YING SHIRLEY MENG, PH.D.

Professor
Zable Endowed Chair in Energy Technologies
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)
Inaugural Director of
Institute for Materials Discovery & Design
Affiliated Faculty with
Center for Memory & Recording Research
Materials Science & Eng. Program

a. Education and Training

Massachusetts Institute of Technology	Postdoc	2005 – 2007
Singapore-MIT Alliance, National University of Singapore	Ph.D	2000 – 2005
Nanyang Technological University, Singapore	B.A.Sc (Matl. Eng.) First class honor	1996 – 2000

b. Research and Professional Experience

2019 – Now Inaugural Director, Institute for Materials Discovery and Design (IMDD)
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 & Eng, Massachusetts Institute of Technology

Meng's research group (**LESC: Laboratory for Energy Storage & Conversion**) focuses on the field of 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 relation in functional ceramics and combining *ab initio* computation with *advanced characterization* experiments for rational materials design for energy applications.
http://smeng.ucsd.edu

c. Awards and Honors

2019, Chancellor's Associates Faculty Excellence Award
2019, International Battery Materials Association, IBA Research Award
2018, Elected Fellow of Electrochemical Society (ECS)
2018, Blavatnik National Awards Finalist http://blavatnikawards.org/
2018, American Chemical Society ACS Applied Materials & Interfaces Young Investigator Award
2018, International Coalition for Energy Storage and Innovation (ICESI) Inaugural Young Career Award
2017, IUMRS-Singapore Young Scientist Research Award
2016, Clean Energy Education & Empowerment (C3E) Award Finalist (Honorable mention)
2016, Charles W. Tobias Award, Electrochemical Society
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 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 169, H-index 56, info from Google Scholar, *corresponding author)

1. D. H. S. Tan, A. Banerjee, Z. Chen and Y. S. Meng*, "From nanoscale interface characterization to sustainable energy storage using all-solid-state batteries", **Nature Nanotechnology**, 2020, 15, 170–180
2. B. Qiu, M. Zhang, S. Lee, H. Liu, T. A. Wynn, L. Wu, Y. Zhu, W. Wen, C. M. Brown, D. Zhou, Z. Liu and Y. S. Meng*, "Metastability and Reversibility of Anionic Redox-Based Cathode for High-Energy Rechargeable Batteries", **Cell Reports Physical Science**, 2020, 1, 100028
3. Y. Li, X. Wang, H. Zhou, X. Xing, A. Banerjee, J. Holoubek, H. Liu, Y. S. Meng and P. Liu, "Thin Solid Electrolyte Layers Enabled by Nanoscopic Polymer Binding", **ACS Energy Lett**. 2020, 5, 955−961
4. Z. W. Lebens-Higgins, H. Chung, M. J. Zuba, J. Rana, Y. Li, N. V. Faenza, N. Pereira, B. D. McCloskey, F. Rodolakis, W. Yang, M. S. Whittingham, G. G. Amatucci, Y. S. Meng, T. Lee and L. F. J. Piper, "How Bulk Sensitive is Hard X-ray Photoelectron Spectroscopy: Accounting for the Cathode−Electrolyte Interface when Addressing Oxygen Redox", **J. Phys. Chem. Lett**. 2020, 11, 2106−2112
5. J. Doux, Y. Yang, D. H. S. Tan, H. Nguyen, E. A. Wu, X. Wang, A. Banerjeea, Y. S. Meng, "Pressure Effects on Sulfide Electrolytes for All Solid-State Batteries**", Journal of Materials Chemistry A**, ASAP, 2020
6. F. Yang, W. Hu, C. Yang, M. Patrick, A. L. Cooksy, J. Zhang, J. A. Aguiar, C. Fang, Y. Zhou, Y. S. Meng, J. Huang, J. Gu, "Tuning Internal Strain in Metal-Organic Frameworks via Vapor Phase Infiltration for CO2 Reduction", **Angew. Chem. Int. Ed**. ASAP, 2020
7. L. Yin, Z. Li, G. S. Mattei, J. Zheng, W. Zhao, F. Omenya, C. Fang, W. Li, J. Li, Q. Xie, E. M. Erickson, J. Zhang, M. S. Whittingham, Y. S. Meng, A. Manthiram and P. G. Khalifah ,"Thermodynamics of anti-site defects in layered NMC cathodes: systematic insights from high-precision powder diffraction analyses", **Chemistry of Materials**, ASAP, 2020
8. J. Doux, H. Nguyen, D. H. S. Tan, A. Banerjee, X. Wang, E. A. Wu, C. Jo, H. Yang and Y. S. Meng, "Stack Pressure Considerations for Room-Temperature All-Solid-State Lithium Metal Batteries", **Adv. Energy Mater**. 10, 1903253, 2019
9. D. G. Lee, M. Kim, S. Wang, B. J. Kim, Y. S. Meng and H. S. Jung, "Effect of Metal Electrodes on Aging-Induced Performance Recovery in Perovskite Solar Cells", **ACS Appl. Mater. Interfaces**, ASAP, 2020.
10. J. Holoubek, Y. Yin, M. Li, M. Yu, Y. S. Meng, P. Liu and Z. Chen, "Exploiting Mechanistic Solvation Kinetics for Dual-Graphite Batteries with High Power Output at Extremely Low Temperature", **Angew. Chem**. ASAP
11. A. Banerjee, H. Tang, X. Wang, J. Cheng, H. Nguyen, M. Zhang, D. Tan, T. Wynn, E. Wu, J.M. Doux, T. Wu, L. Ma, G. E. Sterbinsky, M. Dsouza, S. P. Ong* and Y. S. Meng*, "Revealing Nanoscale Solid-Solid Interfacial Phenomena for Long-Life and High-Energy All-Solid-State Batteries", **ACS Appl. Mater. Interfaces**, ASAP
12. Y. S. Meng, "A few words from Dr. Y. Shirley Meng, the new Editor-in-Chief of MRS Energy & Sustainability", **MRS Energy & Sustainability**, 2019, 6, E13
13. D. H. S. Tan, E. A Wu, H. Nguyen, Z. Chen, M. A. T. Marple, J. Doux, X. Wang, H. Yang, A. Banerjee* and Y. S. Meng*, "Elucidating Reversible Electrochemical Redox of Li6PS5Cl Solid Electrolyte", **ACS Energy Lett**., 2019, 4, 2418−2427
14. D. H. S. Tan, A. Banerjee, Z. Deng, E. A. Wu, H. Nguyen, J. Doux, X. Wang, J. Cheng, S. P. Ong, Y. S. Meng* and Z. Chen*, "Enabling Thin and Flexible Solid-State Composite Electrolytes by the Scalable Solution Process", **ACS Appl. Energy Mater**, ASAP
15. J. Shin, J. K. Seo, R. Yaylian, A. Huang and Y. S. Meng*, "A review on mechanistic understanding of MnO2 in aqueous electrolyte for electrical energy storage systems", **INTERNATIONAL MATERIALS REVIEWS**, 2019. 8

