Curriculum Vitae
Brett L. Lucht

CHRONOLOGICAL HISTORY OF EMPLOYMENT:

Year	Employer	Rank
2006-Present	University of Rhode Island	Professor
2007-2010	University of Rhode Island	Co-Director, Energy Partnership
2002-2006	University of Rhode Island	Associate Professor
1998-2002	University of Rhode Island	Assistant Professor
1996-1998	University of California, Berkeley	Postdoctoral Fellow
1991-1996	Cornell University	Graduate Student

DEGREES EARNED:

Year	Degree	Institution	Major Field
1996	Ph.D.	Cornell University	Organic Chemistry
1991	B.S.	University of Puget Sound	Chemistry

AWARDS AND HONORS:

Distinguished Visiting Professor, Kyoto University (2023)
Chair, Battery Division, Electrochemical Society (2022-2024)
Fellow of the Electrochemical Society (2022)
Visiting Professor, Technical University Munich (2022)
Mentoring Excellence Award, College of Arts and Sciences, University of Rhode Island (2019)
University of Rhode Island Research and Scholarship for Intellectual Property Excellence Award, Division of Research, University of Rhode Island (2017)
Scholarly Excellence Award, University of Rhode Island Foundation (2016)
Advanced Career Faculty Research and Scholarship Excellence Award, Division of Research, University of Rhode Island (2015)
Research Excellence Award, College of Arts and Sciences, University of Rhode Island (2010)
DuPont Teaching Award, Cornell University (1995)
National Institute of Health (NIH) Pre-Doctoral Fellowship, Cornell University (1993 - 1995)
Graduation with Honors in Chemistry (1991)
Best Presentation, Northwest Regional ACS Undergraduate Research Symposium (1991)
National Science Foundation (NSF-PRF) Summer Research Fellowship, University of Utah (1990)
CRC Press Freshman Achievement Award in Chemistry, University of Puget Sound (1989)
University Scholarship, University of Puget Sound (1988 - 1991)

EDITORIAL POSITIONS:

2017-Present	Associate Editor, Journal of the Electrochemical Society
2016-2017	Associate Editor, Journal of Power Sources

SEL 2002
Amperex v. SEL
IPR2023-01016

RESEARCH INTREESTS:

My primary research interest focuses on the investigation of non-aqueous electrolytes for electrochemical storage devices. Much of this research is focused on understanding the performance limiting reactions of the electrolyte with the surface of the electrode materials. My research group has several focus areas including the preparation of novel salts, solvents and additives and ex-situ surface analysis of electrodes. We test the performance of the novel electrolyte in small cells and investigate the mechanism of reaction of the electrolyte with the surface of the electrode materials. Upon developing an understanding of the reactions of the electrolyte with the electrode surface, we modify the electrolyte to optimize cell performance and electrode surface chemistry. Some of the areas that we are currently investigating include: synthesis of novel additives, extending the calendar life of lithium ion batteries, improving the performance of novel high capacity or high voltage electrode materials for lithium batteries, and developing a non-flammable electrolyte.

RESEARCH ACTIVITY:

PEER REVIEWED RESEARCH PUBLICATIONS:

h-index 66, manuscripts referenced over 14,000 times (Google Scholar)

1. Chelate-Assisted Carbon-Halogen Bond Cleavage by Oxidative Addition at a W(0)Carbonyl-Metal Complex, Brett Lucht, Mitchell J. Poss, and Thomas G. Richmond, *J. Chem. Educ.* **1991**, *68*, 786-788.

2. Tungsten(0) Inserts into a Carbon-Fluorine Bond in the Presence of a Carbon-Hydrogen Bond, Brett L. Lucht, Mitchell J. Poss, Margaret A. King, and Thomas G. Richmond, *Chem. Commun.* **1991**, 400-401.

3. Structure of Lithium Hexamethyldisilazide (LiHMDS): Spectroscopic Study of Ethereal Solvation in the Slow-Exchange Limit, Brett L. Lucht and David B. Collum, *J. Am. Chem. Soc.* **1994**, *116*, 6009-6010.

4. Structure of Lithium 2,2,6,6-Tetramethylpiperidide (LiTMP) and 2,2,4,6,6-Pentamethylpiperidide (LiPMP) in Hydrocarbon Solution: Assignment of Cyclic Trimer and Tetramer Conformational Isomers, Brett L. Lucht and David B. Collum, *J. Am. Chem. Soc.* **1994**, *116*, 7949-7950.

5. $^{6}Li/^{15}N$ NMR-based Solution Structural Determination of Et_2O- and TMEDA-solvated Lithium-Phenylacetonitrile and a LiHMDS Mixed Aggregate, Paul R. Carlier, Brett L. Lucht, and David B. Collum, *J. Am. Chem. Soc.* **1994**, *116*, 11602-11603.

6. Ethereal Solvation of Lithium Hexamethyldisilazide (LiHMDS): Unexpected Relationships of Solvation Number, Solvation Energy, and Aggregation State, Brett L. Lucht and David B. Collum, *J. Am. Chem. Soc*. **1995**, *117*, 9863-9874.

7. Lithium Ion Solvation: Amine and Unsaturated Hydrocarbon Solvates of Lithium Hexamethyldisilazide, Brett L. Lucht and David B. Collum, *J. Am. Chem. Soc*. **1996**, *118*, 2217-2225.

8. Solvation of Lithium Hexamethyldisilazide (LiHMDS) by N,N-Dimethylethylenediamine (DMEDA): Effects of Chelation on Competitive Solvation and Mixed Aggregation, Brett L. Lucht and David B. Collum, *J. Am. Chem. Soc.* **1996**, *118*, 3529-3530.

9. Chelating Amine and Ether Solvates of LiHMDS: Relationship of Ligand Structure and Aggregation State, Brett L. Lucht, Max P. Bernstein, Julius F. Remenar, and David B. Collum, *J. Am. Chem. Soc*. **1996**, *118*, 10707-10718.

10. Lithium Diisopropylamide Solvated by Monodentate and Bidentate Ligands: Solution Structures and Ligand Binding Constants, Julius F. Remenar, Brett L. Lucht, and David B. Collum, *J. Am. Chem. Soc*. **1997**, *119*, 5567-5572.

11. Lithium 2,2,6,6-Tetramethylpiperidide (LiTMP) and 2,2,4,6,6-Pentamethylpiperidide (LiPMP): Influence of TMEDA and Related Chelating Ligands on the Solution Structures. Characterization of Higher Cyclic Oligomers, Cyclic Dimers, Open Dimers, and Monomers, Julius F. Remenar, Brett L. Lucht, Dmitriy Kruglyak, Floyd E. Romesberg, James H. Gilchrist, and David B. Collum, *J. Org. Chem.* **1997**, *62*, 5748-5754.

12. A Zirconocene-Coupling Route to Substituted Poly(*p*-phenylenedienylene)s: Bandgap Tuning via Conformational Control, Brett L. Lucht, Shane S. H. Mao, and T. Don Tilley, *J. Am. Chem. Soc.* **1998**, *120*, 4354-4365.

13. Zirconocene-Coupling Routes to Conjugated Polymers: Soluble Poly(arylenedienylene)s, Brett L. Lucht and T. Don Tilley, *Chem. Commun.* **1998**, 1645-1646.

14. Structure of Lithium Monoalkylamides (RHNLi), Katherine B. Aubrecht, Brett L. Lucht, and David B. Collum, *Organometallics* **1999**, *18*, 2981-2987.

15. Lithium Hexamethyldisilazide: A View of Lithium Ion Solvation Through a Glass-Bottom Boat, Brett L. Lucht and David B. Collum, *Acc. Chem. Res.* **1999**, *32*, 1035-1042.

16. Poly(2,5-diphenylgermoles): Incorporation of a Germole Ring into a Conjugated Polymer, Brett L. Lucht, Mihai A. Buretea, and T. Don Tilley, *Organometallics* **2000**, *19*, 3469-3475.

17. Synthesis and Characterization of Poly(*p*-phenylene phosphine)s, Brett L. Lucht and Nicole O. St. Onge, *Chem. Comm.* **2000**, 2097-2098.

18. Transition Metal Mediated Routes to Poly(arylphosphine)s: Investigation of Novel Phosphorus Containing Conjugated Polymers, Zhou Jin and Brett Lucht, *Invited Paper*, *Journal of Organometallic Chemistry*, **2002**, *653*, 167-176.

19. Electron Donating Properties of *p*-Phenylene Phosphine Imides: An Electrochemical and Spectroscopic Investigation, Marcela Escobar, Zhou Jin and Brett L. Lucht, *Org. Lett.,* **2002**, 2213-2216.

20. Heat Sensitive Polymers Change Color with a Change in Temperature, *Invited Paper, MRS Bulletin*, **2003**, *28*, 100.

21. Thermal Stability of Lithium-Ion Battery Electrolytes, Boris Ravdel, K.M Abraham, Robert Gitzendanner, Joe DiCarlo, Brett L. Lucht and Chris Campion, *J. Power Sources*, **2003**, *119-121*, 805-810.

22. Lithium Hexamethyldisilazide-Mediated Ketone Enolization: The Influence of Hindered Dialkyl Ethers and Isostructural Dialkylamines on Reactions and Mechanisms, Pinjing Zhao, Brett L. Lucht, Sarita L. Kenkre, David B. Collum, *J. Org. Chem.* **2004**, *69*, 242-249.

23. Supression of Toxic Compounds Produced in the Decomposition of Lithium-Ion Battery Electrolytes, Chris Campion, Wentao Li, William B. Euler, Brett L. Lucht, Boris Ravdel, Joseph Dicarlo, Robert Gitzendanner, and K. M. Abraham, *Electrochem. & Solid-State Lett.* **2004**, *7*, A194-A197.

24. Unusual chromic and doping behavior of ether substituted polythiophenes, Yu Wang, William B. Euler, and Brett L. Lucht, *Chem. Comm.* **2004**, 686-687.

25. Observation of Two-Step Thermochromism in Poly(3-docosylthiophene): DSC and Reflection Spectroscopy, Yu Wang, Nadia Archambault, Adrienne Marold, Lucy Weng, Brett L. Lucht, and William B. Euler, *Macromolecules* **2004**, *37*, 5415-5422.

26. Hexamethylphosphoramide as a Flame Retarding Additive for Lithium-Ion Battery Electrolytes, Suzette Izquarido-Gonzales, Wentao Li, Brett L. Lucht *J. Power Sources* **2004,** *135*, 291-296.

27. Dependence of the Regioregularity of Polythiophenes on Catalyst, Yuxia Mao, Yu Wang, and Brett L. Lucht, *J. Poly. Sci. A: Poly. Chem.* **2004**, *42*, 5538-5547.

28. Phosphine Modified Poly-*N*-aryl-anilines: Synthesis and Properties, Zhou Jin and Brett L. Lucht, *J. Am Chem. Soc.* **2005**, *127*, 5586-5595.

29. Thermal Stabilizing Additives for $LiPF_6$-Carbonate Electrolytes, Wentao Li, Christopher Campion, Brett L. Lucht, Boris Ravdel, and K. M. Abraham *J. Electrochem Soc.* **2005,** *152,* A1361-A1365.

