

YOSSEF A. ELABD, Ph.D.

Professor and holder of Joe M. Nesbitt Professorship in Chemical Engineering
Associate Department Head
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Education

2001 Ph.D., Johns Hopkins University, Chemical Engineering
1995 B.S., University of Maryland, Baltimore County, Chemical Engineering

Appointments

2014-present Texas A&M University, College Station, TX (Department of Chemical Engineering)
Joe M. Nesbitt Professorship (2017-present), Professor (2014-present), Associate Department
Head (2016-present), Director of the Undergraduate Program (2016-present)
2003-2014 Drexel University, Philadelphia, PA (Department of Chemical and Biological Engineering)
Professor (2013-2014), Associate Professor (2009-2013), Assistant Professor (2003-2009)
2008-2015 Università di Bologna, Bologna, Italy
Senior Fellow, Istituto di Studi Avanzati (2015, 1 mo.), Visiting Scholar (2010, 2 wk.; 2008, 2
mo. – NSF Funded)
2011 Food & Drug Administration, Silver Spring, MD
Scholar in Residence (2011, 5 mo. – NSF Funded)
2001-2003 U.S. Army Research Laboratory, Aberdeen, MD (Materials Division)
NRC Postdoctoral Fellow
1996 SCM Chemicals, Baltimore, MD
R&D Chemical Engineer

Honors and Awards

Joe M. Nesbitt Professorship, 2017
Fish Camp Namesake (Session C, Purple), 2017
American Physical Society Fellow, 2016
Senior Fellowship, Istituto di Studi Avanzati, Università di Bologna, 2015
NSF CAREER Award, 2007-2012
DuPont Science and Engineering Award, 2005-2006
ARO Young Investigator Award, 2004-2007
NRC Postdoctoral Award, 2001-2003
Phi Kappa Phi Honors, 1994
AIChE Donald F. Othmer Sophomore Academic Excellence Award, 1993
Memorial Scholarship of the Engineering Society of Baltimore, 1992

Research Interests

Polymers: Ionic Polymers, Block Copolymers, Polymer Membranes, Polymer Nanofibers, Transport and
Thermodynamics in Polymers
Electrochemical Energy: Fuel Cells, Capacitors, Batteries

Current Research Funding

ARO, ARL-CSCP, NSF-CBET, NSF-CMMI, Axalta Coating Systems

Previous Research Funding

ARO, ARL-MCOE, ARO-MURI, ARO-DURIP, ARO-STTR, ARO-YIP, DTRA/ARO, FDA, NSF-CAREER, NSF-CBET, USDA/DOE, Benjamin Franklin Technology Partners, DuPont, Kraton Polymers, Kuraray America, Microsoft, Perma Pure, POC

Collaborators within the past 48 months

F.L. Beyer (ARL), B. Chaplin (Univ. Ill. Chicago), M.B. Giacinti (Univ. of Bologna, Italy), V. Kalra (Drexel Univ.), M. Minelli (Univ. of Bologna, Italy), G.R. Palmese (Drexel Univ.), G.F. Payne (Univ. of Maryland), J. Runt (Penn St.), G.C. Sarti (Univ. of Bologna, Italy), C. Willis (Kraton), K.I. Winey (Univ. of Penn.)

Graduate and Postdoctoral Advisors

Doctoral: T.A. Barbari, currently at Boston University

Postdoctoral: J.M. Sloan, U.S. Army Research Laboratory

Researchers Currently Advising (4 PhD, 2 undergrad)

PhD Students: P. Lathrop, M. Hwang, R. Sun, T.-L.Chen

Undergraduate Students: M. Doan, M. Karenson

Researchers Previously Advised (5 postdoc, 11 PhD, 13 MS (9 w/ thesis), 37 undergrad, 1 high school student)

Postdoctoral Scholars: J. Collins, X. Wang (Plains Mainstream Canada), Y. Ye (FDA), B. Dong (Soochow Univ.), H. Chen

PhD Students: M. Santos (Univ. Mich. Law School), J.R. Nykaza (Teledyne Technologies), K.M. Meek (Oak Ridge National Laboratory), F.W. Richey (Eos Energy Storage), E.M. Davis (Clemson Univ.), D.O. Dever (Armstrong Engineering), H.L.S. Salerno (DuPont), L. Gwee (Owens Corning), D.T. Hallinan Jr. (Florida State Univ.), A.M. Rahmathullah (Donaldson), N.W. DeLuca (Arkema)

MS Students: R. Sun, T.-L.Chen, A. Pillado, E. Mace, S. Kenney, D.M. Shay (Johnson Matthey), B.D. Eirich (ExxonMobil), J.D. Snyder (Drexel Univ.), T. Avery, D.O. Okojie, C. Hronec, S. Raghav

Undergraduate Students: Y. Shi, B. Alexander, N. Glandon, M. Moerbe, R. Nelson, R. Benjamin (MIT), S. Hausler, K. Mattson, R. Ventura, U. Amira, M. Torelli, K. Padagaonkar, T. Ahmed (Harvard Univ.), I. Ahmed (Merck), K. Wujcik (Ford), C. Bower, C. Anyigbo, D. Mattson, K. Gold, C.-H. Lim, S. Kenney, D.M. Shay (Johnson Matthey), B.D. Eirich (ExxonMobil), J.D. Snyder (Drexel Univ.), D. A. Wunderlich, S. R. Young, H. Ghebremichael, M. Miller, B. N. Sirin, J. Atchison, D.O. Okojie, C. Hronec

NSF-REU Students: S. Gunnels, N. Wallace, K. Ware, D. Jeff-eke, A. Backmann

High School Students: Jeremy Dudo

RECORD OF RESEARCH

PUBLICATIONS (>4,500 citations, h-index = 35; source: Google Scholar)

Publications (Peer-Reviewed Archival Manuscripts)

1. Santos, M.C.; Bendiksen, B.; Elabd Y.A. Diffusion of Liquid Water in Free-Standing Polymer Films using Pressure-Contact Time-Resolved Fourier Transform Infrared Attenuated Total Reflectance Spectroscopy. *Ind. Eng. Chem. Res.* **2017**, *56*, 3464–3476.
2. Chen, T.-L.; Elabd, Y.A.; Hybrid-Capacitors with Polyaniline/Carbon Electrodes Fabricated via Simultaneous Electrospinning/Electrospraying. *Electrochimica Acta* **2017**, *229*, 65-72.
3. Nykaza, J.R.; Li, Y.; Elabd, Y.A.; Snyder, J.D. Effect of Alkaline Exchange Polymerized Block Copolymer Ionomers on the Kinetics of Fuel Cell Half Reactions. *J. Electroanalytical Chem.* **2016**, *783*, 182-187.

4. Nykaza, J.R.; Savage, A.M.; Pan, Q.; Wang, S.; Beyer, F.L.; Tang, M.H.; Li, C.Y.; Elabd, Y.A. Polymerized Ionic Liquid Diblock Copolymer as Solid-State Separator and Electrolyte in Lithium-Ion Battery. *Polymer* **2016**, *101*, 311-318.
5. Nykaza, J.R.; Benjamin, R.; Meek, K.M. Elabd, Y.A. Polymerized Ionic Liquid Diblock Copolymer as an Ionomer and Anion Exchange Membrane for Alkaline Fuel Cells. *Chemical Engineering Science* **2016**, *154*, 119-127. **Invited Contribution, Special Issue on Recent Advances in Energy Conversion and Storage Devices**
6. Meek, K.M.; Elabd, Y.A. Sulfonated Polymerized Ionic Liquid Block Copolymers. *Macromolecular Rapid Comm.* **2016**, *37*, 1200-1206. **Invited Contribution, Special Issue on Ionic Liquids in Polymer Design**
7. Meek, K.M.; Nykaza, J.R.; Elabd, Y.A. Alkaline Chemical Stability and Ion Transport in Polymerized Ionic Liquids with Various Backbones and Cations. *Macromolecules* **2016**, *49*, 3382-2294.
8. Santos, M.; Jing, Y.; Fang, L.; Chaplin, B.P; Elabd Y.A. Highly Porous Ti₄O₇ Reactive Electrode Water Filtration Membranes via Simultaneous Electrospinning/Electrospraying Method. *AIChE J.* **2016**, *62*, 508-524. **Invited Contribution, Special Issue on Advances in Materials**
9. Nykaza, J.R.; Ye, Y.; Nelson, R.L.; Jackson, A.C.; Beyer, F.L.; Davis, E.M.; Page, K.A. Sharick, S.; Winey, K.I.; Elabd, Y.A. Polymerized Ionic Liquid Diblock Copolymers: Impact of Water/Ion Clustering on Ion Conductivity. *Soft Matter* **2016**, *12*, 1133-1144.
10. Meek, K.M.; Elabd, Y.A. Polymerized Ionic Liquid Block Copolymers for Electrochemical Energy. *Journal of Materials Chemistry A* **2015**, *3*, 24187-24194. **Invited Contribution**
11. Meek, K.M.; Elabd, Y.A. Alkaline Chemical Stability of Polymerized Ionic Liquids with Different Cations. *Macromolecules* **2015**, *48*, 7071-7084.
12. Tran, C.; Lawrence, D.; Richey, F.W.; Dillard, C.; Elabd, Y.A.; Kalra, V. Binder-free Three-dimensional High Energy Density Electrodes for Ionic-Liquid Supercapacitors. *Chem. Commun.* **2015**, *51*, 13670-13763.
13. Meek, K.M.; Sharick, S.; Ye, Y.; Winey, K.I.; Elabd, Y.A. Bromide and Hydroxide Conductivity-Morphology Relationships in Polymerized Ionic Liquid Block Copolymers. *Macromolecules* **2015**, *48*, 4850-4862.
14. Ansaloni, L.; Nykaza, J.R.; Ye, Y.; Elabd, Y.A.; Giacinti Baschetti, M. Influence of Water Vapor on the Gas Permeability of Polymerized Ionic Liquid Membranes. *J. Membr. Sci.*, **2015**, *487*, 199-208.
15. Salazar, M.; Richey, F.; Elabd, Y.A; Reznikov, M. Further Improvement of the Ionic Thermoelectric Generator. *IEEE Transactions on Industrial Applications* **2015**, *51*, 1132-1136.
16. Richey, F.W.; Tran, C.; Kalra, V.; Elabd, Y.A. Ionic Liquid Dynamics in Nanoporous Carbon Nanofibers in Supercapacitors Measured with *in operando* Infrared Spectroelectrochemistry. *J. Phys. Chem. C*, **2014**, *118*, 21846-21855.
17. Forrey, C.; Saylor, D.M.; Silverstein, J.S.; Douglas, J.F.; Davis, E.M.; Elabd, Y.A. Prediction and Validation of Diffusion Coefficients in a Model Drug Delivery System Using Microsecond Atomistic Molecular Dynamics Simulation and Vapor Sorption Analysis. *Soft Matter* **2014**, *10*, 7480-7494.

