Curriculum Vitae

Jie Xiao, Ph.D
Boeing Martin Professor, University of Washington (UW)
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Research Interests

Dr. Xiao has been leading research thrusts in both fundamental research and practical applications of energy storage materials and systems to accelerate deep decarbonization. Dr. Xiao's research has led to breakthroughs in long cycling next-generation high energy lithium metal batteries and novel battery materials, accelerating the process to establish domestic manufacturing capability for clean energy technologies. Dr. Xiao's research has changed how battery research is conducted and reported in the scientific community. The protocols she developed have been broadly adopted by scientists and engineers to cross validate and accelerate innovations in energy storage. Dr.Xiao currently serves as the Deputy Director for DOE's Innovation Center for Battery500 Consortium. She is also the Director for DOE's Cathode-Electrolyte Interphase (CEI) Consortium. Her work has been widely reported by many media including a featured story on the Office of Science website, C&EN, R&D magazine, U.S. Department of State, Scientific American etc. She has published more than 100 peer-reviewed journal papers (Google H-index=103; citation: >46,000) and 2 book chapters. She has been named as the top 1% highly cited research by Clarivate Analytics in the field of materials chemistry for many times. Dr.Xiao holds 26 patents and 3 copyrights in the field of energy storage. Seven of her patents/software have been licensed to industry.

Education

Ph. D in Materials Chemistry, State University of New York (SUNY) Binghamton, NY (supervised by Prof. M. Stanley Whittingham, 2019 Nobel Prize Laureate)

M.S. in Physical Chemistry, Wuhan University, China

B.Sc. in Chemistry, Wuhan University, China

Professional Experiences

2024-present	Boeing Martin Professor, Department of Mechanical Engineering, University of Washington (UW)
2022-present	Battelle Fellow, PNNL
2020- present	UW-PNNL distinguished Faculty Fellow
2020-2022	Laboratory Fellow, PNNL
2019-2024	Group Leader (75+ staff) of Battery Materials & Systems, PNNL
2017- 2020	Chief Scientist, PNNL
2016 - 2017	Associate Professor at University of Arkansas (UARK)
2010 - 2016	Scientist (from II to IV), PNNL
2008 - 2010	Postdoctoral research associate, PNNL

Awards and Recognition

- Innovation Award, Advanced Materials &Manufacturing Technology Office (AMMTO) of US Department of Energy (DOE). (2024)
- Clean Energy Education and Empowerment (C3E) Technology Research & Innovation Award, bestowed by DOE, Stanford, MIT and Texas A&M (2023)
- E.O. Lawrence Award, U.S. Department of Energy (2022)
- Elected Member, Washington State Academy of Science (2022)
- Lab Director's Exceptional Scientific Achievements Award (2022)
- R&D 100 Award for Lab-on-a-Fish (2021)
- Battery Technology Award, The Electrochemical Society (ECS), Battery Division (2020)
- Fellow, The Electrochemical Society (2020)
- Materials Today Rising Star Award (2020)
- Federal Laboratory Consortium (FLC) Award for Excellence in Technology Transfer of the Suite of Fish and Wildlife Technologies to Advanced Telemetry Systems (2020)
- Young Researcher Award from International Automotive Lithium Battery Association (Ulm, Germany, 2019)
- Distinguished Inventor of Battelle (2019)
- Exceptional Contribution Award, DOE innovation Center for Battery500 Consortium, Vehicle Technology Office (VTO) (2018)
- Arkansas Research Alliance Scholar (2015)
- Ronald L. Brodzinski Early Career Exceptional Achievement Award (2013)
- R&D 100 Award: "Graphene Nanostructures for Lithium Batteries" (2012)
- Zappert Award, American Chemical Society (ACS) (2008)
- Clifford E. Myers Award, State University of New York Binghamton (2008)

Advisory Board Member and Editor

Advisory board:

