

Matthew J. Panzer, Ph.D.

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Education

Ph.D. in Chemical Engineering, Minor in Nanoparticle Science & Engineering
Thesis: "Polymer Electrolyte-Gated Organic Field-Effect Transistors"
Advisor: Prof. C. Daniel Frisbie
University of Minnesota, Minneapolis, MN, *May 2007*

Honors Bachelor of Chemical Engineering with Distinction, Minor in Mathematics
University of Delaware, Newark, DE, *May 2002*

Employment

Associate Professor, Department of Chemical and Biological Engineering (ChBE)
Tufts University, Medford, MA, *Sept. 2015 to present*

Assistant Professor, Department of Chemical and Biological Engineering (ChBE)
Tufts University, Medford, MA, *2009-2015*

Postdoctoral Associate, Research Laboratory of Electronics, Advisor: Prof. Vladimir Bulović
Massachusetts Institute of Technology, Cambridge, MA, *2007-2009*

Honors & Awards

- Favorite Professor Award, Tufts ChBE Department (May 2019)
- Massachusetts Clean Energy Center Catalyst Program Award (Aug 2017)
- Favorite Professor Award, Tufts ChBE Department (May 2017)
- Lillian and Joseph Leibner Award for Distinguished Teaching and Advising, Tufts University (May 2016)
- Henry and Madeline Fischer Award (Engineering Teacher of the Year), Tufts University (May 2015)
- Favorite Professor Award, Tufts ChBE Department (May 2015)
- Recognition of Undergraduate Teaching Excellence Award, Tufts University (May 2014)
- Massachusetts Clean Energy Center Catalyst Program Award (Feb 2012)
- Best Professor Award, Tufts ChBE Department (May 2011)
- Dr. Gerald R. Gill Professor of the Year Award, Tufts University (April 2011)
- IGERT for Nanoparticle Science & Engineering Graduate Fellowship
- Chemical Engineering & Materials Science Department (U. Minnesota) TA of the Year Award
- NSF Graduate Research Fellowship
- Tau Beta Pi Fellowship (Fellow #676)

Service & Professional Activities

Conference/Meeting Organization

- 2019 1st International Meeting on Deep Eutectic Systems, Scientific Committee Member
- 2018 Tufts Polymer Research Symposium, Founder & Co-organizer
- 2016 AIChE Annual Meeting, Session Chair, "Semiconducting Nanocrystals and Quantum Dots"
- 2014 AIChE Annual Meeting, Chair, Area 8E (Electronics & Photonics)
- 2013 AIChE Annual Meeting, Co-Chair, Area 8E (Electronics & Photonics)
- 2013 AIChE Annual Meeting, Session Chair, "Organic and Hybrid Semiconductors"

- 2013 MRS Fall Meeting, Co-Organizer, Symposium M “Large-Area Processing and Patterning for Active Optical and Electronic Devices”
- 2012 AIChE Annual Meeting, Session Chair, “Materials for Batteries, Capacitors, and Energy Storage I & II”
- 2012 APS March Meeting, Session Chair, “Physics of Batteries and Fuel Cells”

Tufts University Service Activities

- Tufts University Committee on Committees, Member, 2017-2018
- Tufts University Library Committee, Member, 2013-present
- Tufts Institute of the Environment, Internal Advisory Board Member, 2018-present
- Tufts Institute of the Environment, Affiliated Faculty Member, 2017-present
- 2012 Tufts Energy Conference, Panel Moderator
- Tufts Dow Sustainability Innovation Student Challenge Award Selection Committee, Member, 2012

Tufts School of Engineering Service Activities

- Tufts School of Engineering Graduate Studies Committee, Member, 2017-present
- Tufts School of Engineering Strategic Planning: Graduate Education Task Group, Co-chair, 2017-2018
- Tufts School of Engineering Ad Hoc Committee on Tenure & Promotion, Member, 2017-2018
- Tufts School of Engineering Academic Standing Committee, Member, 2010-2015; (Chair, 2014-2015)
- Tufts Engineering Leadership Program Freshman Experience Working Group, Spring 2011
- Tufts Engineering Leadership Program Professional Practice Working Group, Spring 2010
- Tufts Tau Beta Pi Chapter Faculty Advisor, 2013-2017