30. Bisphosphine Imides: Easily Tunable Organic Electron Donors, Vanina V. Guidi, Zhou Jin, Devin Busse, William B. Euler, and Brett L. Lucht, *J. Org. Chem.* **2005**, *70*, 7737-7743.

31. Thermal Decomposition of $LiPF_6$ Based Electrolytes for Lithium-ion Batteries, Christopher L. Campion, Wenato Li, and Brett L. Lucht *J. Electrochem. Soc.* **2005**, *152*, A2327-A2334.

32. Optical Spectra of p-phenylene bridged intervalence radical ions, Stephen F. Nelson, Michael N. Weaver, Joao P. Telo, Brett L. Lucht and Stephen Barlow *J. Org. Chem.* **2005**, *70*, 9326-9333.

33. Surface Reactions of Lithium Battery Electrolyte with Metal Oxide Cathode Particles, Wentao Li and Brett L. Lucht *J. Electrochem. Soc.* **2006**, *153*, A1617-A1625.

34. Effect of Residual Monomer and Related Small Molecules on the Spectroscopic Properties of poly(3-octadecylthiophene), Yu Wang, Ashley Mills, William B. Euler, and Brett L. Lucht *Chem. Comm.* **2006**, 2121-2122.

35. Thermal reactions of graphite with $LiPF_6$ based electrolytes, Ang Xiao, Wentao Li, and Brett L. Lucht *J. Power Sources* **2006**, *162*, 1282-1288.

36. Inhibition of the Detrimental Effects of Water Impurities in Lithium Ion Batteries, Wentao Li and Brett L. Lucht *Electrochem.& Solid State Lett.* **2007**, *10*, A115-A117.

37. Inhibition of Solid Electrolyte Interface Formation on Cathode Particles for Lithium-Ion Batteries, Wentao Li and Brett L. Lucht *J. Power Sources* **2007**, *168*, 258-264.

38. Thermal Reactions of $LiPF_6$ with added LiBOB: Electrolyte Stabilization and Generation of LiF_4OP, Ang Xiao, Li Yang and Brett L. Lucht *Electrochem. & Solid State Lett.* **2007**, *10*, A241–244.

39. Investigating the solid electrolyte interphase using binder-free graphite electrodes, S.-H. Kang, D.P. Abraham, A. Xiao, and B.L. Lucht *Journal of Power Sources* **2008**, *175*, 526-532.

40. Electrochemical characteristics of MCMB and $LiNi_xCo_{1-x}O_2$ electrodes in electrolytes with stabilizing additives, Smart, M. C.; Lucht, B. L.; Ratnakumar, B. V. *J. Electrochem. Soc.***2008**, *155*, A557-A568.

41. Surface analysis of MCMB and $LiNi_xCo_{1-x}O_2$ electrodes from cells containing electrolytes with stabilizing additives and exposed to high temperature, Li, W.; Xiao, A.; Lucht, B. L.; Smart, M. C.; Ratnakumar, B. V. *J. Electrochem. Soc* **2008**, *155*, A648-A657.

42. Mesophase Formation in Regioregular Poly(3-alkylthiophene)s Containing Long Chain Alkyl Groups, Wang, Yu; Archambault, Nadia; Belcher, Allison; Busse, Devin; Damon, David; Mills, Ashley; Riddle, Amanda; Samardjiev, Ivan; Lucht, Brett; Euler, William *Macromolecules* **2008**, *41*, 7115-7121.

43. Surface reactions and performance of non-aqueous electrolytes with lithium metal anodes, Li Yang, Carl Smith, Charles Patrissi, Christian Schumacher, and Brett L. Lucht *J. Power Sources* **2008**, *185*, 1359-1366.

44. Examining the Solid Electrolyte Interphase on Binder-free Graphite Electrodes, Ang Xiao, Brett L. Lucht, S.-H. Kang, and D.P. Abraham *J. Electrochem. Soc.* **2009**, *156*, A318-A327.

45. Investigation of Lithum Tetrafluorooxalatophosphate ($LiPF_4C_2O_4$) as a Lithium Ion battery Electrolyte, Mengqing Xu, Ang Xiao, Weishan Li and Brett L. Lucht, *Electrochem. & Solid State Lett.* **2009**, *12,* A155-A158.

46. Effect of Propane Sultone on Elevated Temperature Performance of Anode and Cathode Materials in Lithium Ion Batteries, Mengqing Xu, Weishan Li and Brett L. Lucht, *J. Power Sources* **2009**, *193*, 804-809.

47. Effect of Mixed Additives on the Performance of Lithium Ion Batteries, Stuart Santee, Ang Xiao, Li Yang, Joseph Gnanaraj and Brett L. Lucht, *J. Power Sources,***2009***, 194*, 1053-1060.

48. Inhibition of Electrolyte Oxidation in Lithium Ion Batteries with Electrolyte Additives, Li Yang and Brett L. Lucht, *Electrochem. & Solid State Lett*., **2009**,*12*, A229-A231.

49. Effect of Impurities and Moisture on Lithium Bisoxalatoborate (LiBOB) Electrolyte Performance in Lithium-ion Cells, Li Yang, M. M. Fuczon, A. Xiao, B. L. Lucht, Z. Zhang, and D. P. Abraham, *J. Power Sources*, **2010,** *195*, 1698-1705.

50. Investigation of Lithium Tetrafluorooxalatophosphate [$LiPF_4(C_2O_4)$] as a Lithium Ion Battery Electrolyte for Elevated Temperature Performance, Mengqing Xu, Ang Xiao, Weishan Li, and Brett L. Lucht, *J. Electrochem. Soc.,* **2010**, *157*, A115-A120.

51. Conversion of Cellulose to Glucose and Levulinic Acid via Solid Supported Acid Catalysis, Jessica Hegner, Kyle Pereira, Brenton DeBoef, and Brett L. Lucht, *Tett. Lett.*, **2010**, *51*, 2356-2358. (Top 25 most cited papers in *Tett. Lett.*, 2010-11)

52. Electrolyte Reactions with the Surface of High Voltage $LiNi_{0.5}Mn_{1.5}O_4$ Cathodes for Lithium Ion Batteries, Li Yang, Boris Ravdel, and Brett L. Lucht, *Electrochem.& Solid State Lett.*, **2010**, *13*, A95-A97.

53. Investigation of Solvation in Lithium Ion Battery Electrolytes by NMR Spectroscopy, Li Yang, Ang Xiao, and Brett L. Lucht *J. Mol. Liq.,* **2010**, *154*, 131-133.

54. Experimental and Theoretical Investigations on Dimethyl Vinylene Carbonate as Solid Electrolyte Interface Forming Additive for Lithium-ion Batteries, Mengqing Xu, Liu Zhou, Lidan Xing, Weishan Li, and Brett L. Lucht *Electrochim. Acta*, **2010**, *55*, 6743-6748.

55. Non-flammable Electrolytes for Lithium Ion Batteries, Swapnil Dalavi, Mengqing Xu, Liu Zhou, Boris Ravdel, and Brett L. Lucht *J. Electrochem. Soc.*, **2010**, *157*, A1113-A1120.

56. Two-Step Thermochromism in Poly(3-docosoxy-4-methylthiophene): Mechanistic Similarity to Poly(3-docosylthiophene), Dinesh Chalasani, Joshua K. Potvin, Brett L. Lucht and William B. Euler *J. Poly. Sci. A: Poly. Chem.* **2010**, *48*, 4370-4373.

57. Inorganic Additives for Passivation of High Voltage Cathode Materials, Li Yang, Tippawan Markmaitree, and Brett L. Lucht *J. Power Sources* **2011**, *196*, 2251-2254.

58. Six-Membered-Ring Malonatoborate-Based Lithium Salts as Electrolytes for Lithium Ion Batteries L Yang, H Zhang, PF Driscoll, B Lucht, JB Kerr *ECS Transactions* **2011**, 33 (39), 57-69

59. Comprehensive improvements in Li-ion batteries for demanding applications, M. Gulbinska, G. Moore, S. Santee, B. Lucht, and F. Puglia, *J. Power Sources*, **2011**, 196, 2899-2904.

60. Investigation and application of lithium difluoro(oxalate)borate (LiDFOB) as additive to improve the thermal stability of electrolyte for lithium-ion batteries, Mengqing Xu, Liu Zhou, Liansheng Hao, Lidan Xing, Weishan Li, and Brett L. Lucht, *J. Power Sources,* **2011**, 196, 6794-6801.

61. Effects of Different Electrode Materials on the Performance of Lithium Tetrafluorooxalatophosphate (LiFOP) Electrolyte, Liu Zhou, Swapnil Dalavi, Mengqing Xu, and Brett L. Lucht *J. Power Sources* **2011**, 196, 8073-8084.

62. Investigation of the Solid Electrolyte Interphase on MCMB and NG Electrodes in Lithium Tetrafluorooxalatophosphate [$LiPF_4C_2O_4$] Based Electrolyte Mengqing Xu, Liu Zhou, Dinesh Chalasani, Swapnil Dalavi, and Brett L. Lucht *J. Electrochem. Soc.* **2011**, 158, A1202-A1206.

63. Cathode Solid Electrolyte Interphase Generation in Lithium-Ion Batteries with Electrolyte Additives, T Markmaitree, L Yang, B Lucht *ECS Transactions* **2011**, 33 (28), 85-88.

64. Investigation of Lithium Tetrafluorooxalatophosphate [LiPF4 (C2O4)] Based Electrolytes, L Zhou, S Dalavi, M Xu, B Lucht, *ECS Transactions* **2011**, 33 (28), 89-93

65. Investigation of the Disproportionation Reactions and Equilibrium of Lithium difluoro(oxalato) borate (LiDFOB) Liu Zhou, Wentao Li, Mengqing Xu, Brett Lucht *Electrochem. Solid State Lett.* **2011**, 14, A161-A164.

66. Effect of NaCl on the conversion of cellulose to glucose and levulinic acid via solid supported acid catalysis, Joshua Potvin, Erin Sorlien, Jessica Hegner, Brenton DeBoef and Brett L. Lucht *Tett. Lett.* **2011**, 52, 5891.

67. Effect of added LiBOB on High Voltage ($LiNi_{0.5}Mn_{1.5}O_4$) Spinel Cathodes, Swapnil Dalavi, Mengqing Xu, Brandon Knight and Brett L. Lucht *Electrochem. Solid State Lett.***2011**, *15*, A28-A31.

68. Performance of Lithium Tetrafluorooxalatophosphate (LiFOP) Electrolyte with Propylene Carbonate, Liu Zhou and Brett L. Lucht *J. Power Sources* **2012**, *205*, 439-448.

69. Methylene Ethylene Carbonate: Novel Additive to Improve the High Temperature Performance of Lithium Ion Batteries, Dinesh Chalasani, Jing Li, Nicole M. Jackson, Martin Payne and Brett L Lucht *J. Power Sources* **2012**, *208*, 67-73.

70. Performance enhancing electrolyte additives for lithium ion batteries with silicon anodes, Swapnil Dalavi, Pradeep Guduru and Brett L. Lucht *J. Electrochem. Soc.* **2012** *159*, A642-646.

