Resonant Soft X-ray Scattering", May 7, **2007**
144. Invited Lecture, Mini Symposium on Development and Characterization of New Functional NanoMaterials based on Block Copolymers, Annual Meeting of the Korean Society of Polymer Science, "Block Copolymer Electrolytes for Lithium Battery Applications", April 12, **2007**.
143. Invited Lecture, Department of Chemical Engineering, Seoul National University, Korea, "Balanced Block Copolymer Surfactants for Organizing Immiscible Polymers", April 10, **2007**.
142. Invited Lecture, Department of Chemical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, "Block Copolymer Electrolytes for Lithium Battery Applications", April 10, **2007**.
141. Invited Lecture, Department of Chemical Engineering, Postech-Pohang University of Science and Technology, Pohang, Korea, "Block Copolymer Electrolytes for Lithium Battery Applications", April 9, **2007**.
140. Invited Lecture, Dow Chemicals, Midland, Michigan, "Balanced Block Copolymer Surfactants for Organizing Immiscible Polymers", February 9, **2007**

139. Invited Lecture, International Conference on Nucleation and Growth, Nehru Center for Advanced Scientific Research, Bangalore, India, "Nucleation and Growth in Polymer Blends", January 20, **2007**.
138. Invited Lecture, Indian Institute of Technology, Bombay, "Block Copolymer Electrolytes for Lithium Battery Applications", December 28, **2006**.
137. Invited Lecture, Annual Meeting of the Materials Research Society, Boston, Massachusetts, Symposium on Electron Microscopy across Hard and Soft Materials, "Imaging Nanostructured Block Copolymer Electrolytes using Electron Microscopy", November 28, **2006**. (Lecture delivered by my PhD student Enrique Gomez.)
136. Invited Lecture, Annual Meeting of the American Chemical Society, San Francisco, California, Symposium on Block Copolymers as Nanoscale Materials, "Nanostructured Block Copolymer Electrolytes", September 13, **2006**.
135. Invited Lecture, Annual Meeting of the American Chemical Society, San Francisco, California, Symposium on Block Copolymers as Nanoscale Materials, "Fluctuation Relaxation in Multicomponent Systems Containing Micelles and other Aggregates", September 11, **2006**.
134. Invited Lecture, Gordon Research Conference, Polymer Physics, New London, Connecticut, "Ion-Containing Block Copolymers", July 26, **2006**.
133. Invited Lecture, US-Poland Nanotechnology Workshop Sponsored by the US National Science Foundation, "Ion-Containing Block Copolymer Nanostructures", June 19, **2006**.
132. Invited Lecture, American Conference on Neutron Scattering, Chicago, Illinois, "Phase Behavior of Polymer Blends Stabilized by Balanced Surfactants", June 26, **2006**.
131. Invited Lecture, "Scattering from Polymers", Los Alamos Neutron Science Center-Neutron School, May 19, **2006**.
130. Departmental Seminar, Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, "Ion-Containing Block Copolymers", April 14, **2006**.
129. Invited Lecture, Annual Meeting of the American Chemical Society, Atlanta, Georgia, Cooperative Research Award in Polymer Science and Engineering Symposium honoring Richard Spontak and Steven Smith, "Ion-containing Block Copolymer Nanostructures", March 27, **2006**.
128. Departmental Seminar, Department of Chemical Engineering, Princeton University, "Neutron Scattering and Monte Carlo Determination of the Variation of the Critical Nucleus Size with Quench Depth", December 14, **2005**.
127. Invited Lecture, Workshop on Directed Self-Assembly of Nanoscale Structures, University of California, Los Angeles, California, November 9, **2005**.
126. Invited Lecture, Annual Meeting of the American Institute of Chemical Engineers, Charles A. Stine Award Lecture, "Ion-Containing Polymer Nanostructures", Cincinnati, Ohio, November 2, **2005**.
125. Keynote Speaker, Joint Chemical Engineering Meeting, China/USA/Japan, Conference on Nanotechnology, Beijing, China, "Ion-Containing Polymer Nanostructures", October 11, **2005**.
124. Invited Lecture, European Discussion Meeting in Polymer Physics-Polymer Crystallization, Waldau, Germany, "Formation of the Critical Nucleus in Phase Separating Polymer Blends, October 5, **2005**.
123. Invited Lecture, Workshop on Soft X-ray Scattering from Soft and Hard Matter, Lawrence Berkeley National Laboratory, Berkeley, California, September 30, **2005**.