Tufts Chemical & Biological Engineering Department Service Activities

- Tufts ChBE Department Graduate Program Chair, 2017-present
- Tufts ChBE Department Graduate Admissions Chair, 2013-2017
- Tufts ChBE Department Graduate Program Committee, Member, 2009-present
- Tufts ChBE Department Faculty Search Committee, Chair, 2017-2018
- Tufts ChBE Department Faculty Search Committee, Member, 2010-2011; 2012-2013
- Tufts ChBE Department Library Liaison, 2009-present
- Tufts ChBE Department Seminar Series Coordinator, 2011-2012
- Tufts AIChE Student Chapter Faculty Advisor, 2010-2016

Editorial Board Service

- Editorial Board Member, *AIMS Materials Science*, 2013-2019

Ad Hoc Reviewer Service

- NSF proposal reviewer, 2010; 2011; 2014; 2017
- InnovateMass proposal reviewer, 2018; 2019
- Tau Beta Pi Scholarship application reviewer, 2017
- DOE Graduate Fellowship Program application reviewer, 2012
- ACS PRF proposal reviewer, 2012
- Manuscript reviews performed for:
 - ACS Appl. Energy Mater.*
 - ACS Appl. Mater. Interfaces*
 - ACS Appl. Polym. Mater.*
 - ACS Nano*
 - ACS Sustainable Chem. Eng.*
 - Adv. Energy Mater.*
 - Adv. Eng. Mater.*
 - Adv. Mater.*
 - Adv. Sustainable Syst.*
 - Angew. Chem. Int. Ed.*
 - Appl. Catal. B*
 - Appl. Optics*
 - Appl. Phys. Lett.*
 - Chem*
 - Electrochem. Commun.*
 - Green Chem.*
 - IEEE J. Display Technol.*

IEEE Trans. Electron Dev.
Ind. Eng. Chem. Res.
Joule
J. Am. Chem. Soc.
J. Mater. Chem. A
J. Mater. Sci.
J. Phys. Chem.
J. Vac. Sci. Technol. B
Macromolecules
Mater. Res. Bulletin
Nanomater. Nanotechnol.
Nano Lett.
Nano Reviews
Nanoscale
New J. Chem.
Opt. Lett.
Organic Electronics
PLOS ONE
Polym. Chem.
Sci. Adv.
Thin Solid Films
Transl. Mater. Res.

Professional Society Memberships

- AIChE, Member since 1999
 - Director, MESD (Area 8), 2019-2020
 - Area 8E Chair, 2013-2014
 - Area 8E Co-chair, 2012-2013
- Tau Beta Pi, Member since 2000

Professional Development Activities

- Tufts Environmental Literacy Institute Fellow, Spring 2011
- Tufts Center for the Enhancement of Learning and Teaching (CELT) Faculty Fellow, 2009-2010

Refereed Publications

50. "Highly Flexible Transistor Threads for All-Thread Based Integrated Circuits and Multiplexed Diagnostics," Owyung, R. E.; Terse-Thakoor, T.; Rezaei Nejad, H.; Panzer, M. J.; Sonkusale, S. R., *ACS Appl. Mater. Interfaces* **2019**, *in press*.
49. "High Flux Membranes with Ultrathin Zwitterionic Copolymer Selective Layers with ~1 nm Pores Using an Ionic Liquid Cosolvent," Bengani-Lutz, P.; Sadeghi, I.; Lounder, S. J.; Panzer, M. J.; Asatekin, A., *ACS Appl. Polym. Mater.* **2019**, *1*, 1954-1959.
48. "Zwitterionic Copolymer-Supported Ionogel Electrolytes: Impacts of Varying the Zwitterionic Group and Ionic Liquid Identities," Rebollar, L.; Panzer, M. J., *ChemElectroChem* **2019**, *6*, 2482-2488.
47. "Design of Stretchable and Self-Healing Gel Electrolytes via Fully Zwitterionic Polymer Networks in Solvate Ionic Liquids for Li-Based Batteries," D'Angelo, A. J.; Panzer, M. J., *Chem. Mater.* **2019**, *31*, 2913-2922.
46. "Colorimetric Gas Sensing Washable Threads for Smart Textiles," Owyung, R. E.; Panzer, M. J.; Sonkusale, S. R., *Sci. Rep.*, **2019**, *9*, 5607.
45. "Highly Stretchable and Nonvolatile Gelatin-Supported Deep Eutectic Solvent Gel Electrolyte-Based Ionic Skins for Strain and Pressure Sensing," Qin, H.; Owyung, R. E.; Sonkusale, S. R.; Panzer, M. J., *J. Mater. Chem. C*, **2019**, *7*, 601-608.

