

**YING SHIRLEY MENG, PH.D.****Professor, Zable Endowed Chair in Energy**[Department of NanoEngineering](#)

University of California San Diego

Room 242G, SME Building (MC0448)

La Jolla, California 92093-0448

858-822-4247 (phone) 858-534-9553 (fax)

shirleymeng@ucsd.edu (email)

**Founding Director of**[Sustainable Power and Energy Center \(SPEC\)](#)**Affiliated Faculty with**[Center for Memory & Recording Research  
Materials Science & Eng. Program](#)**a. Education and Training**

Massachusetts Institute of Technology

Singapore-MIT Alliance, National University of Singapore

Nanyang Technological University, Singapore

Postdoc

2005 – 2007

Ph.D

2000 – 2005

B.A.Sc (Matl. Eng.)

1996 – 2000

1<sup>st</sup> class honor and minor in Business**b. Research and Professional Experience**

2017 – Now Professor, NanoEngineering, University of California, San Diego

2013 – 2017 Associate Professor, NanoEngineering, University of California, San Diego

2009 – 2013 Assistant Professor, NanoEngineering, University of California, San Diego

2009 – 2013 Adjunct Professor, Materials Science and Engineering, University of Florida

2008 – 2009 Assistant Professor, Materials Science and Engineering, University of Florida

2007 – 2008 Research Scientist, Materials Sci &amp; Eng, Massachusetts Institute of Technology

Meng's research group (**LESC: Laboratory for Energy Storage & Conversion**) focuses on energy storage and conversion materials: novel electrodes and novel electrolytes for advanced batteries, solar cells and thermoelectric materials; charge ordering, structure stability, processing – structure – property relations in functional ceramic materials and combining *ab initio* computation with advanced *characterizations* for rational materials design for energy applications. <http://smeng.ucsd.edu>

**c. Awards and Honors**

2017, IUMRS-Singapore Young Scientist Research Award

2016, Clean Energy Education &amp; Empowerment (C3E) Award Finalist (Honorable mention)

2016, Charles W. Tobias Award, Electrochemical Society (Awarded Lifetime Member)

2015, Frontier of Innovation Award

2014, Science Award Electrochemistry by BASF and Volkswagen

2013, Chancellor's Interdisciplinary Research Award

2011, National Science Foundation (NSF) CAREER Award

2011, Christopher Fell (Meng's first Ph.D. student) won the Student Research Award of Battery Division, the Electrochemical Society.

2008, Early Career Faculty Travel Award (The Electrochemical Society)

2003, Graduate Student Award (Materials Research Society)

2002, Systems on Silicon Manufacturing Co. Pte. Ltd (SSMC) Award

2000, Singapore-MIT Alliance Postgraduate Study Scholarship (2000-2005)

1998, Industrial Attachment Book Prize

1996, Singapore Welding Society Book Prize

1995, Ministry of Education Singapore Undergraduate Study Scholarship (1996-2000)

1994, Wong's Fund (USA) Award

**d. Peer-Reviewed Journal Publications (Total 145; H-index 48 info from Google Scholar, \*corresponding author)**

1. T. Yu, Q. Li, X. Zhao\*, H. Xia, L. Ma, J. Wang, Y. S. Meng\*, and X. Shen, "Nanoconfined Iron Oxychloride Material as a High-Performance Cathode for Rechargeable Chloride Ion Batteries", **ACS Energy Lett.**, 2, 2341, 2017.
2. F. Lin, Y. Liu, X/ Yu, L. Cheng, A. Singer, O. G. Shpyrko, H. L. Xin, N. Tamura, C. Tian, T-C Weng, X-Q Yang, Y. S. Meng, D. Nordlund, W. Yang, and M. M. Doef, " Synchrotron X-ray1