16. M. Zhang, X. Wang, and Y. S. Meng*, "In Situ Analytical Electron Microscopy and Cryogenic Electron Microscopy for Characterizing Nanoscale Materials in Electrochemical Process", **Microsc. Microanal**. 25, 2019
17. C. Fang, J. Li, M. Zhang, Y. Zhang, F. Yang, J. Z. Lee, M. Lee, J. Alvarado, M. A. Schroeder, Y. Yang, B. Lu, N. Williams, M. Ceja, L. Yang, M. Cai, J. Gu, K. Xu, X. Wang & Y. S. Meng*, "Quantifying inactive lithium in lithium metal batteries", **Nature**, 572, 511–515 (2019)
18. H. Chung, A. Grenier, R. Huang, X Wang, Z. Lebens-Higgins, J. Doux, S. Sallis, C. Song, P. Ercius, K. Chapman, L. J. Piper, H. Cho, M. Zhang* and Y. S. Meng*, "Comprehensive study of a versatile polyol synthesis approach for cathode materials for Li-ion batteries", **Nano Research**, ASAP
19. E. Zhao, M. Zhang, X. Wang, E. Hu, J. Liu, X. Yu, M. Olguin, T. A. Wynn, Y. S. Meng*, K. Page, F. Wang, H. Li, X. Yang, X. Huang, L. Chen, "Local structure adaptability through multi cations for oxygen redox accommodation in Li-Rich layered oxides", **Energy Storage Materials**, ASAP
20. H. Hirsh, M. Olguin, H. Chung, Y. Li, S. Bai, D. Feng, D.Wang, M. Zhang* and Y. S. Meng*, "Meso-Structure Controlled Synthesis of Sodium Iron-Manganese Oxides Cathode for Low-Cost Na-Ion Batteries", **Journal of The Electrochemical Society**, 166 (12) A2528, 2019
21. Y. Yang, D. M. Davies, Y. Yin, O. Borodin, J. Z. Lee, C. Fang, M. Olguin, Y. Zhang, E. S. Sablina, X. Wang, C. S. Rustomji and Y. S. Meng*, "High-Efficiency Lithium-Metal Anode Enabled by Liquefied Gas Electrolytes", **Joule** , 3, 1–15, 2019
22. H. Zhou, H. Liu, Y. Li, X. Yue, X. Wang, M. Gonzalez, Y. S. Meng* and P. Liu*, "In-situ formed polymer gel electrolytes for lithium batteries with inherent thermal shutdown safety features**", J. Mater. Chem. A**, 2019, ASAP
23. D. Wang, H. Liu, M. Li, X. Wang, S. Bai, Y. Shi, J. Tian, Z. Shan, Y. S. Meng, P. Liu, Z. Chen, "Nanosheet-assembled hierarchical Li4Ti5O12 microspheres for high-volumetric-density and high-rate Li-ion battery anode", **Energy Storage Materials**, 2019, ASAP
24. H. Nguyen, A. Banerjee, X. Wang, D. Tan, E. A. Wu, J. Doux, R. Stephens, G. Verbist, **Y. S. Meng**, "Single-step synthesis of highly conductive Na3PS4 solid electrolyte for sodium all solid-state batteries", **Journal of Power Sources**, 2019, ASAP
25. S. Hong, Y. Gu, J. K. Seo, J. Wang, P. Liu, **Y. S. Meng**, S. Xu, R. Chen, "Wearable thermoelectrics for personalized thermoregulation", **Sci. Adv**. 2019, 5, 0536
26. Z. W. Lebens-Higgins, J. Vinckeviciute, J. Wu, N. V. Faenza, Y. Li, S. Sallis, N. Pereira, **Y. S. Meng**, G. G. Amatucci, A. V. D. Ven, W. Yang, and L. F. J. Piper, "Distinction Between Intrinsic and X-ray Induced Oxidized Oxygen States in Li-Rich 3d Layered Oxides and LiAlO", **Journal of Physical Chemistry C**, 2019, 123, 21, 13201
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29. C.Fang, X.Wang, and **Y. S. Meng**, "Key Issues Hindering a Practical Lithium-Metal Anode" **Trends in Chemistry**, 2019, 1, 152
30. J. Liu, Z. Bao, Y. Cui, E. J. Dufek, J. B. Goodenough, P. Khalifah, Q. Li, B. Y. Liaw, P. Liu, A. Manthiram, **Y. S. Meng**, V. R. Subramanian, M. F. Toney, V. V. Viswanathan, M. S. Whittingham, J. Xiao, W. Xu, J. Yang, X.-Q. Yang and J.-G. Zhang, "Pathways for practical high-energy long-cycling lithium metal batteries" **Nature Energy**, 2019, 4, 180
31. J. Alvarado, M. A Schroeder, T. P Pollard, X. Wang, J. Z Lee, M. Zhang, T. Wynn, M. Ding, O. A Borodin, **Y. S. Meng**, K. Xu "Bisalt ether electrolytes_ a pathway towards lithium metal batteries with Ni-rich cathodes" **Energy Environ. Sci**., 2019, 12, 780
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33. D. M. Davies, M. G. Verde, O. Mnyshenko, Y. R. Chen, R. Rajeev, Y. S. Meng and G. Elliott "Combined economic and technological evaluation of battery energy storage for grid applications" **Nature Energy**, 2019, 4(1), 42