- Advisory Board of the Upstate New York Energy Storage Engine, Regional Innovation Engines Program sponsored by NSF
- The external advisory board member for Energy Frontier Research Center (EFRC) on Synthetic Control Across Length-scales for Advancing Rechargeables (SCALAR) (Lead: UCLA)
- Editorial Advisory Board for *Chemical Reviews*
- Senior Editorial Board for *Materials Today*
- Editorial Advisory Board for *Communication Materials*
- Editorial Advisory Board for *Journal of Power Sources Advances*

Editor:

- Editor-in-Chief, Energy Storage Materials (impact factor: 19)
- Editor, Journal of Power Sources (impact factor: 9.127)
- Guest editor for Advanced Energy Materials on Special issue of "Lithium Sulfur Battery Systems", 2015

- Panel report writer (Panel 1: pathways to Simultaneous High Energy and Power) for Basic Research Needs workshop for Next Generation Electrical Energy Storage (DOE/BES), 2017

Synergistic Activities at Professional Societies

- ACS National Award Selection Committee (2024-2026 award cycle)
- Battery Division Chair, The Electrochemical Society (ECS) (2024-present)
- Battery Division Vice Chair, ECS (2022-2024)
- Founding Chair of ECS Pacific Northwest Section (2020-2022)
- Battery Division Secretary of The Electrochemical Society (2020-2022)
- Battery Division Treasurer of ECS (2018-2020)
- ECS Sponsorship committee member (2018-2021)
- Committee chair of the Fundraising Office of ECS Battery Division (2016-2017)
- Organizer for Roundtable Discussion on "Battery Manufacturing Science in Accelerating Technology Translation from Lab to Market" sponsored by DOE/AMMTO, September 26-27, Seattle, 2023.
- Local organizing committee member of International Battery Association (IBA), San Diego, 2019
- Faculty advisor of Materials Research Society (MRS) University Chapter
- Lead organizer of Electrochemistry in Manufacturing for ECS Fall Meeting, Atlanta, 2022
- Co-organizer of Electrolyte & Interfaces Symposium for AiMES 2018 (Cancun, 2018)
- Co-organizer of Li-ion Battery symposium for 2017 ECS Fall Meeting (National Harbor, 2017)
- Lead organizer on symposium of Electrochemistry and Batteries for Safe and Low-cost Energy Storage for the 229th ECS Spring meeting (San Diego, 2016)
- Co-organizer of ECS Conference on Electrochemical Energy Conversion & Storage with SOFC-XIV (Glasgow, Scotland, 2015)
- Lead organizer for MRS 2014 spring meeting on Energy Storage Technologies beyond Li-ion Batteries
- Lead organizer of Material and Electrode Designs session for Energy Storage and Conversion for 2014 the Electrochemical Society (ECS) Spring meeting
- Lead organizer of Nano-architectures for Energy Storage session for 2014 ECS Fall Meeting
- Lead organizer of Metal-air Batteries session for 220th ECS meeting
- Lead organizer of symposium O (Next-Generation Energy Storage Materials and Systems) for 2012 MRS Spring Meeting
- Co-organizer of Energy Storage session for XXII International Materials Research Congress (2013)
- Co-organizer of Batteries and Energy Technology Joint General Session for 2014 ECS Fall meeting.
- Session chairs for ECS and MRS conferences in the past decade

Selected Plenary, Keynote or Invited Talks

1. J. Xiao, "Electroplating of Lithium Metal and its Correlation to Rechargeable Lithium Metal Batteries", The Electrochemical Society Spring Meeting, May 21, Montreal, Canada, 2025.