- Analytical Techniques for Studying Materials Electrochemistry in Rechargeable Batteries” **Chem. Rev.**, Article ASAP, 2017.
3. J. Huang, H.D. Liu, N. Zhou, K. An, Y.S. Meng and J. Luo, “Enhancing the Ion Transport in  $\text{LiMn}_{1.5}\text{Ni}_{0.5}\text{O}_4$  by Altering the Particle Wulff Shape via Anisotropic Surface Segregation”, **ACS Appl. Mater. Interfaces**, Accepted Manuscript, 2017.
  4. P. Parikh, C. Senowitz, D. Lyons, I. Martin, T. J. Prosa, M. DiBattista, A. Devaraj, and Y. S. Meng\*, “Three-Dimensional Nanoscale Mapping of State-of-the-Art Field-Effect Transistors (FinFETs)”, **Microscopy and Microanalysis**, Article ASAP, 2017.
  5. M. Zhang, K. Yin, Z. D. Hood, Z. Bi, C. A. Bridges, S. Dai, Y. S. Meng, M. P. Paranthaman and M. Chi, “In situ TEM observation of the electrochemical lithiation of N-doped anatase  $\text{TiO}_2$  nanotubes as anodes for lithium-ion batteries”, **J. of Materials Chemistry A.**, Article ASAP, 2017.
  6. H. Liu, H.D. Liu, S. H. Lapidus, Y. S. Meng, P. J. Chupas, and K. W. Chapman “Sensitivity and Limitations of Structures from X-ray and Neutron-Based Diffraction Analyses of Transition Metal Oxide Lithium-Battery Electrodes”, **Journal of The Electrochemical Society**, 164 (9), 1802, 2017.
  7. R. Kumar, J. Wang, and Y.S. Meng\*, “Conformal, Wearable Batteries: Powering Warfighter Equipment”, **Homeland Defense and Security Information Analysis Center (HDIAC) Newsletter**, 4(3), 4, 2017.
  8. J. Alvarado, C. Ma, S. Wang, K. Nguyen, M. Kodur, and Y. S. Meng\*, “Improvement of the Cathode Electrolyte Interphase on P2- $\text{Na}_{2/3}\text{Ni}_{1/3}\text{Mn}_{2/3}\text{O}_2$  by Atomic Layer Deposition” **ACS Appl. Mater. Interfaces**, 9(31), 26518, 2017.
  9. Yin, M. Zhang, Z. D. Hood, J. Pan, Y. S. Meng, and M. Chi, “Self-Assembled Framework Formed During Lithiation of  $\text{SnS}_2$  Nanoplates Revealed by in Situ Electron Microscopy” **Acc. Chem. Res.**, Article ASAP, 2017
  10. Maxwell D. Radin, Sunny Hy, Mahsa Sina, Chengcheng Fang, Haodong Liu, Julija Vinckeviciute, Minghao Zhang, Stanley M. Whittingham, Y. Shirley Meng\* and Anton Van der Ven\*, “Narrowing the gap between theoretical and practical capacities in Li-ion layered oxide cathode materials”, **Advanced Energy Materials**, Article ASAP, 2017.
  11. C. S. Rustomji, Y. Yang, T. Kim, J. Mac, Y. Kim, E. Caldwell, H. Chung, Y.S. Meng\*, “Liquefied Gas Electrolytes for Electrochemical Energy Storage Devices”, **Science**, 356, 1351, 2017.
  12. H. Shobukawa, J. Alvarado, Y. Yang, Y. S. Meng\*, “Electrochemical performance and interfacial investigation on Si composite anode for lithium ion batteries in full cell”, **Journal of Power Sources**, 359, 173, 2017.
  13. J. K. Seo, H.-M. Cho, K. Takahara, K. W. Chapman, O. J. Borkiewicz, M. Sina\*, and Y. S. Meng\*, “Revisiting the conversion reaction voltage and the  $\text{CuF}_2$  electrode in Li-ion batteries”, **Nano Research**, 1, 2017.
  14. C. Zhu, L. Yang, J. K. Seo, X. Zhang, S. Wang, J.W. Shin, D. Chao, H. Zhang, Y. S. Meng\* and H. J. Fan\*, “Self-branched  $\alpha\text{-MnO}_2\text{-d-MnO}_2$  heterojunction nanowires with enhanced pseudocapacitance”, **Materials Horizons**, 4, 415, 2017.
  15. M. Wang, A. V. Le, D. J. Noelle, Y. Shi, Y. S. Meng, Y. Qiao, “Internal-short-mitigating current collector for lithium-ion battery”, **Journal of Power Sources**, 2017, 349, 84
  16. C. Ma, J. Alvarado, J. Xu, R. J. Clément, M. Kodur, W. Tong, C. P. Grey\* and Y. S. Meng\*, “Exploring Oxygen Activity in the High Energy P2-Type  $\text{Na}_{0.78}\text{Ni}_{0.23}\text{Mn}_{0.69}\text{O}_2$  Cathode Material for Na-ion Batteries”, **J. Am. Chem. Soc.**, 139(13), 4835, 2017.
  17. M. Samiee, B. Radhakrishnan, Z. Rice, Z. Deng, Y. S. Meng, S. P. Ong and J. Luo, “Divalent-doped  $\text{Na}_2\text{Zr}_2\text{Si}_2\text{PO}_{12}$  sodium superionic conductor\_ Improving the ionic conductivity via simultaneously optimizing the phase and chemistry of the primary and secondary phases”, **Journal of Power Sources**, 347, 229, 2017
  18. A. Devaraj, D. E. Perea, J. Liu, L. M. Gordon, T. J. Prosa, P. Parikh, D. R. Diercks, S. Meher, R. P. Kolli, Y. S. Meng and S. Thevuthasan, “Three-dimensional nanoscale characterisation of materials by atom probe tomography”, **International Materials Reviews**, 1, 1, 2017
  19. R. J. Clément, J. Xu, D. Middlemiss, J. Alvarado, C. Ma, Y. S. Meng and C. P. Grey, “Direct Evidence for High  $\text{Na}^+$  Mobility and High Voltage Structural Processes in P2- $\text{Na}_{0.78}[\text{Li}_{1-x}\text{Ni}_x\text{Mn}_{1-y}\text{O}_2]$

- (x,y,z ≤ 1) Cathodes from <sup>23</sup>Na and <sup>7</sup>Li Solid-State NMR and First Principles Density Functional Theory Calculat” **Journal of Mater. Chem. A**, 5, 4129, 2017
20. B. Qiu, M. Zhang, Y. Xia, Z. Liu, and Y. S. Meng\*, “Understanding and Controlling Anionic Electrochemical Activity in High-Capacity Oxides for Next Generation Li-Ion Batteries”, **Chemistry of Materials**, 29, 908, 2017
  21. Y. Shi, D. J. Noelle, M. Wang, A. V. Le, H. Yoon, M. Zhang, Y. S. Meng, J. Fan, D. Wu, and Y. Qiao, “Mitigating thermal runaway of lithium-ion battery through electrolyte displacement”, **Applied Physics Letters**, 110(6), 063902, 2017
  22. J. Z. Lee, Z. Wang, H. L. Xinb, T. A. Wynn, and Y. S. Meng\*, “Amorphous Lithium Lanthanum Titanate for Solid-State Microbatteries”, **Journal of The Electrochemical Society**, 164(1), 6268, 2017
  23. Y. Shi, D. J. Noelle, M. Wang, A. V. Le, H. Yoon, M. Zhang, Y. S. Meng, and Yu Qiao, “Role of Amines in Thermal-Runaway-Mitigating Lithium-ion Battery”, **ACS Appl. Mater. Interfaces**, 8 (45), 30956, 2016
  24. N. M. Trease, I. D. Seymour, M. Radin, H.D. Liu, H. Liu, S. Hy, N. Chernova, P. Parikh, A. Devaraj, K. M. Wiaderek, P. J. Chupas, K. W. Chapman, M. S. Whittingham, Y. S. Meng\*, A. V. der Ven, and C. P. Grey\* “Identifying the distribution of Al<sup>3+</sup> in LiNi<sub>0.8</sub>Co<sub>0.15</sub>Al<sub>0.05</sub>O<sub>2</sub>”, **Chemistry of Materials**, 28, 8170, 2016
  25. A. Orita, M. G. Verde, M. Sakai, and Y. S. Meng\* “A biomimetic redox flow battery based on flavin mononucleotide”, **Nature Communications**, 7, 13230, 2016
  26. I.-H. Chu, C. S. Kompella, H. Nguyen, Z. Zhu, S. Hy, Z. Deng, Y. S. Meng\* and S. P. Ong\* “Room-Temperature All-solid-state Rechargeable Sodium-ion Batteries with a Cl-doped Na<sub>3</sub>PS<sub>4</sub> Superionic Conductor”, **Scientific Reports**, 6, 33733, 2016
  27. H. Nguyen, S. Hy, E. Wu, Z. Deng, M. Samiee, T. Yersak, J. Luo, S. P. Ong, and Y. S. Meng\*, “Experimental and Computational Evaluation of a Sodium-Rich Anti-Perovskite for Solid State Electrolytes”, **Journal of The Electrochemical Society**, 163(10), A2165, 2016
  28. M. Sina, J. Alvarado, H. Shobukawa, C. Alexander, V. Manichev, L. Feldman, T. Gustafsson, K. Stevenson, and Y. S. Meng\*, “Direct Visualization of the Solid Electrolyte Interphase and Its Effects on Silicon Electrochemical Performance”, **Adv. Mater. Interfaces**, 1600438, 2016
  29. M. Zhang, A. C. MacRae, H.D. Liu, and Y. S. Meng\* “Investigation of Anatase-TiO<sub>2</sub> as an Efficient Electrode Material for Magnesium-Ion Batteries” **Journal of The Electrochemical Society**, 163(10), A2368, 2016
  30. J.W. Shin, J.-M. You, J. Z. Lee, R. Kumar, L. Yin, J. Wang, and Y. S. Meng\*, “Deposition of ZnO on bismuth species towards a rechargeable Zn-based aqueous battery”, **Phys. Chem. Chem. Phys.**, 18, 26376, 2016 (Front Cover)
  31. S. Wang, M. Sina, P. Parikh, T. Uekert, B. Shahbazian, A. Devaraj, and Y. S. Meng\*, “Role of 4-tert-Butylpyridine as a Hole Transport Layer Morphological Controller in Perovskite Solar Cells” **Nano Letters**, 16, 5594, 2016
  32. H. Shobukawa, J. Shin, J. Alvarado, C. Rustomji, Y. S. Meng\*, “Electrochemical Reaction and Surface Chemistry for Performance Enhancement of Si Composite Anode Using bis(fluorosulfonyl)imide Based Ionic Liquid”, **Journal of Materials Chemistry A**, 4, 15117, 2016.
  33. X. He, J. Wang, B. Qiu, E. Paillard, C. Ma, X. Cao, H.D. Liu, M. C. Stan, H. Liu, T. Gallash, Y. S. Meng\* and J. Li\*, “Durable High-Rate Capability Na<sub>0.44</sub>MnO<sub>2</sub> Cathode Material for Sodium-ion Batteries”, **Nano Energy**, 27, 602, 2016.
  34. B. Qiu, M. Zhang, L. Wu, J. Wang, Y. Xia, D. Qian, H.D. Liu, S. Hy, Y. Chen, K. An, Y. Zhu, Z. Liu\*, Y. S. Meng\*, “Gas–solid interfacial modification of oxygen activity in layered oxide cathodes for lithium-ion batteries”, **Nature Communications** 7:12108 doi: 10.1038/ncomms12108, 2016.
  35. B. J. Hertzberg, A. Huang, A. Hsieh, M. Chamoun, G. Davies, J. K. Seo, Z. Zhong, M. Croft, C. Erdonmez, Y. S. Meng\*, and D. Steingart\*, “The effect of multiple cation electrolyte mixtures on rechargeable Zn-MnO<sub>2</sub> alkaline batteries”, **Chem. Mater.**, 28 (13), 4536, 2016.
  36. Z. Wang, J. Z. Lee, H. L. Xin, L. Han, N. Grillon, D. Guy-Bouyssou, E. Bouyssou, M. Proust, Y. S.