71. The Effect of Additives upon the Performance of MCMB/ $LiNi_xCo_{1-x}O_2$ Li-Ion Cells Containing Methyl Butyrate-Based Wide Operating Temperature Range Electrolytes, M. C. Smart, B. L. Lucht, S. Dalavi, F. C. Krause, and B. V. Ratnakumar *J. Electrochem. Soc.* **2012**, *159*, A739-A751.

72. Quantifying Capacity Loss due to Solid-Electrolyte-Interphase Layer Formation on Silicon Negative Electrodes in Lithium-ion Batteries, S. Nadimpalli, V. Sethuraman, S. Dalavi, B. L. Lucht, M. Chon, V. Shenoy, P. Guduru *J. Power Sources* **2012**, *193*, 804**.**

73. Reactivity of Electrolytes for Lithium-Oxygen Batteries with Li_2O_2, Dinesh Chalasani and Brett L. Lucht *ECS Electrohchem. Lett.* **2012**, *1*, A38.

74. Improved Performance of $LiNi_{0.5}Mn_{1.5}O_4$ Cathodes with Electrolytes Containing Dimethylmethylphosphonate (DMMP), M. Xu, D. Lu, A. Garsuch, and B. L. Lucht *J. Electrochem. Soc.* **2012,** *159,* A2100-A2108.

75. Electrochemical Analysis of Li-Ion Cells Containing Triphenyl Phosphate, R. P. Dunn, J. Kafle, F. C. Krause, C. Hwang, B. V. Ratnakumar, M. C. Smart, and B. L. Lucht, *J. Electrochem Soc.* **2012**, *159*, A2130-A2134.

76. Performance of lithium tetrafluorooxalatophosphate in methyl butyrate electrolyte, Liu Zhou, Mengqing Xu, Brett L. Lucht *J. Appl. Electrochem.*, **2013**, *43*, 497-505.

77. Lithium ion battery graphite solid electrolyte interphase (SEI) revealed by microscopy and spectroscopy, Mengyun Nie, Dinesh Chalasani, Daniel P. Abraham, Yanjing Chen, Arijit Bose and Brett L. Lucht *J. Phys. Chem. C.***2013**, *117*, 1257-1267.

78. Failure Mechanism of High Voltage Graphite/$LiNi_{0.5}Mn_{1.5}O_4$ (LNMO) Li-ion Cells at Elevated Temperature, Dongsheng Lu, Mengqing Xu, Liu Zhou, Arnd Garsuch, and Brett L. Lucht *J. Electrochem Soc.***2013**, *160*, A3138-A3143.

79. Silicon Solid Electrolyte Interphase (SEI) of Lithium Ion Battery Characterized by Microscopy and Spectroscopy, Mengyun Nie, Daniel Abraham, Yanjing Chen, Arijit Bose, and Brett L. Lucht *J. Phys. Chem. C.* **2013**, *117*, 13403-13412.

80. Improving the Performance of Graphite/ $LiNi_{0.5}Mn_{1.5}O_4$ Cells at High Voltage and Elevated Temperature with added Lithium bis(oxalato) borate (LiBOB), Mengqing Xu, Liu Zhou, Yingnan Dong, Yanjing Chen, Arnd Garsuch, and Brett L. Lucht *J. Electrochem. Soc.* **2013**, *160*, A2005-A2013.

81. Role of Solution Structure in Solid Electrolyte Interphase (SEI) Formation on Graphite with $LiPF_6$ in Propylene Carbonate (PC), Mengyun Nie, Daniel P. Abraham, Daniel Seo, Yanjing Chen, Arijit Bose, and Brett L. Lucht *J. Phys. Chem. C.* **2013**, *117*, 25381-25389.

82. Surface Study of Electrodes after Long-Term Cycling in $Li_{1.2}Ni_{0.15}Mn_{0.55}Co_{0.1}O_2$ -Graphite Lithium-ion Cells, Xiaobo Li, Mengqing Xu, Yanjing Chen, Brett L Lucht *J. Power Sources* **2014**, *284*, 1077-1084.

83. Flame Retardant Co-solvent Incorporation into Lithium-Ion Coin Cells with Thin-film Si Anodes, Ronald P. Dunn, Siva P.V. Nadimpalli, Pradeep Guduru, Brett L. Lucht *J. Electrochem. Soc*. **2014**, *161,* A176-A182.

84. Analysis of Integrated Electrode Stacks for Lithium Ion Batteries Michael Lazar, Ben Sloan, Steven Carlson, and Brett L. Lucht *J. Power Sources* **2014**, *251*, 476-479.

85. Stability of Inactive Components of Cathode Laminates for Lithium Ion Batteries at High Potential, Xiaobo Li, Yanjing Chen, Cao Cuong Nguyen, Mengyun Nie, Brett L. Lucht *J. Electrochem. Soc.* **2014**, *161*, A576-A582.

86. High capacity, stable silicon/carbon anodes for lithium-ion batteries prepared using emulsion-templated directed assembly, Chen, Yanjing; Nie, Mengyun; Lucht, Brett; Saha, Amitesh; Guduru, Pradeep; Bose, Arijit *ACS App. Mater. Interfaces* **2014**, *6*, 4678-4683..

87. Generation of Cathode Passivation Films via Oxidation of Lithium bis(oxalato) borate on High Voltage Spinel ($LiNi_{0.5}Mn_{1.5}O_4$), Mengqing Xu, Nikolaos Tsiouvaras, Arnd Garsuch, Hubert A. Gasteiger, and Brett L. Lucht *J. Phys. Chem. C.* **2014**, *118*, 7363-7368.

88. Role of Lithium Salt on Solid Electrolyte Interface (SEI) Formation and Structure in Lithium Ion Batteries, Mengyun Nie and Brett L. Lucht *J. Electrochem. Soc.* **2014**, *161*, A1001-A1006.

89. Reduction reactions of carbonate solvents for lithium ion batteries, Daniel M. Seo, Dinesh Chalasani, Bharathy S. Parimalam, Rahul Kadam, Mengyun Nie and Brett L. Lucht *ECS Electrochemistry Lett.* **2014**, *3*, A91-A93.

90. Surface phenomena of high energy $Li(Ni_{1/3}Co_{1/3}Mn_{1/3})O_2$ /graphite cells at high temperature and high cutoff voltages, Ting Liu, Arnd Garsuch, Frederick Chesneau, and Brett L. Lucht, *J. Power Sources* **2014**, *269*, 920-926.

91. Comparative Study of Fluoroethylene Carbonate and Vinylene Carbonate for Silicon Anodes in Lithium Ion Batteries, Cao Cuong Nguyen and Brett L Lucht, J. Electrochem. Soc. **2014**, 161, A1933-A1938.

92. Novel Carbonate Free Electrolyte for Lithium Ion Batteries Containing γ-Butyrolactone and Methyl Butyrate, Michael L. Lazar and Brett L. Lucht, *J. Electrochem. Soc.* **2015**, *162*, A928-A934.

93. Role of 1, 3-Propane Sultone and Vinylene Carbonate in Soli Electrolyte Interface (SEI) Formation and Gas Generation" Bo Zhang, Michael Metzger, Sophie Solchenbach, Martin Payne, Stefano Meini, Hubert Gasteiger, Arnd Garsuch, and Brett Lucht *J. Phys. Chem. C.* **2015**, *119,* 11337-11348.

94. Improved performance of high voltage Graphite/$LiNi_{0.5}Mn_{1.5}O_4$ Batteries with added Lithium Tetramethyl Borate Mengqing Xu, Liu Zhou, Yingnan Dong, Usha Tottempudi, Julien Demeaux, Arnd Garsuch, and Brett L. Lucht *ECS Electrochemistry Lett.* **2015**, *4*, A83-A86.

95. Role of Mixed Solvation and Ion Pairing in the Solution Structure of Lithium Ion Battery Electrolytes, Seo, Daniel; Reininger, Stefanie; Kutcher, Mary; Redmond, Kaitlin; Euler, William; Lucht, Brett *J. Phys. Chem. C* **2015**, *119*, 14038-14046.

96. Flame Retardant Co-solvent Incorporation into Lithium-Ion Coin Cells with Si Nanoparticle Anodes, Ronald P. Dunn, Cao Cuong Nguyen, Brett L. Lucht, *J. Applied Electrochem.* **2015**, *45*, 873-880.

97. Effect of Vinylene Carbonate and Fluoroethylene Carbonate on SEI Formation on Graphitic Anodes in Li-ion Batteries, Mengyun Nie, Julien Demeaux, Benjamin T. Young, David R. Heskett, Yanjing Chen, Arijit Bose, Joseph C. Woicik and Brett L. Lucht, *J. Electrochem. Soc.* **2015**, *162*, A7008-A7014.

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7. Use of reactive lithium alkoxyborates as electrolyte additives in electrolytes for lithium ion batteries A Garsuch, M Schmidt, B Lucht, M Xu, Z Liu, US Patent App. 14/906,198, 2016

8. Non-aqueous electrolytes for lithium-ion batteries comprising asymmetric borates, Garsuch; Arnd, Schmidt; Michael, Chesneau; Frederick Francois, Meini; Stefano, Lucht; Brett, Tottempudi; Usha Kiran, Dong; Yingnan, Rohde; Michael, Demeaux; Julien US Patent # 10720668, Issued July 21, 2020

9. Pyridine sulfur trioxide complexes as electrolyte component for high voltage batteries, Chesneau; Frederick Francois, Garsuch; Arnd, Schmidt; Michael, Lucht; Brett, Demeaux; Julien, Dong; Yingnan, Zhang; Bo, US Patent # 20190326642 A1, Issued Oct 24, 2019

10. Lithium bis (trimethylsilyl) phosphate as a novel bi-functional additive for lithium ion batteries, Brett Lucht, KIM Jongjung, Venkata AK Adiraju, Jennifer Hoffmann, Martin Payne US Patent Application # 17685076

EXTERNAL RESEARCH FUNDING:

Have received over $ 14 M in external research grants and contracts since initial appointment.

1. 1998-1999, ACS-PRF/Type G, Structure and Reactivity of Organocuprates, **$25,000**, 3 years

2. 1999-2000, Pfizer Summer Undergraduate Research Fellowship, Mechanistic Investigation of Organocuprate Alkylations, with John Kelly, **$5,000**

3. 1999-2000, KM Scientific, Development of Thermochromic Polymer Coatings for Rapid Assessment of Temperature, **$19,500**, with W. Euler and O. Gregory

4. 2000-2001, Yardney Technical Products, Inc., Development of Thermally and Electrochemically Stable Electrolyte/Solvent Systems for Li-ion Batteries, **$102,680**, 2 years

5. 2000-2001, KM Scientific, Development of Thermochromic Polymer Coatings for Rapid Assessment of Temperature, **$60,386**, with W. Euler and O. Gregory

6. 2001-2002, USDOT/URI-TC, Development of Thermochromic Paints, Plastics, and Rubbers for Rapid Visual Assessment of Temperature, **$97,402**, with W. Euler and O. Gregory

7. 2001-2002, Yardney Technical Products Inc., Synthesis and Investigation of Novel Polymer Electrolytes, **$40,300**

8. 2001-2002, KM Scientific, Development of Thermochromic Pigments for Low Temperature Applications, **$20,000**, with W. Euler.