122. Invited Lecture, Materials Research Using Neutrons (Symposium to honor Mike Rowe and Jack Rush), National Institute of Science and Technology, "A Universal Mechanism of Phase Separation", Gaithersburg, Maryland, September 9, **2005**.
121. Invited Lecture, Annual Meeting of the American Chemical Society, Washington, D.C., Preparing for the Bright Future of Neutron Scattering in the US, Analytical Chemistry Division, "Small Angle Neutron Scattering Studies of the Initial Stages of Phase Separation", September 1, **2005**.
120. Invited Lecture, Annual Meeting of the American Chemical Society, Washington, D.C., Scattering from Polymers Symposium, Polymer Materials Science and Engineering Division, "Designing Balanced Surfactants for Organizing Immiscible Polymers", August 30, **2005**.
119. Plenary Lecture, Inaugural Users Meeting for Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, "Challenges and Opportunities in Polymer Nanoscience", May 23, **2005**.
118. Invited Lecture, Prospects in New Materials Science (Workshop to foster new US-Japan collaborations in materials science), Kyoto University, Kyoto, Japan, "Ion-Containing Polymer Nanostructures", April 25-27, **2005**.
117. Departmental Seminar, Department of Chemical Engineering, Purdue University, Indiana, "Diffusion and Equilibration of Surfactants for Polymer-Polymer Interfaces", April 12, **2005**.
116. Invited Lecture, Annual Meeting of the American Physical Society, Los Angeles, California, "Functional Microstructures from Iron-Containing Block Copolymers", March, **2005**.
115. Departmental Seminar, Department of Chemical Engineering, Indian Institute of Technology, Kanpur, India, "Characterization and Design of Surfactants for Polymer-Polymer Interfaces", January 6, **2005**.
114. Departmental Seminar, Department of Chemical Engineering, Indian Institute of Science, Bangalore, India, "Characterization and Design of Surfactants for Polymer-Polymer Interfaces", January 3, **2005**.
113. Invited Lecture, "Characterization and Design of Surfactants for Polymer-Polymer Interfaces", Complex Fluids Symposium, National Chemical Laboratory, Pune, India, January 1, **2005**.
112. Invited Lecture, "Searching for the Critical Nucleus in Phase Separating Polymer Blends", Joint meeting of the American Institute of Chemical Engineers and the Indian Institute of Chemical Engineers, Mumbai, India, December 28, **2004**.
111. Departmental Seminar, Department of Chemical Engineering, Pennsylvania State University, State College, Pennsylvania, December 7, **2004**.
110. Invited Lecture, Polymer Science Lecture Series, University of Akron, Akron, Ohio, "Searching for the Critical Nucleus in Phase Separating Polymer Blends", September 9, **2004**.
109. Invited Lecture, Mini-Symposium on Bioinspired Dry Adhesive Pads for Climbing, Sponsored by the Defense Advanced Research Projects Agency (DARPA), July 16, **2004**.
108. Invited Lecture, Gordon Research Conference, Complex Fluids, New London, New Hampshire, "Initial Stages of Nucleation in Phase Separating Polymer Blends", July 5, **2004**.
107. Invited Lecture, American Conference on Neutron Scattering, College Park, Maryland, "Searching for the Critical Nucleus in Phase Separating Polymer Blends", June 7, **2004**.
106. Invited Lecture, Materials Research Society Meeting, Symposium on Nucleation Phenomena-Mechanisms, Dynamics, and Structure, "Searching for the Critical Nucleus in Phase Separating Polymer Blends", San Francisco, California, April 13, **2004**.