- Meng\*, "Effects of cathode electrolyte interfacial (CEI) layer on long term cycling of all-solid-state thin-film batteries" **Journal of Power Sources**, 324, 342, 2016.
37. Z. Wang, D. Santhanagopalan, W. Zhang, F. Wang, H. L. Xin, K. He, J. Li, N. Dudney, and Y. S. Meng\*, "In Situ STEM-EELS Observation of Nanoscale Interfacial Phenomena in All-Solid-State Batteries", **Nano Letters**, 16 (6), 3760, 2016.
38. A. Orita, M.G. Verde, M. Sakai, Y.S. Meng\*, "The impact of pH on side reactions for aqueous redox flow batteries based on nitroxyl radical compounds", **Journal of Power Sources**, 321, 126, 2016.
39. S. Hy, H.D. Liu, M. Zhang, D. Qian, B.-J. Hwang, Y. S. Meng\*, "Performance and design considerations for lithium excess layered oxide positive electrode materials for lithium ion batteries", **Energy & Environmental Science**, 9, 1931, 2016.
40. Y. Shi, M. Zhang, D. Qian and Y. S. Meng\*, "Ultrathin AlO<sub>3</sub> Coatings for Improved Cycling Performance and Thermal Stability of LiNi<sub>0.5</sub>Co<sub>0.2</sub>Mn<sub>0.3</sub>O<sub>2</sub> Cathode Material", **Electrochimica Acta**, 203(10), 154, 2016.
41. M. G. Verde, L. Baggetto, N. Balke, G. M. Veith, J. K. Seo, Z. Wang, and Y. S. Meng\*, "Elucidating the Phase Transformation of Li<sub>1</sub>Ti<sub>5</sub>O<sub>12</sub> Lithiation at the Nanoscale", **ACS Nano**, 10 (4), 4312, 2016.
42. I.-H. Chu, H. Nguyen, S. Hy, Y.-C. Lin, Z. Wang, Z. Xu, Z. Deng, Y. S. Meng\*, and S. P. Ong\*, "Insights into the Performance Limits of the Li<sub>7</sub>P<sub>3</sub>S<sub>11</sub> Superionic Conductor\_ A Combined First-Principles and Experimental Study", **ACS Appl. Mater. Interfaces**, 8 (12), 7843, 2016.
43. H.D. Liu, J. Huang, D. Qian, S. Hy, C. Fang, J. Luo, and Y. S. Meng\*, "Enhancing the Electrochemical Performance of Lithium-Excess Layered Oxide Li<sub>1.3</sub>Ni<sub>0.3</sub>Mn<sub>0.9</sub>O<sub>2</sub> via a Facile Nanoscale Surface Modification", **Journal of The Electrochemical Society**, 163 (6), A971, 2016.
44. H. Xia, Q. Xia, B. Lin, J. Zhu, J. K. Seo, and Y. S. Meng\*, "Self-standing porous LiMn<sub>2</sub>O<sub>4</sub> nanowall arrays as promising cathodes for advanced 3D microbatteries and flexible lithium-ion batteries", **Nano Energy**, 22, 475, 2016.
45. H.D. Liu, Y. Chen, S. Hy, K. An, S. Venkatachalam, D. Qian, M. Zhang, and Y. S. Meng\*, "Operando Lithium Dynamics in the Li-Rich Layered Oxide Cathode Material via Neutron Diffraction", **Adv. Energy Mater.** 1502143, 2016.
46. S. Wang, W. Yuan, and Y. S. Meng\*, "Spectrum-Dependent Spiro-OMeTAD Oxidization Mechanism in Perovskite Solar Cells", **ACS Appl. Mater. Interfaces**, 7 (44), 24791, 2015.
47. H.D. Liu, D. Qian, M. G. Verde, M. Zhang, L. Baggetto, K. An, Y. Chen, K. J. Carroll, D. Lau, M. Chi, G. M. Veith, and Y. S. Meng\*, "Understanding the Role of NH<sub>4</sub>F and Al<sub>2</sub>O<sub>3</sub> Surface Co-modification on Lithium-Excess Layered Oxide Li<sub>1.2</sub>Ni<sub>0.2</sub>Mn<sub>0.8</sub>O<sub>2</sub>", **ACS Appl. Mater. Interfaces**, 7 (34), 19189, 2015.
48. K. Schroder, J. Alvarado, T. A. Yersak, J. Li, N. Dudney, L. J. Webb, Y. S. Meng\*, and K. J. Stevenson\*. "The Effect of Fluoroethylene Carbonate as an Additive on the Solid Electrolyte Interphase on Silicon Lithium-Ion Electrolytes", **Chemistry of Mater.**, 27 (16), 5531, 2015.
49. C. Ma, J. Xu, J. Alvarado, B. Qu, J. Somerville, J. Y. Lee, and Y. S. Meng\*, "Investigating the Energy Storage Mechanism of SnS<sub>2</sub>-rGO Composite Anode for Advanced Na-Ion Batteries", **Chemistry of Mater.**, 27 (16), 5633, 2015.
50. J. Xu, H. D. Liu, Y. S. Meng\*, "Exploring Li substituted O3-structured layered oxides NaLi<sub>x</sub>Ni<sub>1-x</sub>Mn<sub>0.9-x</sub>Co<sub>0.1x</sub>O<sub>2</sub> (x = 0.07, 0.13, and 0.2) as promising cathode materials for rechargeable Na batteries", **Electrochemistry Communications**, 60, 13, 2015.
51. H. Cho, M. V. Chen, A. C. MacRae, and Y. S. Meng\*, "Effect of Surface Modification on Nano-Structured LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> Spinel Materials", **ACS Appl. Mater. Interfaces**, 7 (30), 16231, 2015.
52. Y. C. Lu, C. Ma, J. Alvarado, T. Kidera, Y. S. Meng\*, and S. Okada\*, "Improved electrochemical performance of tin-sulfide anodes for sodium-ion batteries", **Journal of Materials Chemistry A**, 3, 16971, 2015.
53. D. Qian, C. Ma, K. L. More, Y. S. Meng\* and M. Chi\*, "Advanced analytical electron microscopy for lithium-ion batteries", **NPG Asia Materials**, 7, e193, 2015.
54. Y.-S. Yu, C. Kim, D. A. Shapiro, M. Farmand, D. Qian, T. Tyliszczak, A. L. D. Kilcoyne, R. Celestre, S. Marchesini, J. Joseph, P. Denes, T. Warwick, F. C. Strobridge, C. P. Grey, H. Padmore, Y. S. Meng, R. Kostecki, and J. Cabana, "Dependence on Crystal Size of the Nanoscale Chemical Phase Distribution and Fracture in Li<sub>x</sub>FePO<sub>4</sub>", **Nano Letters**, 15(7), 4282, 2015.