34. J. Z. Lee, T. A. Wynn, M. A. Schroeder, J, Alvarado, X. Wang, K. Xu and Y. S. Ying* "Cryogenic Focused Ion Beam Characterization of Lithium Metal Anodes"**ACS Energy Letters**, 2019, 4, 489
35. C. Wang, Y. S. Meng and K. Xu,"Fluorinating Interphases**" Journal of the Electrochemical Society**, 2019, 166(3), A5184
36. H. Xia, X. Zhu, J. Liu, Q. Liu, S. Lan, Q. Zhang, X. Liu, J. K. Seo, T. Chen, L. Gu and Y. S. Meng* "A Monoclinic polymorph of sodium birnessite for ultrafast and ultrastable sodium ion storage", **Nature Comm**, 2018, ASAP
37. D.M. Davies, M.G. Verde, O. Mnyshenko, Y.R. Chen, R. Rajeev, Y.S. Meng* and G. Elliott*, "Combined Economic and Experimental Evaluation of Energy Storage for Grid Applications", **Nature Energy**, 2018, Just accepted
38. T. A. Wynn, C. Fang, M. Zhang, H. Liu, D. M Davies, X. Wang, D. Lau, J. Z Lee, B.-Y. Huang, K. Z. Fung, C.-T. Ni and Y. S. Meng "Mitigating Oxygen Release in Anionic-Redox-Active Cathode Materials by Cationic Substitution through Rational Design**" J. Mater. Chem. A**, 2018, 6, 24651
39. S. Wang, Z. Huang, X. Wang, Y. Li, M. Günther, S. Valenzuela, P. Parikh, A. Cabreros, W. Xiong, and Y. S. Meng "Unveiling the Role of tBP–LiTFSI Complexes in Perovskite Solar Cells**" J.Am.Chem.Soc** 2018, 140, 48
40. X. Wang, Y. Li, and Y.S.Meng* "Cryogenic Electron Microscopy for Characterizing and Diagnosing Batteries" **Joule ,** 2018,2, 1
41. T.A. Wynn, J.Z. Lee , A. Banerjee and Y.S. Meng* "In situ and operando probing of solid– solid interfaces in electrochemical devices" **MRS Bulletin** 2018, 43 (10), 768
42. L. Yin, G. S. Mattei, Z. Li, J. Zheng, W. Zhao, F. Omenya, C. Fang, W. Li, J. Li, Q. Xie, J.-G. Zhang, M. S. Whittingham, Y. S. Meng, A. Manthiram, and P. G. Khalifah "Extending the limits of powder diffraction analysis_ Diffraction parameter space, occupancy defects, and atomic form factors" **Review of Scientific Instruments** 2018, 89, 093002
43. Y. Fang, S. Ran, W. Xie, S. Wang, Y. S. Meng, and M. B. Maple"Evidence for a conducting surface ground state in high-quality single crystalline FeSi", **PNAS** 2018, 115 (34) 8558
44. X. Wang, Y. Li, X. Bi, L. Ma, T. Wu, M. Sina, S. Wang, M. Zhang, J. Alvarado, B. Lu, A. Banerjee, K. Amine, J. Lu, and Y. S. Meng* "Hybrid Li-Ion and Li-O2 Battery Enabled by Oxyhalogen-Sulfur Electrochemistry", **Joule** 2018, 2, 11, 2381
45. S. M. Wood, C. Fang, E. J. Dufek, S. C. Nagpure, S. V. Sazhin, B. Liaw, and Y. S. Meng*, "Predicting Calendar Aging in Lithium Metal Secondary Batteries_ The Impacts of Solid Electrolyte Interphase Composition and Stability", **Adv. Energy Mater.** 8(26), 1801427
46. M. Zhang, H.D. Liu, Z. Liu, C. Fang, and Y. S. Meng*, "Modified Coprecipitation Synthesis of Mesostructure-Controlled Li-Rich Layered Oxides for Minimizing Voltage Degradation", **ACS Appl. Energy Mater.**, 2018, 1(7), 3369
47. X. Ren, S. Chen, H. Lee, D. Mei, M. H. Engelhard, S. D. Burton, W. Zhao, J. Zheng, Q. Li, M. S. Ding, M. Schroeder, J. Alvarado, K. Xu, Y. S. Meng, J. Liu, J-G. Zhang, W. Xu, " Localized High-Concentration Sulfone Electrolytes for High-Efficiency Lithium-Metal Batteries", **Chem**, 2018, 4, 1
48. Y. Shi, M. Zhang, C. Fang, and Y. S. Meng*, "Urea-based hydrothermal synthesis of LiNi0.5Co0.2Mn0.3O2 cathode material for Li-ion battery", **Journal of Power Sources**, 2018, 394, 114
49. H.D. Liu, X. Wang, H. Zhou, H.-D. Lim, X. Xing, Q. Yan, Y. S. Meng, and P. Liu, "Structure and Solution Dynamics of Lithium Methyl Carbonate as a Protective Layer For Lithium Metal", **ACS Appl. Energy Mater.**, 2018, 1(5),1864
50. J. K. Seo, J.W. Shin, H. Chung, P. Y. Meng, X. Wang, and Y. S. Meng*, "Intercalation and Conversion Reactions of Nanosized β-MnO2 Cathode in the Secondary Zn_MnO2 Alkaline Battery", **J. Phys. Chem. C**, 2018, 122 (21), 11177
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Hua, J. Wingert, H. Liu, M. Sprung, A. V. Zozulya, E. Maxey, R. Harder, Y. S. Meng* and O. G. Shpyrko*, "Nucleation of dislocations and their dynamics in layered oxide cathode materials during battery charging", **Nature Energy**, 2018, 3, 64, Chosen as Cover