44. "Fully-Zwitterionic Polymer-Supported Ionogel Electrolytes Featuring a Hydrophobic Ionic Liquid," Taylor, M. E.; Panzer, M. J., *J. Phys. Chem. B*, **2018**, *122*, 8469-8476.
43. "Decoupling the Ionic Conductivity and Elastic Modulus of Gel Electrolytes: Fully Zwitterionic Copolymer Scaffolds in Lithium Salt/Ionic Liquid Solutions," D'Angelo, A. J.; Panzer, M. J., *Adv. Energy Mater.* **2018**, *8*, 1801646.
42. "Chemically Cross-Linked Poly(2-hydroxyethyl methacrylate)-Supported Deep Eutectic Solvent Gel Electrolytes for Eco-Friendly Supercapacitors," Qin, H.; Panzer, M. J., *ChemElectroChem* **2017**, *4*, 2556-2562.
41. "Enhanced Lithium Ion Transport in Poly(ethylene glycol) Diacrylate-Supported Solvate Ionogel Electrolytes via Chemically Cross-linked Ethylene Oxide Pathways," D'Angelo, A. J.; Panzer, M. J., *J. Phys. Chem. B*, **2017**, *121*, 890-895.
40. "Zwitterion-Containing Ionogel Electrolytes," Lind, F.; Rebollar, L.; Bengani-Lutz, P.; Asatekin, A.; Panzer, M. J., *Chem. Mater.* **2016**, *28*, 8480-8483.
39. "Flexible 3D Graphene Transistors with Ionogel Dielectric for Low-Voltage Operation and High Current Carrying Capacity," Kabiri Ameri, S.; Singh, P. K.; D'Angelo, A. J.; Panzer, M. J.; Sonkusale, S. R., *Adv. Electron. Mater.* **2016**, *2*, 1500355.
38. "Etching of Electrodeposited Cu₂O Films Using Ammonia Solution for Photovoltaic Applications," Zhu, C.; Panzer, M. J., *Phys. Chem. Chem. Phys.* **2016**, *18*, 6722-6728.
37. "Formulation Influence on the Sol-Gel Formation of Silica-Supported Ionogels," Horowitz, A. I.; Westerman, K.; Panzer, M. J., *J. Sol-Gel Sci. Technol.* **2016**, *78*, 34-39.
36. "Deciphering Physical versus Chemical Contributions to the Ionic Conductivity of Functionalized Poly(methacrylate)-Based Ionogel Electrolytes," D'Angelo, A. J.; Grimes, J. J.; Panzer, M. J., *J. Phys. Chem. B* **2015**, *119*, 14959-14969.
35. "Spectroscopic Determination of Relative Brønsted Acidity as a Predictor of Reactivity in Aprotic Ionic Liquids," Horowitz, A. I.; Arias, P.; Panzer, M. J., *Chem. Commun.* **2015**, *51*, 6651-6654.
34. "Synthesis of Zn:Cu₂O Thin Films Using a Single Step Electrodeposition for Photovoltaic Applications," Zhu, C.; Panzer, M. J., *ACS Appl. Mater. Interfaces* **2015**, *7*, 5624-5628.
33. "Poly(dimethylsiloxane)-Supported Ionogels with High Ionic Liquid Loading," Horowitz, A. I.; Panzer, M. J., *Angew. Chem.* **2014**, *53*, 9780-9783.
32. "Seed Layer-assisted Chemical Bath Deposition of CuO Films on ITO-coated Glass Substrates with Tunable Crystallinity and Morphology," Zhu, C.; Panzer, M. J., *Chem. Mater.* **2014**, *26*, 2960-2966.
31. "Rapid, Microwave-Assisted Thermal Polymerization of Poly(Ethylene Glycol) Diacrylate-Supported Ionogels," Visentin, A. F.; Dong, T.; Poli, J.; Panzer, M. J., *J. Mater. Chem. A* **2014**, *2*, 7723-7726.
30. "Integration of UV-cured Ionogel Electrolyte with Carbon Paper Electrodes," Flores Zopf, S.; Panzer, M. J., *AIMS Materials Science* **2014**, *1*, 59-69.
29. "Influence of Ionic Liquid Selection on the Properties of Poly(Ethylene Glycol) Diacrylate-Supported Ionogels as Solid Electrolytes," Visentin, A. F.; Alimena, S.; Panzer, M. J., *ChemElectroChem* **2014**, *1*, 718-721.
28. "Influence of ITO Electrode Surface Composition on the Growth and Optoelectronic Properties of Electrodeposited Cu₂O Thin Films," Osherov, A.; Zhu, C.; Panzer, M. J., *J. Phys. Chem. C* **2013**, *117*, 24937-24942.
27. "Reclamation and Reuse of Ionic Liquids from Silica-Supported Ionogels Using Spontaneous Water-Driven Separation," Horowitz, A. I.; Wang, Y.; Panzer, M. J., *Green Chem.* **2013**, *15*, 3414-3420.