105. Departmental Seminar, Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, Minnesota, "Does Conventional Nucleation Occur during Phase Separation in Polymer Blends", March 2, **2004**.
104. Invited Lecture, Boston Scientific, Minneapolis, Minnesota, "Balanced Surfactants for Organizing Immiscible Materials", March 1, **2004**.
103. Departmental Seminar, Department of Polymer Science and Engineering, University of Massachusetts, Amherst, November 21, **2003**.
102. Departmental Seminar, Department of Polymer Science and Engineering, University of Massachusetts, Lowell, November 20, **2003**.
101. Departmental Seminar, Department of Chemical Engineering, University of California at Santa Barbara, October 23, **2003**.
100. Departmental Seminar, Department of Chemistry, University of California at Los Angeles, October 6, **2003**.
99. Invited Lecture, Tyco Electronics, Menlo Park, California, September 24, **2003**.
98. Invited Lecture, Physical Chemistry Division of the American Chemical Society, September 7, **2003**.
97. Invited Lecture, Soft Matter and Biophysics Workshop, Organized by Brookhaven National Laboratory, Stony Brook, New York, September 5, **2003**.
96. Invited Lecture, Gordon Research Conference, Chemistry and Physics of Liquids, August 6, **2003**.
95. Invited Lecture, Institut fur Festkoperforschung, Forschungszentrum Julich, Germany, July 17, **2003**.
94. Invited Lecture, Department of Physics, University of Freiburg, Germany, July 15, **200**3.
93. Invited Lecture, ESPCI, Paris, July 5, **2003**.
92. Invited Lecture, College de France, Paris, July 4, **2003**.
91. Invited Lecture, Institut de Physique, University of Strasbourg, France, July 2, **2003**.
90. Invited Lecture, Structured Fluids and Soft Solids Symposium, ACS Colloid and Surface Science Symposium, June 18, **2003**.
89. Invited Lecture, Nucleation Symposium, ACS Colloid and Surface Science Symposium, June 17, **2003**.
88. Invited Lecture, Workshop on Nanotechnology in Mechanical Engineering, National Science Foundation, June 15, 2003.
87. Annual Meeting of the American Physical Society, Austin, Texas, March, **2003**.
86. Department of Chemical Engineering, Washington University, Saint Louis, Missouri, February, **2003**.
85. Departmental Seminar, Department of Chemical Engineering, University of Washington, Seattle, January, **2003**.
84. Materials Research Society, Boston, Massachusetts, December, **2002**.
83. Annual Meeting of the Society of Rheology, Nagaoka, Japan, **2002**.
82. Fourth Kyoto Symposium on Rheology, Japan, October, **2002**.
81. Departmental Seminar, Department of Chemical Engineering, University of Texas, Austin, September, **2002.**
80. Discussion leader, Gordon Research Conference, Polymer Physics, Newport, Rhode Island, August, **2002**.
79. Invited Lecture, Department of Materials Science, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, July, **2002**.

78. Invited Lecture, Max Plank Institute for Polymers, Mainz, Germany, July, **2002**.
77. Departmental Seminar, Department of Physical Chemistry, University of Cologne, Germany, July, **2002**
76. Invited Lecture, Department of Physics, University of Freiburg, Germany, July, **200**2.
75. Invited Lecture, Annual Meeting of the Division of Colloids, American Chemical Society, Ann Arbor, Michigan, June, **2002**.
74. Invited Lecture, Annual Meeting of the American Chemical Society, Orlando, April **2002**.
73. Invited Lecture, Bend Research Inc., Bend Oregon, January, **2002**.
72. Departmental Seminar, Department of Chemical Engineering, California Institute of Technology, Pasadena, California, January, **2002**.
71. Invited Lecture, Annual Meeting on Photonic Materials, Cornell University, Ithaca, New York, January, **2002**.
70. Invited Lecture, Golden Gate Polymer Forum, Mountain View, California, December, **2001**.
69. Discussion Leader, Elastomers Gordon Conference, New London, New Hampshire, August, **2001**.
68. Invited Lecture, Wright Patterson Air Force Base, Dayton, Ohio, April, **2001**.
67. Invited Lecture, ExxonMobil Chemical Company, Baytown, Texas, March, **2001**.
66. Departmental Seminar, Department of Chemical Engineering, North Carolina State University, Raleigh, March, **2001**.
65. Invited Lecture, Flory Symposium, Stanford University, California, Departments of Chemistry and Chemical Engineering, February **2001**.
64. Invited Lecture, Stanford Linear Accelerator Laboratory, Soft X-Ray Speckle: Nanoscale Dynamics in Liquids and Solids, October, **2000**
63. Departmental Seminar, Department of Textile Engineering, Georgia Institute of Technology, Atlanta, October **2000**.
62. Departmental Seminar, Department of Chemical Engineering, Tulane University, New Orleans, Louisiana, September **2000**,
61. Invited Lecture, ExxonMobil Company, Annandale, New Jersey, July **2000**.
59. Invited Lecture, National Research Council of Solid State Physics, Gaithersburg, Maryland, July **2000**.
60. Invited Lecture, Gordon Research Conference, Polymer Physics, New London, Connecticut, July, **2000**.
58. Invited Lecture, Gordon Research Conference, Polymers (East), New London, Connecticut, June **2000**.
57. Invited Lecture, Annual Meeting of the American Chemical Society, San Francisco, March **2000**.
56. Invited Lecture, Exxon Research and Engineering Company, Annandale, New Jersey, November **1999**.
55. Invited Lecture, Dow Chemical Company, Midland, Michigan, November **1999**.
54. Departmental Seminar, Department of Chemical Engineering, Louisiana State University, Baten Rouge, November **1999**.
53. Departmental Seminar, Department of Chemical Engineering, Massachusetts Institute of Technology, September **1999**.
52. Departmental Seminar, Department of Materials Science and Engineering, University of Maryland, College Park, October **1999**.