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53. H. Li, H. Tang, C. Ma, Y. Bai, J. Alvarado, B. Radhakrishnan, S. P. Ong, F. Wu, Y. S. Meng*, and C. Wu*, "Understanding the Electrochemical Mechanisms Induced by Gradient Mg^{2+} Distribution of Na-Rich Na3+xV2–xMgx(PO4)3_C for Sodium Ion Batteries" **Chem. Mater.,** 2018, 30 (8), 2498
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56. H.D. Liu, H. Liu, I. D. Seymour, N. Chernova, K. M. Wiaderek, N. M. Trease, S. Hy, Y. Chen, K. An, M. Zhang, O. J. Borkiewicz, S. H. Lapidus, B. Qiu, Y. Xia, Z. Liu, P. Chupas, K. Chapman, M. S. Whittingham, C. P. Grey and Y. S. Meng*, "Identifying the chemical and structural irreversibility in LiNi0.8Co0.15Al0.05O2 – A model compound for classical layered intercalation" **J. Mater. Chem. A**, 2018, 6, 4189
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174. M-C. Yang, B. Xu ,J-H. Cheng, C-J. Pan, B-J. Hwang and Y. S. Meng*, *"Electronic, Structural, and Electrochemical Properties of $LiNi_xCu_yMn_{2-x-y}O_4$ ($0 < x < 0.5$, $0 < y < 0.5$) High-Voltage Spinel Materials"*, **Chemistry of Materials**, 23(11), 2832-2841, 2011.
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176. C. R. Fell, K. Carroll, M. Chi and Y.S. Meng*, *"Synthesis – Structure – Property Relations in Layered, "Li-Excess" Oxides Electrode Materials $Li[Li_{1/3-2x/3}Ni_xMn_{2/3-x/3}]O_2$ (x= 1/3, 1/4 and 1/5)"*, **Journal of the Electrochemical Society**, 157 (11),A1202-A1211, 2010.
177. K. Persson, Y. Hinuma, Y.S. Meng, A. van der Ven and G. Ceder, *"Thermodynamic and kinetic properties of the Li-graphite system from first-principles calculations"*, **Physical Review B**, 82, 125416, 2010.
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183. Y. S. Meng* and E. Arroyo-de Dompablo, *"First Principles Computational Materials Design for Energy Storage Materials in Lithium Ion Batteries"*, **Energy & Environmental Science**, 2, 589-609, 2009. (**Invited Review)**
184. J. L. Jones, J-T. Hung and Y. S. Meng*, "*Intermittent X-ray Diffraction Study of Kinetics of Delithiation in $LiFePO_4$*", **Journal of Power Sources**, 189, 702-705, 2009.
185. R. E. Doe, K. A. Persson, Y. S. Meng and G. Ceder, *"First-Principles Investigation of the Li-Fe-F Phase Diagram and Equilibrium and Non-equilibrium Conversion Reactions of Iron Fluorides with Lithium"*, **Chemistry of Materials**, 20, 5274-5283, 2008.
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187. Y. Hinuma, Y.S. Meng and G. Ceder, "*Temperature-Concentration Phase Diagram of P2-Na_xCoO_2 by First Principles Calculations*", **Physical Review B**, 77, 224111, 2008.
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191. H. Xia, L. Lu and Y.S. Meng*, "*Growth of layered $LiNi_{0.5}Mn_{0.5}O_2$ Thin Films by Pulsed Laser Deposition for Application in Microbatteries*", **Applied Physics Letters**, 92, 011912, 2008.
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195. H. Xia, Y.S. Meng, L. Lu and G. Ceder, *"Nonstoichiometric $LiNi_{0.5}Mn_{1.5}O_{4-\delta}$ thin film electrodes prepared by pulsed laser deposition"*, **Journal of the Electrochemical Society**, 154(8), A737-A743, 2007.
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197. Y. Hinuma, Y.S. Meng, K. Kang and G. Ceder, *"Phase transition in the $LiNi_{0.5}Mn_{0.5}O_2$ system upon temperature change"*, **Chemistry of Materials**, 19 (7), 1790-1800, 2007.
198. H. Xia, L. Lu, Y.S. Meng and G. Ceder, "*Phase transitions and high-voltage electrochemical behavior of $LiCoO_2$ thin films grown by PLD*", **Journal of the Electrochemical Society**, 154 (4), A337-A342, 2007.
199. H. Xia, S. B. Tang, L. Lu, Y.S. Meng and G. Ceder, *"The influence of preparation conditions on*