18. Nykaza, J.R.; Ye, Y.; Elabd, Y.A. Polymerized Ionic Liquid Diblock Copolymers with Long Alkyl Side-Chain Length. *Polymer* **2014**, *55*, 3360-3369. **Invited Contribution, Special Issue on Polymerized Ionic Liquids**
19. Wang, X.; Richey, F.W.; Wujcik, K.; Ventura, R.; Mattson, K.; Elabd, Y.A. Effect of Polytetrafluoroethylene on Ultra-Low Platinum Loaded Electrospun/Electrosprayed Electrodes in Proton Exchange Membrane Fuel Cells. *Electrochimica Acta* **2014**, *139*, 217-224.
20. Zhang, L.; Kucera, L.R.; Ummadisetty, S.; Nykaza, J.R.; Elabd, Y.A.; Story, R.F.; Cavicchi, K.A.; Weiss, R.A. Supramolecular Multiblock Polystyrene-Polyisobutylene Copolymers via Ionic Interactions. *Macromolecules* **2014**, *47*, 4387-4396.
21. Wang, X.; Richey, F.W.; Wujcik, K.; Elabd, Y.A. Ultra-Low Platinum Loadings in Proton Exchange Membrane Fuel Cell Electrodes Fabricated via Simultaneous Electrospinning/Electrospraying Method. *J. Power Sources* **2014**, *264*, 42-48.
22. Dever, D.O.; Cairncross, R.A.; Elabd, Y.A. Nanofiber Cathode Catalyst Layer Model for a Proton Exchange Membrane Fuel Cell. *J. Fuel Cell Sci. & Tech.* **2014**, *11*, 041007, 1-13.
23. Choi, U.H.; Ye, Y.; Salas de la Cruz, D.; Liu, W.; Winey, K.I., Elabd, Y.A.; Runt, J.; Colby, R.H. Dielectric and Viscoelastic Responses of Imidazolium-Based Ionomers with Different Counterions and Side Chain Lengths. *Macromolecules* **2014**, *47*, 777-790.
24. Liu, Y.; Kim, E.; Lee, M.E.; Zhang, B.; Elabd, Y.A.; Wang, Q.; White, I.M. Bentley, W.E.; Payne, G.F. Enzymatic Writing to Soft Films: Potential to Filter, Store and Analyze Biologically-relevant Chemical Information. *Adv. Funct. Mater.* **2014**, *24*, 480-491.
25. Davis, E.M.; Elabd, Y.A. Water Clustering in Glassy Polymers. *J. Phys. Chem. B* **2013**, *117*, 10629-10640.
26. Price, S.C.; Ren, X.; Jackson, A.C.; Ye, Y.; Elabd, Y.A.; Beyer, F.L. Bicontinuous Alkaline Fuel Cell Membranes from Strongly Self-Segregating Block Copolymers. *Macromolecules* **2013**, *46*, 7332-7340.
27. Davis, E.M.; Elabd Y.A. Prediction of Water Solubility in Glassy Polymers Using Nonequilibrium Thermodynamics. *Ind. Eng. Chem. Res.* **2013**, *52*, 12865-12875.
28. Richey, F.W.; Dyatkin, B.; Gogotsi, Y.; Elabd, Y.A. Ion Dynamics in Porous Carbon Electrodes in Supercapacitors using in situ Infrared Spectroelectrochemistry. *J. Amer. Chem. Soc.* **2013**, *135*, 12818-12826.
29. Choi, J.-H.; Ye, Y.; Elabd, Y.A.; Winey, K.I. Network Structure and Strong Microphase Separation for High Ion Conductivity in Polymerized Ionic Liquid Block Copolymers. *Macromolecules* **2013**, *46*, 5290-5300.
30. Davis, E.M.; Minelli, M.; Baschetti, M.G.; Jr.; Elabd, Y.A. Non-Fickian Diffusion of Water in Polylactide. *Ind. Eng. Chem. Res.* **2013**, *52*, 8664-8673. **Invited Contribution, Professor Giulio Sarti Festschrift**
31. Ye, Y.; Wang, S.; Davis, E.M.; Winey, K.I.; Elabd Y.A. High Hydroxide Conductivity in Polymerized Ionic Liquid Block Copolymers. *ACS Macro Letters* **2013**, *2*, 575-580.
32. Ye, Y.; Stokes, K.K.; Beyer, F.L.; Elabd, Y.A. Development of Phosphonium-based Bicarbonate Anion Exchange Polymer Membranes. *J. Membrane Sci.* **2013**, *443*, 93-99.
33. Richey, F.W.; Elabd, Y.A. In Situ Spectroscopic Measurements of Individual Cation and Anion Dynamics in a RuO₂ Electrochemical Capacitor. *J. Electrochem. Soc.* **2013**, *160*, A862-A868.

34. Salerno, H.L.S.; Elabd, Y.A. Anion Exchange Membranes Derived from Nafion Precursor for Alkaline Fuel Cells: Effect of Cation Type on Properties. *J. Appl. Polym. Sci.* **2013**, *127*, 298-307.
35. Richey, F.W.; Elabd, Y.A. In Situ Molecular Level Measurements of Ion Dynamics in an Electrochemical Capacitor. *J. Phys. Chem. Lett.* **2012**, *3*, 3297-3301.
36. Davis, E.M.; Minelli, M.; Baschetti, M.G.; Jr.; Sarti, G.C.; Elabd, Y.A. Nonequilibrium Sorption of Water in Polylactide. *Macromolecules*, **2012**, *45*, 7486-7494.
37. Ye, Y.; Choi, J.-H.; Winey, K.I.; Elabd, Y.A. Polymerized Ionic Liquid Block and Random Copolymers: Effect of Weak Microphase Separation on Ion Transport. *Macromolecules* **2012**, *45*, 7027-7035.
38. Salerno, H.L.S.; Beyer F.L.; Elabd, Y.A. Anion Exchange Membranes Derived from Nafion Precursor for Alkaline Fuel Cells. *J. Polym. Sci. Part B: Polym. Phys.* **2012**, *50*, 552-562.
39. Salas-de la Cruz, D.; Green, M.D.; Ye, Y.; Elabd, Y.A.; Long, T.E.; Winey, K.I. Correlating Backbone-to-Backbone Distance to Ionic Conductivity in Amorphous Polymerized Ionic Liquids. *J. Polym. Sci.: Part B: Pol. Phys.* **2012**, *50*, 338-346.
40. Smith, D.M.; Dong, B.; Marron, R.W.; Birnkrant, M.J.; Elabd, Y.A.; Natarajan, L.V.; Tondiglia, V.P.; Bunning, T.J.; Li, C.Y. Tuning Ionic Conducting Pathways Using Holographic Polymerization. *Nano Letters* **2012**, *12*, 310-314.
41. Green, M.D.; Salas-de la Cruz, D.; Ye, Y.; Layman, J.M.; Elabd, Y.A.; Winey, K.I.; Long, T.E. Alkyl-Substituted *N*-Vinylimidazolium Polymerized Ionic Liquids: Thermal Properties and Ionic Conductivities. *Macromol. Chem. Phys.* **2011**, *212*, 252-2528.
42. Ye, Y.; Elabd, Y.A. Relative Chemical Stability of Alkaline Exchange Polymerized Ionic Liquids. *Macromolecules* **2011**, *44*, 8494-8503.
43. Davis, E.M.; Theryo, G.; Hillmyer, M.A.; Cairncross, R.A.; Elabd, Y.A. Liquid Water Transport in Polylactide Homo and Graft Copolymers. *ACS Applied Materials & Interfaces* **2011**, *3*, 3997-4006.
44. Davis, E.M.; Benetatos, N.M.; Regnault, W.F.; Winey, K.I.; Elabd, Y.A. The Influence of Thermal History on the Structure and Water Transport in Parylene C Coatings. *Polymer* **2011**, *52*, 5378-5386.
45. Weber, R.L.; Ye, Y.; Banik, S.M.; Elabd, Y.A.; Hickner, M.A.; Mahanthappa, M.K. Thermal and Ion Transport Properties of Hydrophilic and Hydrophobic Polymerized Styrenic Imidazolium Ionic Liquids. *J. Polym. Sci.: Part B: Pol. Phys.* **2011**, *49*, 1287-1296.
46. Weber, R.L.; Ye, Y.; Schmitt, A.L.; Banik, S.M.; Elabd, Y.A.; Mahanthappa, M.K. Effect of Nanoscale Morphology on the Conductivity of Polymerized Ionic Liquid Block Copolymers. *Macromolecules* **2011**, *44*, 5727-5735.
47. McPeak, K.M.; Le, T.P.; Britton, N.G.; Nickolov, Z.S.; Elabd Y.A.; Baxter J.B. Chemical Bath Deposition of ZnO Nanowires at Near-Neutral pH Conditions without Hexamethylenetetramine (HMTA): Understanding the Role of HMTA in ZnO Nanowire Growth. *Langmuir* **2011**, *27*, 3672-3677.
48. Ye, Y.; Elabd, Y.A. Anion Exchanged Polymerized Ionic Liquids: High Free Volume Single Ion Conductors. *Polymer* **2011**, *52*, 1309-1317.
49. Elabd, Y.A.; Hickner, M.A. Block Copolymers for Fuel Cells. *Macromolecules* **2011**, *44*, 1-11. **Invited Contribution, Perspective Article**