51. Departmental Seminar, Department of Chemical Engineering, Johns Hopkins University, September **1999**.
50. Departmental Seminar, Department of Chemical Engineering, University of California, Berkeley, August **1999**.
49. Invited Lecture, Annual Meeting of the American Chemical Society, New Orleans, August **1999**.
48. Invited Lecture, Gordon Research Conference, Chemistry of Supramolecules and Assemblies, August **1999**.
47. Invited Lecture, Gordon Research Conference, Elastomers, July **1999**.
46. Departmental Seminar, Department of Chemistry, Carnegie Mellon University, May **1999**
45. Departmental Seminar, Department of Chemical Engineering, University of Rhode Island, February **1999**.
44. Departmental Seminar, Department of Materials Science and Engineering, Northwestern University, April **1999**.
43. Invited Lecture, Annual Meeting of the Rubber Division of the American Chemical Society, April **1999**.
42. Departmental Seminar, Department of Chemical Engineering, Princeton University, March **1999**.
41. Departmental Seminar, Department of Chemical Engineering, City College of New York, September **1998**.
40. Departmental Seminar, Department of Materials Science and Engineering, North Carolina State University, October **1998**.
39. Invited Lecture, Meeting on Unifying Principles for Engineering Soft Materials, Risø National Laboratory, Denmark, June **1999**.
38. Invited Lecture, Exxon Corporate Research Laboratories, Clinton, New Jersey, April **1998**.
37. Invited Lecture, American Chemical Society, Division of Polymer Materials Science and Engineering, Dallas, March **1998**.
36. Departmental Seminar, Department of Materials Science and Engineering, Cornell University, Ithaca, New York, February **1998**.
35. Invited Lecture, Goodyear Tire Company, Akron, Ohio, February **1998**.
34. Departmental Seminar, Department of Chemical Engineering, University of Pennsylvania, Philadelphia, Pennsylvania, January **1998**.
33. Invited Lecture, Department of Chemical Engineering, Indian Institute of Technology, Bombay, December **1997**.
32. Invited Lecture, Royal Society-Unilever Forum on Structure and Dynamics of Materials in the Mesoscopic Domain, National Chemical Society, India, December **1997**.
32. Departmental Seminar, Department of Chemistry, University of North Carolina, Chapel Hill, North Carolina, November **1997**.
31. Departmental Seminar, Department of Chemical Engineering, University of California at Los Angeles, October **1997**.
30. Departmental Seminar, Department of Chemical Engineering, Columbia University, October **1997**.
29. Departmental Seminar, Department of Macromolecular Science, Case Western Reserve University, September **1997**.
28. Invited Lecture, Cold Neutron Research Center, National Institute of Standards and Technology, Gaithersburg, Maryland, September **1997**.