electrochemical properties of $LiNi_{0.5}Mn_{1.5}O_4$ thin film electrodes by PLD", **Electrochimica Acta** 52(8), 2822-2828, 2007.

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201. K. Kang, Y.S. Meng, J. Breger, C.P. Grey and G. Ceder, *"Electrodes with high power and high capacity for rechargeable lithium batteries"*, **Science,** 311, 977-980, 2006.
202. A. Van der Ven, D. Morgan, Y.S. Meng and G. Ceder, *"Phase stability of nickel hydroxides and oxyhydroxides"*, **Journal of the Electrochemical Society,** 153 (2) A210-A215, 2006.
203. Y.S. Meng, A. Van der Ven, M.C.K. Chan and G. Ceder, *"Ab-initio study of sodium ordering in $Na_{0.75}CoO_2$ and its relation to Co^{3+}/Co^{4+} charge ordering"*, **Physical Review B,** 72, 172103, 2005.
204. J. Breger, M. Jiang, N. Dupré, Y.S. Meng, Y. Shao-Horn, G. Ceder, C.P. Grey, *"High resolution X-ray diffraction, DIFFaX, NMR and first principles study of disorder in the $Li_2MnO_3 – Li(NiMn)_{1/2}O_2$ solid solution"*, **Journal of Solid State Chemistry**, 178, 2575-2585, 2005.
205. Y.S. Meng, G. Ceder, C.P. Grey, W.-S. Yoon, M. Jiang, J. Greger and Y. Shao-Horn, *"Cation ordering in layered O3 $Li[Ni_xLi_{1/3-2x/3}Mn_{2/3-x/3}]O_2$ ($0 \le x \le 1/2$) compounds"*, **Chemistry of Materials**, 17 (9), 2386-2394, 2005.
206. Y.S. Meng, G. Ceder, C.P. Grey, W.-S. Yoon, and Y. Shao-Horn, *"Understanding the crystal structure of layered $LiNi_{0.5}Mn_{0.5}O_2$ by electron diffraction and powder diffraction simulation"*, **Electrochemical and Solid-State Letters 7**(6) A155-A158, 2004.
207. Y.S. Meng, Y.W. Wu, B.J. Hwang, Y. Li and G. Ceder, *"Combining ab-initio computation with experiments for designing new electrode materials for advanced lithium batteries: $LiNi_{1/3}Fe_{1/6}Co_{1/6}Mn_{1/3}O_2$"*, **Journal of the Electrochemical Society,** 151(8) A1134-A1140, 2004.

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. Y.S. Meng and H. Liu, "Lithium and Sodium Contacting Layered Oxide Material, Cathodes and Sodium Ion Electrochemical Cells", US/14/917, 340, 2016
4. J. Wang, R. Kumar, Y.S. Meng, J.W. Shin and L. Yin, "Hyper-elastic Binder for Printed, Stretchable Electronics", US/15/820, 284 and PCT/US62860, 2017
5. Y.S. Meng, M. Zhang, H. Liu, D. Qian and C. Fang, "Lithium-Excess Cathode Material and Co-precipitation Formation Method", US/15/774,876
6. C. Rustomji, Y.S. Meng and Y. Yang, "Electrochemical Energy Storage Device", PCT/US29821, 2017
7. Z. Zhu, L.H. Chu, S.P. Ong, E. Wu, H. Nguyen and Y.S. Meng," Lithium and Sodium Superionic Conductors", US/059340, 2017
8. D. Steingart, B. Hertzberg, M. Chamoun, G. Davies and Y.S. Meng," Alkaline Electrolyte Useful for a Rechargeable Alkaline Electrochemical Cell", PCT/US/25989, 2018
9. D. Tan, A. Banerjee, "Electrolyte composite for batteries", US Patent App. 16/409,275, 2019
10. "Chemical formulations for electrochemical device" International App. PCT/US19/32414 (2019-023†§) May 2019
11. A chapter in **Handbook of Solid State Batteries** 2nd Edition, Edited by: Nancy J Dudney, William C West and Jagjit Nanda (World Scientific Publishing)
12. A chapter in **Handbook of Materials Modeling-Battery Electrodes, Electrolytes, and Their Interfaces**, Edited by: Wanda Andreoni and Sidney Yip (Springer)

f. Selected Keynote and Invited Talks

1. Keynote Talk, Materials Research Meeing (MRM), Yokohama, Japan, December 11th, 2019
2. Invited Talk, Symposium EN02, MRS Fall, Boston, MA, December 2nd, 2019.
3. Seminar Talk, College de France, Paris, France, October 18th, 2019
4. Plenary Talk, Li Battery Discussions (LiBD), Bordeaux, France, September 16th, 2019.