26. "Surface Chemistry of Electrodeposited Cu₂O Films Studied by XPS," Zhu, C.; Osherov, A.; Panzer, M. J., *Electrochim. Acta* **2013**, *111*, 771-778.
25. "Role of Solution Chemistry in Determining the Morphology and Photoconductivity of Electrodeposited Cuprous Oxide Films," Osherov, A.; Zhu, C.; Panzer, M. J., *Chem. Mater.* **2013**, *25*, 692-698.
24. "Acene-Doped Polymer Films: Singlet Oxygen Dosimetry and Protein Sensing," Koylu, D.; Sarrafpour, S.; Zhang, J.; Ramjattan, S.; Panzer, M. J., Thomas III, S. W., *Chem. Commun.* **2012**, *48*, 9489-9491.
23. "High-performance, Mechanically Compliant Silica-based Ionogels for Electrical Energy Storage Applications," Horowitz, A. I.; Panzer, M. J., *J. Mater. Chem.* **2012**, *22*, 16534-16539.
22. "Ion Electrodiffusion Governs Silk Electrogelation," Kojic, N.; Panzer, M. J.; Leisk, G. G.; Raja, W. K.; Kojic, M.; Kaplan, D. L., *Soft Matter* **2012**, *8*, 2897-2905. **(Featured on Inside Front Cover)**
21. "Poly(Ethylene Glycol) Diacrylate-Supported Ionogels with Consistent Capacitive Behavior and Tunable Elastic Response," Visentin, A. F.; Panzer, M. J., *ACS Appl. Mater. Interfaces* **2012**, *4*, 2836-2839.

Work performed prior to Tufts:

20. "Contact Printing of Colloidal Nanocrystal Thin Films for Hybrid Organic/Quantum Dot Optoelectronic Devices," Panzer, M. J.; Aidala, K. E.; Bulović, V., *Nano Reviews* **2012**, *3*, 16144.
19. "Morphology of Contact Printed Colloidal Quantum Dots in Organic Semiconductor Films: Implications for QD-LEDs," Aidala, K. E.; Panzer, M. J.; Anikeeva, P. O.; Halpert, J. E.; Bawendi, M. G.; Bulović, V., *Phys. Status Solidi C* **2011**, *8*, 120-123.
18. "Electroluminescence from Nanoscale Materials via Field-Driven Ionization," Wood, V.; Panzer, M. J.; Bozyigit, D.; Shirasaki, Y.; Rousseau, I.; Geyer, S.; Bawendi, M. G.; Bulović, V., *Nano Lett.* **2011**, *11*, 2927-2932.
17. "Nanoscale Morphology Revealed at the Interface Between Colloidal Quantum Dots and Organic Semiconductor Films," Panzer, M. J.; Aidala, K. E.; Anikeeva, P. O.; Halpert, J. E.; Bawendi, M. G.; Bulović, V., *Nano Lett.* **2010**, *10*, 2421-2426.
16. "Measuring Charge Trap Occupation and Energy Level in CdSe/ZnS Quantum Dots Using a Scanning Tunneling Microscope," Hummon, M. R.; Stollenwerk, A. J.; Narayanamurti, V.; Anikeeva, P. O.; Panzer, M. J.; Wood, V.; Bulović, V., *Phys. Rev. B* **2010**, *81*, 115439.
15. "Tunable Infrared Emission from Printed Colloidal Quantum Dot/Polymer Composite Films on Flexible Substrates," Panzer, M. J.; Wood, V.; Geyer, S. M.; Bawendi, M. G.; Bulović, V., *IEEE J. Display Technol.* **2010**, *6*, 90-93.
14. "Air-Stable Operation of Transparent, Colloidal Quantum Dot Based LEDs with a Unipolar Device Architecture," Wood, V.; Panzer, M. J.; Caruge, J.-M.; Halpert, J. E.; Bawendi, M. G.; Bulović, V., *Nano Lett.* **2010**, *10*, 24-29.
13. "Selection of Metal Oxide Charge Transport Layers for Colloidal Quantum Dot LEDs," Wood, V.; Panzer, M. J.; Halpert, J. E.; Caruge, J.-M.; Bawendi, M. G.; Bulović, V., *ACS Nano* **2009**, *3*, 3581-3586.
12. "Alternating Current Driven Electroluminescence from ZnSe/ZnS:Mn/ZnS Nanocrystals," Wood, V.; Halpert, J. E.; Panzer, M. J.; Bawendi, M. G.; Bulović, V., *Nano Lett.* **2009**, *9*, 2367-2371.
11. "Inkjet Printed Quantum Dot-Polymer Composites for Full Color AC-Driven Displays," Wood, V.; Panzer, M. J.; Chen, J.; Bradley, M. S.; Halpert, J. E.; Bawendi, M. G.; Bulović, V., *Adv. Mater.* **2009**, *21*, 2151-2155. **(Featured on Inside Front Cover)**
10. "Exploiting Ionic Coupling in Electronic Devices: Electrolyte-Gated Organic Field-Effect Transistors," (Research News) Panzer, M. J.; Frisbie, C. D., *Adv. Mater.* **2008**, *20*, 3177-3180.