50. Gwee, L.; Choi, J.-H.; Winey, K.I.; Elabd, Y.A. Block Copolymer/Ionic Liquid Films: The Effect of Ionic Liquid Composition on Morphology and Ion Conduction. *Polymer* **2010**, *51*, 5516-5524.
51. Dong, B.; Gwee, L.; Salas-de la Cruz, D.; Winey, K.I. Elabd, Y.A. Super Proton Conductive High Purity Nafion Nanofibers. *Nano Letters* **2010**, *10*, 3785-3790.
52. Hallinan, D.T., Jr.; De Angelis, M.G.; Baschetti, M.G.; Jr.; Sarti, G.C.; Elabd, Y.A. Non-Fickian Diffusion of Water in Nafion. *Macromolecules* **2010**, *43*, 4667-4678.
53. Rahmathullah, M. Aflal M.; Snyder, J.D.; Elabd, Y.A.; Palmese G.R. Nanoporous and Proton Conductive Hydrophobic-Hydrophilic Copolymer Thermoset Membranes. *J. Polym. Sci.: Part B: Pol. Phys.* **2010**, *48*, 1245-1255.
54. Antonietti, M.; Shen, Y.; Nakanishi, T.; Manuelian, M.; Campbell, R.; Gwee, L.; Elabd, Y.A.; Tambe, N.; Crombez, R.; Texter, J. Single Wall Carbon Nanotube Latexes. *ACS Applied Materials & Interfaces* **2010**, *2*, 649-653.
55. Rahmathullah, M. Aflal M.; Elabd, Y.A.; Palmese G.R. Kinetic and Thermomechanical Analysis of Hydrophobic-Hydrophilic Copolymer Thermosets Synthesized via Free-Radical Polymerization. *J. Appl. Polym. Sci.* **2010**, *115*, 1419-1427.
56. Chen, L.; Hallinan, D.T. Jr.; Elabd, Y.A.; Hillmyer, M.A. Highly Selective Polymer Electrolyte Membranes From Reactive Block Polymers. *Macromolecules*, **2009**, *42*, 6075-6085.
57. Chen, H.; Choi, J.-H.; Salas-de la Cruz, D.; Winey, K.I.; Elabd, Y.A. Polymerized Ionic Liquids: The Effect of Copolymer Composition on Ion Conduction. *Macromolecules* **2009**, *42*, 4809-4816.
58. Chen, H.; Elabd, Y.A. Electrospinning and Solution Properties of Polymerized Ionic Liquids. *Macromolecules* **2009**, *42*, 3368-3373.
59. Hallinan, D.T., Jr.; Elabd, Y.A. Diffusion of Water in Nafion using Time-Resolved FTIR-ATR Spectroscopy. *J. Phys. Chem. B* **2009**, *113*, 4257-4266.
60. Snyder, J.D.; Elabd, Y.A. Nafion[®] Nanofibers and Their Effect on Polymer Electrolyte Membrane Fuel Cell Performance. *J. Power Sources* **2009**, *186*, 385-392.
61. Chen, H.; Snyder, J.D.; Elabd, Y.A. Electrospinning and Solution Behavior of Nafion and Poly(acrylic acid). *Macromolecules* **2008**, *41*, 128-135.
62. Rahmathullah, A.M.; Robinette, E.J.; Chen, H.; Elabd, Y.A.; Palmese G.R. Plasma-Assisted Synthesis of Hollow Nanofibers using Electrospun Sacrificial Templates. *Nucl. Instrum. Meth. B* **2007**, *265*, 23-30.
63. Hallinan, D.T., Jr.; Elabd, Y.A. Diffusion and Sorption of Methanol and Water in Nafion using Time-Resolved FTIR-ATR Spectroscopy. *J. Phys. Chem. B* **2007** *111*, 13221-13230. **Featured in Photonics Spectra, Jan 2008**
64. Chen, H.; Elabd, Y.A.; Palmese, G.R. Plasma-Aided Template Synthesis of Inorganic Nanotubes and Nanorods. *J. Mater. Chem.* **2007**, *17*, 1593-1596.
65. Chen, H.; Palmese, G.R.; Elabd, Y.A. Electrosensitive Permeability of Membranes with Oriented Polyelectrolyte Nanodomains. *Macromolecules* **2007**, *40*, 781-782.
66. DeLuca, N.W.; Elabd, Y.A. Direct Methanol Fuel Cell Performance of Nafion[®]/ Poly(vinyl alcohol) Blend Membranes. *J. Power Sources* **2006**, *163*, 386-391.

67. Chen, H.; Palmese, G.R.; Elabd, Y.A. Membranes with Oriented Polyelectrolyte Nanodomains. *Chem. Mater.* **2006**, *18*, 4875-4881.
68. DeLuca, N.W.; Elabd, Y.A. Nafion[®]/Poly(vinyl alcohol) Blends: Effect of Composition and Annealing Temperature on Transport Properties. *J. Membrane Sci.* **2006**, *282*, 217-224.
69. DeLuca, N.W.; Elabd, Y.A. Polymer Electrolyte Membranes for the Direct Methanol Fuel Cell: A Review. *J. Polym. Sci.: Part B: Pol. Phys.* **2006**, *44*, 2201-2225. **Invited Contribution, Special Issue on Polymers in Fuel Cells**
70. Elabd, Y.A.; Napadensky, E.; Walker, C.W.; Winey, K.I. Transport Properties of Sulfonated Poly(styrene-isobutylene-styrene) Triblock Copolymers at High Ion-Exchange Capacities. *Macromolecules* **2006**, *39*, 399-407.
71. Suleiman, D.; Elabd, Y.A.; Napadensky, E.; Sloan, J.M.; Crawford, D.M. Thermogravimetric Characterization of Sulfonated Poly(styrene-isobutylene-styrene) Block Copolymers: Effects of Processing Conditions. *Thermochim. Acta* **2005**, *430*, 149-154.
72. Wu, L-Q.; Ghodssi, R.; Elabd, Y.A.; Payne, G.F. Biomimetic Pattern Transfer. *Adv. Funct. Mater.* **2005**, *15*, 189-195.
73. Elabd, Y.A.; Napadensky, E. Sulfonation and Characterization of Poly(styrene-isobutylene-styrene) Triblock Copolymers at High Ion-Exchange Capacities. *Polymer* **2004**, *45*, 3037-3043.
74. Elabd, Y.A.; Beyer, F.L.; Walker, C. W. Triblock Copolymer Ionomer Membranes. Part II: Structure Characterization and its Effects on Transport Properties and Direct Methanol Fuel Cell Performance. *J. Membrane Sci.* **2004**, *231*, 181-188.
75. Elabd, Y.A.; Baschetti Giacinti, M.; Barbari, T.A. Time-Resolved FTIR-ATR Spectroscopy for the Measurement of Molecular Diffusion in Polymers. *J. Polym. Sci.: Part B: Pol. Phys.* **2003**, *41*, 2794-2807. **Invited Contribution**
76. Elabd, Y.A.; Napadensky, E.; Sloan, J.M.; Crawford, D.M.; Walker, C. W. Triblock Copolymer Ionomer Membranes. Part I: Methanol and Proton Transport. *J. Membrane Sci.* **2003**, *217*, 227-242.
77. Elabd, Y.A.; Barbari, T.A. Multicomponent Diffusion of Hydrogen Bonding Solutes in a Polymer. *AIChE J.* **2002**, *48*, 1610-1620.
78. Elabd, Y.A.; Sloan, J.M.; Beck Tan, N.; Barbari, T.A. The Effect of Penetrant-Polymer Interactions on Molecular Diffusion in Conformational Isomers of a Heterogeneous Polymer. *Macromolecules* **2001**, *34*, 6268-6273.
79. Elabd, Y.A.; Barbari, T.A. Acetic Acid Diffusion in Polyisobutylene: Probing Small Molecule Structures. *Ind. Eng. Chem. Res.* **2001**, *40*, 3076-3084.
80. Elabd, Y.A.; Barbari, T.A. Separating Solvation from Molecular Diffusion in Polymers. *AIChE J.* **2001**, *47*, 1255-1262. **Featured in Chemical Engineering Progress, June 2001**
81. Elabd, Y.A.; Sloan, J.M.; Barbari, T.A. Diffusion of Acetonitrile in Conformational Isomers of an H₁₂MDI Polyurethane. *Polymer* **2000**, *41*, 2203-2212.

Publications (Book Chapters)

82. Ye, Y.; Elabd, Y.A. Chemical Stability of Anion Exchange Membranes for Alkaline Fuel Cells; In *Polymers for Energy Storage and Delivery: Polyelectrolytes for Batteries and Fuel Cells*. Page, K.A.; Soles, C.L.; Runt, J., Eds.; Oxford University Press, 2012; ACS Symposium Series 1096, pp 234-251. **Invited Contribution**
83. Chen, H.; Rahmathullah, A.M.; Palmese, G.R.; Elabd, Y.A. Polymer-Polymer Nanocomposite Membranes as Breathable Barriers with Electro-Sensitive Permeability; In *Nanoscience and Nanotechnology for Chemical and Biological Defense*. Nagarajan, R.; Zukas, W.; Hatton, T.A.; Lee, S., Eds.; Oxford University Press, 2009; ACS Symposium Series 1016, pp 307-322. **Invited Contribution**
84. Hallinan, D.T., Jr.; Elabd, Y.A. Sorption and Diffusion Selectivity of Methanol/Water Mixtures in Nafion[®]. In *Micro-Mini Fuel Cells – Fundamentals and Applications*; Kakac, S., Pramuanjaroenkij, A., Vasiliev, L., Eds; Springer: Netherlands, 2008; pp 189-208. **Invited Contribution**

Publications (Archival Proceedings, Preprints, and Technical Reports)

85. Long, T.E.; Elabd, Y.A.; Yuan, J. Ionic Liquids in Polymer Design. *Macromolecular Rapid Comm.* **2016**, *37*, 1105-1105. **Invited Contribution, Special Issue on Ionic Liquids in Polymer Design**
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Publications (Issued Patents)

120. Elabd, Y.A.; Winey, K.I.; Ye, Y.; Choi, J.-H. Sharick, T.-S. S. Polymerized Ionic Liquid Block Copolymers As Battery Membrane. U.S. Patent 9,365,688, June 14, 2016.
121. Elabd, Y.A.; Winey, K.I.; Ye, Y.; Choi, J.-H. Sharick, T.-S. S. Polymerized Ionic Liquid Block Copolymers As Battery Membrane. U.S. Patent 8,853,286, October 7, 2014.
122. Elabd, Y.A.; Palmese, G.R. Filled Nanoporous Polymer Membrane Composites for Protective Clothing and Methods for Making Them. U.S. Patent 8,686,054, April 1, 2014.
123. Elabd, Y.A.; Palmese, G.R. Filled Nanoporous Polymer Membrane Composites for Protective Clothing and Methods for Making Them. U.S. Patent 8,173,713, May 8, 2012. **Featured in Homeland Security Daily Wire, February 2008.**
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Publications (Pending Patents)

125. Elabd, Y.A.; Richey, F.W.; Wujcik, K.H. Ion Conducting Nanofiber Fuel Cell Electrodes. U.S. Patent Application Publication, Pub. No.: US 2014/0051013 A1, Pub. Date: February 20, 2014, pending approval.
126. Elabd, Y.A.; Gogotsi, Y.; Eirich, B.; Shay, D. Electrocatalysts for Fuel Cells. U.S. Patent Application Publication, Pub. No.: US 2013/0309595 A1, Pub. Date: November 21, 2013, pending approval.