55. A. Ulvestad, A. Singer, J.N. Clark, H.M. Cho, J.W. Kim, R. Harder, J. Maser, Y.S. Meng\*, and O.G. Shpyrko\* "3D operando imaging of topological defect dynamics in battery nanoparticles", **Science**, 348, 1344, 2015.
56. Y. C. Lu, C. Ma, J. Alvarado, T. Kidera, N. Dimov, Y. S. Meng\*, and S. Okada\*, "Electrochemical properties of tin oxide anodes for sodium-ion batteries", **Journal of Power Sources**, 284, 287, 2015.
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58. B. Han, D. Qian, M. Risch, H. Chen, M. Chi, Y. S. Meng\*, and Yang S-H., "Role of LiCoO<sub>2</sub> Surface Terminations in Oxygen Reduction and Evolution Kinetics", **J. Phys. Chem. Lett.** 6, 1357, 2015
59. Y-S. Yu, C. Kim, Y. Liu, A. v. d. Ven, Y. S. Meng, R. Kostecky, and J. Cabana, "Nonequilibrium Pathways during Electrochemical Phase Transformations in Single Crystals Revealed by Dynamic Chemical Imaging at Nanoscale Resolution", **Advanced Energy Materials**, 5, 1402040, 2015
60. A. Saracibar, Z. Wang, K. J. Carroll, Y. S. Meng and M. E. Arroyo-de Dompablo, "New insights into the electrochemical performance of LiMnSiO<sub>4</sub> effect of cationic substitutions", **Journal of Materials Chemistry A**, 3, 6004, 2015.
61. H. Zheng, Y. S. Meng and Y. Zhu, "Frontiers of in situ electron microscopy", **MRS Bulletin**, 40, 12, 2015.
62. Q. Zhang, M. G. Verde, J. K. Seo, X. Li and Y. S. Meng\*, "Structural and electrochemical properties of Gd-doped Li<sub>2</sub>Ti<sub>3</sub>O<sub>12</sub> as anode material with improved rate capability for lithium-ion batteries", **Journal of Power Sources**, 1, 124, 2015.
63. H. Liu, J. Xu, C Ma and Y. S. Meng\*, "A new O3-type layered oxide cathode with high energy power density for rechargeable Na batteries." **Chemical Communications**, 51, 4693, 2015.
64. J. Shin, M. Kim, J. Cirera, S. H. Chen, G. Halder, T. A. Yersak, F. Paesani, S. M. Cohen and Y. S. Meng\*, "MIL-101(Fe) as a lithium-ion battery electrode material\_ a relaxation and intercalation mechanism during lithium insertion" , **Journal of Materials Chemistry A**, 3, 4738, 2015.
65. T. A. Yersak, J. Shin, Z. Wang, D. Estrada, J. Whiteley, S-H Lee, M. J. Sailor, and Y. S. Meng\*, "Preparation of Mesoporous Si@PAN Electrodes for Li-Ion Batteries via the In-Situ Polymerization of PAN", **ECS Electrochemistry Letters**, 4 (3), A33, 2015.
66. H. Yoon, A. Xu, G. E. Sterbinsky, D. A. Arena, Z. Wang, P. W. Stephens, Y.S. Meng\* and K. J. Carroll, "In situ non-aqueous nucleation and growth of next generation rare-earth-free permanent magnets", **Physical Chemistry Chemical Physics**, 17, 1070, 2015.
67. D. Santhanagopalan, D. K. Schreiber, D. E. Perea, R. L. Martens, Y. Janssen, P. Khalifah, Y. S. Meng\*, "Effects of Laser Energy and Wavelength on the Analysis of LiFePO<sub>4</sub> Using Laser Assisted Atom Probe Tomography", **Ultramicroscopy**, 148, 57, 2015.
68. M. G. Verde, H. Liu, K. J. Carroll, L. Baggetto, G. M. Veith, and Y. S. Meng\*, "Effect of Morphology and Manganese Valence on the Voltage Fade and Capacity Retention of Li[Li<sub>0.2/12</sub>Ni<sub>0.3/12</sub>Mn<sub>0.7/12</sub>]O<sub>2</sub>", **ACS Applied Materials & Interfaces**, 6, 18868, 2014.
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71. A. Singer, A. Ulvestad, H. Cho, J. W. Kim, J. Maser, R. Harder, Y. S. Meng, and O. G. Shpyrko, "Nonequilibrium Structural Dynamics of Nanoparticles in LiNi<sub>0.2</sub>Mn<sub>0.3</sub>O<sub>4</sub> Cathode under Operando Conditions", **Nano Letters**, 14(9), 5295, 2014.
72. A. Ulvestad, A. Singer, H. Cho, J. N. Clark, R. Harder, J. Maser, Y. S. Meng\*, and O. G. Shpyrko, "Single Particle Nanomechanics in Operando Batteries via Lensless Strain Mapping", **Nano Letters**, 14(9), 5123, 2014.
73. A. Bandodkar, W. Jia, J. Ramirez, Y. S. Meng\* and J. Wang, "An epidermal alkaline rechargeable Ag-