9. "Polymer Electrolyte-Gated Organic Field-Effect Transistors: Low Voltage, High Current Switches for Organic Electronics and Testbeds for Probing Electrical Transport at High Charge Carrier Density," Panzer, M. J.; Frisbie, C. D., *J. Am. Chem. Soc.* **2007**, *129*, 6599-6607.
8. "Ion Gel Gated Polymer Thin-Film Transistors," Lee, J.; Panzer, M. J.; He, Y.; Lodge, T. P.; Frisbie, C. D., *J. Am. Chem. Soc.* **2007**, *129*, 4532-4533.
7. "Vibrational Spectroscopy Reveals Electrostatic and Electrochemical Doping in Organic Thin Film Transistors Gated with a Polymer Electrolyte Dielectric," Kaake, L. G.; Zou, Y.; Panzer, M. J.; Frisbie, C. D.; Zhu, X.-Y. *J. Am. Chem. Soc.* **2007**, *129*, 7824-7830.
6. "High Charge Carrier Densities and Conductance Maxima in Single-Crystal Organic Field-Effect Transistors with a Polymer Electrolyte Gate Dielectric," Panzer, M. J.; Frisbie, C. D., *Appl. Phys. Lett.* **2006**, *88*, 203504.
5. "High Carrier Density and Metallic Conductivity in Poly(3-hexylthiophene) Achieved by Electrostatic Charge Injection," Panzer, M. J.; Frisbie, C. D., *Adv. Funct. Mater.* **2006**, *16*, 1051-1056.
4. "High Mobility Top-Gated Pentacene Thin-Film Transistors," Newman, C. R.; Chesterfield, R. J.; Panzer, M. J.; Frisbie, C. D., *J. Appl. Phys.* **2005**, *98*, 084506.
3. "Polymer Electrolyte Gate Dielectric Reveals Finite Windows of High Conductivity in Organic Thin Film Transistors at High Charge Carrier Densities," Panzer, M. J.; Frisbie, C. D., *J. Am. Chem. Soc.* **2005**, *127*, 6960-6961.
2. "Low-Voltage Operation of a Pentacene Field-Effect Transistor with a Polymer Electrolyte Gate Dielectric," Panzer, M. J.; Newman, C. R.; Frisbie, C. D., *Appl. Phys. Lett.* **2005**, *86*, 103503.
1. "Mass Transfer Properties of Monoliths," Hahn, R.; Panzer, M.; Hansen, E.; Mollerup, J.; Jungbauer, A., *Sep. Sci. & Tech.* **2002**, *37*, 1545-1565.

Book Chapters

3. "Wearable Energy Storage Based on Ionic Liquid Gels," S. F. Zopf, A. J. D'Angelo, H. Qin, M. J. Panzer, Chapter 14 in *Polymerized Ionic Liquids* (Edited by A. Eftekhari), The Royal Society of Chemistry, Smart Materials Series (Book 29), 2018. ISBN: 9781782629603
2. "Colloidal Quantum Dot Light Emitting Diodes," V. Wood, M. Panzer, S. Coe-Sullivan, V. Bulović, Chapter 6 in *Colloidal Quantum Dot Optoelectronics and Photovoltaics* (Edited by G. Konstantatos and E. H. Sargent), Cambridge University Press, 2013. ISBN: 9780521198264
1. "Contact Effects in Organic Field-Effect Transistors," M. J. Panzer and C. D. Frisbie, Section 2.4 in *Organic Field-Effect Transistors* (Edited by Z. Bao and J. Locklin), CRC Press, Optical Science and Engineering Series, *128*, 2007. ISBN: 9780849380808

