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Founding Director of[Sustainable Power and Energy Center \(SPEC\)](#)**Affiliated Faculty with**[Center for Magnetic 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

1st class honor**b. Research and Professional Experience**

2013 – Present 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 Science and Engineering, Massachusetts Institute of Technology

Meng's research group (**LESC: Laboratory for Energy Storage & Conversion**) focuses on the field of energy storage and conversion materials: nano structured electrodes 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 selected experiments for rational materials design for energy applications. <http://smeng.ucsd.edu>

c. Peer-Reviewed Journal Publications (Total 91; H-index 31, Total citation 4155, info from Google Scholar, *corresponding author)

1. 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**, accepted, 2015.
2. 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**, 2015, 284, 287
3. A. Ulvestad, J. N. Clark, A. Singer, D. Vine, H. Cho, R. Harder, Y. S. Meng and O. G. Shpyrko, "In situ strain evolution during a disconnection event in a battery nanoparticle", **Physical Chemistry Chemical Physics**, 17, 10551, 2015
4. B. Han, D. Qian, M. Risch, H. Chen, M. Chi, Y. S. Meng*, and Yang S-H., "Role of LiCoO₂ Surface Terminations in Oxygen Reduction and Evolution Kinetics", **J. Phys. Chem. Lett.** 6, 1357, 2015
5. 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
6. A. Saracibar, Z. Wang, K. J. Carroll, Y. S. Meng and M. E. Arroyo-de Dompablo, "New insights into the electrochemical performance of Li₂MnSiO₄ effect of cationic substitutions", **Journal of Materials Chemistry A**, 3, 6004, 2015.
7. H. Zheng, Y. S. Meng and Y. Zhu, "Frontiers of in situ electron microscopy", **MRS Bulletin**, 40, 12, 2015.
8. Q. Zhang, M. G. Verde, J. K. Seo, X. Li and Y. S. Meng*, "Structural and electrochemical properties of Gd-doped Li₄Ti₅O₁₂ as anode material with improved rate capability for lithium-ion batteries", **Journal of Power Sources**, 1, 124, 2015.