27. Invited Lecture, International Conference on Neutron Scattering, Toronto, August **1997**.
26. Invited Lecture, Exxon Chemical Company, Baytown, Texas, June **1997**.
25. Departmental Seminar, Department of Chemical Engineering, University of Connecticut, Storrs, April **1997**.
24. Departmental Seminar, Department of Materials Science and Engineering, Stevens Institute of Technology, Hoboken, April **1997**.
23. Departmental Seminar, Department of Chemistry, University of North Carolina at Chapel Hill, March **1997**.
22. Invited Lecture, National Meeting of the American Physical Society, Kansas City, March **1997**.
21. Invited Lecture, National Meeting of the Materials Research Society, Boston, December **1996**.
20. Invited Lecture, Rubber Science Hall of Fame, lecture honoring the induction of G. Kraus to the Rubber Science Hall of Fame, University of Akron, Akron, Ohio, November **1996**.
19. Departmental Seminar, Department of Chemical Engineering, Columbia University, May **1996**.
18. Invited Lecture, Gordon Conference on Colloidal, Macromolecular and Polyelectrolyte Solutions, Ventura, California, February **1996**.
17. Departmental Seminar, Department of Textile Engineering, North Carolina State University, Raleigh, January **1996**.
16. Departmental Seminar, Department of Chemical Engineering, University of California, Berkeley, November **1995**.
15. Departmental Seminar, Department of Materials Science and Engineering, University of Illinois, Urbana-Champaign, November **1995**.
14. Invited Lecture, Mitsubishi Chemicals, Yokkaichi, Japan, June **1995**.
13. Invited Lecture, Faculty of Macromolecular Science, Kyoto University, Japan, June **1995**.
12. Invited Lecture, Faculty of Macromolecular Science, Osaka University, Japan, June **1995**.
11. Invited Lecture, Department of Chemical Engineering, Kyoto Institute of Technology, Japan, June **1995**.
10. Departmental Seminar, Department of Materials Science and Engineering, University of Pennsylvania, January **1995**.
9. Departmental Seminar, Department of Chemical Engineering, University of California at Santa Barbara, January **1995**.
8. Invited Lecture, Polymers Division, National Institute of Standards and Technology, Gaithersburg, Maryland, January **1995**.
7. Invited Lecture, National Meeting of the American Physical Society, Division of Condensed Matter Physics, San Jose, California, March **1995**.
6. Departmental Seminar, Department of Materials Science and Engineering, Massachusetts Institute of Technology, November **1994**.
5. Invited Lecture, 3M Company, St. Paul Minnesota, November **1994**.
4. Departmental Seminar, Department of Polymer Science and Engineering, University of Massachusetts, October **1994**.
3. Departmental Seminar, Department of Materials Science and Engineering, Pennsylvania State University, September **1994**.
2. Invited Lecture, National meeting of the American Chemical Society, Chicago, August **1993**.