Patents/Applications

5. A. J. D'Angelo, E. Taylor, M. J. Panzer. Gel Electrolyte Composites. US Provisional Patent Application, filed Oct. 2018.
4. C. Zhu, M. J. Panzer. Cupric Oxide Semiconductors. US Patent 10,115,847, filed Apr. 2, 2015, and issued Oct. 30, 2018.
3. A. I. Horowitz, M. J. Panzer. Silicone-Containing Ionic Materials. US Patent 10,044,062, filed Dec. 15, 2014, and issued Aug. 7, 2018.
2. V. Wood, M. J. Panzer, J. E. Halpert, M. G. Bawendi, V. Bulović. Light Emitting Device Including Semiconductor Nanocrystals. US Patent 9,574,134, filed May 7, 2010, and issued Feb. 21, 2017.

1. V. Wood, M. J. Panzer, J. M. Caruge, J. E. Halpert, M. G. Bawendi, V. Bulović. Light Emitting Device Including Semiconductor Nanocrystals. US Patent 8,536,776, filed May 7, 2010, and issued Sept. 17, 2013.

Invited Presentations & Seminars

24. 1st International Meeting on Deep Eutectic Systems, Lisbon, Portugal, June 27, 2019
23. POLYMAT Innovative Polymers Group, University of the Basque Country, June 21, 2019
22. Chemical Engineering Department Seminar, University of Massachusetts Lowell, Mar. 21, 2019
21. Gordon Research Conference on Ionic Liquids, Sunday River, ME, Aug. 14, 2018
20. 35th International Battery Seminar & Exhibit, Ft. Lauderdale, FL, Mar. 28, 2018
19. Chemical & Biological Engineering Department Seminar, Tufts University, Sept. 18, 2017
18. Chemical Engineering Department Seminar, The City College of New York, Mar. 13, 2017
17. Gordon Research Conference on Ionic Liquids, Sunday River, ME, Aug. 15, 2016
16. PRISM/PCCM Seminar, Princeton University, Mar. 23, 2016
15. Soft Materials for Energy Applications Workshop, University of Edinburgh, Feb. 11, 2016
14. Condensed Matter Physics Group Seminar, Tufts University, Feb. 3, 2016
13. Chemical Engineering Department Seminar, University of Edinburgh, Sept. 14, 2015
12. Natick Chapter of Sigma Xi (The Scientific Research Society), Natick, MA, Nov. 21, 2014
11. Chemical Engineering Department Seminar, Carnegie Mellon University, Oct. 21, 2014
10. Bioengineering Program Seminar, Tufts University, Oct. 9, 2013
9. Physics Department Seminar, Mt. Holyoke College, Mar. 14, 2013
8. Energy Frontier Research Center Seminar, Columbia University, Oct. 3, 2012
7. Integrated Systems Laboratory, ETH Zurich, Sep. 14, 2012
6. Center for STEM Diversity, Tufts University, Feb. 8, 2012
5. Urban Science Academy, West Roxbury, MA, Jan. 25, 2012
4. US Army Natick Soldier Research, Development & Engineering Center, Natick, MA, Jan. 12, 2012
3. QD Vision, Inc., Lexington, MA, Dec. 13, 2011
2. Electrical and Computer Engineering Department Seminar, Tufts University, Sep. 28, 2010
1. Biomedical Engineering Department Seminar, Tufts University, Nov. 16, 2009