PRESENTATIONS

Webinars

1. ACS Division of Polymer Chemistry (POLY) Webinar, “The Power of Plastics: Polymerized Ionic Liquids and Nanosstructured Polymers for Battery and Other Applications, April 18, 2017, Moderator: Marc Hilmyer, University of Minnesota, Speakers: Yossef A. Elabd, Texas A&M University, and Thomas Epps III, University of Delaware. YouTube: [https://youtu.be/ T41tQzz91A](https://youtu.be/T41tQzz91A)

Presentations (*Oral Presentations at Meetings and Conferences, presenter underlined*)

2. Elabd, Y.A. Polymerized Ionic Liquid Block Copolymers for Alkaline Fuel Cells. Materials Research Society Fall National Meeting, Boston, MA, November 2016. **Invited Speaker**
3. Meek, K.M.; Nykaza, J., Sun, R.; Willis, C.L.; Elabd, Y.A. Chemical Stability and Ion Transport in Polymerized Ionic Liquid Anion Exchange Membranes. AIChE Annual Meeting, San Francisco, CA, November 2016. **Selected for Excellence in Graduate Polymer Research Session – Received 2nd Place Award in Session**
4. Santos, M.; Elabd, Y.A. *In Situ* Pressure-Contact Time-Resolved Fourier Transform Infrared Attenuated Total Reflectance Spectroscopy: A New Method to Measure Liquid Diffusion in Free-Standing Polymer Films. AIChE Annual Meeting, San Francisco, CA, November 2016. AIChE, San Francisco, CA, November 2016.
5. Elabd, Y.A. Polymerized Ionic Liquid Block Copolymers for Alkaline Fuel Cells. American Chemical Society Southwest Regional Meeting (ACS-SWRM), Galveston, TX, November 2016. **Invited Speaker**
6. Elabd, Y.A. Polymerized Ionic Liquid Block Copolymers. American Chemical Society Meeting on Advanced Polymer Materials (ACS-APM), Houston, TX, November 2016. **Invited Speaker**
7. Elabd, Y.A. Polymerized Ionic Liquid Block Copolymers for Alkaline Fuel Cells. 15th International Symposium on Polymer Electrolytes. Uppsala, Sweden, August 2016. **Invited Speaker**
8. Elabd, Y.A. Membranes for Fuel Cells. European Membrane Society Summer School, Bertinoro, Italy, June 2016. **Invited Speaker**
9. Santos, M.; Jing, Y.; Fang, L.; Chaplin, B.; Elabd, Y.A. Highly Porous Ti₄O₇ Reactive Electrode Membranes for Water Filtration. AIChE Annual Meeting, Salt Lake City, UT, November 2015.
10. Meek, K.M.; Savage, A.M.; Beyer, F.L.; Elabd, Y.A. Chemical Stability and Ion Transport in Polymerized Ionic Liquid Block Copolymer Anion Exchange Membranes with Various Cations. AIChE Annual Meeting, Salt Lake City, UT, November 2015.
11. Nykaza, J.R.; Li, Y.; Elabd, Y.A.; Snyder, J. The Hydroxide Conductivity and Chemical Stability of a Polymerized Ionic Liquid Diblock Copolymer for Alkaline Fuel Cells Using Rotating Disk Electrode. AIChE Annual Meeting, Salt Lake City, UT, November 2015.
12. Elabd, Y.A. Polymerized Ionic Liquid Block Copolymer as Anion Exchange Membranes. Fall National Meeting of the American Chemical Society, Boston, MA, August 2015. **Invited Speaker**
13. Meek, K.M.; Beyer, F.L.; Elabd, Y.A. Transport and Morphology of Polymerized Ionic Liquid Block Copolymer Anion Exchange Membranes with Various Cations. Spring National Meeting of the American Chemical Society, Denver, CO, March 2015.
14. Nykaza, J.R.; Sharick, S.; Davis, E.M.; Ye, Y.; Page, K.A.; Jackson, A.; Beyer, F.L.; Winey, K.I.; Elabd, Y.A. Impact of Alkyl Chain Length on Ion Conduction and Morphology in Polymerized Ionic Liquid

Diblock Copolymers. Spring National Meeting of the American Chemical Society, Denver, CO, March 2015.

15. Elabd, Y.A. Water in Renewable Polymers: Nonequilibrium Thermodynamics. American Physical Society Meeting, San Antonio, TX, March 2015. **Invited Speaker**
16. Weiss, R.A.; Zhang, L.; Cavicchi, K.A.; Story R.F.; Kucera, L.R.; Ummadisetty, S.; Elabd, Y.A.; Nykaza, J.R. Synthesis and Properties of Supramolecular Multiblock Copolymers Formed From Ionic Bonds. Materials Research Society Fall Meeting, Boston, MA, December 2014.
17. Elabd, Y.A. Polymerized Ionic Liquid Block Copolymers: Highly Versatile Ion Conductors. Annual Meeting of the American Institute of Chemical Engineers, Atlanta, GA, November 2014. **Invited Speaker**
18. Ye, Y.; Nykaza, J.R.; Meek, K.M.; Elabd, Y.A. Polymerized Ionic Liquid Block Copolymers as Anion Exchange Membranes for Alkaline Fuel Cells. Annual Meeting of the American Institute of Chemical Engineers, Atlanta, GA, November 2014. **Invited Speaker**
19. Ansaloni, L.; Nykaza, J.R.; Minelli, M.; Elabd, Y.A.; Giaciniti Baschetti, M. Polymerized Ionic Liquid Membranes for CO₂ Capture: The Effect of Water Vapor. Annual Meeting of the American Institute of Chemical Engineers, Atlanta, GA, November 2014.
20. Richey, F.W.; Hallinan, Jr., D.T.; Elabd, Y.A. In Situ Time-Resolved Infrared Spectroelectrochemistry of Fuel Cells and Electrochemical Capacitors. Spring National Meeting of the American Chemical Society, Dallas, TX, March 2014. **Invited Speaker**
21. Nykaza, J.R.; Ye, Y.; Elabd, Y.A. Synthesis of Long-Chain Polymerized Ionic Liquid Diblock Copolymers with High Ion Conductivity. Spring National Meeting of the American Chemical Society, Dallas, TX, March 2014.
22. Meek, K.M.; Ye, Y.; Elabd, Y.A. Chemical Stability of Polymerized Ionic Liquid Block Copolymer Anion Exchange Membranes with Various Cations. Spring National Meeting of the American Chemical Society, Dallas, TX, March 2014.
23. Sharick, S.; Meek, K.; Ye, Y.; Elabd, Y.A.; Winey, K.I. Morphology and Ionic Conductivity of Humidity-Responsive Polymerized Ionic Liquid Block Copolymers. American Physical Society Meeting, Denver, CO, March 2014.
24. Dyatkin, B.; Richey, F.W.; Elabd, Y.A.; Gogotsi, Y. Novel in situ Infrared Spectroelectrochemistry Technique for Analyzing Ionic Liquid Electrolyte Dynamics at Interfaces of Carbon Supercapacitor Electrodes. Materials Research Society Meeting, Boston, MA, December 2013.
25. Nykaza, J.R.; Meek, K.M.; Ye, Y.; Elabd, Y.A. Invited Talk: Block Copolymers as Anion Exchange Membranes for Alkaline Fuel Cells. Annual Meeting of the American Institute of Chemical Engineers, San Francisco, CA, November 2013. **Invited Speaker**
26. Richey, F.W.; Dyatkin, B.; Gogotsi, Y.; Elabd, Y.A. Time-Resolved Ion Dynamics in Carbon Supercapacitor Electrodes Using In Situ Infrared Spectroscopy. Ion Annual Meeting of the American Institute of Chemical Engineers, San Francisco, CA, November 2013.
27. Davis, EM; Elabd, Y.A. Water Sorption and Diffusion in Glassy Polymers: Nonequilibrium Thermodynamics and States of Water. Ion Annual Meeting of the American Institute of Chemical Engineers, San Francisco, CA, November 2013.

28. Richey, F.W.; Dyatkin, B.; Gogotsi, Y.; Elabd, Y.A. Time-Resolved Ion Dynamics in Carbon Supercapacitor Electrodes Using In Situ Infrared Spectroscopy. 224th Electrochemical Society Meeting, San Francisco, CA, October 2013. **Received ECS Student Travel Award**
29. Dyatkin, B.; Richey, F.W.; Elabd, Y.A.; Gogotsi, Y. Time-Resolved Ion Mobility in Supercapacitor Electrodes Studied Using In Situ Attenuated Total Reflectance Infrared Spectroscopy. Materials Research Society Meeting, San Francisco, CA, April 2013.
30. Wang, S.; Ye, Y.; Elabd, Y.A.; Winey, K.I. Morphologies and Ionic Conductivity in Polymerized Ionic Liquid Block Copolymers. Materials Research Society Meeting, San Francisco, CA, April 2013.
31. Elabd, Y.A. Fuel Cell Membranes. Short course on Membranes for Clean Water and Energy. American Physical Society Meeting, Baltimore, MD, March 2013. **Invited Speaker**
32. Davis E.M.; Elabd, Y.A. States of Water in Non-Equilibrium Glassy Polymers. American Physical Society Meeting, Baltimore, MD, March 2013.
33. Beyer, F.L.; Price, S.; Jackson, A.; Ren, X.; Chu, D.; Ye, Y.; Elabd, Y.A. Anion Exchange Membranes Based on Reactive Block Copolymers. American Physical Society Meeting, Baltimore, MD, March 2013.
34. Wang, S.; Ye, Y.; Elabd, Y.A.; Winey, K.I. Ordered and Disordered Polymerized Ionic Liquid Block Copolymers: Morphology and Ion Conductivity. American Physical Society Meeting, Baltimore, MD, March 2013.
35. Choi, J.-H.; Ye, Y.; Elabd, Y.A.; Winey, K.I. Effect of Morphology on Ion Transport in Polymerized Ionic Liquid Block Copolymers. American Physical Society Meeting, Baltimore, MD, March 2013.
36. Elabd, Y.A. Block Copolymers in Fuel Cells. Advanced in Materials for Proton Exchange Membrane Fuel Cells Systems Meeting, sponsored by The Division of Polymer Chemistry (POLY) of the American Chemical Society, Asilomar, CA, February 2013. **Invited Speaker**
37. Ye, Y.; Choi, J.; Wang, S.; Winey, K.I.; Elabd, Y.A. Hydroxide Conducting Polymerized Ionic Liquid Block Copolymers for Alkaline Fuel Cells. Annual Meeting of the American Institute of Chemical Engineers, Pittsburgh, PA October 2012. **Invited Speaker**
38. Davis, E.M.; Elabd, Y.A. Non-Equilibrium Sorption and Anomalous Diffusion in Glassy Polymers. Annual Meeting of the American Institute of Chemical Engineers, Pittsburgh, PA October 2012.
39. Kim, E.; Gordonov, T.; Liu, Y.; Elabd, Y.A.; Bentley, W.E.; Payne, G.F. Bio-based Redox-Capacitor to Intercede in Microbe-Electrode Electron Flow. Annual Meeting of the American Institute of Chemical Engineers, Pittsburgh, PA October 2012.
40. Richey, F.W.; Dyatkin, B.; Gogotsi, Y.; Elabd, Y.A. Measuring Ion Transport in Energy Storage Devices Using In Situ Time-Resolved Infrared Spectroscopy. 222nd Electrochemical Society Meeting, Honolulu, HI, October 2012.
41. Ye, Y.; Choi, J.; Wang, S.; Winey, K.I.; Elabd, Y.A. Ion Transport in Polymerized Ionic Liquid Block and Random Copolymers. World Polymer Congress, International Union of Pure and Applied Chemistry (IUPAC), Blacksburg, VA, June 2012. **Invited Speaker**
42. Choi, J.; Ye, Y.; Green, M.D.; Elabd, Y.A.; Long, T.E.; Winey, K.I. Ion Conduction in Polymerized Ionic Liquid Thin Films. World Polymer Congress, International Union of Pure and Applied Chemistry (IUPAC), Blacksburg, VA, June 2012.