9. 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.
10. 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.
11. 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.
12. 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.
13. 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 LiFePO₄ Using Laser Assisted Atom Probe Tomography", **Ultramicroscopy**, 148, 57, 2015.
14. 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_{2/12}Ni_{3/12}Mn_{7/12}]O₂", **ACS Applied Materials & Interfaces**, 6, 18868, 2014.
15. D. A. Shapiro, Y-S. Yu, T. Tylliszczak, J. Cabana, R. Celestre, W. Chao, K. Kaznatcheev, A. L. D. Kilcoyne, F. Maia, S. Marchesini, Y. S. Meng, T. Warwick, L. L. Yang and H. A. Padmore, "Chemical composition mapping with nanometre resolution by soft X-ray microscopy", **Nature Photonics**, 8, 765, 2014.
16. J. Xu, C. Ma, M. Balasubramanian, and Y. S. Meng*, "Understanding Na₂Ti₃O₇ as an ultra-low voltage anode material for a Na-ion battery", **Chemical Communications**, 50, 12564, 2014.
17. 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_{1/2}Mn_{3/2}O₄ Cathode under Operando Conditions", **Nano Letters**, 14(9), 5295, 2014.
18. 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.
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21. 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
22. H. Liu, H. Cho , Y. S. Meng*, Quan Li, "Engineering Three-Dimensionally Electrodeposited Si-on-Ni Inverse", **ACS Applied Materials & Interfaces**, 6 (12), 9842, 2014
23. D. Qian, N. M. Hagh, Y.S. Meng*, "Insight into Designing High-Energy, High-Power Cathode Material for Lithium Ion Batteries", **ECS Electrochemistry Letters**, 3(7), A72, 2014
24. J. Zhao, J. Xu, D. H. Lee, N. Dimov, Y. S. Meng*, S. Okada, "Electrochemical and thermal properties of P2-type Na_{2/3}Fe_{1/3}Mn_{2/3}O₂", **Journal of Power Sources**, 264, 235, 2014
25. L. Baggetto, K. J. Carroll, H-Y. Hah, C.E. Johnson, D. R. Mullins, R. R. Unocic, J. A. Johnson, Y.S. Meng, G. M. Veith, "Probing the Mechanism of Sodium Ion Insertion into Copper Antimony Cu₂Sb Anodes", **Journal of Phys. Chem. C.**, 118(15), 7856, 2014
26. B. Qu, C. Ma, G. Ji, C. Xu, J. Xu, Y. S. Meng, T. Wang, J. Y. Lee, "Layered SnS₂ -Reduced Graphene Oxide Composite – A High-Capacity, High-Rate, and Long-Cycle Life Sodium-Ion Battery Anode Material", **Advanced Materials**, 26(23), 3854, 2014
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28. A. Ulvestad, H. M. Cho, R. Harder, J. W. Kim, S. H. Dietze, E. Fohtung, Y. S. Meng, O. G. Shpyrko, "Nanoscale strain mapping in battery nanostructures", *Applied Physics Letters*, 104, 073108, 2014
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32. Y. Janssen, D. Santhanagopalan, D. Qian, M. Chi, X. Wang, C. Hoffman, Y. S. Meng* and P. Khalifah, "Reciprocal Salt Flux Growth of LiFePO_4 Single Crystals with Controlled Defect Concentrations", *Chemistry of Materials*, 25 (22), 4574-4584, 2013
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38. K. J. Carroll, D. Qian, C. R. Fell, S. Calvin, G. M. Veith, M. Chi, L. Baggetto, Y. S. Meng*, "Probing the electrode/electrolyte interface in the Li-excess material $\text{Li}_{1.2}\text{Ni}_{0.2}\text{Mn}_{0.6}\text{O}_2$ ", *Phys. Chem. Chem. Phys.*, 2013, 15, 11128
39. Y. S. Meng*, M. S. Whittingham, "Introduction and foreword to focus issue on intercalation compounds for rechargeable batteries", *Journal of the Electrochemical Society*, 160(5), Y2-Y3, 2013
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41. C. R. Fell, D. Qian, K. J. Carroll, M. Chi, J. L. Jones, Y. S. Meng*, "Correlation between oxygen vacancy, microstrain, and cation distribution in Lithium-excess layered oxides during the first electrochemical cycle", *Chemistry of Materials*, 25(9), 1621-1629, 2013
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44. D. H. Lee, J. Xu, Y. S. Meng*, "An advanced cathode for Na-ion batteries with high rate and excellent structural stability", *Phys. Chem. Chem. Phys.*, 15, 3304-3312, 2013
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55. C. R. Fell, M. Chi, Y. S. Meng*, J. L. Jones, "In situ X-ray diffraction study of the lithium excess layered oxide compound Li[Li_{0.2}Ni_{0.2}Mn_{0.6}]O₂ during electrochemical cycling", **Solid State Ionics**, 207, 44-49, 2012.
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d. Patents

1. Patent application filed in 2014 - LITHIUM AND SODIUM CONTAINING LAYERED OXIDE MATERIAL, ELECTRODES AND SODIUM ION ELECTROCHEMICAL CELLS