9. 2002-2003, Yardney Technical Products, Inc., Development of Thermally and Electrochemically Stable Electrolyte/Solvent Systems for Li-ion Batteries, **$80,828.**

10. 2002-2003, USDOT/URI-TC, Development of Thermochromic Paints, Plastics, and Rubbers for Rapid Visual Assessment of Temperature, **$37,840**, with W. Euler.

11. 2002-2003, Yardney Technical Products, ARO-SBIR Phase I, Development of P-N Containing Flame Retarding Additives, **$15,000**.

12. 2003-2004, Yardney Technical Products, Development of Thermally Stable Electrolytes for Lithium Ion Batteries, **$55,830**.

13. 2003-2004, Kimberly-Clark Corporation, Development of Novel Thermochromic Pigments for Personal Care Applications, **$35,000**, with W. Euler.

14. 2004-2005, Yardney Technical Products, Development of Thermally Stable Lithium-ion Batteries with Extended Calendar and Shelf Life, **$20,000**.

15. 2004-2005, NSF/ACT SGER: Thermally Stabilized Electrolytes: Extension of the Calendar and Cycle Life for Lithium-Ion Batteries, **$150,000**, 2 years.

16. 2005-2006, SIRA Technologies, Development of irreversible thermochromic pigments for barcode applications, **$33,000**, with W. Euler, 1 year.

17. 2005-2006, DuPont, Development of Novel Materials for Organic LED's, **$15,000**, 1 year.

18. 2005-2006, Albany International, Preparation of Thermochromic Pigment for Specialty Fabrics, **$ 75,417**, 3 years.

19. 2005-2006, Yardney Technical Products, Development of Test Procedures for Leak Check Analysis, **$3,972**, 1 year.

20. 2006-2007, Yardney Technical Products, US Army SBIR subcontract, Improvements of Lithium-Ion Battery Electrolytes, **$20,000**, 6 months.

21. 2006-2007, DuPont, Development of Novel Materials for Organic LED's, **$15,000**, 1 year.

22. 2006-2007, USDA, Hatch Project, College of Environment and Life Sciences, Irreversible-Upon-Activation Thermochromic Pigments for Time-Temperature Indicator Barcodes for Food Safety, **$59,740**, with W. Euler, 3 years.

23. 2007-2008, SIRA Technologies, Sub-contract from DOD, Development of irreversible thermochromic pigments for barcode applications, **$321,634** with W. Euler, 18 months.

24. 2007-2008, Yardney Technical Products, US Army Subcontract, Investigation of the Source of Low Temperature Performance Loss of Lithium Ion Batteries", **$7,482**.

25. 2007-2008, Argonne National Laboratory, "Investigating Electrolyte Stability and Electrode Electrolyte Interactions in Lithium Batteries", $**89,816**, 3 years.

26. 2007-2008, NASA Jet Propulsion Laboratory, "Characterization of Advanced Electrolytes and Electrodes for Rechargeable Li Batteries with High Specific Energy and Improved Safety", **$75,000**, 3 years.

27. 2008-2009, Yardney Technical Products, Navy SBIR subcontract, "Development of Thermally Stable Lithium Ion Battery Electrolytes", **$6,000**.

28. 2008-2009, Yardney Technical Products, OSD (USAF) SBIR subcontract, "Development of High Voltage Lithium Ion Batteries", **$10,000**.

29. 2008-2009, Lawrence Berkeley National Laboratory, DOE BATT Program, "Development of Electrolytes for Lithium Ion Batteries", **$731,340**, 5 years.

30. 2008-2009, Yardney Technical Products, NASA-NRA subcontract, "Flame-Retardant, Electrochemically Stable Electrolyte for Lithium-Ion Batteries", **$55,000**, 1 year.

31. 2008-2009, SIRA Technologies, Development of Thermochromic Pigments for Barcodes, **$20,000,** with W. Euler, 1 year.

32. 2009-2010, Yardney Technical Products, US Army-SBIR subcontract, "Development of High Voltage Lithium Ion Batteries", **$40,000**, 2 years.

33. 2009-2010, Yardney Technical Products, US Air Force Subcontract, "High Power Battery Development for Directed Energy Weapons and Aircraft Systems", **$23,874**, 1 year.

34. 2009-2010, Yardney Technical Products, Development of Electrolytes for High Voltage Cathodes, **$25,000, 2 years**.

35. 2009-2010, Yardney Technical Products, Development of Novel Process of Dry Cathode Laminates, **$60,000, 2 years**.

36. 2009-2010, STAC, Development of Durable Silicon Thin-Film Anodes on Flexible Substrates for Lithium Batteries Brown University sub-contract, **$67,000**.

37. 2009-2010, Duracell/Gillette Corporation/Proctor & Gamble, Improved Electrolytes for Lithium Ion Batteries, **$224,000**, 2 years.

38. 2009-2010, Novolyte Technologies, Synthesis and Purification of Methylene Ethylene Carbonate **$19,500**

39. 2009-2010, Coda Automotive, Yardney Technical Products sub-contract, Improved Electrolytes for Lithium Ion Batteries, **$66,186**.

40. 2010-2011, DOE-EPSCoR, Novel Electrolytes for Lithium Batteries**, $590,991**, 3 years.

41. 2010-2011, NASA-EPSCoR, Development of Advanced Silicon Anodes and Electrolytes for NASA Battery Systems, **$298,240**, 3 years.

42. 2010-2011, Yardney Technical Products, US Navy SBIR Subcontract, Electrolytes for High Temperature Long Life Performance, **$25,000**.

43. 2010-2011, Hatch Project, College of Environment and Life Sciences, Research and Outreach on Cellulosic Biofuels, **$23,213**.

44. 2010-2011, BASF, Development of new electrolyte systems for high voltage and high energy lithium ion battery system, **$640,669**, 3 Years

45. 2011-2012, Maxwell Technologies-USABC, Development of Electrolyte for Lithium Ion Capacitors, **$194,626**, 1 Year.

46. 2011-2012, DOE-EPSCoR Implementation award with Brown University, Fundamental Investigations of Mechanical and Chemical Degradation Mechanisms in Lithium Ion Battery Materials, **$2,072,980**, 3 Years, with W. Euler and A. Bose.

47. 2011-2012, Optodot-DOE, Innovative Manufacturing and Materials for Low Cost Lithium Ion Batteries **$300,000**, 3 years.

48. 2011-2012, BASF, Development of Electrolytes for Lithium Ion Batteries, **$670,000**, 3 years.

49. 2013-2014, Samsung, Development and synthesis of new lithium salts for application in lithium ion battery, **$50,000**.

50. 2014-2015, BASF, Development of Electrolytes for lithium ion batteries, **$1,707,936**, 5 years.

51. 2014-2015, DOE EPSCoR Implementation award with Brown University, Fundamental Investigations of Mechanical and Chemical Degradation Mechanisms in Lithium Ion Battery Materials**, $2,017,417**, 3 years, with W. Euler, A. Bose, and D. Heskett.

52. 2015-2016, DOD-STTR with Electro Standards Laboratory, Tradeoff in chemistry of lithium ion battery for energy/power with external lithium ion super, **$42,228.**

53. 2015-2016, NSF-MRI: Acquisition of a 400 MHz NMR Spectrometer for Chemistry and Chemical Forensics, **$202,993**, B. DeBoef lead PI

54. 2017-2018, DOD-STTR with Electro Standards Laboratory, Tradeoff in chemistry of lithium ion battery for energy/power with external lithium ion supercapacitors, 2 years **$300,000**, R. Vacarro co PI.

55. 2018-2019, Gotion, Development of electrolytes for lithium ion batteries, **$60,000**.

56. 2018-2019, USABC subcontract from Gotion, The Development of High-Performance Electrolytes for LNMO/LTO Batteries, **$590,548.**

57. 2019-2020, NSF-MRI: Acquisition of a Scanning Transmission Electron Microscope for Materials Research and Educations, **$1,610,000**, A. Bose, lead PI, (Lucht co PI, $322,000)

58. 2019-2020, Eagle Picher, Improvement of Safety and Life of High Power Lithium Ion Batteries, **$106,666**, A. Bose, Co PI.

59. 2019-2020, Albemarle, Development of Lithium Batteries, **$300,000**.

60. 2019-2020, US-DOE, Brookhaven National Laboratory subcontract, Synthesis, screening and characterization of novel low temperature electrolyte for lithium-ion batteries, **$518,901**

61. 2020-2021, DOE EPSCoR National Lab Partnership, Role of electrolyte in silicon electrolyte interface stabilization, **$747,700**.

62. 2020-2021, Volkswagen, Development of lithium battery electrolytes stable up to 4.5 V, **$328,700**.

RESEARCH PRESENTATIONS:

Over 150 total national and international presentations, over 100 invited presentations in 23 different states and 15 different countries

Highlighted National and International Invited and Keynote Lectures:

"Development of Electrolytes for High Voltage Lithium Ion Batteries" Advanced Automotive Battery Conference, Orlando, FL, February 2012

"Investigation of Electrolyte-Electrode interfaces" International Battery Association Meeting, Barcelona, Spain, March 2013.

Improved performance of graphite/$LiNi_{0.5}Mn_{1.5}O_4$ cells with electrolyte additives, 6th International Conference on Advanced Lithium Batteries for Automotive Applications, Argonne IL, USA, September 2013.

"Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Advanced Automotive Battery Conference, Atlanta, GA, February 2014.

"Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding", The International Battery Seminar, Ft. Lauderdale, FL, March, 2014.

"Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Electrochemistry 2014, Mainz, Germany, September 2014.

"Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Batteries 2014, Nice, France, September 2014.

"Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" US-China Battery Workshop, Beijing, China, March 2015

"Development of Novel Electrolyte Additives for Designed Surface Modification", Advanced Automotive Battery Conference, Detroit, MI, June 2016.

"Fundamental reduction and subsequent decomposition reactions of the anode SEI in lithium ion batteries" International Society for Electrochemistry, Annual Meeting, The Hague, Netherlands, August, 2016

"Development of Novel Electrolyte Additives for Designed Surface Modification" International Society for Electrochmistry, 20th Topical Meeting, Buenos Aries, Argentina, March, 2017.

"Electrolytes and Electrode Interphases in Lithium-Ion Batteries" Advanced Automotive Battery Conference, Mainz, Germany, January 2018.

"Effect of electrolyte composition on the Solid Electrolyte Interface (SEI) and electrochemical cycling of lithium metal anodes" International Battery Association Meeting, Jeju, Korea, March 2018.

"Effect of electrolyte composition on the Solid Electrolyte Interface (SEI) and electrochemical cycling of lithium metal anodes" International Meeting for Lithium Batteries, Kyoto, Japan, June 2018.

Presentations:

1. "Irreversible Opioid Ligands: Design and Synthesis of Tethered Derivatives of Naltrexone", Northwest Regional ACS Undergraduate Research Symposium, April, 1991.