- Zn printable tattoo battery for wearable electronics*", **Journal of Materials Chemistry A**, 2(38), 15788, 2014.
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75. D. Qian, B. Xu, M. Chi, Y.S. Meng\*, "Uncovering the roles of oxygen vacancies in cation migration in lithium excess layered oxides", **Physical Chemistry Chemical Physics**, 16, 14665, 2014
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#### e. Patents and Book Chapter

1. Y. S. Meng, F. So, J. Xue, J. Reynolds, K. R. Zawoy, "Integrated PV/Battery/OLED Lighting Module (SoLiOled)," US/183359, 2012.
2. Y. S. Meng, "High Energy Density Cathode Materials for Lithium Ion Batteries," US 12/143606, 2012.
3. H. Liu and Y. S. Meng, "Lithium and Sodium Containing Layered Oxide Materials, Electrodes and Sodium Ion Electrochemical Cells" WO2015/035138 A1
4. PCT/US17/29821, ELECTROCHEMICAL ENERGY STORAGE DEVICE (Currently a Patent Application; regarding addition of  $\text{CO}_2$  and other chemicals)
5. SD2017-168, ELECTROCHEMICAL ENERGY STORAGE DEVICES (Currently a Provisional Application; regarding thermal balancing and mechanical construction)
6. A chapter in **Handbook of Solid State Batteries** 2nd Edition, Edited by: Nancy J Dudney, William C West and Jagjit Nanda (World Scientific Publishing)

**f. Selected Keynote and Invited Talks**

1. Invited talk, 10<sup>th</sup> International Conference on Advanced Lithium Batteries for Automobile Applications (ABAA), Chicago, USA, October 23<sup>rd</sup>, 2017
2. Invited talk, Symposium on advanced characterization in honor of Dr. Frank McLarnon, Electrochemical Society Meeting, National Harbor, October 3<sup>rd</sup>, 2017
3. Department of Energy & Environmental Materials, School of Materials Science and Engineering, Beijing Institute of Technology, China, September 2<sup>nd</sup>, 2017
4. Keynote talk, International Union of Materials Research Society – The 15<sup>th</sup> International Conference on Advanced Materials (IUMRS-ICAM), Kyoto, Japan, August 31<sup>st</sup>, 2017
5. Department of Chemistry, Dalhousie University, Halifax, Canada, August 22<sup>nd</sup>, 2017
6. Stanford University Materials Science & Engineering Department Seminar, May 5<sup>th</sup>, 2017
7. US China Electric Vehicle Battery Technology (EVBT), Zhuhai, China, April 17<sup>th</sup>, 2017
8. 3<sup>rd</sup> International Forum on Cathode and Anode Materials for Advanced Batteries, Ningbo, China, April 14<sup>th</sup>, 2017
9. Keynote talk, International Battery Association (IBA), Nara, Japan, March 6<sup>th</sup>, 2017
10. Chinese University of Hong Kong, Physics Department Colloquium, March 2<sup>nd</sup>, 2017
11. Hong Kong Polytechnic University Colloquium, February 28<sup>th</sup>, 2017
12. 9<sup>th</sup> ABAA International Conference on Advanced Lithium Batteries for Automotive Applications, Huzhou, China, October 18<sup>th</sup>, 2016.
13. 18<sup>th</sup> International Meeting of Lithium Batteries, Chicago, IL, June 20<sup>th</sup>, 2016
14. Department of Materials Science & Engineering seminar, University of California Santa Barbara, May 27<sup>th</sup>, 2016
15. Sino-American Technology & Engineering Conference, Wuhu, China, May 16<sup>th</sup>, 2016
16. Department of Physics seminar, University of Houston, Houston, TX, April 25<sup>th</sup>, 2016
17. Department of Physics and Applied Physics seminar, Nanyang Technological University, Singapore, March 25<sup>th</sup>, 2016
18. Symposium EE7, Materials Research Society (MRS), Spring Meeting, Phoenix, AZ, March 31<sup>st</sup>, 2016
19. Munich Battery Discussion Meeting by BMW, Munich, Germany, March 14<sup>th</sup>, 2016
20. 2016 Gordon Research Conference (GRC) on Batteries, Ventura California, February 22<sup>nd</sup>, 2016
21. 3<sup>rd</sup> Euro-Mediterranean Conference on Materials and Renewable Energies (EMCMRE-3), Marrakech, Morocco, November 2-6<sup>th</sup>, 2015
22. International Society of Electrochemistry (ISE), Hong Kong Satellite Meeting and Taipei Annual Meeting, Oct 3-6, 2015.
23. 2<sup>nd</sup> International Forum on Anode & Cathode Materials for Advanced Batteries, Hangzhou, China, April 22<sup>nd</sup>, 2015.
24. 10<sup>th</sup> China-US Battery Workshop, Beijing, China Mar 30<sup>th</sup>, 2015.
25. Mechanical Engineering Seminar, Princeton University, Dec 5<sup>th</sup>, 2014
26. Symposium Z, Materials Research Society MRS Fall Meeting, Boston, Dec 3<sup>rd</sup>, 2014
27. 55<sup>th</sup> Japan Battery Symposium, Kyoto, Japan, Nov 20<sup>th</sup>, 2014.
28. 226<sup>th</sup> Electrochemical Society Meeting (ECS), Cancun, Mexico, Oct 7<sup>th</sup>, 2014.
29. Frontier of Engineering, National Academia of Engineering, Irvine, CA, Sep. 12<sup>th</sup>, 2014.
30. XXIII International Materials Research Congress, Cancun, Mexico, August 17<sup>th</sup>, 2014.
31. Gordon Research Conference on Electrodeposition, New Hampshire, ME, July 30<sup>th</sup>, 2014.
32. Argonne National Lab Chemical Engineering Division Colloquium Talk, May 6<sup>th</sup>, 2014.
33. International Battery Association (IBA) Meeting, Melbourne, Australia, March 4<sup>th</sup>- 7<sup>th</sup>, 2014.
34. Department of Physics and Atmospheric Science, Dalhousie University, December 9<sup>th</sup>, 2013.
35. Materials Research Society Meeting, Symposium CC, Boston, December 4<sup>th</sup>, 2013.
36. Institute for Pure and Applied Mathematics, Materials for a Sustainable Energy Future Program, Los Angeles, September 9<sup>th</sup>, 2013.
37. 7<sup>th</sup> International Conference on Materials for Advanced Technologies (ICMAT), July 4<sup>th</sup>, Singapore 2013.
38. Massive Energy Storage, Engineering Conferences International, Newport Beach, CA, June 24<sup>th</sup>, 2013.
39. PacRim American Ceramics Society Meeting, Coronado Island, CA, June 5<sup>th</sup>, 2013.