5. Invited Talk, Symposium ENFL, ACS Annual Meeting, San Diego, August 26th, 2019.
6. Invited talk, Symposium N, 10th International Conference on Materials for Advanced Technologies, Singapore, June 23rd- 28th, 2019
7. Seminar, Department of Materials Science and Engineering, UC Irvine, May 24th, 2019
8. Invited talk, Lithium Battery International Summit, Shenzhen, China, May 6-9th, 2019
9. Invited talk, Materials Research Society MRS, Phoenix, AZ, April 24th, 2019
10. Invited talk, Gordon Research Conference on Nanomaterials for Applications in Energy Technology, CA, USA, Feb 26th, 2019
11. Invited talk, International Coalition for Energy Storage and Innovation and Pacific Power Symposium Joint Meeting, January 10th, 2019
12. Invited talk, 11th International Conference on Advanced Lithium Batteries for Automobile Applications (ABAA), Huzhou, China, October 13th, 2018
13. Invited talk, Symposium on Advanced Batteries and Supercapacitors for Energy Storage, 12th International Conference on Ceramic Materials, Singapore, July 25th, 2018
14. Keynote talk, International Meeting on Lithium Batteries (IMLB) 2018, Kyoto, Japan, June 18th, 2018
15. Invited talk, Advanced Automotive Battery Conference, San Diego, CA, USA, June 5th, 2018
16. Department Colloquium, Nuclear Engineering and Materials Science and Engineering, MIT, April 27th, 2018.
17. Seminar, School of Engineering and Applied Sciences, Harvard University, April 25th, 2018
18. Invited talk, Symposium on Safe and High Energy Batteries, Materials Research Society MRS, Phoenix, AZ, April 4th, 2018
19. Discussion Leader, Gordon Research Conference (GRC) on Batteries, Ventura, CA, USA, Feb. 27th – March 1st, 2018
20. Keynote talk, International Battery Association (IBA) Meeting, Jeju, South Korea, March 12-15th, 2018.
21. Invited talk, Munich Battery Discussion Meeting, Munich, Germany, February 19-20th, 2018
22. Keynote talk, Nature Conference on Electrochemical Energy Systems, Shenzhen, China, January 13-15th, 2018.
23. Department of Chemical & Biological Engineering Colloquium, Princeton University, November 29, 2017.
24. Invited talk, 10th International Conference on Advanced Lithium Batteries for Automobile Applications (ABAA), Chicago, USA, October 23rd, 2017.
25. Invited talk, Symposium on advanced characterization in honor of Dr. Frank McLarnon, Electrochemical Society Meeting, National Harbor, October 3rd, 2017.
26. Department of Energy & Environmental Materials, School of Materials Science and Engineering, Beijing Institute of Technology, China, September 2nd, 2017.
27. Keynote talk, International Union of Materials Research Society – The 15th International Conference on Advanced Materials (IUMRS-ICAM), Kyoto, Japan, August 31st, 2017
28. Department of Chemistry, Dalhousie University, Halifax, Canada, August 22nd, 2017
29. Materials Science & Engineering Department Seminar, Stanford University, May 5th, 2017
30. US China Electric Vehicle Battery Technology (EVBT), Zhuhai, China, April 17th, 2017
31. 3rd International Forum on Cathode and Anode Materials for Advanced Batteries, Ningbo, China, April 14th, 2017
32. Keynote talk, International Battery Association (IBA), Nara, Japan, March 6th, 2017
33. Chinese University of Hong Kong, Physics Department Colloquium, March 2nd, 2017
34. Hong Kong Polytechnic University Colloquium, February 28th, 2017
35. 9th ABAA International Conference on Advanced Lithium Batteries for Automotive Applications, Huzhou, China, October 18th, 2016.
36. 18th International Meeting of Lithium Batteries, Chicago, IL, June 20th, 2016
37. Department of Materials Science & Engineering seminar, University of California Santa Barbara, May 27th, 2016
38. Sino-American Technology & Engineering Conference, Wuhu, China, May 16th, 2016
39. Department of Physics seminar, University of Houston, Houston, TX, April 25th, 2016

40. Department of Physics and Applied Physics seminar, Nanyang Technological University, Singapore, March 25th, 2016
41. Symposium EE7, Materials Research Society (MRS), Spring Meeting, Phoenix, AZ, March 31st, 2016
42. Munich Battery Discussion Meeting by BMW, Munich, Germany, March 14th, 2016
43. 2016Gordon Research Conference (GRC) on Batteries, Ventura California, February 22nd, 2016
44. 3rd Euro-Mediterranean Conference on Materials and Renewable Energies (EMCMRE-3), Marrakech, Morocco, November 2-6th, 2015
45. International Society of Electrochemistry (ISE), Hong Kong Satellite Meeting and Taipei Annual Meeting, Oct 3-6, 2015.
46. 2nd International Forum on Anode & Cathode Materials for Advanced Batteries, Hangzhou, China, April 22nd, 2015.
47. 10th China-US Battery Workshop, Beijing, China Mar 30th, 2015.
48. Mechanical Engineering Seminar, Princeton University, Dec 5th, 2014
49. Symposium Z, Materials Research Society MRS Fall Meeting, Boston, Dec 3rd, 2014
50. 55th Japan Battery Symposium, Kyoto, Japan, Nov 20th, 2014.
51. 226th Electrochemical Society Meeting (ECS), Cancun, Mexico, Oct 7th, 2014.
52. Frontier of Engineering, National Academia of Engineering, Irvine, CA, Sep. 12th, 2014.
53. XXIII International Materials Research Congress, Cancun, Mexico, August 17th, 2014.
54. Gordon Research Conference on Electrodeposition, New Hampshire, ME, July 30th, 2014.
55. Argonne National Lab Chemical Engineering Division Colloquium Talk, May 6th, 2014.
56. International Battery Association (IBA) Meeting, Melbourne, Australia, March 4th- 7th, 2014.
57. Department of Physics and Atmospheric Science, Dalhousie University, December 9th, 2013.
58. Materials Research Society Meeting, Symposium CC, Boston, December 4th, 2013.
59. Institute for Pure and Applied Mathematics, Materials for a Sustainable Energy Future Program, Los Angeles, September 9th, 2013.
60. 7th International Conference on Materials for Advanced Technologies (ICMAT), July 4th, Singapore 2013.
61. Massive Energy Storage, Engineering Conferences International, Newport Beach, CA, June 24th, 2013.
62. PacRim American Ceramics Society Meeting, Coronado Island, CA, June 5th, 2013.
63. Department of Materials Science and Engineering, UC Riverside, CA, May 29th, 2013.
64. International Battery Association (IBA) meeting, Barcelona, Spain, March 11th, 2013.
65. 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 17th, 2013.
66. "Big Energy Seminar Series", University of Colorado Boulder, November 8th, 2012.
67. European Microscopy Congress, Manchester, UK, September 19th, 2012.
68. International Conference of Young Researchers on Advanced Materials, ICYRAM, Electrochemical Energy Session, Singapore, July 2nd, 2012.
69. HRL Laboratories Colloquium, Malibu CA, June 21st, 2012.
70. Materials Research Society, Symposium O Invited talk, San Fransisco, CA, April 12th 2012.
71. Center for Computational Sciences, University of Kentucky, March 21st, 2012.
72. Taipei Forum on Large-Format Power Lithium Batteries, Taipei, February 15th, 2012.
73. International Battery Association (IBA) meeting, Kona, Hawaii, January 12th, 2012.
74. Gordon Research Conference (GRC) on Electrochemistry, Ventura, CA, January 11th, 2012.
75. Ningbo-2011 International Symposium on Development and Commercialization of Power Lithium-ion Batteries, China, November 10th, 2011.
76. Department of Materials Science and Engineering, Seoul National University, Korea, August 12th, 2011.
77. Department of Materials Science and Engineering, Northwestern University, May 23rd, 2011.
78. Department of Chemical Engineering and Materials Science, UC Irvine, April 1st, 2011.
79. Department of Materials Science and Engineering, UCLA, October 29th, 2010.
80. Symposium B4 Electrode-Electrolyte Interfaces in Li-ion Batteries, Electrochemical Society Meeting Fall 2010, Las Vegas, October 11-14th, 2010.