2. "Structure of Lithium Tetramethylpiperidide in Hydrocarbon Solution: Assignment of Cyclic Trimer and Tetramer Conformational Isomers", Northeast Regional Meeting of the American Chemical Society, June, 1994

3. **Invited:** "Solvation and Aggregation of Lithium Hexamethyldisilazide", University of Puget Sound Department of Chemistry, Tacoma, WA, April, 1995

4. "Solvation of Lithium Hexamethyldisilazide Effects of Chelation on Competitive Solvation and Mixed Aggregation", National Meeting of the American Chemical Society, March, 1996

5. "A Zirconocene-Coupling Route to Substituted Poly(*p*-phenylenedienylene)s: Bandgap Tuning via Conformational Control", National Meeting of the American Chemical Society, April, 1997

6. **Invited:** "Hexamethyldisilazide Solvation and Aggregation of Lithium", University of Rhode Island, College of Pharmacy, March, 1999

7. **Invited:** "Solvation and Aggregation of Lithium Hexamethyldisilazide", Brown University, Department of Chemistry, March, 1999

8. **Invited:** "Tuning the Color of Conjugated Polymers", Connecticut College, Department of Chemistry, April, 2000

9. "Synthesis and Characterization of Poly(*p*-phenylene phosphine)s via Palladium Catalyzed Carbon-Phosphorus Bond Formation", Northeast Regional Meeting of the American Chemical Society, June, 2000

10. "Synthesis and Investigation of the Thermochromic Properties of Poly(3-*n*-alkylthiophene)s", with Carmen Beildeck and John Kelly, Northeast Regional Meeting of the American Chemical Society, June, 2000

11. "Synthesis and Characterization of Poly(*p*-phenylene phosphine)s and related Phosphine Containing Materials", Gordon Research Conference on Organometallic Chemistry, August 2000.

12. **Invited:** "Transition Metal Mediated Routes to Conjugated Polymers", University of Massachusetts, Department of Chemistry, January, 2001.

13. **Invited:** "Transition Metal Mediated Routes to Conjugated Polymers", University of Florida, Department of Chemistry, January, 2001.

14. **Invited:** "Transition Metal Mediated Routes to Conjugated Polymers", Dartmouth College, Department of Chemistry, April, 2001.

15. "Synthesis and Investigation of the Thermochromic Properties of Poly(3-*n*-alkylthiophene)s", with Carmen Beildeck, Elisabeth Tanaka, and John Kelly, Rhode Island Local Section Meeting of the American Chemical Society, April, 2001

16. "Incorporation of Phosphorus into Conjugated Polymers and Oligomers", Gordon Research Conference on Organometallic Chemistry, July 2001.

17. "Incorporation of phosphorus into conjugated polymers", National Meeting of the American Chemical Society, August 2001

18. "Mechanistic investigation of organocuprate alkylations: Role of ethereal solvents", National Meeting of the American Chemical Society, August 2001

19. "Comparison of analytical methods for characterization of the thermochromic transition of poly(3-alkylthiophene)s", National Meeting of the American Chemical Society, August 2001

20. **Invited:** "Incorporation of Phosphorus into Conjugated Polymers", University of Maryland, Department of Chemistry, MD September, 2001.

21. "Performance and Safety Testing of Lithium-ion cells Containing Flame-Retardant Additives" with R. L. Gitzendanner, B. Ravdel, and C. Marsh, Meeting of the Electrochemical Society, September 2001.

22. "Investigation of the thermochromic properties of poly(3-alkylthiophene)s" 2nd Annual Molecular Materials Symposium, Dartmouth College, Dartmouth , NH, October 2001.

23. **Invited:** "Synthesis and Investigation of Novel Conjugated and Conducting Polymers", Pennsylvania State University, Materials Research Laboratory, January 2002.

24. **Invited:** "Incorporation of Phosphorus into Conjugated Polymers", National Meeting of the American Chemical Society, April 2002.

25. "Investigation of thermochromic polymers dispersed in host polymers" with W.B. Euler and O.J. Gregory, National Meeting of the American Chemical Society, April 2002

26. "Poly(*p*-phenylene iminophosphosphorane)s: Conjugated Polymers with Alternating Positive and Neutral Segments" with M. Escobar, National Meeting of the American Chemical Society, April 2002.

27. "Development of Phosphate-Based Polymer Electrolytes" with Z. Jin, K.M. Abraham, and J. DiCarlo, International Meeting on Lithium Batteries, June 2002.

28. "Thermal Stability of Lithium-Ion Battery Electrolytes" with B. Ravdel, K.M. Abraham, R. Gitzendanner, J. DeCarlo, and C. Campion, International Meeting on Lithium Batteries, June 2002.

29. "Synthesis and Investigation of Conjugated Polymers Containing Phosphorus", with M. Escobar and Z. Jin, National Meeting of the American Chemical Society, August 2002.

30. "Decomposition of Carbonate Solvents in Solutions Conatining $LiPF_6$", with C. Campion, National Meeting of the American Chemical Society, August 2002.

31. "Synthesis and investigation of polymer electrolytes derived from polyphosphates", with Z. Jin, K. M. Abraham, R. Rodriguez, and J. Dicarlo, National Meeting of the American Chemical Society, August 2002.

32. "Investigation of the oxidative coupling polymerization of 3-alkylthiophenes with iron (III) chloride", with W. Euler and Y. Wang, National Meeting of the American Chemical Society, August 2002.

33. Invited: "Thermal Stability of Lithium-Ion Battery Electrolytes", New England Workshop on Synthesis and Materials, October 2002.

34. Invited: "Synthesis and Investigation of Novel Conjugated Polymers Containing Phosphorus", Rutgers Newark, October 2002.

35. Invited: "Thermal Stability of Lithium-Ion Battery Electrolytes", Worcester Polytechnic Institute, January 2003.

36. Invited: "Thermochromic Pigments Based on Polythiophenes", High Performance and Functional Pigments, Atlanta, GA, April 2003.

37. Invited: "Thermochromic Polymers for the Rapid Visual Assessment of Temperature", European Coatings Conference, Smart Coatings II, Berlin, Germany, June 2003.

38. Thermal Decomposition of Lithium-Ion battery Electrolytes" Organometallic Gordon Conference, July 2003.

39. "Incorporation of Phosphorus into Conjugated Polymers and Oligomers" Organometallic Gordon Conference, July 2003.

40. Invited: "Thermochromic Polymers for the Rapid Visual Assessment of Temperature", Triton Systems, Chelmsford, MA, July 2003.

41. Invited: "Thermal Stability of Lithium-Ion Battery Electrolytes" NASA Jet Propulsion Laboratory, Pasadena, CA, August 2003.

42. Invited: "Thermochromic Polymers for the Rapid Visual Assessment of Temperature" Rohm & Hass, Spring House Technical Center, Spring House, PA, September 2003.

43. "Mechanistic Investigation of the Thermal Decomposition of $LiPF_6$ in Carbonates" with C. Campion, National Meeting of the American Chemical Society, September 2003.

44. "Synthetic Methods for the Modification of the Thermochromic Properties of Polythiophenes", with Y. Wang, National Meeting of the American Chemical Society, September 2003.

45. Synthesis and Characterization of poly *p*-phenylene phosphine/polyaniline alternating copolymers, With Z. Jin, National Meeting of the American Chemical Society, September 2003.

46. "Thermal Decomposition of $LiPF_6$ in Carbonate Solvents" Electrochemical Society Meeting, Orlando, FL, October 2003.

47. "Influenece of Impurities on the Decomposition of $LiPF_6$ Based Electrolytes", with C. Campion, Electrochemical Society Meeting, Orlando, FL, October 2003.

48. Invited: "Thermochromic Polymers for the Rapid Visual Assessment of Temperature" Kimberly Clark, Research and Development, Neenah, WI, October 2003.

49. **Invited:** "Thermochromic Polymers for the Rapid Visual Assessment of Temperature" XXVII FATIPEC Congress, Aix en Provence, France, April, 2004.

50. "Suppression of Decomposition Reactions of Lithium-ion Battery Electrolytes", Power Sources Conference, Philadelphia, PA, June 2004

51. "Thermal Degradation of Lithium-Ion Batteries: Mechanism and Stabilization", Organometallic Gordon Research Conference, July 2004.

52. "Poly(p-phenylene phosphine)-poly(N-arylaniline) Copolymers: Evidence for Electronic Delocalization through Phosphorus", Organometallic Gordon Research Conference, July 2004.

53. **Invited:** "Conjugated Molecules Containing Phosphorus: New Materials for Light Emitting Diodes (LEDs)" Case Western, Cleveland, OH, March 2005.

54. "Power fade in lithium-ion batteries: Reactions on the surface of metal oxide cathode particles" National Meeting of the American Chemical Society, March, 2005.

55. **Invited:** "Thermal Degradation of Lithium-Ion Batteries: Mechanism and Stabilization" NASA Glenn Research Center, Cleveland, OH, April 2005.

56. **Invited:** "Thermochromic Polymers for the Rapid Visual Assessment of Temperature" Sun Chemical, Cincinnati, OH, April 2005

57. **Invited:** "Thermochromic Polymers for the Rapid Visual Assessment of Temperature" Sun Chemical, Carlstadt, NJ, June 2005.

58. **Invited:** "Thermal Degradation of Lithium-Ion Batteries: Mechanism and Stabilization" NSF-ACT Workshop, Washington, DC, July 2005.

59. **Invited:** "Thermochromic Polymers for the Rapid Visual Assessment of Temperature" Horizons Presentation Series, Kimberly-Clark Corporation, Roswell, GA, August 2005.

60. "Thermal Reactions of the Electrolyte with the Surface of Electrode Materials: Investigation and Methods of Inhibition", Electrochemical Society Meeting, Los Angeles, CA, October 2005.

61. **Invited:** "Thermochromic Pigments: An Artists Perspective" 1st International Research Conference: New Materials and Technologies for Art, Madrid, Spain, November 2005.

62. **Invited:** "Thermal Reactions of the Electrolyte with the Surface of Electrode Materials: Investigation and Methods of Inhibition", Department of Chemistry, University of Rhode Island, October 2005.

63. **Invited:** "Detrimental Surface Films on Electrode Materials: Investigation and Inhibition" 6th International Advanced Automotive & Ultracapacitor Conference, Baltimore, MD, May 2006.

64. **Invited:** "Transinformative Thermographic Barcode Matrix that Archivally Monitors for Food, Drug & Biological Safety: A Fungible Line Item and Carton Sentinel System", TAPPI PLACE, Cincinnati, OH, September 2006.

65. "Detrimental Surface Films on Electrode Materials: Investigation and Inhibition" Electrochemical Society Meeting, Cancun, Mexico, October 2006.

66. Invited: "Conjugated Organic Materials from LED's to Barcodes", DuPont Central Research, Wilmington, DE, April, 2007.

67. "Mesophase formation in poly(3-alkylthiophene)s containing long chain alkyl groups", ACS National Meeting, Boston, MA, United States, August 19-23, 2007 (2007)

68. Invited: "Stability of Electrolytes used in Lithium-ion Batteries" Argonne National Laboratory, Monday Morning Seminar Series, Argonne, IL, September, 2007.

69. Invited: "Stability of Electrolytes used in Lithium-ion Batteries" University of Rhode Island, Department of Chemical Engineering, Kingston, RI, October 2007.

70. "Power Fade in Lithium-Ion Batteries: Effect of Electrolyte Additives" Electrochemical Society Meeting, Washington, DC, October 2007.