1. Departmental Seminar, Department of Chemical Engineering, Rensselaer Polytechnic Institute, September **1992**.

Summary of Courses Taught

Semester	Course	Av. teaching effectiveness max=7.0 (# of evaluations)	Median teaching effectiveness	Course effectiveness max=7.0 (# of evaluations)	Median course effectiveness	Number students enrolled
Fall 2000	CH 178	6.1 (#21)		5.4 (#21)		24
Spring 2001	CH295N	6.0 (#11)		6.3 (#11)		11
Fall 2001	CH178	4.7 (#27)		4.6 (#24)		29
Spring 2002	CH178	5.4 (#9)		5.4 (#9)		11
Fall 2002	CH240	4.8 (#31)		5.3 (#31)		32
Spring 2003	CH295N	5.9 (#9)		6.6 (#9)		11
Fall 2003	CH240	5.9 (#13)		6.3 (#12)		14
Spring 2004	CH178	5.1 (#17)		5.6 (#14)		26
Fall 2004	CH240	5.0 (#19)		5.3 (#19)		20
Spring 2005	CH162	5.5 (#30)		5.4 (#30)		38
Fall 2005	CH240	4.9 (#15)	5.0	5.1 (#15)	5.0	16
Spring 2006	C201	5.4 (#24)	NA	NA	NA	40
Fall 2006	CH154	4.3 (#28)	4.5	4.9 (#28)	5.0	56
Spring 2007	CH240	4.5 (#15)	5.0	5.3 (#15)	6.0	17
Fall 2007	Sabbatica					
Spring 2008	CH295N	6.0 (#14)	6.0	7.0 (#13)	7.0	17
Fall 2008	CH162	4.7 (#22)	5.0	5.5 (#23)	6.0	33
Spring 2009	CH154	4.0 (#13)	4.0	4.6 (#16)	5.0	21
Fall 2009	CH162	5.6 (#27)	6.0	5.7 (#26)	6.0	35
Spring 2010	CH295N	6.1 (#12)	6.0	6.1 (#12)	6.5	12
Fall 2010	CH154	5.1 (#14)	5.0	5.4 (#20)	5.5	35
Spring 2011	CH162	5.1 (#51)	5.0	5.8 (#51)	6.0	66
Fall 2011	CH154	5.1 (#17)	5.0	5.6 (#25)	6.0	28
Spring 2012	CH162	5.3 (#28)	5.5	5.8 (#28)	6.0	52
Fall 2013	CH154	5.3 (#17)	6.0	6.4 (#20)	7.0	20
Spring 2013	CH162	5.0 (#49)	5.0	5.4 (#48)	6.0	76
Fall 2013	CH154					
Spring 2014	CH162	4.9 (#59)	5.0	5.6 (#58)	6.0	95
Fall 2014	Sabbatica					
Spring 2015	CH295N	5.4 (#24)	6.0	5.7 (#24)	6.0	24
Fall 2015	CH162	5.85 (#40)		6.00 (#40)		46
Spring 2016	CH178	5.6 (#22)	6.0	5.4 (#22)	6.0	37
Fall 2016	CH162	5.72 (#43)	6.0	5.86 (#43)	6.0	43
Spring 2017	CH295N	6.3 (#12)	6.0	6.4(#12)	7.0	14
Fall 2017	Sabbatica					
Spring 2018	CH178	5.37 (#27)	6.0	5.48 (#27)	6.0	29
Fall 2018	CBE162	6.0 (#50)	6.0	6.1 (#50)	6.0	51
Spring 2019	CBE178	6.1 (#29)	6.0	6.0 (#28)	6.0	32

Fall 2019	Sabbatica					

*This was a new interdisciplinary course on Nanotechnology that was developed with Professors Gronsky (Materials Science), Yu (Physics), and me. The course was divided into 4 modules, 3 modules taught by the instructors, and a final module that was taught by all of the instructors. Students were only required to take 3 modules. The survey only recorded the teaching effectiveness of individual instructors.

Visiting Professorships
Kyoto University (Japan), Summer 1995
University of Freiburg (Germany), Summer 2002
Louis Pasteur University in Strasbourg (France), Summer 2003

Professional Society Membership
Electrochemical Society
American Physical Society
American Chemical Society
American Institute of Chemical Engineers
Society of Rheology (Japan)

Editorial Boards of Journals
Macromolecules (2000-2003)
Journal of Polymer Science, Part B: Polymer Physics (2000-present)
Journal of the Society of Rheology, Japan (US editor) (2000-present)
Progress in Polymer Science (2002-present)

Institutional and Professional Service
Elected Chair of the Division of Polymer Physics of the American Physical Society, 2014-2015.
Member of the Executive Committee of the Division of Polymer Physics of the American Physical Society, 2012-2016.
Co-chair of the Program Committee for the Annual Meeting of the American Conference on Neutron Scattering, 2011-2012.
Chair of University of California Faculty Senate Committee, Student Diversity and Academic Development, 2009-2011.
Founding Chair of the Users Committee, National Center for Neutron Research at the National Institute of Standards and Technology in Gaithersburg, Maryland, 2002-2008.
Member of the Executive Committee of the Division of Polymer Physics of the American Physical Society (Elected Member-at-Large by the division), 2004-2006.
Member of the Experimental Facilities Advisory Committee, Spallation Neutron Source being built at Oak Ridge National Laboratory, 2002-2005.
Programming Chair for the Division of Polymer Physics of the American Physical Society for the annual March meeting in 2004 (45 symposia, including 7 invited symposia and 5 focused topic sessions).
Programming Chair for Thermodynamics and Transport Phenomena Symposia (50 symposia) for the annual AIChE meeting in 2002.