e. Selected Invited Talks

1. 2nd International Forum on Anode & Cathode Materials for Advanced Batteries, Hangzhou, China, April 22nd, 2015.
2. 10th China-US Battery Workshop, Beijing, Mar 30th, 2015
3. Mechanical Engineering Seminar, Princeton University, Dec 5th, 2014
4. Symposium Z, Materials Research Society MRS Fall Meeting, Boston, Dec 3rd, 2014
5. 55th Japan Battery Symposium, Kyoto, Japan, Nov 20th, 2014.
6. 226th Electrochemical Society Meeting (ECS), Cancun, Mexico, Oct 7th, 2014.
7. Frontier of Engineering, National Academia of Engineering, Irvine, CA, Sep. 12th, 2014.
8. XXIII International Materials Research Congress, Cancun, Mexico, August 17th, 2014.
9. Gordon Research Conference on Electrodeposition, New Hampshire, ME, July 30th, 2014.
10. Argonne National Lab Chemical Engineering Division Colloquium Talk, May 6th, 2014.
11. International Battery Association (IBA) Meeting, Melbourne, Australia, March 4th- 7th, 2014.
12. Department of Physics and Atmospheric Science, Dalhousie University, December 9th, 2013.
13. Materials Research Society Meeting, Symposium CC, Boston, December 4th, 2013.
14. Institute for Pure and Applied Mathematics, Materials for a Sustainable Energy Future Program, Los Angeles, September 9th, 2013.
15. 7th International Conference on Materials for Advanced Technologies (ICMAT), July 4th, Singapore 2013.
16. Massive Energy Storage, Engineering Conferences International, Newport Beach, CA, June 24th, 2013.
17. PacRim American Ceramics Society Meeting, Coronado Island, CA, June 5th, 2013.
18. Department of Materials Science and Engineering, UC Riverside, CA, May 29th, 2013.
19. International Battery Association (IBA) meeting, Barcelona, Spain, March 11th, 2013.
20. 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.
21. "Big Energy Seminar Series", University of Colorado Boulder, November 8th, 2012.
22. European Microscopy Congress, Manchester, UK, September 19th, 2012.
23. International Conference of Young Researchers on Advanced Materials, ICYRAM, Electrochemical Energy Session, Singapore, July 2nd, 2012.
24. HRL Laboratories Colloquium, Malibu CA, June 21st, 2012.
25. Materials Research Society, Symposium O Invited talk, San Fransisco, CA, April 12th 2012.
26. Center for Computational Sciences, University of Kentucky, March 21st, 2012.
27. Taipei Forum on Large-Format Power Lithium Batteries, Taipei, February 15th, 2012.
28. International Battery Association (IBA) meeting, Kona, Hawaii, January 12th, 2012.