71. "Tunable mesophase formation in substituted polythiophenes", ACS National Meeting, New Orleans, LA, United States, April 6-10, 2008.

72. "Power Fade in Lithium-Ion Batteries: Effect of Electrolyte Additives", 43rd Power Sources Conference, Philadelphia, PA, July 7-10, 2008.

73. "Surface Analysis of Solid Electrolyte Interphase on Binder-free Graphite Electrodes in Advanced Electrolytes", PRIME, Honolulu, HI, October 12-17th 2008.

74. "Novel Electrolyte for Lithium Ion Batteries: Lithum Tetrafluorooxalatophosphate ($LiPF_4C_2O_4$)", PRIME, Honolulu, HI, October 12-127th 2008.

75. Invited: "Lithium Ion Batteries: Improved Electrolytes for Electric Vehicle Applications" University of Rhode Island, Interdisciplinary Research Seminars, Kingston, RI, February 2009.

76. Invited: "Lithium Ion Batteries: Improved Electrolytes for Electric Vehicle Applications" Brown University, Department of Chemistry, April, 2009.

77. Invited: "Role of Electrolyte on the Formation of Electrode Surface Films in Lithium Ion Batteries" International Society of Electrochemistry, Annual Meeting, Beijing, China, August 2009.

78. Invited: "Role of Electrolyte on the Formation of Electrode Surface Films in Lithium Ion Batteries" South China University of Technology, Guangzhou, China, August, 2009.

79. Invited: "Role of Electrolyte on the Formation of Electrode Surface Films in Lithium Ion Batteries" ATL, DongGuan, China, August, 2009.

80. Invited: "Role of Electrolyte on the Formation of Electrode Surface Films in Lithium Ion Batteries" BTR, Shenzhen, China, August, 2009.

81. Invited: "Role of Electrolyte on the Formation of Electrode Surface Films in Lithium Ion Batteries" Dalhousie University, Halifax, Nova Scotia, Canada, September, 2009.

82. **Invited:** "Role of Electrolyte on the Formation of Electrode Surface Films in Lithium Ion Batteries" Procter and Gamble, Duracell, Needam, MA, September, 2009.

83. **Invited:** "Role of Electrolyte on the Formation of Electrode Surface Films in Lithium Ion Batteries" Lithium Mobile Power Conference, Boston, MA, November, 2009.

84. **Invited:** "Development of Non-Flammable Electrolytes for Lithium Ion Batteries" NASA Battery Workshop, Huntsville, AL, November, 2009.

85. **Invited:** "Development of Electrolytes for Lithium Ion Batteries" DOE Vehicle Technologies Program Review Meeting, Washington, DC, June 2010.

86. "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" International Meeting on Lithium Batteries, Montreal, QC, June 2010.

87. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding", 240th ACS National Meeting, Boston, MA, August, 2010 .

88. "Mesophase formation in Poly(3-methyl-4-alkoxythiophene)s", 240th ACS National Meeting, Boston, MA, United States, August 22-26, 2010.

89. "Investigation of novel electrolytes for lithium ion batteries", 240th ACS National Meeting, Boston, MA, United States, August, 2010.

90. "Inhibition of Electrolyte Oxidation in Lithium-ion Batteries with Electrolyte Additives", 240th ACS National Meeting, Boston, MA, United States, August, 2010.

91. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding", Massachusetts Institute of Technology, Department of Materials Science, Cambridge, MA August, 2010.

92. "Cathode Solid Electrolyte Interphase Generation in Lithium Ion Batteries with Electrolyte Additives", Fall ECS meeting, Las Vegas Nevada, October, 2010.

93. "Investigation of Lithum Tetrafluorooxalatophosphate ($LiPF_4C_2O_4$) Based Electrolytes", Fall ECS meeting, Las Vegas Nevada, October, 2010.

94. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries", BASF, Ludwigshafen, Germany, November 2010.

95. **Invited:** "Electrolytes for High Voltage $LiNi_{0.5}Mn_{1.5}O_4$", High Voltage Spinel Focus Group, January, 2011, Berkeley, CA.

96. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries", DOW Chemical, Midland, MI, March 2011.

97. **Invited:** "Development of Electrolytes for Lithium Ion Batteries, DOE Vehicle technologies Program Review Meeting, Washington, DC, May 2011.

98. "Investigation of Lithum Tetrafluorooxalatophosphate ($LiPF_4C_2O_4$) Based Electrolytes", 4th Symposium on Energy Storage: Beyond Lithium Ion, Pacific Northwest National Laboratory, Richland, WA, June 2011.

99. Invited: "Electrolytes for High Voltage $LiNi_{0.5}Mn_{1.5}O_4$", High Voltage Spinel Focus Group, August, 2011, Berkeley, CA.

100. **Invited:** "Development of Electrolytes for High Voltage Lithium Ion Batteries", 5th Polymer Batteries and Fuel Cells Conference, Argonne, IL, August 2011.

101. "Investigation of the Solid Electrolyte Interphase on Graphite Electrodes with Lithium Tetrafluorooxalatophosphate [$LiPF_4C_2O_4$] Electrolyte" Mengqing Xu, Liu Zhou, Dinesh Chalasani, Swapnil Dalavi, and Brett L. Lucht, Meeting of the Electrochemical Society, Boston, MA, October 2011.

102. "Detrimental reactions of electrolyte with $LiNi_{0.5}Mn_{1.5}O_4$" Mengqing Xu, Swapnil Dalavi, Janak Kafle, and Brett L. Lucht, Meeting of the Electrochemical Society, Boston, MA, October 2011.

103. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding", BASF Electrochemistry Network Meeting, Ludwigshafen, Germany, November 2011.

104. **Invited:** "New developments in high voltage electrodes, electrolytes and alternative red-ox chemistries" Electronic Materials and Applications Conference, Orlando, FL, January 2012.

105. **Invited:** "Electrolytes for High Voltage $LiNi_{0.5}Mn_{1.5}O_4$", High Voltage Spinel Focus Group, January, 2012, Berkeley, CA.

106. **Invited:** "Development of Electrolytes for High Voltage Lithium Ion Batteries" Advanced Automotive Battery Conference, Orlando, FL, February 2012

107. **Invited:** "Electrolyte Development" BASF Network Meeting, Bar Ilan University, Tel Aviv, Israel.

108. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries" NASA Jet Propulsion Laboratory, Pasadena, CA, February 2012.

109. **Invited:** "Spinel Focus Group: Electrolytes" US Drive Partnership Electrochemical Energy Storage Tech Team Meeting, Berkeley, CA, March 2012.

110. **Invited:** "Development of Electrolytes for High Voltage $LiNi_{0.5}Mn_{1.5}O_4$ Cathodes" BASF Electrochemistry Network Meeting, Ludwigshafen, Germany, May 2012.

111. **Invited:** Structure of the Graphite Anode Solid Electrolyte Interphase in Lithium Ion Batteries Brett L. Lucht[1], Mengyun Nie[1], Daniel P. Abraham[2], Yanjing Chen[1], and Arijit Bose[1] *American Chemical Society Meeting, August 2012, Philadelphia, PA.*

112. **Invited:** "Electrolytes for High Voltage $LiNi_{0.5}Mn_{1.5}O_4$", High Voltage Spinel Focus Group, September, 2012, Berkeley, CA.

113. **Invited:** "Structure of the graphite anode solid electrolyte interphase in lithium ion batteries" Pacific Rim Meeting on Electrochemistry and Solid State Sciences, Honolulu, HI, October 2012.

114. "Effect of electrolyte and additives on performance of $LiNi_{0.5}Mn_{1.5}O_4$" Pacific Rim Meeting on Electrochemistry and Solid State Sciences, Honolulu, HI, October 2012.

115. **Invited:** "Recent progress in LIB additive development" BASF Electrochemistry Network Meeting, Ludwigshafen, Germany, November 2012**.**

116. "Structure of the graphite anode solid electrolyte interphase in lithium ion batteries" Materials Research Society Meeting, Boston, MA, November, 2012.

117. **Invited:** "Electrolytes for High Voltage Ultra Capacitors" Corning Inc., Corning, NY, January, 2013, Berkeley, CA.

118. **Invited:** "Effect of electrolyte and additives on performance of $LiNi_{0.5}Mn_{1.5}O_4$" NAAT Batt Annual Meeting and Symposium, Austin, TX, January 2013.

119. **Invited:** "Role of electrolyte in interface formation and cycling performance in lithium ion batteries" International Battery Association Meeting, Barcelona, Spain, March 2013.

120. **Invited:** "Structure of the graphite anode solid electrolyte interphase in lithium ion batteries" TMS Meeting, San Antonio, TX, March 2013.

121. **Invited:** Improved performance of graphite/$LiNi_{0.5}Mn_{1.5}O_4$ cells with electrolyte additives, 6th International Conference on Advanced Lithium Batteries for Automotive Applications, Argonne IL, USA, September 2013.

122. **Invited:** "Electrolytes for Silicon Anodes", Silicon Anode Focus Group, September, 2013, Berkeley, CA.

123. **Invited:** "Recent progress in LIB electrolyte development". BASF Electrochemistry Network Meeting, Ludwigshafen, Germany, October 2013.

124. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" University of Freiburg, Freiburg, Germany.

125. "Lithium alkyl carbonates: Preparation and investigation of stability" Electrochmistry Society Meeting, San Francisco, CA October 2013

126. "Improved performance of graphite/ $LiNi_{0.5}Mn_{1.5}O_4$ cells with electrolyte additives" Electrochmistry Society Meeting, San Francisco, CA October 2013.

127. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Dalhousie University, Halifax, Nova Scotia, Canada, November 2013

128. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Samsung SDI, Seoul, Korea, December, 2013.

129. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" ATL, NingDe, China, December 2013.

130. **Invited:** "Electrolytes for Silicon Anodes", Silicon Anode Focus Group, January, 2014, Berkeley, CA.

131. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Advanced Automotive Battery Conference, Atlanta, GA, February 2014.

132. **Invited:** "Role of Solution Structure in Solid Electrolyte Interface (SEI) Formation on Graphite", Materials Challenges in Alternative and Renewable Energy Conference, Clearwater, FL, February 2014.

133. **Invited:** " Improved performance of graphite/ $LiNi_{0.5}Mn_{1.5}O_4$ cells with electrolyte additives" TMS Meeting, San Diego, CA, February 2014.

134. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding", The International Battery Seminar, Ft. Lauderdale, FL, March, 2014.

135. **Invited:** "Recent progress in LIB electrolyte development". BASF Electrochemistry Network Meeting, Ludwigshafen, Germany, April 2014.

136. **Invited:** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Technical University – Munich, Munich, Germany, April 2014.

137. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" University of Texas at Austin, Austin, TX, April 2014.

138. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" A123, Waltham, MA, May 2014.

139. "Improved performance of graphite/ $LiNi_{0.5}Mn_{1.5}O_4$ cells cycled to high voltage (4.8 V) with electrolyte additives" 17th International Meeting on Lithium Batteries, Como, Italy, June 2014

140. **Invited** "Development of Electrolytes for Lithium Ion Batteries" DOE Annual Merit Review, Crystal City, VA, June 2014.