40. Department of Materials Science and Engineering, UC Riverside, CA, May 29th, 2013.
41. International Battery Association (IBA) meeting, Barcelona, Spain, March 11<sup>th</sup>, 2013.
42. Funding Program for World-leading Innovative R&D on Science and Technology (FIRST) "Innovative Basic Research Toward Creation of High-performance Battery" Tokyo, Japan, January 17<sup>th</sup>, 2013.
43. "Big Energy Seminar Series", University of Colorado Boulder, November 8<sup>th</sup>, 2012.
44. European Microscopy Congress, Manchester, UK, September 19<sup>th</sup>, 2012.
45. International Conference of Young Researchers on Advanced Materials, ICYRAM, Electrochemical Energy Session, Singapore, July 2<sup>nd</sup>, 2012.
46. HRL Laboratories Colloquium, Malibu CA, June 21<sup>st</sup>, 2012.
47. Materials Research Society, Symposium O Invited talk, San Fransisco, CA, April 12<sup>th</sup> 2012.
48. Center for Computational Sciences, University of Kentucky, March 21<sup>st</sup>, 2012.
49. Taipei Forum on Large-Format Power Lithium Batteries, Taipei, February 15<sup>th</sup>, 2012.
50. International Battery Association (IBA) meeting, Kona, Hawaii, January 12<sup>th</sup>, 2012.
51. Gordon Research Conference (GRC) on Electrochemistry, Ventura, CA, January 11<sup>th</sup>, 2012.
52. Ningbo-2011 International Symposium on Development and Commercialization of Power Lithium-ion Batteries, China, November 10<sup>th</sup>, 2011.
53. Department of Materials Science and Engineering, Seoul National University, Korea, August 12<sup>th</sup>, 2011.
54. Department of Materials Science and Engineering, Northwestern University, May 23<sup>rd</sup>, 2011.
55. Department of Chemical Engineering and Materials Science, UC Irvine, April 1<sup>st</sup>, 2011.
56. Department of Materials Science and Engineering, UCLA, October 29<sup>th</sup>, 2010.
57. Symposium B4 Electrode-Electrolyte Interfaces in Li-ion Batteries, Electrochemical Society Meeting Fall 2010, Las Vegas, October 11-14<sup>th</sup>, 2010.
58. Gordon Research Conference, Solid State Studies in Ceramics, New Hampshire, August 15-17<sup>th</sup>, 2010.
59. UCSD Research Expo, April 15, 2010.
60. Materials Science & Technology 2009 Conference, Pittsburgh, Oct. 27, 2009.
61. State Key Lab for Physical Chemistry of Solid Surfaces, Xiamen University, China, June 25, 2009.
62. Department of Physics, Chinese University of Hong Kong, June 22, 2009.
63. Oak Ridge National Laboratory, USA, May 28, 2009.
64. CERMACS Annual Meeting, American Chemical Society, Cleveland, Ohio, May 22, 2009.
65. Florida Institute of Sustainable Energy (FISE) Seminar, March 16, 2009.
66. Department of NanoEngineering, University of California San Diego, December 8, 2008.
67. Materials Science and Technology 2008 Conference, Pittsburg, Pennsylvania, October 6, 2008.
68. Department of Materials Science and Engineering, University of Michigan, September 26, 2008.
69. International Materials Research Congress (IMRC), Annual Conference, Cancun, Mexico, August 18-21, 2008.
70. Korea Electrotechnology Research Institute (KERI), Pusang, Korea, July 7, 2008.
71. National Taiwan University of Science and Technology, Taipei, Taiwan, June 20, 2008.
72. International Meeting for Lithium Batteries (IMLB) 2008, Tianjin, China, June 22-27, 2008.
73. International Materials Research Congress (IMRC), Annual Conference, Cancun, Mexico, October 28-30, 2007.
74. University of Bordeaux, ICMCB, France, September 27, 2007.
75. CSIRO Energy Technology, Commonwealth Scientific and Industrial Research Organization (CSIRO), Melbourne, Australia, July 24-25, 2007.
76. Department of Physics, University of California Davis, April 9 – 10, 2007.
77. Nanoscience and Nanoengineering Institute and Department of Materials Science and Engineering, University of California Berkeley, January 25, 2007.
78. Department of Materials Science and Engineering, University of Florida, January 18, 2007.
79. Department of Physics, Chinese University of Hong Kong, September 1, 2006.
80. State Key Lab for Physical Chemistry of Solid Surfaces, Xiamen University, China, Aug 31, 2006.
81. The 7<sup>th</sup> China International Battery Fair, Beijing, China June 28-30, 2006.
82. Lawrence Livermore National Laboratory, USA, June 9, 2006.
83. Department of Materials Science and Engineering, Stanford University, Palo Alto, June 5, 2006.

84. Industrial Technology Research Institute ITRI, Taiwan, May 19, 2006.
85. International Battery Association – Hawaii Battery Conference (IBA-HBC), Hawaii, USA, Jan 9-13, 2006.
86. Department of Mechanical Engineering, University of Texas, Austin, May 5, 2005.

**g. Synergistic Activities**

**Founding Director of Sustainable Power and Energy Center** (<http://spec.ucsd.edu>) The SPEC consists more than fifteen faculty members from interdisciplinary fields, who all focus on making breakthroughs in distributed energy generation, storage and the accompanying integration-management systems.