2. J. Xiao, “Reducing Manufacturing Cost of Single Crystal Cathode Materials through Scientific Innovations”, Materials Research Society Meeting, Seattle, April 9, 2025.
3. J. Xiao, “Characterizing Single Crystal Ni-rich Cathode Materials: from Cathode-Electrolyte Interphase to Single Crystal Growth”, 2025 Materials Research Society Meeting, Seattle, April 8, 2025.
4. J. Xiao, “Battery500 Consortium: Address Fundamental Challenges in Rechargeable Li Metal Batteries”, The 15th Conference on Advanced Batteries for Automobile Applications (ABAA), October 29th, 2024, Montreal, Canada.
5. J.Xiao, “Overview of Cathode-Electrolyte Interface Consortium”, ECS PRiME Meeting, Honolulu, HI, October 2024.
6. J.Xiao, “Understanding Pressure Impacts and Coulombic Efficiency of Rechargeable Lithium Metal Batteries”, ECS PRiME Meeting Honolulu, HI, October 7th, 2024.
7. J.Xiao, “Overview of EV Battery RD&D”, LG Energy Solutions, Korea, September 27, 2024.
8. J.Xiao, “Cost-Oriented Fundamental Research for Single Crystal Cathode Manufacturing”, Clean Energy Forum, Seoul, Korea, September 23, 2024.
9. J.Xiao, “Rechargeable Lithium Metal Batteries: From Electroplating to Pouch Cell Cycling”, Seminar at Albemarle, Kings Mountain, September 17, 2024.
10. J.Xiao, “Developing and Manufacturing Next-Generation Battery Materials and Technologies”, Seminar at Albemarle, Kings Mountain, September 17, 2024.
11. J.Xiao, “Advancing EV Battery Technology through Materials Innovation and Validation, “International Collaboration Network for Innovative Battery Technology and Net-Zero Society”, Waseda University, Tokyo, Japan, June 24, 2024.
12. J. Xiao, “Carbon in Electrochemical Energy Storage”, ECS Spring Meeting, San Francisco, May 29, 2024.
13. J. Xiao, “Single Crystal Ni-rich cathodes: Synthesis, Scaleup and Validation”, ECS Spring Meeting, San Francisco, May 27, 2024.
14. J. Xiao, an Integrated Science and Engineering approach for Developing and Manufacturing Next-Generation Battery Materials and Technologies”, Toyota Research Institute of North America, May 16th, 2024.
15. J. Xiao, “Single Crystal Ni-rich Cathodes”, 2024 MRS Spring, Seattle, April 23, 2024.
16. J. Xiao, “Battery500 Consortium: Understanding and Addressing Fundamental Challenges in Rechargeable Lithium Metal Batteries”, 2024 TMS Annual Meeting, Orlando, FL, March 6th, 2024.
17. J. Xiao, “An Integrated Science and Engineering Approach for Next-Generation Battery Materials and Technologies”, The 5th Battery and Energy Storage Conference, Argonne National Laboratory, Lemont, IL, November 16th, 2023.
18. J. Xiao, “Overview of Cathode-Electrolyte Interface (CEI) Consortium”, The 14th International Conference on Advanced Lithium Batteries for Automobile Applications, Ho Chi Mihn City, November 1st, Vietnam
19. J. Xiao, “PNNL Battery Research Consortiums”, ACS Fall Meeting, San Francisco, CA, August 16th, 2023.
20. J. Xiao, “High-Energy Single Crystal Ni-rich Cathode for Advanced Li-ion Batteries”, US – UK Battery Technology Research and Innovation, Denver, CO, August 1st, 2023.
21. J. Xiao, “Synthesis and Scaleup of high-energy single crystal Ni-rich cathode materials for Advanced Li-ion Batteries”, Virtual Seminar for Center for Research in Extreme Batteries (CREB), University of Maryland, June 23, 2023.