43. Price, S.C.; Jackson, A.C.; Stokes, K.K.; Beyer, F.L.; Ye, Y.; Elabd, Y.A. Developing Ionomers with Controlled Morphologies for Anion Exchange Membranes. World Polymer Congress, International Union of Pure and Applied Chemistry (IUPAC), Blacksburg, VA, June 2012.
44. Ye, Y.; Choi, J.-H.; Winey, K.I.; Elabd, Y.A. Polymerized Ionic Liquids: Comparing Ion Transport-Morphology Relationships in Block and Random Copolymers. Spring National Meeting of the American Chemical Society, San Diego, CA, March 2012.
45. Weber, R.L.; Ye, Y.; Schmitt, A.L.; Banik, S.M.; Elabd, Y.A.; Mahanthappa, M.K. Nanostructured Polymerized Ionic Liquid Block Copolymers. Spring National Meeting of the American Chemical Society, San Diego, CA, March 2012.
46. Davis, E.M.; McDermott, M.K.; Benetatos, N.M.; Elabd, Y.A. Drug Delivery in Biodegradable Polymer Coatings used in Drug-Eluting Medical Devices: An Infrared Spectroscopic Investigation. Spring National Meeting of the American Chemical Society, San Diego, CA, March 2012.
47. Richey, F.; Elabd, Y.A. Ion Dynamics in Solid-State Polymer Electrolyte Electrochemical Cells using in situ Time-Resolved Infrared Spectroscopy. American Physical Society Meeting, Boston, MA, March 2012.
48. Choi, J.-H.; Ye, Y.; Green, M.D.; Elabd, Y.A.; Long, T.E.; Winey, K.I. Ion Conduction in Polymerized Ionic Liquid Thin Films. American Physical Society Meeting, Boston, MA, March 2012.
49. Choi, U.-H.; Lee, M.; Mittal, A.; Ye, Y.; Elabd, Y.A.; Gibson, H.; Runt, J.; Colby, R. Ion Conduction and Dielectric Response of Imidazolium-Based Single-Ion Conductors. American Physical Society Meeting, Boston, MA, March 2012.
50. Elabd, Y.A.; Ye, Y.; Choi, J.-H.; Winey, K.I. Ion Transport in Polymerized Ionic Liquid Block and Random Copolymers. American Physical Society Meeting, Boston, MA, March 2012.
51. Davis, E.D.; Minelli, M.; Baschetti, M.B.; Sarti, G.C.; Elabd, Y.A. Non-Equilibrium Water-Glassy Polymer Dynamics. American Physical Society Meeting, Boston, MA, March 2012.
52. Davis, E.D.; Minelli, M.; Baschetti, M.G.; Sarti, G.C.; Elabd, Y.A. Non-Equilibrium Sorption and Diffusion of Water In Polylactide: Experiments and Model Predictions. Annual Meeting of the American Institute of Chemical Engineers, Minneapolis, MN, October 2011.
53. Dong, B.; Chen, H.; Snyder, J.D.; Elabd, Y.A. Super Conductive Nafion Nanofibers: Discovery, Fabrication, Properties and Fuel Cell Performance. 220th Electrochemical Society Meeting, Boston, MA, October 2011.
54. Choi, U.H.; Ye, Y.; Lee, M.; Mittal, A.; Gibson, H.W.; Elabd, Y.A. Runt, J.; Colby, R.H. Conductivity and Dielectric Behavior of Imidazolium-based Polymers: Structure-Property Relationships. 4th Congress on Ionic Liquids, Arlington, VA, June 2011.
55. Ye, Y.; Mace, E.J.; Elabd, Y.A. Stable Hydroxide Anion Exchange Polymerized Ionic Liquid. Spring National Meeting of the American Chemical Society, Anaheim, CA, March 2011. **Invited Speaker**
56. Choi, U.H.; Ye, Y.; Lee, M.; Mittal, A.; Gibson, H.W.; Elabd, Y.A. Runt, J.; Colby, R.H. Time Scales of Ion Transport in Imidazolium-based Polymers. American Physical Society Meeting, Dallas, TX, March 2011.
57. Beyer, F.L.; Stokes, K.; Orlicki, J.; Ye, Y.; Elabd, Y.A. Morphology and Transport Properties of Phosphonium-containing Styrenic Ionomers with Random Charge Placement. American Physical Society (DPOLY) Meeting, Dallas, TX, March 2011.

58. Elabd, Y.A. Transport Phenomena in Proton Exchange Membranes: A Molecular Perspective. Advanced in Materials for Proton Exchange Membrane Fuel Cells Systems Meeting, sponsored by The Division of Polymer Chemistry (POLY) of the American Chemical Society, Asilomar, CA, February 2011. **Invited Speaker**
59. Hallinan, D.T., Jr.; Elabd, Y.A. Understanding Water Diffusion and Ion Conductivity in Polymer Electrolyte Membranes. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2010.
60. Ye, Y.; Elabd, Y.A. Imidazolium-Based Polymerized Ionic Liquids for Solid Polymer Electrolytes: The Effect of Anion Type. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2010.
61. Hallinan, D.T., Jr.; De Angelis, M.G.; Baschetti, M.G.; Jr.; Sarti, G.C.; Elabd, Y.A. Water Transport in Proton Exchange Membranes: Insights from Time-Resolved Infrared Spectroscopy. 218th Electrochemical Society Meeting, Las Vegas, NV, October 2010. **Invited Speaker**
62. Davis, E.M.; Elabd, Y.A.; Winey, K.I.; Regnault, W.F.; Benetatos, N.M. New Characterization Techniques for Assessing the Structure and Water Transport of Parylene Coatings. Spring National Meeting of the American Chemical Society, San Francisco, CA, March 2010.
63. Hallinan, D.T., Jr.; Elabd, Y.A. Real-Time Molecular Measurements of Water Dynamics in Nafion using Fourier-Transform Infrared, Attenuated Total Reflectance Spectroscopy. Spring National Meeting of the American Chemical Society, San Francisco, CA, March 2010. **Invited Speaker**
64. Ye, Y.; Salas-de la Cruz, D.; Winey, K.I.; Elabd, Y.A. Ion Conduction in Polymerized Ionic Liquids: The Effect of Anion Type. Spring National Meeting of the American Chemical Society, San Francisco, CA, March 2010. **Invited Speaker**
65. Choi, J.-H.; Gwee, L.; Elabd, Y.A.; Winey, K.I. Morphologies in Diblock Copolymer and Ionic Liquid Mixtures. American Physical Society Meeting, Portland, OR, March 2010.
66. Schaeffer, H.; Elabd, Y.A. Nafion-Based Anion Exchange Membranes for the Alkaline Fuel Cell. Annual Meeting of the American Institute of Chemical Engineers, Nashville, TN, November 2009.
67. Hallinan, D.T., Jr.; De Angelis, M.G.; Baschetti, M.G.; Jr.; Sarti, G.C.; Elabd, Y.A. Understanding Mechanisms of Non-Fickian Water Diffusion in Polymer Electrolyte Membranes. Annual Meeting of the American Institute of Chemical Engineers, Nashville, TN, November 2009.
68. Chen, H.; Ye, Y.; Gwee, L.; Choi, J.-H.; Salas-de la Cruz, D.; Winey, K.I.; Elabd, Y.A. Ionic Conduction in Polymerized Ionic Liquids. Polymers and Ionic Liquids Conference, Arlington, VA, September 2009. **Invited Speaker**
69. Elabd, Y.A. Transport Phenomena in Polymer Electrolyte Membrane Fuel Cells. University of Pennsylvania Fuel Cell Symposium, Philadelphia, PA, September 2009. **Invited Speaker**
70. Chen, H.; Gwee, L.; Choi, J.-H.; Salas-de la Cruz, D.; Winey, K.I.; Elabd, Y.A. Ionic Conduction in Polymerized Ionic Liquids and Ionic Liquid-Polymer Mixtures. Spring National Meeting of the American Chemical Society, Salt Lake City, UT, March 2009. **Invited Speaker**
71. Choi, J.-H.; Gwee, L.; Elabd, Y.A.; Winey, K.I. Morphology and Ion Transport in Mixtures of Polymers and Ionic Liquid. American Physical Society Meeting, Pittsburgh, PA, March 2009.

72. Choi, U.H.; Chen, H.; Liu, W.; Elabd, Y.A.; Colby, R.H. Understanding Ion Transport in Polymerized Ionic Liquids using Dielectric Spectroscopy. American Physical Society Meeting, Pittsburgh, PA, March 2009.
73. Hallinan, D.T., Jr.; De Angelis, M.G.; Giacinti Baschetti, M.; Sarti, G.C.; Elabd, Y.A. Non-Fickian Diffusion of Water in Nafion. Annual Meeting of the American Institute of Chemical Engineers, Philadelphia, PA, November 2008.
74. Gwee, L.; Choi, J.-H.; Salas-de la Cruz, D.; Winey, K.I.; Elabd, Y.A. Highly Conductive Ionic Liquid-Homopolymer Mixtures. Annual Meeting of the American Institute of Chemical Engineers, Philadelphia, PA, November 2008.
75. Dever, D.; Cairncross, R.A.; Elabd, Y.A. Planar Model for the Cathode Layer for Polymer Electrolyte Fuel Cells. Annual Meeting of the American Institute of Chemical Engineers, Philadelphia, PA, November 2008.
76. Chen, H.; Choi, J.-H.; Salas-de la Cruz, D.; Winey, K.I.; Elabd, Y.A. Ionic Liquid Polymers: The Effect of Copolymer Composition on Structure and Ion Conduction. Fall National Meeting of the American Chemical Society, Philadelphia, PA, August 2008.
77. Chen, H.; Snyder, J.D.; Elabd, Y.A. Electrospinning Nafion[®] Nanofibers. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2007.
78. Hallinan, D.T., Jr.; Elabd, Y.A. Water Transport in Nafion[®] Using Time-Resolved FTIR-ATR Spectroscopy. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2007.
79. DeLuca, N.W.; Elabd Y.A. Effects of Membrane Preparation and Treatment on Transport Properties in Recast Nafion[®] Membranes. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2007.
80. Rahmathullah, A.M.; Elabd Y.A.; Palmese, G.R. Design of Nanoporous, Proton-Conductive Polymer Thermosets. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2007.
81. Schaeffer, H.; Chen, H.; Snyder, J.D.; Rahmathullah, A.M.; Palmese, G.R.; Elabd, Y.A. Electrosensitive Permeability of Polymer-Polymer Nanocomposite Membranes. Fall National Meeting of the American Chemical Society, Boston, MA, August 2007.
82. Elabd, Y.A. Transport Phenomena in Polymer Electrolyte Membranes for the Direct Methanol Fuel Cell. NATO Advanced Study Institute on Mini-Micro Fuel Cells as Electric Energy Generators, Cesme, Izmir, Turkey, July 2007. **Invited Speaker**
83. Hallinan, D.T., Jr.; Elabd, Y.A. Transport of Water in Nafion[®] using Time-Resolved FTIR-ATR Spectroscopy. Annual Meeting of the North American Membrane Society, Orlando, FL, May 2007.
84. Elabd, Y.A. Methanol Crossover: New Insights and Experimental Techniques. Advanced in Materials for Proton Exchange Membrane Fuel Cells Systems Meeting, sponsored by The Division of Polymer Chemistry (POLY) of the American Chemical Society, Asilomar, CA, February 2007. **Invited Speaker**
85. Rahmathullah, A.M.; Elabd, Y.A.; Palmese, G.R. Plasma-Radiation Enhanced Nanofiber-Thermoplastic Composites. Materials Research Society Fall Meeting, Boston, MA, November 2006.
86. Rahmathullah, A.M.; Elabd, Y.A.; Palmese, G.R. Structure, Property and Cure Kinetics of Thermosetting Copolymers. Annual Meeting of the American Institute of Chemical Engineers, San Francisco, CA, November 2006.