**Technical Editor– Journal of Power Sources** (IF 6.7) 2015 to present

**Associate Editor–NPG Asia Materials** (IF 9.0) 2012-2015

**Editorial Board Member** - Ionics (IF 1.7), Sustainable Energy and Fuels (new journal 2016), Advanced Energy Materials (IF 16.7) and Chemical Reviews (IF47.9)

**Guest Editor** – First focused issue for *Journal of the Electrochemical Society (JES)* on “Intercalation Compounds” (co-editor, Stanley Whittingham)

**Guest Editor – Focused issue for MRS Bulletin** on “Frontier in In Situ TEM”(co-editors, Haimei Zheng and Yimei Zhu)

**Regular reviewer** for Journal of American Chemical Society, Chemistry of Materials, Journal of the Electrochemical Society, Electrochemical and Solid-State Letters, Solid State Ionics, Journal of Materials Research, Journal of Physical Chemistry, Advanced Energy Materials, ACS Nano and Energy and Environmental Science, Nature Communications, Nature Chemistry, Nature Energy and Science.

**Panel reviewer** for National Science Foundation and Department of Energy, USA and various overseas funding agencies including Hong Kong Council of Research, German Research Foundation, Israel Science Foundation and Canada Foundation for Innovation, Swiss National Science Foundation, Singapore A\*STAR.

**Scientific Advisory Board Member** for Pacific Northwestern National Lab EMSL

**Member-at-large (Elected)** for Battery Division of the Electrochemical Society (>2000 members), USA, 2010-1012

**Treasurer (Elected)** for Battery Division of the Electrochemical Society, USA, 2014-2016. During her tenure as the treasurer, Meng successfully raised funding for KM Abraham Student Travel Awards and MTI Postdoc Research Awards.

**Secretary (Elected)** for Battery Division of the Electrochemical Society, USA, 2016 - now

**Executive Board Member and Treasurer** for International Battery Association (IBA) 2017 – now

**Lead Organizer –**

- Symposium “Lithium Ion Batteries”, Electrochemical Society (ECS) 232<sup>nd</sup> Meeting, National Harbor MD, Oct 1-5, 2017.
- Ceramics for Energy Workshop, Sponsored by National Science Foundation, San Diego, June 3-4th, 2016.
- Symposium “High-Energy Li-Ion Intercalation Materials”, Electrochemical Society (ECS) 228<sup>th</sup> Meeting, Phoenix AZ, Oct 11-15, 2015.
- Symposium “Lithium Ion Batteries”, Electrochemical Society (ECS) Fall 226<sup>th</sup> Meeting, Cancun, Mexico, October 6-10<sup>th</sup>, 2014.
- Symposium “Batteries and Fuel Cell Technologies: Challenges and Solutions Towards Global Stewardships” 248<sup>th</sup> American Chemical Society ACS National Meeting and Exhibition, San Francisco, USA, August 10-14<sup>th</sup>, 2014.
- Symposium N “Frontier in Energy Storage”, Materials Research Society (MRS), San Francisco, USA, April 20-25<sup>th</sup>, 2014.
- Symposium on “Computation Science on Battery Materials”, Electrochemical Society (ECS) Fall 224<sup>th</sup> meeting, San Francisco, USA, October 27-November 1, 2013.
- Symposium on “Design and Modeling of Battery Materials”, Electrochemical Society (ECS) Spring 223<sup>rd</sup> meeting, Toronto, Canada, May 12-14, 2013.

- Advances in Batteries, American Chemical Society (ACS) Fall Meeting, Philadelphia, August 23-24th, 2012.
- Intercalation Compounds Symposium B4, Electrochemical Society (ECS) Fall 222<sup>nd</sup> meeting, Honolulu, October 7-12, 2012.
- Functional Ceramics for Energy Storage & Conversion for the Electronic Materials and Applications (EMA) 2011 Conference, Orlando January 19-21, 2011.
- International Lecture Series on Materials Design and Development for Energy Storage and Conversion, Taipei May15-18, 2006

**Co-Organizer** – Symposium S6 for 37th International Conference and Expo on Advanced Ceramics and Composites (ICACC), Daytona, Jan 27- Feb 1, 2013. Symposium B6 for Electrochemical Society Meeting (ECS), Boston, October 9-14<sup>th</sup>, 2011. Symposium L for Materials Research Society Meeting (MRS), April 25-29<sup>th</sup>, 2011. Symposium B8 for Electrochemical Society Meeting (ECS), Las Vegas, October 11-14<sup>th</sup>, 2010. Functional Ceramics for Energy Storage & Conversion (Symposium 5) for the Electronic Materials and Applications (EMA) Conference, Orlando January 20-22<sup>nd</sup>, 2010.

**h. Professional Memberships:**

Electrochemical Society; Materials Research Society; American Chemical Society.

**i. Collaborators and Co-Editors**

Dr. Clare P. Grey (SUNY Stony Brook, USA and Cambridge University, UK), Dr. Yang Shao-Horn (Massachusetts Institute of Technology, USA) Dr. Nancy Dudney, Dr. Gabriel Veith and Dr Miaofang Chi (Oak Ridge National Laboratory, USA) Dr. Bing-Joe Hwang (National Taiwan University of Science and Technology) Dr. Jordi Cabana (University of Illinois Chicago, USA) Dr. Quan Li (Chinese Hong Kong University, China) Dr. Anton Van der Ven (UC Santa Barbara) Dr. Sungho Jin, Dr. Joseph Wang, Dr. Oleg Shpyrko, Dr. ShyuePing Ong, Dr. Michael Sailor, Dr. Seth Cohen, Dr. Eric Fullerton (UC San Diego) Dr. Elena Arroyo (University of Madrid, Spain) Dr. Feng Wang, Dr. Huolin Xin, Dr. Yimei Zhu and Dr. Xiao-Qing Yang (Brookhaven National Laboratory, USA) Dr. Ross Harder (Argonne National Lab, USA), Dr. Stanley Whittingham (State University of New York, Binghamton, USA) Dr. Dan Steingart (Princeton University, USA) Dr. Haimei Zheng and Dr. Marca Doeff (Lawrence Berkley National Lab, USA)

**j. Media Coverage**

Guest appearance on NOVA documentary Aired February 1, 2017 on PBS

<http://www.pbs.org/wgbh/nova/tech/super-battery.html>

Time Magazine interview

<http://time.com/4970269/batteries-next-target-china-clean-energy-conquest/>

ECS Podcast interview

<https://ecs.podbean.com/e/shirley-meng-on-sustainable-power/>

About Zero Carbon Future

<https://www.universityofcalifornia.edu/news/achieving-zero-carbon-future>

About New Research Direction

<https://www.sciencedaily.com/releases/2016/07/160706175335.htm>

[http://jacobsschool.ucsd.edu/news/news\\_releases/release.sfe?id=2042](http://jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=2042)