141. **Invited** "Fundamental Investigations of Mechanical and Chemical Degradation Mechanisms in Lithium-Ion Battery Materials", DOE Annual Merit Review, Crystal City, VA, June 2014.

142. **Keynote** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Electrochemistry 2014, Mainz, Germany, September 2014.

143. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Batteries 2014, Nice, France, September 2014.

144. **Invited** "Improved Performance of Graphite/ $LiNi_{0.5}Mn_{1.5}O_4$ Cells Cycled to High Voltage (4.8 V) with Electrolyte Additives" Electrochemistry Society Meeting, Cancun Mexico, October 2014.

145. "Investigation of the Performance Improvement of Silicon Electrodes Cycled with Electrolyte Containing FEC or VC" Electrochemistry Society Meeting, Cancun Mexico, October 2014.

146. **Invited** "Investigation of the Solid Electrolyte Interface (SEI) on Silicon Nano-Particle Anodes" Electrochemistry Society Meeting, Cancun Mexico, October 2014.

147. **Invited** "Novel Electrolyte Additives for Lithium Ion Batteries" BASF Electrochemistry Network meeting, Heidelberg, Germany, November 2014.

148. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Materials Research Society Meeting, Boston, MA, December 2014.

149. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Brookhaven National Laboratory, Upton, NY, January 2015.

150. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Paul Scherrer Institut, Viligen-PSI, Switzerland, March 2015.

151. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" US-China Battery Workshop, Beijing, China, March 2015

152. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" BASF-Amagasaki Research Center, Amagasaki, Japan, March 2015.

153. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" Graduate School of Engineering, Kyoto University, April 2015.

154. Role of 1, 3-Propane Sultone and Vinylene Carbonate in Solid Electrolyte Interface (SEI) Formation and Gas Generation, Electrochemical Society Meeting, Chicago, May 2015.

155. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding" BASF-Electrolyte Center, Independence, OH, July, 2015.

156. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding", Brown University, Providence, RI, September, 2015.

157. Improvement of Electrode/ Electrolyte Interfaces in Graphite/$LiNi_{0.5}Mn_{1.5}O_4$ Batteries at High Voltage with Lithium Trimethyl alkyl Borates as Electrolyte Additives, Electrochemical Society Meeting, Phoenix, AZ, October, 2015.

158. Capacity Fading Mechanisms of Submicron-Sized Silicon Negative Electrode for Lithium Ion Batteries by Taeho Yoon, Brett Lucht, Cao Cuong Nguyen, Daniel Seo

159. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding", University of Tokyo, Tokyo, Japan, October, 2015.

160. **Invited** "Novel Electrolyte Additives for Lithium Ion Batteries" BASF Electrochemistry Network meeting, Mannheim, Germany, November 2015.

161. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding", Karlsruhe Institute of Technology, Karlsruhe, Germany, November 2015.

162. **Invited** "Advances in Electrolytes for Lithium Ion Batteries: A Mechanistic Understanding", Justus-Liebig Universitat Giessen, Giessen, Germany, November 2015.

163. "The Role of Binders in Solid Electrolyte Interface Formation on Silicon Anodes for Lithium Ion Batteries" Material Research Society Meeting, Boston, MA, December 2015.

164. **Invited :** "Development of novel electrolyte additives via ex-situ analysis of electrodes" International Battery Association Meeting, Nantes, France, March 2016.

165. **Invited : "**Development of novel electrolyte additives for designed surface modification" Materials Challenges in Alternative and Renewable Energy, Clearwater, Florida, April 2016

166. **Invited** "Novel Electrolyte Additives for Lithium Ion Batteries" BASF Electrochemistry Network meeting, Ludwigshafen, Germany, May 2016.

167. **Invited** "Fundamental Investigations of Mechanical and Chemical Degradation Mechanisms in Li-ion Battery Materials" DOE VT-AMR, Washington, DC, June 2016.

168. **Invited** "Development of Novel Electrolyte Additives for Designed Surface Modification", AABC, Detroit, MI, June 2016.

169. "Development of Novel Electrolyte Additives for Designed Surface Modification", IMLB, Chicago, IL, June 2016.

170. **Invited** "State-of-the-Art and Perspectives in Electrolytes for Advanced Battery Systems", NHRF Advanced Battery Workshop, Athens, Greece, July 2016 (Remote via internet).

171. **Invited** "Fundamental reduction and subsequent decomposition reactions of the anode SEI in lithium ion batteries" Telluride Science Research Center, Telluride, CO, July 2016

172. **Invited Keynote** "Fundamental reduction and subsequent decomposition reactions of the anode SEI in lithium ion batteries" International Society for Electrochemistry, Annual Meeting, The Hague, Netherlands, August, 2016

173. **Invited** Boston Power, MA, September 2016

174. "Development of novel electrolyte additives for designed surface modification" Pacific Rim Meeting on Electrochemical Science, Honolulu, HI, October, 2016.

175. **Invited** "Novel Electrolyte Additives for Lithium Ion Batteries" BASF Electrochemistry Network meeting, Frankenthal, Germany, November 2016.

176. **Invited** "Fundamental reduction and subsequent decomposition reactions of the anode SEI in lithium ion batteries" Muenster Electrochemical Energy Technology research center, Muenster University, Muenster Germany, November 2016.

177. **Invited** "Fundamental reduction and subsequent decomposition reactions of the anode SEI in lithium ion batteries" Material Research Society Meeting, Boston, MA, November, 2016.

178. **Invited** "Generation and Evolution of the Silicon Solid Electrolyte Interphase (SEI) of Lithium-ion Batteries", BMR/ABR/Battery 500 Information Exchange, Berkeley, CA, January 2017

179. **Invited** "Generation and evolution of materials in the anode Solid Electrolyte Interphase (SEI) of lithium ion batteries", Technical University Munich, Munich, Germany, February 2017

180. **Invited "**Development of Novel Electrolyte Additives for Designed Surface Modification" International Society for Electrochmistry, 20th Topical Meeting, Buenos Aries, Argentina, March, 2017.

181. **Invited** "Generation and evolution of materials in the anode Solid Electrolyte Interphase (SEI) of lithium ion batteries", American Chemical Society Meeting, San Francisco, CA, April 2017.

182. **Invited** "Generation and evolution of materials in the anode Solid Electrolyte Interphase (SEI) of lithium ion batteries", National Renewable Energy Laboratory, Golden, CO, May 2017.

183. **Invited** "Novel Electrolyte Additives for Lithium Ion Batteries" BASF Electrochemistry Network meeting, Frankenthal, Germany, May 2017.

184. **Invited**, "Generation and evolution of materials in the anode Solid Electrolyte Interphase (SEI) of lithium ion batteries", Helmholtz Institute", Ulm, Germany, May 2017.

185. **Invited**, "Generation and evolution of materials in the anode Solid Electrolyte Interphase (SEI) of lithium ion batteries", Uppsala University, Uppsala, Sweden, June 2017.

186. **Invited**, "Generation and evolution of the silicon Solid Electrolyte Interphase (SEI) of lithium ion batteries", American Chemical Society Meeting, Washington, DC, August 2017.

187. "Generation and evolution of the silicon Solid Electrolyte Interphase (SEI) of lithium ion batteries", International Society for Electrochemistry, Providence, RI, August 2017.

188. "Understanding Electrolyte Decomposition of High Ni-NCM at Elevated Operating Voltage " Nina Laszczynski, Bo Zhang, Brett Lucht, Providence, RI, August 2017.

189. "Investigation of SEI Formation on Lithium Metal Anodes ", Zachary Brown, Sunhyung Jurng, Brett Lucht, Providence, RI, August 2017.

190. The Effects of Electrolyte Additives on Li4Ti5O12 and How They Impact Gassing", Mickdy Milien, Jennifer Hoffmann, Jing Li, Martin Payne, Scott Stephenson, John Sans, Brett Lucht, Providence, RI, August 2017.

191. "Effects of Alkali Metal Ions on the SEI Formation at Graphite Anode in Propylene Carbonate Based Electrolytes", Dilni Kaveendi Koggala Wellalage, Cao Cuong Nguyen, Brett Lucht, Yuzi Zhang, Bharathy Subramanian Parimalam

192. "Insights into the Stability of Lithium-Ion Battery SEI Components in LiPF6 Containing Electrolytes", Bharathy Subramanian Parimalam, Brett Lucht, Providence, RI, August 2017.

193. "Investigation of CO2 Reduction Products in Lithium Ion Batteries", Satu Kristiina Heiskanen (Department of Chemistry, The University of Rhode Island, Kingston, USA), Brett Lucht

194. **Invited,** "Investigations of the Electrolyte and Solid Electrolyte Interphase (SEI) of lithium ion batteries" SAFT, Boudreaux, France, September 2017

195. "Effect of electrolyte composition on the Solid Electrolyte Interface (SEI) and electrochemical cycling of lithium metal anodes", Electrochemical Society Meeting, Washington, DC, October 2017.

186. **Invited**, "Investigations of the Electrolyte and Solid Electrolyte Interphase (SEI) of lithium ion batteries" SAFT, Cockeysville, MD, October, 2017.

196. **Invited** "Novel Electrolyte Additives for Lithium Ion Batteries" BASF Electrochemistry Network meeting, Frankenthal, Germany, November, 2017.

197. **Invited** "Electrolytes and Electrode Interphases in Lithium-Ion Batteries" Advanced Automotive Battery Conference, Mainz, Germany, January 2018.

198. **Invited** "Effect of electrolyte composition on the Solid Electrolyte Interface (SEI) and electrochemical cycling of lithium metal anodes" International Battery Association Meeting, Jeju, Korea, March 2018.

199. **Invited** "Novel Electrolyte Additives for Lithium Ion Batteries" BASF Electrochemistry Network meeting, Dad Durkheim, Germany, April, 2018.

200. Effect of electrolyte composition on the Solid Electrolyte Interface (SEI) and electrochemical cycling of lithium metal anodes, Electrochemical Society Meeting, Seattle, WA, May 2018.

201. **Invited** "Effect of electrolyte composition on the Solid Electrolyte Interface (SEI) and electrochemical cycling of lithium metal anodes" International Meeting for Lithium Batteries, Kyoto, Japan, June 2018.

202. **Invited** "Effect of electrolyte composition on the Solid Electrolyte Interface (SEI) and electrochemical cycling of lithium metal anodes", International Society for Electrochemistry Meeting, Bologna, Italy, September 2018.

203. **Invited** "Developing novel electrolyte materials for enhanced performance", American Innovation Day, Detroit, MI, September 2018.

204. "Effect of electrolyte composition on the Solid Electrolyte Interface (SEI) and electrochemical cycling of lithium metal anodes", Electrochemical Society Meeting, Cancun, Mexico, October 2018.

205. **Invited,** "Generation and Evolution of Materials in the Anode Solid Electrolyte Interphase (SEI) of Lithium Ion Batteries", Lithium Battery Materials and Chemistries, Arlington, VA, November 2018

206. **Invited**, "Development of electrolytes for lithium ion batteries", Bad Durkheim, Germany, November 2018.

207. **Invited**, "Visions of lithium battery research and development in the UK" University of Warwick, UK, January, 2019.