Contributed Conference Research Presentations

35. D'Angelo, A.; Lind, F.; Rebollar, L.; Taylor, M.; Panzer, M. J., Zwitterionic Copolymer Scaffolds for Nonaqueous, Ionic Liquid-Based Gel Electrolytes, 4th International Conference on Bioinspired and Zwitterionic Materials, Kerkrade, The Netherlands, 6/17/19.
34. Clark, A.; Taylor, M. E.; Panzer, M. J.; Cebe, P., Thermal Analysis of Fully Zwitterionic Copolymers for Safer Electrochemical Energy Storage, Bulletin of the American Physical Society, APS March Meeting, Boston, MA, 3/6/19.
33. Oweyung, R. E.; Panzer, M. J.; Sonkusale, S. R., Colloidal Dispersion Supported Ionic Liquid Gels for New Transistor Geometries, MRS Fall Meeting, Boston, MA, 11/26/18.
32. Qin, H.; Panzer, M. J. Chemically Cross-Linked Poly(2-Hydroxyethyl Methacrylate)-Supported Deep Eutectic Solvent Gel Electrolytes, AIChE Annual Meeting, Minneapolis, MN, 11/1/2017.
31. Panzer, M. J. Zwitterionic Copolymers as Novel Supporting Scaffolds for Ionic Liquid-Based Gel Electrolytes, AIChE Annual Meeting, Minneapolis, MN, 10/31/2017.
30. D'Angelo, A.; Panzer, M. J. Solvate Ionic Liquid-based Gel Electrolytes Containing Functionalized Polymer-based Networks for Use in Lithium Metal Battery Applications, AIChE Annual Meeting, Minneapolis, MN, 10/30/2017.
29. D'Angelo, A.; Panzer, M. J., Enhanced Lithium Ion Transport in Poly(ethylene glycol) Diacrylate-based Solvate Ionogel Electrolytes via Ethylene Oxide Pathways, MRS Fall Meeting, Boston, MA, 11/30/16.

28. Panzer, M. J.; Novel Ionogel Electrolytes with Varying Chemical Functionality in the Polymer Scaffold, 3rd International Conference on Ionic Liquid-Based Materials (ILMAT III), Berlin, Germany, 12/9/15.
27. D'Angelo, A.; Grimes, J.; Panzer, M. J., Flexible Supercapacitors Featuring Novel Ionogel Electrolytes Designed with Chemically-Tailored Polymer Scaffolds, MRS Fall Meeting, Boston, MA, 12/2/15.
26. Horowitz, A. I.; Panzer, M. J., Overcoming Miscibility Barriers to Create Poly(dimethylsiloxane)-Supported Ionogel Electrolytes with High Ionic Liquid Loading, MRS Fall Meeting, Boston, MA, 12/4/14.
25. Horowitz, A. I.; Panzer, M. J., Low-Energy Recycling of Ionic Liquids from Silica-Supported Ionogel Electrolytes Using Spontaneous Water-Driven Separation, 248th ACS National Meeting, San Francisco, CA, 8/14/14.
24. Visentin, A. F.; Alimena, S.; Panzer, M. J., Solvent vs. Scaffold Contributions in Poly(Ethylene Glycol) Diacrylate-Supported Solid Ionogel Electrolytes, 56th Electronic Materials Conference, Santa Barbara, CA, 6/27/14.
23. Panzer, M. J.; Zhu, C.; Osherov, A., Unexpected Impurities in Electrodeposited Cu₂O Thin Films for Photovoltaics, 56th Electronic Materials Conference, Santa Barbara, CA, 6/25/14.
22. Panzer, M. J.; Zhu, C.; Osherov, A. Effect of Growth Solution Selection on Unexpected Impurities in Electrodeposited Cu₂O Thin Films, MRS Fall Meeting, Boston, MA, 12/4/2013.
21. Panzer, M. J. Solution Speciation Effects on Electrodeposited Cu₂O Films for Solution-Processed Photovoltaics, AIChE Annual Meeting, San Francisco, CA, 11/7/2013.
20. Panzer, M. J. Tailoring the Properties of Polymer- and Silica-Supported Ionogel Electrolytes for Energy Storage Applications, AIChE Annual Meeting, San Francisco, CA, 11/7/2013.
19. Panzer, M. J.; Visentin, A. F.; Horowitz, A. I.; Flores, S. Development of Soft Ionogel Electrolytes for Flexible Charge Storage Applications, Electronic Materials Conference, Notre Dame, IN, 6/27/2013.
18. Zhu, C.; Osherov, A.; Panzer, M. J. Solution Speciation Effects on the Morphology and Photoconductivity of Electrodeposited Cuprous Oxide Films, Electronic Materials Conference, Notre Dame, IN, 6/26/2013.
17. Visentin, A. F.; Panzer, M. J. Characterization of Solid Ionogel Electrolytes for Capacitive Energy Storage, MRS Fall Meeting, Boston, MA, 11/27/2012.
16. Osherov, A.; Zhu, C.; Panzer, M. J. Morphological Control in Electrodeposited Cuprous Oxide Schottky Barrier Solar Cells: "Flowers" vs. "Cubes," MRS Fall Meeting, Boston, MA, 11/27/2012.
15. Horowitz, A. I.; Panzer, M. J. A Novel Form of Silica-based Ionogel Electrolyte Offering Versatility, Stability, and High Performance, AIChE Annual Meeting, Pittsburgh, PA, 10/31/2012.
14. Panzer, M. J.; Wood, V.; Bozyigit, D.; Shirasaki, Y.; Rousseau, I.; Geyer, S.; Bawendi, M. G.; Bulović, V. Electroluminescence from Colloidal Nanocrystals (Quantum Dots) via Field-Driven Ionization, AIChE Annual Meeting, Minneapolis, MN, 10/20/2011.
13. Panzer, M. J.; Georgakis, C. G.; Pantelidou, A. E. Using the DOE Methodology to Determine Optimal Annealing Profiles for Organic Bulk Heterojunction Photovoltaics, Wittich Energy Sustainability Research Symposium, Medford, MA, 10/4/2011.
12. Panzer, M. J.; Wood, V.; Su, G.; Geyer, S. M.; Bawendi, M. G.; Bulović, V. Flexible Infrared Displays Incorporating Quantum Dot/Polymer Composites, MRS Fall Meeting, Boston, MA, 12/2/2008.
11. Panzer, M. J.; Arango, A. C.; Osedach, T. P.; Geyer, S. M.; Bawendi, M. G.; Bulović, V. Hybrid Organic/Inorganic Solar Cells Featuring Microcontact-Printed Quantum Dot Films, AIChE Annual Meeting, Philadelphia, PA, 11/21/2008.