29. Gordon Research Conference (GRC) on Electrochemistry, Ventura, CA, January 11th, 2012.
30. Ningbo-2011 International Symposium on Development and Commercialization of Power Lithium-ion Batteries, China, November 10th, 2011.
31. Department of Materials Science and Engineering, Seoul National University, Korea, August 12th, 2011.
32. Department of Materials Science and Engineering, Northwestern University, May 23rd, 2011.
33. Department of Chemical Engineering and Materials Science, UC Irvine, April 1st, 2011.
34. Department of Materials Science and Engineering, UCLA, October 29th, 2010.
35. Symposium B4 Electrode-Electrolyte Interfaces in Li-ion Batteries, Electrochemical Society Meeting Fall 2010, Las Vegas, October 11-14th, 2010.
36. Gordon Research Conference, Solid State Studies in Ceramics, New Hampshire, August 15-17th, 2010.
37. UCSD Research Expo, April 15, 2010.
38. Materials Science & Technology 2009 Conference, Pittsburgh, Oct. 27, 2009.
39. State Key Lab for Physical Chemistry of Solid Surfaces, Xiamen University, China, June 25, 2009.
40. Department of Physics, Chinese University of Hong Kong, June 22, 2009.
41. Oak Ridge National Laboratory, USA, May 28, 2009.
42. CERMACS Annual Meeting, American Chemical Society, Cleveland, Ohio, May 22, 2009.
43. Florida Institute of Sustainable Energy (FISE) Seminar, March 16, 2009.
44. Department of Nano Engineering, University of California San Diego, December 8, 2008.
45. Materials Science and Technology 2008 Conference, Pittsburg, Pennsylvania, October 6, 2008.
46. Department of Materials Science and Engineering, University of Michigan, September 26, 2008.
47. International Materials Research Congress (IMRC), Annual Conference, Cancun, Mexico, August 18-21, 2008.
48. Korea Electrotechnology Research Institute (KERI), Pusang, Korea, July 7, 2008.
49. National Taiwan University of Science and Technology, Taipei, Taiwan, June 20, 2008.
50. International Meeting for Lithium Batteries (IMLB) 2008, Tianjin, China, June 22-27, 2008.
51. International Materials Research Congress (IMRC), Annual Conference, Cancun, Mexico, October 28-30, 2007.
52. University of Bordeaux, ICMCB, France, September 27, 2007.
53. CSIRO Energy Technology, Commonwealth Scientific and Industrial Research Organization (CSIRO), Melbourne, Australia, July 24-25, 2007.
54. Department of Physics, University of California Davis, April 9 – 10, 2007.
55. Nanoscience and Nanoengineering Institute and Department of Materials Science and Engineering, University of California Berkeley, January 25, 2007.
56. Department of Materials Science and Engineering, University of Florida, January 18, 2007.
57. Department of Physics, Chinese University of Hong Kong, September 1, 2006.
58. State Key Lab for Physical Chemistry of Solid Surfaces, Xiamen University, China, Aug 31, 2006.
59. The 7th China International Battery Fair, Beijing, China June 28-30, 2006.
60. Lawrence Livermore National Laboratory, USA, June 9, 2006.
61. Department of Materials Science and Engineering, Stanford University, Palo Alto, June 5, 2006.
62. Industrial Technology Research Institute ITRI, Taiwan, May 19, 2006.
63. International Battery Association – Hawaii Battery Conference (IBA-HBC), Hawaii, USA, Jan 9-13, 2006.
64. Department of Mechanical Engineering, University of Texas, Austin, May 5, 2005.

f. Synergistic Activities

Associate Editor –NPG Asia Materials (IF 9.0)

Editorial Board Member - Ionics (IF 1.7) Journal of Power Sources (IF 5.2)

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, Haimie Zheng and Yimei Zhu)

Regular reviewer for Journal of American Chemical Society, Chemistry of Materials, Journal of Power Sources, 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.

Scientific Advisory Board Member for Pacific Northwestern National Lab EMSL

Member-at-large for Battery Division of the Electrochemical Society, USA, 2010-2012.

Treasurer for Battery Division of the Electrochemical Society, USA, 2014-now

Lead Organizer –

- 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 May 15-18, 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 9-14th, 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.

Instructor Short Course on Lithium Battery Materials, the 212th Electrochemical Society Meeting, Washington DC Oct. 7-12, 2007 and the 216th ECS Meeting, Vienna, Oct. 4-9, 2009.

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

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

g. Professional Memberships:

Electrochemical Society; Materials Research Society; American Ceramic Society; American Chemical Society.

h. Collaborators and Co-Editors

Dr. Clare P. Grey (SUNY Stony Brook, USA and Cambridge University, UK)

Dr. Yang Shao-Horn and Dr. Gerbrand Ceder (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. Keith Stevenson (UT Austin, USA)

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. Yimei Zhu and Dr. Xiao-Qing Yang (Brookhaven National Laboratory, USA)
Dr. Stanley Whittingham (State University of New York, Binghamton, USA)
Dr. Dan Steingart (Princeton University, USA)
Dr. Haimei Zheng, Dr. Kristin Persson, Dr. Marca Doeff (Lawrence Berkley National Lab, USA)

i. Awards and Honors

2015, Frontier of Innovation Award
2014, Science Award Electrochemistry by BASF and Volkswagen
2013, Chancellor's Interdisciplinary Research Award
2013, Haodong Liu (Meng's current Ph.D. student) won the Dr. Huang Memorial Fellowship (2-year full fellowship)
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