208. **Invited**, "Generation and Evolution of Materials in the Anode Solid Electrolyte Interphase (SEI) of Lithium Ion Batteries", EPF Lausanne, Switzerland, February 2019.

209. **Invited**, "Generation and Evolution of Materials in the Anode Solid Electrolyte Interphase (SEI) of Lithium Ion Batteries", Paul Scherrer Institute, Switzerland, February 2019.

210. "Synergistic Performance of Lithium Difluoro(oxalate)Borate and Fluoroethylene Carbonate in Carbonate Electrolytes for Lithium Metal Anodes", International Battery Association Meeting, San Diego, March 2019.

211. **Invited**, "Development of electrolytes for lithium ion batteries", Bad Durkheim, Germany, April 2019, BASF Electrochemical Network Meeting.

212. "Generation and Evolution of Materials in the Anode Solid Electrolyte Interphase (SEI) of Lithium Ion Batteries" ECS Meeting, Dallas, TX, May, 2019

213. **Invited**, "Generation and Evolution of Materials in the Anode Solid Electrolyte Interphase (SEI) of Lithium Ion Batteries", Albemarle, Baton Rouge, LA, June, 2019.

214. **Invited**, "Generation and Evolution of Materials in the Anode Solid Electrolyte Interphase (SEI) of Lithium Ion Batteries", Electrochemical Conference on Energy and the Environment: Bioelectrochemistry and Energy Storage, July 21-26, 2019, Glasgow, Scotland, UK.

215. Development of Novel Binders for Silicon Electrodes for Lithium Ion Batteries, Electrochemical Society Meeting, October 2019, Atlanta, GA.

216. **Invited,** Electrolyte reactivity with NMC cathode materials, Bad Durkheim, Germany, November 2019, BASF Electrochemistry Network Meeting.

217. **Invited**, "Generation and Evolution of Materials in the Anode Solid Electrolyte Interphase (SEI) of Lithium Ion Batteries", Japan Battery Symposium, November 2019, Kyoto, Japan.

218. **Invited**, "Why lithium ion batteries do not last forever", Department of Chemistry, University of Massachusetts, Dartmouth, February, 2020.

219. **Invited Keynote**, "Generation and evolution of the solid electrolyte interphase on silicon anodes of lithium ion batteries", International Battery Association meeting, Bled, Slovenia, March 2020 (Cancelled due to COVID-19)

220. **Invited**, "Generation and evolution of the solid electrolyte interphase on silicon anodes of lithium ion batteries", Munich Battery Discussions, Munich, Germany, April 2020. (Cancelled due to COVID-19)

221. **Invited,** "Why lithium ion batteries do not last forever", Western Colorado University, August 2020. (Virtual)

222. **Invited**, "Why lithium ion batteries do not last forever", Massachusetts Institute of Technology, Micro-Nano/Energy Seminar Series, September, 2020 (Virtual).

223. "Electrolyte reactivity with NCM cathode materials", PRIME October, 2020 (Virtual).

224. **Invited** "Why lithium ion batteries do not last forever", Faraday Degradation Project Meeting, Cambridge, UK (Virtual), February 2021.

225. "Structure and Stability of the Solid Electrolyte Interphase on Silicon Anodes of Lithium-Ion Batteries", Electrochemical Society Meeting, May 2021 (Virtual).

226. **Invited Keynote** "Electrolyte oxidation and the role of acidic fluorophosphates in capacity loss for lithium ion batteries" International Battery Association Meeting, Xiamen, China (Virtual), October 2021.

227. **Invited**, "Electrolyte oxidation and the role of acidic fluorophosphates in capacity loss for lithium ion batteries" Power Up Conference, Newport, RI, October, 2021.

228. **Invited**, "Lithium ion batteries for grid storage" Plugged into Energy Research Lecture Series, Kingston, RI (Virtual), November, 2021.

229. **Invited**, "Electrolyte oxidation and the role of acidic fluorophosphates in capacity loss for lithium ion batteries", Materials Research Society Meeting, Boston, MA, December 2021.

230. **Invited**, "Electrolyte oxidation and the role of acidic fluorophosphates in capacity loss for lithium ion batteries", Munich Battery Discussions, Munich, Germany, March 2022.

231. **Invited**, "Solid Electrolyte Interphase (SEI) of lithium ion batteries: Role of additives and crossover reactions on stability and performance" Helmholtz Institute Ulm, Ulm, Germany, March 2022.

232. **Invited,** "Solid Electrolyte Interphase (SEI) of lithium ion batteries: Role of additives and crossover reactions on stability and performance", ECS Student Chapter Munich Colloquium, March 2022.

233. **Invited**, "Electrolyte oxidation and the role of acidic species in crossover reactions and capacity loss for lithium ion batteries" Electrochemical Society Meeting, Vancouver, BC, Canada, May 2022.

234. **Invited**, "Electrolyte oxidation and the role of acidic species in crossover reactions and capacity loss for lithium ion batteries", International Meeting on Lithium Batteries, Sydney, Australia, June 2022.

235. **Invited**, "Solid Electrolyte Interphase (SEI) of lithium ion batteries: Role of additives and crossover reactions on stability and performance", Ford Ion Park – Battery Center of Excellence, Detroit, MI (Virtual) August, 2022.

236. **Invited**, "Solid Electrolyte Interphase (SEI) of lithium ion batteries: Role of additives and crossover reactions on stability and performance", Distinguished Seminar Series, ECS San Francisco Section, (Virtual) September, 2022.

237. **Invited Keynote**, "Electrolyte oxidation and the role of acidic species in crossover reactions and capacity loss for lithium ion batteries", International Battery Association Meeting, Bled, Slovenia, October 2022.

238. **Invited**, "Electrolyte oxidation and the role of acidic species in crossover reactions and capacity loss for lithium ion batteries", University of Houston, Electrical and Computer Engineering Department, (Virtual), December 2022.

239. **Invited**, "Lithium Ion Battery Fundamentals" JGP Lecture Series, Kyoto University, Kyoto, Japan, January 2023

240. **Invited**, "Electrolytes for Lithium Ion Batteries" JGP Lecture Series, Kyoto University, Kyoto, Japan, January 2023.

241. **Invited**, "Interactions of the Electrolyte with Anodes in Lithium Ion Batteries" JGP Lecture Series, Kyoto University, Kyoto, Japan, January 2023.

242. **Invited**, "Interactions of the Electrolyte with Cathodes in Lithium Ion Batteries" JGP Lecture Series, Kyoto University, Kyoto, Japan, January 2023.

243. **Invited,** "Solid Electrolyte Interphase (SEI) of lithium ion batteries: Role of additives and crossover reactions on stability and performance" Japan Gateway Program Seminar, **Distinguished Visiting Professorship**, Kyoto University, Kyoto Japan, January 2023.

244. **Invited**, Lithium Tetrafluoroborate Based Ester Electrolyte System for Wide Operating Temperatures In graphite/ $LiNi_{0.6}Co_{0.2}Mn_{0.2}O_2$ Cells, Meeting of the Electrochemical Society, Boston, MA May 2023.

PROFESSIONAL RESEARCH SERVICE AND ACADEMIC LEADERSHIP

Professional Society Memberships:

American Chemical Society, since 1993
Electrochemical Society, since 2003

Elected Member at Large, Battery Division ECS, 2012-2016
Treasurer, Battery Division ECS, 2016-2018
Secretary, Battery Division ECS, 2018-2020
Vice Chair, Battery Division ECS, 2020-2022
Chair, Battery Division, Electrochemical Society, 2022-2024

I am currently the Chair of the Battery Division of the Electrochemistry Society (ECS). The ECS is an 8,000 member scientific society and the Battery Division is the largest division with 2,000 members.

Scientific Journal Editorship:

Associate Editor, Journal of the Electrochemistry Society, 2017-present.
Associate Editor, Journal of Power Sources, 2016-2017.

Scientific Manuscripts Reviewed:

Many Manuscripts for the Journal of the American Chemical Society, Electrochimica Acta, Chemistry of Materials, Journal of the Electrochemical Society, Electrochemical and Solid State Letters, Electrochemical Communications, Journal of Power Sources, J. Phys. Chem. C., Energy and Environmental Science, ACS Applied Materials and Interfaces, and Joule.

Scientific Proposals Reviewed:

Many proposals from the National Science Foundation, Petroleum Research Fund, US Department of Energy, Swiss National Science Foundation, the Czech National Science foundation, University of Legie (Belgium), Israeli Ministry of Science, Technology and Space, and German Federal Ministry of Education and Research.

NIH panel for SBIR/STTR Cardiovascular and Surgical Devices, 2017-2020.

Served on three site review committees for NSERC (Canada).

Award committee for ECS Battery division Student research award, 2013, 2014, 2015 (Chair).

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ECS Toyota Young Investigator Fellowship selection committee 2015, 2016

Award committee for ECS Battery division Student travel award, 2016-2018

DOE EFRC Mid-term Review Committee (January 2016)

DOE-EERC AMR 2019-2020

Conference Service:

Discussion Leader, Gordon Conference on Organometallic Chemistry, July 2001

Session Chair, Organic Division, 222nd National ACS Meeting, August 2001
Session Chair, Inorganic Division, 224th National ACS Meeting, August 2002
Session Chair, Inorganic Division, 226th National ACS Meeting, September 2003
Session Chair, Battery Division, ECS Meeting, October 2007.
Session Organizer, Kipinger Award in Silicon Chemistry, 235th National ACS Meeting, April 2008
Symposium Organizer, Lithium Battery Electrolytes, Battery Division, PRIME/ECS Meeting, October 2008, 2012
Session Chair, Batteries and Capacitors, ISE Annual Meeting, August 2009.
Lead Symposium Organizer, Lithium Battery Electrolytes, Battery Division, ECS Meeting, October 2010, Las Vegas
Session Organizer, Take Charge EV Conference, October 2010.
Session Organizer, ACS National Meetings, Inorganic Division, Electrochemistry, 2012-2017.
Symposium Organizer, Non-aqueous Electrolytes symposium, PRIME October 2012
Lead Symposium Organizer, Non Aqueous Electrolytes Symposium, ECS Meeting October 2014, Cancun
Symposium Organizer, Lithium Ion Batteries and Beyond, ECS Meeting May 2015, Chicago
Lead Symposium Organizer, Electrolytes and Electrochemical Interfaces, ECS Meeting October 2015, Phoenix
Lead Symposium Organizer, Advances in Electrolytes for Lithium Batteries, October 2016, Honolulu
Lead Symposium Organizer, Student Battery Slam, ECS Meeting May 2017, New Orleans
Symposium Organizer, Student Battery Slam, ECS Meeting October 2017, National Harbor
Lead Symposium Organizer, Electrolytes and Interfaces in Lithium Ion Batteries, October, 2018, Cancun
Lead Symposium Organizer, Lithium Ion Batteries and Beyond, May 2019, Dallas
Symposium Organizer, Lithium Ion Batteries, Electrochemical Conference on Energy and the Environment, July, 2019, Glasgow
Symposium Organizer, Lithium Ion Batteries, ECS Meeting October 2019, Atlanta

Funding Agency Service:

DOE-Basic Research Needs for Electrical Energy Storage Workshop participant