87. Hallinan, D.T., Jr.; Elabd, Y.A. Multicomponent Transport of Water and Methanol in Nafion[®]. Annual Meeting of the American Institute of Chemical Engineers, San Francisco, CA, November 2006. **Received Schering-Plough Research Institute Travel Award (\$2,000)**
88. DeLuca, N.W.; Elabd, Y.A. Nafion[®] Blend Membranes for the Direct Methanol Fuel Cell. Annual Meeting of the American Institute of Chemical Engineers, San Francisco, CA, November 2006.
89. Chen, H.; Palmese, G.R.; Elabd, Y.A. Membranes with Oriented Polyelectrolyte Nanodomains. Fall National Meeting of the American Chemical Society, San Francisco, CA, September 2006.
90. Hronec, C.; Elabd, Y.A. Catalyst Layer Network Formation in Polymer Electrolyte Membrane Fuel Cells. Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH, November 2005.
91. Chen, H.; Palmese, G.R.; Elabd, Y.A. Polyester-Polyelectrolyte Nanocomposite Membranes as Breathable and Responsive Barriers. Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH, November 2005.
92. DeLuca, N.W.; Elabd, Y.A. Nafion[®]/Poly(vinyl alcohol) Blends: Effects of Crosslinking Conditions on Transport Properties. Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH, November 2005.
93. Raghav, S.; Elabd, Y.A. Polymer-Filled Nanoporous Membranes. Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH, November 2005.
94. Soroush, M.; Elabd, Y.A. Control Configuration Selection for Fuel Cell Stack Systems, Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH, November 2005.
95. Rahmathullah, A.M.; Elabd, Y.A.; Palmese, G.R. Synthesis and Characterization of Thermosetting Copolymers as PEMs. Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH, November 2005.
96. Hronec, C.; Walker, C.W.; Elabd, Y.A. Catalyst Layer Network Formation and Its Effect on Fuel Cell Performance. Fall National Meeting of the American Chemical Society, Washington, DC, August 2005.
97. Chen, H.; Palmese, G.R.; Elabd, Y.A. Polyester-Poly(methacrylic acid) Nanocomposite Membranes as Breathable Barriers. Fall National Meeting of the American Chemical Society, Washington, DC, August 2005.
98. Wu, L-Q.; Ghodssi, R.; Elabd, Y.A.; Payne, G.F. Biomimetic Pattern Transfer from a Hard Material to a Soft Biomaterial. Fall National Meeting of the American Chemical Society, Washington, DC, August 2005.
99. Soroush, M.; Elabd, Y.A. Process Systems Engineering Challenges in Fuel Cell Technology for Automobiles. Annual Meeting of the American Institute of Chemical Engineers, Austin, TX, November 2004.
100. Elabd, Y.A.; Walker, C.W. Proton Conducting Block Copolymers and their Application to the Direct Methanol Fuel Cell. 41st Power Sources Conference, Philadelphia, PA, June 2004.
101. Elabd, Y.A.; Napadensky, E.; Walker, C.W. Proton Conducting Block Copolymers: Sulfonation, Characterization and Application to the Direct Methanol Fuel Cell. Spring National Meeting of the American Chemical Society, Anaheim, CA, March 2004. **Invited Speaker**

102. Elabd, Y.A.; Napadensky, E.; Sloan, J.M.; Crawford, D.M.; Walker, C.W. Transport Properties of Triblock Copolymer Ionomer Membranes for Fuel Cells. 23rd Army Science Conference, Orlando, FL, December 2002.
103. Elabd, Y.A.; Sloan, J.M.; Napadensky, E.; Walker, C. Block Copolymer Ionomers as Solid Polymer Electrolyte Membranes for Application to the Direct Methanol Fuel Cell. Annual Meeting of the American Institute of Chemical Engineers, Reno, NV, November 2001.
104. Elabd, Y.A.; Sloan, J.M.; Napadensky, E.; McKnight, S.M. Understanding Transport Mechanisms in Ionomer Membranes. Annual Meeting of the American Institute of Chemical Engineers, Reno, NV, November 2001.
105. Elabd, Y.A.; Barbari, T.A. Understanding Multicomponent Transport in a Polymer Membrane for the Separation of Interacting Mixtures. Spring National Meeting of the American Chemical Society, San Diego, CA, April 2001. **Invited Speaker**
106. Elabd, Y.A.; Barbari, T.A. Multicomponent Diffusion of Interacting Penetrants in a Polymer. Annual Meeting of the American Institute of Chemical Engineers, Los Angeles, CA, November 2000.
107. Elabd, Y.A.; Barbari, T.A. Small Molecule Transport Mechanisms in Polymers: Insights from FTIR-ATR Spectroscopy. Third Joint China/USA Chemical Engineering Conference, Beijing, China, September 2000.
108. Elabd, Y.A.; Barbari, T.A. Probing Complex Molecular Transport Mechanisms with FTIR-ATR Spectroscopy. Annual Meeting of the American Institute of Chemical Engineers, Dallas, TX, November 1999.
109. Elabd, Y.A.; Barbari, T.A. Understanding the Role of Penetrant-Polymer Solvation on Small Molecule Diffusion. Annual Meeting of the American Institute of Chemical Engineers, Dallas, TX, November 1999.
110. Elabd, Y.A.; Barbari, T.A. Diffusion of Acetic Acid in Polyisobutylene: Probing Small Molecule Structures. Annual Meeting of the American Institute of Chemical Engineers, Dallas, TX, November 1999.
111. Elabd, Y.A.; Barbari, T.A. Probing Complex Molecular Transport Mechanisms Through Polymeric Membranes with FTIR-ATR Spectroscopy. The Johns Hopkins Annual Chemical Engineering Symposium, Baltimore, MD, December 1998.
112. Elabd, Y.A.; Barbari, T.A.; Sloan, J.M. Diffusion as a Morphological Probe in Polyurethane Elastomers. Annual Meeting of the American Institute of Chemical Engineers, Miami Beach, FL, November 1998.
113. Hong, S.U.; Elabd, Y.A.; Barbari, T.A. Multicomponent Diffusion of a Vapor Mixture in a Polymeric Film from Sorption Kinetics: Spectroscopic Measurements and the Conditions for a Pseudo-Binary Analysis. Annual Meeting of the American Institute of Chemical Engineers, Los Angeles, CA, November 1997.
114. Payne, G.F.; Lenhart, J.L.; Elabd, Y.A. Tyrosinase-Reaction Coupled to Chitosan Adsorption for Separations and Polymer Modifications. Spring National Meeting of the American Chemical Society, New Orleans, LA, March 1996.
115. Payne, G.F.; Elabd, Y.A.; Lenhart, J.L.; Rameriz, D.M. Enzymatic Modification of Chitosan by Tyrosinase. Spring National Meeting of the American Chemical Society, New Orleans, LA, March 1996.
116. Bush, K.D.; Madurawe, R.D.; Elabd, Y.A.; Lumpkin, J.A. Qualitative Analysis of Structural Damage to LDH in Metal Affinity Systems. Spring National Meeting of the American Chemical Society, New Orleans, LA, March 1996.

Presentations (*Poster Presentations at Meetings and Conferences, presenter underlined*)

117. Sun, R.; Meek, K.M.; Elabd, Y.A. PIL-Derived Carbon. AIChE Annual Meeting, San Francisco, CA, November 2016.
118. Hwang, M.; Elabd, Y.A. Exploration of Nanofiber-Nanoparticle Electrodes Fabricated *via* Simultaneous Electrospinning/Electrospraying for Ultra-Low Platinum Fuel Cells. AIChE Annual Meeting, San Francisco, CA, November 2016.
119. Chen, T.-L.; Elabd, Y.A. Hybrid-Capacitors with Polyaniline/Carbon Electrodes Fabricated *via* Simultaneous Electrospinning/Electrospraying. AIChE Annual Meeting, San Francisco, CA, November 2016.
120. Lathrop, P.; Elabd, Y.A. Polymerized Ionic Liquid Triblock Terpolymers: Synthesis and Characterization. AIChE Annual Meeting, San Francisco, CA, November 2016.
121. Benjamin, R.; Nykaza, J.R.; Elabd, Y.A. Alkaline Fuel Cell Performance with a Polymerized Ionic Liquid Block Copolymer as Anion Exchange Membrane. Annual Meeting of the American Institute of Chemical Engineers, Atlanta, GA, November 2014. **Received 3rd Place Award in the Materials Science and Engineering Poster Competition**
122. Nykaza, J.R.; Elabd, Y.A. Polymerized Ionic Liquid Block Copolymers as Solid-State Polymer Electrolytes for Lithium-Ion Batteries. Annual Meeting of the American Institute of Chemical Engineers, Atlanta, GA, November 2014.
123. Jackson, A.C.; Li, Y.; Nykaza, J.R.; Elabd, Y.A.; Knauss, D.M.; Beyer, F.L.; Walck, S.D. HAADF STEM of Phase Separated Anion Exchange Membranes Prepared by Ultramicrotomy. Microscopy and Microanalysis Meeting, Hartford, CT, August 2014.
124. Ansaloni, L.; Nykaza, J.; Minelli, M.; Elabd, Y.A.; Giacinti Baschetti, M. Characterization of the Gas Transport Properties of PILs Membranes under Humid Conditions. ICOM 2014 - The 10th International Congress on Membranes and Membrane Processes, Suzhou, China, July 2014.
125. Dyatkin, B.; Richey, F.W.; Elabd, Y.A.; Gogotsi, Y. Ionic Liquid Electrolyte Dynamics in Porous Architectures of Supercapacitor Electrodes Determined *via* in situ Infrared Spectroelectrochemistry. Materials Research Society Meeting, Boston, MA, December 2013.
126. Nykaza, J.R.; Ye, Y.; Elabd, Y.A. Synthesis of Imidazolium-based Polymerized Ionic Liquid Diblock Copolymers. Gordon Research Conference – Polymers, South Hadley, MA, June 2013.
127. Meek, K.M.; Elabd, Y.A. Chemical Stability of Imidazolium-based Block Copolymers as Anion Exchange Membranes. Gordon Research Conference – Polymers, South Hadley, MA, June 2013.
128. Benjamin, R.R.; Nykaza, J.R.; Meek, K.M.; Ye, Y.; Elabd, Y.A. Development and Characterization of Solid State Polymer Electrolyte Membranes for Use in Alkaline Fuel Cells. National Conference on Undergraduate Research (NCUR), University of Wisconsin – La Crosse, La Crosse, Wisconsin, April 2013.
129. Beyer, F.L.; Price, S.; Jackson, A.; Gold, C.; Ye, Y.; Elabd, Y.A. Synthesis and Physical Behavior of Model Polymer Electrolyte Membranes for Alkaline Fuel Cells. American Physical Society Meeting, Boston, MA, March 2012.
130. Wang, T.-S.; Ye, Y.; Elabd, Y.A.; Winey, K.I. Effect of Water Uptake on Morphology of Polymerized Ionic Liquid Block Copolymers and Random Copolymers. American Physical Society Meeting, Boston, MA, March 2012.