10. Panzer, M. J.; Frisbie, C. D. Highly Conductive Polymer Thin Films Realized by Field-Effect Charging, AIChE Annual Meeting, Salt Lake City, UT, 11/8/2007.
9. Panzer, M. J.; Frisbie, C. D. Electrostatic Injection of Very Large 2D Charge Carrier Densities to Obtain Metallic Conductivities in Organic Semiconductors, APS March Meeting, Denver, CO, 3/8/2007.
8. Panzer, M. J.; Frisbie, C. D. Realization of Very Large 2D Charge Carrier Densities in Organic Semiconductors by Electrostatic Injection, MRS Fall Meeting, Boston, MA, 11/28/2006.
7. Panzer, M. J.; Frisbie, C. D. Electrostatic Injection of 10^{15} Charges per Square Centimeter in Organic Semiconductors, AIChE Annual Meeting, San Francisco, CA, 11/16/2006.
6. Panzer, M. J.; Frisbie, C. D. Charge Transport at Very Large 2D Carrier Densities in Organic FETs, Kinken Organic Field-Effect Transistors Workshop, Sendai, Japan, 10/20/2006.
5. Panzer, M. J.; Frisbie, C. D. Charge Transport at Very High Carrier Densities in Organic Semiconductor Thin Films & Single Crystals, Electronic Materials Conference, State College, PA, 6/30/2006.
4. Panzer, M. J.; Frisbie, C. D. Achieving 10^{15} charges/cm² in Organic Semiconductors by Electrostatic Injection, International Conference for Organic Electronics, Eindhoven, Netherlands, 6/21/2006.
3. Panzer, M. J.; Frisbie, C. D. Polymer Electrolyte Enables Injection of 10^{15} charges/cm² in a Variety of Pi-Conjugated Organic Semiconductor Materials, 7th International Symposium on Functional Pi-Electron Systems, Osaka, Japan, 5/16/2006.
2. Panzer, M. J.; Newman, C. R.; Frisbie, C. D. Low-Voltage Operation of a Pentacene Field-Effect Transistor Realized Using a Polymer Electrolyte Gate Dielectric, Electronic Materials Conference, Santa Barbara, CA, 6/23/2005.
1. Panzer, M. J.; Frisbie, C. D. Finite Windows of High Conductivity in OTFTs at High Charge Carrier Densities Realized Using a Polymer Electrolyte Gate Dielectric, Physical Electronics Conference, Madison, WI, 6/20/2005.

Teaching Summary

CHBE 11: Chemical Engineering Thermodynamics (taught every Spring, 2010-2019)

CHBE 140: Surface and Colloid Chemistry (taught Fall 2011, Fall 2013, Fall 2014, Fall 2016, Spring 2018)

*CHBE 175: Electronic Devices for Energy Applications (taught Fall 2010, 2011, 2013, 2014, 2016-2018)

*CHBE 194: Wine Chemistry and Engineering (taught Summer 2017 at Tufts-in-Talloires, France)

*ES 93: Innovation and Innovators in ChBE (co-developed course Summer 2012, guest lecturer in Fall 2012)

*EN 1: Coffee Engineering (in co-development now; to be offered in Fall 2019)

* = new course developed (or co-developed) by Panzer.