81. Gordon Research Conference, Solid State Studies in Ceramics, New Hampshire, August 15-17th, 2010.
82. UCSD Research Expo, April 15, 2010.
83. Materials Science & Technology 2009 Conference, Pittsburgh, Oct. 27, 2009.
84. State Key Lab for Physical Chemistry of Solid Surfaces, Xiamen University, China, June 25, 2009.
85. Department of Physics, Chinese University of Hong Kong, June 22, 2009.
86. Oak Ridge National Laboratory, USA, May 28, 2009.
87. CERMACS Annual Meeting, American Chemical Society, Cleveland, Ohio, May 22, 2009.
88. Florida Institute of Sustainable Energy (FISE) Seminar, March 16, 2009.
89. Department of NanoEngineering, University of California San Diego, December 8, 2008.
90. Materials Science and Technology 2008 Conference, Pittsburg, Pennsylvania, October 6, 2008.
91. Department of Materials Science and Engineering, University of Michigan, September 26, 2008.
92. International Materials Research Congress (IMRC), Annual Conference, Cancun, Mexico, August 18-21, 2008.
93. Korea Electrotechnology Research Institute (KERI), Pusang, Korea, July 7, 2008.
94. National Taiwan University of Science and Technology, Taipei, Taiwan, June 20, 2008.
95. International Meeting for Lithium Batteries (IMLB) 2008, Tianjin, China, June 22-27, 2008.
96. International Materials Research Congress (IMRC), Annual Conference, Cancun, Mexico, October 28-30, 2007.
97. University of Bordeaux, ICMCB, France, September 27, 2007.
98. CSIRO Energy Technology, Commonwealth Scientific and Industrial Research Organization (CSIRO), Melbourne, Australia, July 24-25, 2007.
99. Department of Physics, University of California Davis, April 9 – 10, 2007.
100. Nanoscience and Nanoengineering Institute and Department of Materials Science and Engineering, University of California Berkeley, January 25, 2007.
101. Department of Materials Science and Engineering, University of Florida, January 18, 2007.
102. Department of Physics, Chinese University of Hong Kong, September 1, 2006.
103. State Key Lab for Physical Chemistry of Solid Surfaces, Xiamen University, China, Aug 31, 2006.
104. The 7th China International Battery Fair, Beijing, China June 28-30, 2006.
105. Lawrence Livermore National Laboratory, USA, June 9, 2006.
106. Department of Materials Science and Engineering, Stanford University, Palo Alto, June 5, 2006.
107. Industrial Technology Research Institute ITRI, Taiwan, May 19, 2006.
108. International Battery Association – Hawaii Battery Conference (IBA-HBC), Hawaii, USA, Jan 9-13, 2006.
109. Department of Mechanical Engineering, University of Texas, Austin, May 5, 2005.

g. Synergistic Activities

Inaugural Director of Institute for Materials Discovery and Design (https://imdd.ucsd.edu/) a joint initiative of the Jacobs School of Engineering and Division of Physical Sciences at the University of California San Diego. The Institute's unique approach will be to apply data analytics and machine learning together with rapid materials synthesis and multi-scale characterization in order to accelerate the discovery, design, synthesis and evaluation of novel functional materials.

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.

Editor in Chief – MRS Energy & Sustainability 2019

Technical Editor– Journal of Power Sources (IF 6.7) 2015-2019

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 21.8) and Chemical Reviews (IF 47.9)

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 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 (>1500 members), USA, 2010-1012
Treasurer (Elected) for Battery Division of the Electrochemical Society, USA, 2014-2016. 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 – 2018
Vice Chair (Elected) for Battery Division of the Electrochemical Society, USA, 2018 – now
Executive Board Member and Treasurer for International Battery Association (IBA), 2017 - now
Lead Organizer –