[https://www.electrochem.org/the-future-of-batteries/?utm\\_source=Informz&utm\\_medium=Email&utm\\_campaign=ECS+Website](https://www.electrochem.org/the-future-of-batteries/?utm_source=Informz&utm_medium=Email&utm_campaign=ECS+Website)

About SPEC Center

[http://jacobsschool.ucsd.edu/news/news\\_releases/release.sfe?id=1998](http://jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=1998)

<http://www.kpbs.org/news/2015/oct/15/san-diego-researchers-push-build-better-batteries/>

[http://ucsdnews.ucsd.edu/pressrelease/uc\\_san\\_diego\\_part\\_of\\_new\\_doe\\_consortium\\_to\\_revolutionize\\_electric\\_car\\_batte](http://ucsdnews.ucsd.edu/pressrelease/uc_san_diego_part_of_new_doe_consortium_to_revolutionize_electric_car_batte)

**k. Mentoring and Advising**

Graduate Students (18): Rajan Kumar, William Gents, Yixuan Li (Ms.), Darren Tan, Sophia Valenzuela (Ms.) Yangyuchen Yang, Thomas Wyne, Dan Davis, Chengcheng Fang (Ms.), Hyeseung Chung (Ms.), Han Nguyen, Minghao Zhang, Judith Alvarado (Ms.), Shen Wang, Jungwoo Lee (Ms), Pritesh Parikh, Erik Wu, Hayley Hirsh (Ms.) and Postdocs (5): Dr. Abhik Banerjee, Dr. Thomas Brenner, Dr. Xuefeng Wang, Dr. Shawn Chen and Dr. Joon Kyo Seo

Previous graduate students (PhD: 12): Dr. Christopher Fell (Staff Scientist at Tesla), Dr. Bo Xu (Postdoc at UF), Dr. Jing Xu (Assis. Prof. Iowa State University), Dr. Daniel Lee (Project leader, Samsung SDI Korea), Dr. Hyuman Cho (Staff researcher, LG Chem Korea), Dr. Andrew Ulvestad (Director's postdoc fellow at APS), Dr. Danna Qian (Scientist, NanoLab, USA), Dr. Ziyang Wang (Staff researcher, Maxwell), Dr. Chloe Yoon (Staff researcher, LG Chem Korea), Dr. Jae Wook Shin, (Postoc, POSTECH), Dr. Haodong Liu (Postdoc, UCSD), Dr. Chuze Ma (Staff scientist, Wildcat Discovery Inc.)

Previous postdocs (11): Dr. Dan Gostovic (Group leader, FEI USA), Dr. Yoyo Hinuma (Assist Prof. Kyoto University in Japan), Dr. Kyler Carroll (Staff Scientist, Wildcat Technologies USA) Dr. Dhamodaran Santhanagopalan (Associate Prof. Amrita Centre for Nanoscience in India), Dr. Young-Sang Yu (Staff Scientist, ALS/LBNL) Dr. Tom Yersak (Staff Scientist, General Motors USA), Dr. Sunny Hy (Research Group Leader, TESLA Canada), Dr. Michael Verde (Staff Scientist, ZPower USA), Dr. Andrej Singer (Assistant Prof. Cornell University USA) Dr. Cyrus Rustomji (CTO, South 8 Technologies, USA) and Dr. Mahsa Sina (Lecturer, SD State University)

**Faculty Advisor** – Society for Green Mobility, University of Florida, 2008-2009

**Founding Faculty Advisor** – ECS Student Chapter, UCSD, 2014 – present (founded in June 2014)

**l. References**

**Dr. Clare P. Grey** (Cambridge University, UK)

**Dr. Gerbrand Ceder** (University of California Berkeley, USA)

**Dr. Yang Shao-Horn** (Massachusetts Institute of Technology, USA)

**Dr. Stanley Whittingham** (State University of New York, Binghamton, USA)

**Dr. Jun Liu** (Pacific Northwestern National Lab, USA)

**m. Selected Major Funding**

PI NSF CAREER **DMR-1057170**

“Dynamic Phenomena in Complex Oxides During Electrochemical Processes” \$450,000 May 2011 - Apr 2016

PI DOE/BES **DE-SC0002357**

“In Situ Analytical Electron Microscopy for Probing Dynamic Nano-Scale Electrochemistry” \$1,475,815 Sept 2009 – July 2019

co-PI ARPA-E/General Atomics **DE-AR0000124**

“Grids: Lead-Acid Flow Battery Technology” \$500,000 Sept 2012 – May 2015

PI LBNL/DOE **DE-AC02-05CH11231**

“Optimization of Ion Transport in High-Energy Composite Cathodes” \$899,999 Sep. 2013 – April 2017

co-PI DOE/ARPA-E **DE-AR0000396**

“Developing Low Cost, Robust and Multi-functional Battery System for Electric Vehicles” \$300,000 Nov 2013 – Oct 2016

PI DOE/ARPA-E **DE-AR0000646**

“Liquefied Gas Solvent Based Electrolytes for Electrochemical Energy Storage Devices” \$300,000 Oct. 2015 – Apr. 2017

PI DOE/SUNY **DE-SC0001294 renewed DE-SC0012583**

“NorthEast Center for Chemical Energy Storage NECCES” \$950,000 August 09 – July 14 and renewed \$1,275,000 Aug. 2014 – Jul. 2018

PI AFOSR **FA2386-15-1-4110**

“Development of Advanced Li Rich Composite Cathode For High Capacity Li Ion Batteries” \$240,000 Sep. 2015 – May 2015

co-PI DOE/VTO **DE-EE0007764**

“Battery500 Consortium: Development of High Capacity Cathodes and Robust Solid Electrolytes” \$1,500,000 Oct. 2016-Sep. 2021

co-PI NSF/DMREF **CMMI-1436976**

“Design of Novel Sodium Superionic Conductors with Integrated High Throughput First Principles Calculations, Data Mining and Experiments” \$430,000 Sep. 2014 – Aug. 2017

PI NSF **DMR-1608968**

“Interfacial Science and Defect Engineering of Functional Oxides for Na-Ion Storage and Transport” \$ 743,000 Sep. 2016 – Aug. 2020

Co-PI California Energy Commission **EPC-16-050**

“Scaling Reliable, Next-Generation Perovskite Solar Cell Modules” \$450,000 (overhead-free) May2017 – Dec.2020

PI Ford Motor Company, Sony, Hitachi Chemicals, Asahi Kasai, Maxwell Technologies, South 8 Technologies, MTI Corporation, Arbin Instrument, Qualcomm, STMicroelectronics **Industrial Funding** 2009-2017

**Total funding from 2009-2017 exceeding 10M\$, 2016-2017 research expenditure of LESC group exceeding 1.9M\$.**