131. Richey, F.; Elabd, Y.A. Ion Transport in Ionic Polymer Actuators using In Situ Time-Resolved Infrared Spectroscopy. 220th Electrochemical Society Meeting, Boston, MA, October 2011. **Received 1st Place Award**
132. Davis, E.M.; Minelli, M.; Baschetti, M.G.; Sarti, G.C.; Elabd, Y.A. Sorption and Diffusion of Water Vapor in Polylactide: Experiments and Model Predictions. Spring National Meeting of the American Chemical Society, Anaheim, CA, March 2011. **Received Excellence in Polymer Graduate Research Symposium Award**
133. Ye, Y.; Elabd, Y.A. Ion Conduction in Polymers Derived From Ionic Liquids. Gordon Research Conference – Polymer Physics, South Hadley, MA, June 2010.
134. Davis, E.M.; Regnault, W.F.; Benetatos, N.M.; Elabd, Y.A. Water Transport in Glassy Polymers: Diffusion-Relaxation Phenomena. Gordon Research Conference – Polymer Physics, South Hadley, MA, June 2010.
135. Gwee, L.; Choi, J.-H.; Winey, K.I.; Elabd, Y.A. Ionic Liquid-Polymer Solid-State Films: The Effect of Ionic Liquid Composition on Morphology and Ion Conduction. Spring National Meeting of the American Chemical Society, San Francisco, CA, March 2010. **Received Excellence in Polymer Graduate Research Symposium Award**
136. Schaeffer, H.; Elabd, Y.A. Nafion-Based Anion Exchange Membranes for the Alkaline Fuel Cell. Spring National Meeting of the American Chemical Society, San Francisco, CA, March 2010.
137. Davis, E.M.; Theryo, G.; Hillmyer, M.A.; Cairncross, R.A.; Elabd, Y.A. Liquid Water Transport in Polylactide Using Time-Resolved FTIR-ATR Spectroscopy, Annual Meeting of the American Institute of Chemical Engineers, Nashville, TN, November 2009.
138. Ye, Y.; Salas-de la Cruz, D.; Winey, K.I.; Elabd, Y.A. Ionic Conduction in Polymerized Ionic Liquids: The Effect of Anion Type. Polymers and Ionic Liquids Conference, Arlington, VA, September 2009.
139. Gwee, L.; Choi, J.-H.; Winey, K.I.; Elabd, Y.A. Ionic Liquid-Block Copolymer Solid-State Films: The Effect of Ionic Liquid Composition on Ion Conduction and Morphology. Polymers and Ionic Liquids Conference, Arlington, VA, September 2009.
140. Gwee, L.; Elabd, Y.A. In Situ Time-Resolved FTIR-ATR Spectroscopy Measurements of Polymer-Ionic Liquid Actuators Under an Applied Electric Field. Polymers and Ionic Liquids Conference, Arlington, VA, September 2009.
141. Ye, Y.; Salas-de la Cruz, D.; Winey, K.I.; Elabd, Y.A. Ionic Conduction in Polymerized Ionic Liquids: The Effect of Anion Type. University of Pennsylvania Fuel Cell Symposium, Philadelphia, PA, September 2009.
142. Schaeffer, H.; Elabd, Y.A. Nafion-Based Anion Exchange Membranes for the Alkaline Fuel Cell. University of Pennsylvania Fuel Cell Symposium, Philadelphia, PA, September 2009.
143. Schaeffer, H.; Elabd, Y.A. Nafion-Based Anion Exchange Membranes for the Alkaline Fuel Cell. 11th Grove Fuel Cell Symposium, London, England, September 2009.
144. Schaeffer, H.; Elabd, Y.A. Nafion-Based Anion Exchange Membranes for the Alkaline Fuel Cell. Annual Meeting of the American Institute of Chemical Engineers, Philadelphia, PA, November 2008.
145. Throckmorton, J.A.; Hallinan, D.T., Jr.; Elabd, Y.A. Diffusion of Water and Methanol in Nafion: In Situ Infrared Experiments and Multicomponent Models. Annual Meeting of the American Institute of Chemical

Engineers, Philadelphia, PA, November 2008. **Received 2nd Place Award in the Materials Science and Engineering Poster Competition**

146. Chen, H.; Elabd, Y.A. Ionic Liquid Polymers: Electrospinning and Solution Properties. Fall National Meeting of the American Chemical Society, Philadelphia, PA, August 2008.
147. Hallinan, D.T., Jr.; De Angelis, M.G.; Giacinti Baschetti, M.; Elabd, Y.A. Non-Fickian Diffusion of Water in Nafion. Gordon Research Conference – Polymer Physics, Newport, RI, July 2008.
148. Gwee, L.; Elabd, Y.A. Highly Conductive Ionic Liquid-Polymer Membranes. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2007.
149. Eirich, B.D.; Elabd, Y.A. Ion-Exchanged Carbon Supported Platinum Catalysts for Hydrogen Fuel Cells. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2007.
150. Schaeffer, H.; Elabd Y.A. Transport in Polymer-Polymer Nanocomposite Membranes. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2007.
151. Snyder, J.D.; Elabd Y.A. Nafion[®] Nanofibers and their Effect on Polymer Electrolyte Membrane Fuel Cell Performance. Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, UT, November 2007. **Received 2nd Place Award in the Materials Science and Engineering Poster Competition**
152. DeLuca, N.W.; Elabd, Y.A. Blend Membranes with Sulfonated Poly(vinyl alcohol) for the Direct Methanol Fuel Cell. Annual Meeting of the North American Membrane Society, Orlando, RL, May 2007. **Received Elias Klein Founders' Travel Award (\$500)**
153. Jeff-eke, D.; Hallinan D.T., Jr.; Elabd, Y.A. Nafion[®]/Clay Nanocomposites for Direct Methanol Fuel Cells (DMFCs): Preparation Techniques, Characterization, and Conductivity Analysis. 21st National Conference on Undergraduate Research (NCUR[®]), Dominican University of California, CA, April 2007.
154. Hallinan, Jr., D.T.; Elabd, Y.A. Transport of Water in Nafion[®] using Time-Resolved FTIR-ATR Spectroscopy. Fuel Cells 2007 Meeting, sponsored by The Division of Polymer Chemistry (POLY) of the American Chemical Society, Asilomar, CA, February 2007.
155. Chen, H.; Palmese, G.R.; Elabd, Y.A. Membranes with Oriented Polyelectrolyte Nanodomains as Breathable Barriers for Protective Clothing. 25th Army Science Conference, Orlando, FL, November 2006.
156. Rahmathullah, A.M.; Elabd, Y.A.; Palmese, G.R. Plasma-Radiation Enhanced Nanofiber-Thermoplastic Composites. Annual Meeting of the American Institute of Chemical Engineers, San Francisco, CA, November 2006.
157. DeLuca, N.W.; Elabd, Y.A. Nafion[®]/Poly(vinyl alcohol) Blend Membranes for the Direct Methanol Fuel Cell. Annual Meeting of the North American Membrane Society, Chicago, IL, May 2006.
158. Hallinan, D.T., Jr.; Elabd, Y.A. Multicomponent Transport of Water and Methanol in Nafion[®]. Annual Meeting of the North American Membrane Society, Chicago, IL, May 2006. **Received NAMS Poster Award (\$500) and NAMS Annual Meeting Student Travel Award (\$1,000)**
159. Rahmathullah, A.M.; Elabd, Y.A.; Palmese, G.R. Multifunctional Nanoporous Thermosetting Copolymer Membranes: Synthesis and Characterization. Annual Meeting of the North American Membrane Society, Chicago, IL, May 2006. **Received Elias Klein Founders' Travel Award (\$500)**

160. Rahmathullah, A.M.; Elabd, Y.A.; Palmese, G.R. Multifunctional Nanoporous Thermosetting Copolymers. American Chemical Society Local Section 6th Annual Poster Session, Villanova University, Philadelphia, PA, January 2006. **Received the EssTech Polymers and Materials Science Award**
161. Chen, H.; Rahmathullah, A.M.; Hallinan, D.T., Jr.; Napadensky, E.; Palmese, G.R.; Elabd, Y.A. Polymer-Polymer Nanocomposite Membranes as Breathable and Responsive Barriers. 2005 Scientific Conference on Chemical and Biological Defense Research, Timonium, MD, November 2005.
162. Hallinan, D.T., Jr.; Elabd, Y.A. Transport of Water in Nafion[®] using Time-Resolved FTIR-ATR Spectroscopy. Annual Meeting of the American Institute of Chemical Engineers, Cincinnati, OH, November 2005.
163. Rahmathullah, A.M.; Elabd, Y.A.; Palmese, G.R. Multifunctional Nanoporous Thermosetting Copolymer Matrices. American Society of Composites Annual Meeting, Philadelphia, PA, September 2005.
164. Rahmathullah, A.M.; Palmese, G.R.; Elabd, Y.A. Proton Conductive Nanoporous Thermosetting Copolymers, Fall National Meeting of the American Chemical Society, Washington, DC, August 2005.
165. Sloan, J.M.; Napadensky, E.; Crawford D.M.; Elabd, Y.A. Nanostructured Polymer Membranes for Chemical Protective Clothing. 24th Army Science Conference, Orlando, FL, December 2004.
166. Raghav, S.; Elabd, Y.A. Conductive Properties of Pore-Filled Track-Etched Membranes. Annual Meeting of the American Institute of Chemical Engineers, Austin, TX, November 2004. **Received 2nd Place Award in the Materials Science and Engineering Poster Competition**
167. DeLuca, N.W.; Elabd, Y.A. Proton Conducting Homopolymer and Random Copolymer Blends Containing Poly(vinyl alcohol). Annual Meeting of the American Institute of Chemical Engineers, Austin, TX, November 2004.
168. Napadensky, E.; Sloan, J.M.; Elabd, Y.A. Breathability and Selectivity of Selected Materials for Protective Clothing. Fall National Meeting of the American Chemical Society, Philadelphia, PA, August 2004.
169. Sloan, J.M.; Elabd, Y.A.; Napadensky, E. Sulfonated Block Copolymer Ionomers for Use in Direct Methanol Fuel Cells. Annual Technical Conference (ANTEC) of the Society of Plastics Engineers, San Francisco, CA, May 2002.
170. Sloan, J.M.; Crawford D.M.; Elabd, Y.A.; Napadensky, E.; Zukas, W.X.; Kendrick, C. Mechanical Properties and Water Vapor Transport Properties of Sulfonated Block Copolymers. Spring National Meeting of the American Chemical Society, Orlando, FL, April 2002.
171. Sloan, J.M.; Elabd, Y.A.; Napadensky, E. Monitoring Permeation Through Polymer Membranes by Continuous Flow FTIR-ATR with a Side-by-Side Diffusion Cell. The Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy, New Orleans, LA, March 2002.
172. Napadensky, E.; Sloan, J.M.; Elabd, Y.A. Solvent Diffusion in Polymers by FT-IR-ATR. Eastern Analytical Conference, Atlantic City, NJ, October 2001.
173. Elabd, Y.A.; Sloan, J.M.; Napadensky, E.; Walker, C. Examination of Block Copolymer Ionomers as Solid Polymer Electrolyte Membranes. Annual Meeting of the North American Membrane Society, Lexington, KY, May 2001.
174. Elabd, Y.A.; Sloan, J.M.; Beck Tan, N.; Barbari, T.A. Diffusion in a Phase-Segregated Polymer with Reversible Binding to Dispersed-Phase Surfaces. Annual Meeting of the American Institute of Chemical Engineers, Los Angeles, CA, November 2000.