- Chairperson for International Battery Association IBA2019 http://iba-2019.org/ Annual Meeting, La Jolla, March 3-8th, 2019.
- Symposium "Lithium Ion Batteries", Electrochemical Society (ECS) 234th Meeting, Cancun Mexico, October 1-5th, 2018.
- US China Electric Vehicle Battery Technology Workshop, La Jolla, CA, April 8-10th, 2018, 2018.
- Symposium "Lithium Ion Batteries", Electrochemical Society (ECS) 232nd Meeting, National Harbor MD, October 1-5th, 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) 228th Meeting, Phoenix AZ, Oct 11-15, 2015.
- Symposium "Lithium Ion Batteries", Electrochemical Society (ECS) Fall 226th Meeting, Cancun, Mexico, October 6-10th, 2014.
- Symposium "Batteries and Fuel Cell Technologies: Challenges and Solutions Towards Global Stewardships" 248th American Chemical Society ACS National Meeting and Exhibition, San Francisco, USA, August 10-14th, 2014.
- Symposium N "Frontier in Energy Storage", Materials Research Society (MRS), San Francisco, USA, April 20-25th, 2014.
- Symposium on "Computation Science on Battery Materials", Electrochemical Society (ECS) Fall 224th meeting, San Francisco, USA, October 27-November 1, 2013.
- Symposium on "Design and Modeling of Battery Materials**",** Electrochemical Society (ECS) Spring 223rd 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 222nd 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 A03 Li ion Battery, 233rd Electrochemical Society Meeting(ECS) Seattle, May 2018. 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 9-14th, 2011. Symposium L for Materials Research Society Meeting

(MRS), April 25-29th, 2011. Symposium B8 for Electrochemical Society Meeting (ECS), Las Vegas, October 11-14th, 2010. Functional Ceramics for Energy Storage & Conversion (Symposium 5) for the Electronic Materials and Applications (EMA) Conference, Orlando January 20-22nd, 2010.
Faculty Advisor – Society for Green Mobility, University of Florida, 2008-2009
Founding Faculty Advisor – ECS Student Chapter, UCSD, 2014 – present (founded in June 2014)

h. Selected Major Research 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 DOE/VTO **DE-EE0008442**

" Cobalt Free Cathode Materials and Their Novel Architectures" $2,500,000 Nov.2018 – Nov. 2021

PI Ford Motor Company, Sony, Hitachi Chemicals, Asahi Kasai, Maxwell Technologies, South 8 Technologies, MTI Corporation, Arbin Instrument, Qualcomm, STMicroelectronics, Shell, LG Chem. **Industrial Funding** exceeding 2M$ over the last six years.

i. Collaborators and Co-Editors

Dr. Clare P. Grey (SUNY Stony Brook, USA and Cambridge University, UK), Dr. Krystyn Van Vilet and 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. Karena Chapman and 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) Dr. Chuan Wu (Beijing Institute of Technology, China) Dr. Andrej Singer (Cornell University) Dr. Feng Lin (Virginia Tech University)

j. Media Coverage

About Zero Carbon Future
https://www.universityofcalifornia.edu/news/achieving-zero-carbon-future

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About SPEC Center
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http://www.pbs.org/wgbh/nova/tech/super-battery.html

Inside Innovation
https://www.youtube.com/watch?v=6WSwyBs0axc&feature=youtu.be

k. Mentoring and Advising

Graduate Students (21): Diyi Cheng, Yixuan Li (Ms.), Darren Tan, Yangyuchen Yang, Thomas Wynn, Daniel Davis, Hyeseung Chung (Ms.), Yihui Zhang (Ms.), Erik Wu, Hayley Hirsh (Ms.), Baharak Sayahpour (Ms.), Bingyu Lu, Ryosuke Shimizu, Jonathan Scharf, Yijie Yin, Weiliang Yao, Matthew Mayer, Ashley Cronk (Ms), Grayson Deysher, Yuting Chen, So-Yeon Ham (Ms),
Postdocs (7): Dr. Chengcheng Fang, Dr. Weikang Li, Dr. Minghao Zhang, Dr. Yoon-Gyo Cho, Dr. Jean-Marie Doux, Dr. Min-cheol Kim and Dr. Enyue Zhao

Previous graduate students (PhD: 21): 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. Cyrus Rustmoji (CEO, South8 Technologies), Dr. Danna Qian (Scientist, NanoLab, USA), Dr. Ziying 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.), Dr. Judith Alvarado (Postdoc, LBNL), Dr. Minghao Zhang (Postdoc, UCSD), Dr. Jungwoo Lee (CTO, South 8 Technologies), Dr. Shen Wang (Postdoc, UCSD), Dr. Joon Kyo Seo (Staff researcher, LG Chem Korea), Dr. Chengcheng Fang(Postdoc, UCSD), Dr Pritesh Parikn, Dr Han Nguyen(Staff Research Scientist, UCSD)

Previous postdocs (15): Dr. Abhik Banerjee, Dr. Xuefeng Wang(IoP, CAS), Dr. Marco Olguin, Dr. Shen Wang, Dr. Dan Gostovic (FEI), Dr. Yoyo Hinuma (Kyoto University), Dr. Kyler Carroll (Wildcat Technologies) Dr. Dhamodaran Santhanagopalan (Amrita Centre for Nanoscience in India), Dr. Young-Sang Yu (ALS/LBNL) Dr. Tom Yersak (GM), Dr. Sunn Hy (Tesla Canada), Dr. Michael Verde (Trojan Batteries), Dr. Andrej Singer (Cornell University), Dr. Cyrus Rustmoji (Founder of South8 Technologies), Dr. Mahsa Sina (Ms.) (Lecturer, San Diego State University) and Dr. Thomas Brenner (Israel US Postdoc fellowship)

l. References

Dr. Clare P. Grey (Cambridge University, UK) FRS
Dr. Gerbrand Ceder (University of California Berkeley, USA) NAE
Dr. Yang Shao-Horn (Massachusetts Institute of Technology, USA) NAE
Dr. Stanley Whittingham (State University of New York, Binghamton, USA) NAE
Dr. Jun Liu (Pacific Northwestern National Lab, USA) Battelle Tech Fellow