175. Elabd, Y.A.; Barbari, T.A. Multicomponent Diffusion of Interacting Penetrants in Polymer Membranes. Gordon Research Conference - Membranes: Materials and Processes, New London, CT, July 2000.
176. Elabd, Y.A.; Barbari, T.A. Diffusion with Solvation in Homogeneous and Heterogeneous Polymeric Membranes. Annual Meeting of the North American Membrane Society, Boulder, CO, May 2000.
177. Elabd, Y.A.; Barbari, T.A. Effect of Penetrant-Polymer Hydrogen Bonding on the Transport Process. The Johns Hopkins University Annual Chemical Engineering Symposium, Baltimore, MD, December 1999.
178. Elabd, Y.A.; Hong, S.U.; Barbari, T.A. Multicomponent Diffusion Measurements in Polymeric Membranes Using FTIR-ATR Spectroscopy. Annual Meeting of the North American Membrane Society, Baltimore, MD, June 1997.

DISSERTATIONS/THESES

PhD Dissertations

1. Santos, M.C. Ph.D. Dissertation, Liquid Water Transport in Polymer Films and Membranes, Texas A&M University, May 2017.
2. Meek, K.M. Ph.D. Dissertation, Alkaline Chemical Stability and Ion Transport in Polymerized Ionic Liquid Anion Exchange Membranes, Texas A&M University, May 2016.
3. Nykaza, J.R. Ph.D. Dissertation, Imidazolium-Based Block Copolymers as Solid-State Separators for Alkaline Fuel Cells and Lithium Ion Batteries, Drexel University, April 2016.
4. Richey, F.W. Ph.D. Dissertation, Ion Dynamics in Electrochemical Capacitors Using Infrared Spectroelectrochemistry, Drexel University, April 2014.
5. Davis, E.M. Ph.D. Dissertation, Water Sorption and Diffusion in Glassy Polymers, Drexel University, May 2013.
6. Dever, D.O. Ph.D. Dissertation, Nanofiber, Ideal Fiber, and Planar Cathode Catalyst Layer Models for the Proton Exchange Membrane Fuel Cell, Drexel University, May 2013.*
7. Salerno, H.L.S. Ph.D. Dissertation, Anion Exchange Membranes Derived from the Nafion Precursor for the Alkaline Fuel Cell, Drexel University, December 2011.
8. Gwee, L. Ph.D. Dissertation, Ion Transport in Polymer/Ionic Liquid Films, June 2010.
9. Hallinan, Jr., D.T. Ph.D. Dissertation, Transport in Polymer Electrolyte Membranes Using Time-Resolved FTIR-ATR Spectroscopy, Drexel University, June 2009.
10. Rahmathullah, A.M. Ph.D. Dissertation, Multifunctional Polymers by Incorporating Ionic Groups at Molecular and Mesoscopic Length Scales, Drexel University, March 2008.**
11. DeLuca, N.W. Ph.D. Dissertation, Polymer Electrolyte Blend Membranes for the Direct Methanol Fuel Cell, Drexel University, February 2008.

* Co-advised with R.A. Cairncross (RAC secondary advisor); **Co-advised with G.R. Palmese (GRP primary advisor)

MS Theses

1. Kleiderer, A. M.S. Thesis, Electrospun/Electrosprayed Aligned Fuel Cell Electrodes, Texas A&M University, August 2017.
2. Sun, R. M.S. Thesis, Polymerized Ionic Liquid Derived Carbon, Texas A&M University, August 2016.
3. Chen, T.-L. M.S. Thesis, Hybrid Capacitor with Polyaniline/Carbon Electrodes, Texas A&M University, August 2016.
4. Mace, E. M.S. Thesis, Transport in Fuel Cell Ion Exchange Membranes: Molecular Mechanisms and Mathematical Modeling, Drexel University, December 2011.
5. Shay, D.M. M.S. Thesis, Ion-Exchanged Carbide Derived Carbon-Supported Platinum Catalysts for Fuel Cells, Drexel University, August 2008.

6. Eirich, B.D. M.S. Thesis, Ion-Exchanged Carbon Supported Platinum Catalysts for Fuel Cells, Drexel University, August 2007. **Received Drexel University Most Outstanding Masters Award**
7. Snyder, J.D. M.S. Thesis, Nafion Nanofibers and their Effect on Polymer Electrolyte Membrane Fuel Cell Performance, Drexel University, August 2006.
8. Hronec, C. M.S. Thesis, Catalyst Layer Network Formation in Polymer Electrolyte Membrane Fuel Cells, Drexel University, June 2005.
9. Raghav, S. M.S. Thesis, Polymer-Filled Nanoporous Membranes, Drexel University, June 2005.

GRADUATE/UNDERGRADUATE STUDENT RESEARCH AWARDS

1. Kelly Meek – 2017 DSM Science & Technology Award Finalist (@Fall 2017 ACS National Meeting), 2nd Place Award in Excellence in Graduate Polymer Research Session at 2016 AIChE National Meeting, 2015 Phillips 66 Fellowship (awarded to top PhD student in Chemical Engineering Department at Texas A&M University)
2. Rishon Benjamin – 2013 Goldwater Scholarship, 2014 AIChE Poster Award (3rd Place) in the Materials Science and Engineering Section
3. Francis Richey – William A. Casey Fellowship, 2013 ECS Student Travel Award, Leroy Dresser Fellow, 2011 ECS Poster Award (1st Place)
4. Erich Mace – NSF-IGERT Fellow, 2010-2011
5. Eric M. Davis – George Hill Jr. Fellow, 2012 Meeting of the Noble Laureates Lindau Award, 2011 ACS Excellence in Polymer Graduate Research Symposium, FDA Biomedical Devices Fellow
6. Ishtiaque Ahmed - 2012 NSF Graduate Research Fellowship
7. Liang Gwee - 2010 ACS Excellence in Polymer Graduate Research Symposium
8. James Throckmorton - Koerner Family Fellow, 2008 AIChE Poster Award (2nd Place) in the Materials Science and Engineering Section
9. Daniel T. Hallinan Jr. - George Hill Jr. Fellow, DoEd-GAANN Fellow, Drexel University Graduate Student Research Excellence Award, NSF-IGERT Fellow, Schering-Plough Research Institute Travel Award, North American Membrane Society Poster Award and Annual Meeting Student Travel Award, University Teaching Assistance Excellence Award
10. Nicholas W. DeLuca - DoEd GAANN Fellow, Koerner Family Fellow, Elias Klein Founders' Travel Award (North American Membrane Society)
11. Aflal M. Rahmathullah - American Society for Composites PhD Research Award, University Graduate Student Research Excellence Award, Department Outstanding Graduate Student Research Award, SAMPE Student Symposium Award (3rd place), Elias Klein Founders' Travel Award (North American Membrane Society), Esstech Polymers and Materials Science Graduate Student Poster Award (American Chemical Society), American Society for Composites Poster Award (honorable mention)
12. Joshua D. Snyder - 2007 AIChE Poster Award (2nd Place) in the Materials Science and Engineering Section
13. Benjamin D. Eirich - 2007 Drexel University Most Outstanding Masters Award
14. Tamika Avery - NSF Bridges to Doctorate Fellow
15. Sunil Raghav - 2004 AIChE Poster Award (2nd Place) in the Materials Science and Engineering Section

RECORD OF TEACHING

TEACHING RESPONSIBILITIES/COURSES TAUGHT

@ *Texas A&M University*

Junior Courses

CHEN 323: Chemical Engineering Heat Transfer (F15, F16)

ENGR 385: Co-op (Su16, F16, S17, Su17, F17)

Senior Courses

CHEN 424: Chemical Engineering Mass Transfer Operations (S15, S16, F17)

CHEN 469: Chemical Engineering Car Design (S16, F16, S17, F17)

CHEN 489: Zymology (F17)

Graduate Courses

CHEN 629: Transport Phenomena (F14, S17)

New Course Development

CHEN 489 - Zymology (new course undergraduate elective course)

@ Drexel University

Freshmen Courses

ENGR 101: Engineering Design Lab I (F06, F08)

ENGR 102: Engineering Design Lab II (W07, W09)

ENGR 103: Engineering Design Lab III (S07)

Sophomore Courses

CHE 206: Basic Thermodynamics (Su08, Su13)

Junior Courses

CHE 301: Process Thermodynamics (S10, F12, F13, S14)

CHE 303: Process Heat Transfer (F03, S04, F04, S05, F05, S06)

Senior Courses

CHE 424: Kinetics and Reactor Design (F06, F07, F08)

Graduate Courses

CHE 525: Transport Phenomena I (W05, W06, W07, W08, W09, W10, W11, W12, W13, W14)

CHE 800: Polymer Physics III (S09)

CHE 626: Transport Phenomena II (S11, S12)

New Course Development

CHE 301 - Process Thermodynamics (major revision to core undergraduate course)

CHE 800 - Polymer Physics III: Polymer Characterization Laboratory (new graduate course)

CHE 206 - Basic Thermodynamics (major revision to core undergraduate course)

CHE 303 - Process Heat Transfer (major revision to core undergraduate course)

CHE 424 - Kinetics and Reactor Design (major revision to core undergraduate course)

CHE 525 - Transport Phenomena I (major revisions to core graduate course)

CHE 626 - Transport Phenomena II (new graduate course)