22. J. Xiao, "Accelerating Next-Generation Battery Technology Development and Manufacturing, Seminar at Albemarle, Kings Mountain, NC, April 20th, 2023."
23. J. Xiao, "Single Crystal Ni-rich Cathode for Advanced Li-ion Batteries: Synthesis, Scaleup and Validation", ACS Spring Meeting, Indianapolis, IN, March 29th, 2023.
24. J. Xiao, "Single Crystal Ni-rich Cathode for Advanced Li-ion Batteries: Synthesis, Scaleup and Validation", International Battery Association, Austin, March 9th, 2023.
25. J. Xiao, "Microbatteries and their Applications", Innovation Engine for Digital Urban & Rural Equity (iEnDURE) Symposium, University of Washington, Seattle, February 28th, 2023.
26. J. Xiao, "Battery500 Consortium: Addressing Fundamental Challenges to Enable Rechargeable Lithium Metal Batteries", Yonsei-CBE International Workshop Series, Korea (virtual), February 6th, 2023.
27. J. Xiao, "Single Crystal Ni-rich Cathode for Advanced Li-ion Batteries: Synthesis, Scaleup and Validation", Advanced Automotive Battery Conference, San Diego, CA, December 6th, 2022.
28. J. Xiao, "Single Crystal Ni-rich Cathode for Advanced Li-ion Batteries: Synthesis, Scaleup and Validation", Boise State University (Virtual), December 2nd, 2022.
29. J. Xiao, "Overview of Battery500 Consortium", National Academy of Science, Engineering and Medicine Workshop on "Electrification of the Army's Light Combat Vehicle Fleet", Washington DC, November 3rd, 2022
30. J. Xiao, "PNNL R&D in Primary and Secondary Lithium Metal Batteries", ECS Fall meeting, Atlanta, October 12, 2022.
31. J. Xiao, "An Integrated Science and Engineering Approach for Next-generation Battery Materials and Technology", ORCAS: International Conference on Energy Conversion and Storage, San Juan, WA, September 8th, 2022
32. J. Xiao, "Single Crystal Ni-rich Cathode Materials: Synthesis, Scaleup and Validation", US-UK Workshop on Energy Storage Research Collaboration: Cathode Materials and Recycling. London, UK, July 27th, 2022
33. J. Xiao, "Electrochemical Energy Storage: An Integration of Materials Science, Electrochemistry and Engineering", Seminar at Dalhousie University, March 24th, 2022.
34. J. Xiao, "Single Crystal Ni-Rich Cathode Materials for Advanced Li-ion Batteries", ACS Spring Meeting, March 21, 2022.
35. J. Xiao, "Battery500 Consortium Overview", Lithium Metal Battery Symposium, MPSC Symposium Series (virtual), March 3rd, 2022.
36. J. Xiao, "Battery500 Consortium Overview", US – UK Battery Technology Research and Innovation Online Summit (virtual), February 1st, 2022
37. J. Xiao, "Materials Chemistry in Electrochemical Energy Storage", Chemistry Department Seminar (virtual), Binghamton University, November 5th, 2021.
38. J. Xiao, "From Materials Science to Prototype Batteries and Cell Manufacturing", International Battery Materials Association (virtual), October 24, 2021.
39. J. Xiao, "Electrochemistry in Energy Storage Research", Oregon Center for Electrochemistry Conference, University of Oregon(virtual), September 24, 2021.
40. J. Xiao, "From Materials Science to Prototype Batteries and Cell Manufacturing", Molecular Foundry 2021 Annual User Meeting (virtual), LBNL, August 20, 2021.
41. J. Xiao, "Electrochemical Energy Storage: From Materials Science to Prototype Batteries and Cell Manufacturing", Shell, July 6th, 2021.
42. J. Xiao, "From Fundamental Research to Technology Transfer", Virtual Seminar, DOE OTT Entrepreneurship Program, June 24th, 2021.

43. J. Xiao, “From Reproducible Coin Cells to Pouch Cell Design and Fabrication”, Department Seminar(virtual), University of Washington, June 2nd, 2021.
44. J. Xiao, “Reversible planar gliding and microcracking in a single-crystalline Ni-rich Cathode”, MRS Spring Meeting (virtual), April 21, 2021.
45. J. Xiao, “A Top-down approach to understand and address fundamental challenges in rechargeable lithium metal batteries”, MRS Spring Meeting (Virtual), April 21, 2021
46. J. Xiao, “Reversible planar gliding and microcracking in a single-crystalline Ni-rich Cathode”, ACS Spring Meeting (Virtual), April 7th, 2021.
47. J. Xiao, “Electrochemical Energy Storage: From Materials Science to Prototype Batteries and Manufacturing”, Virtual Materials Science and Engineering (MSE) seminars(virtual), University of Houston, March 26th, 2021.
48. J. Xiao, “Integrating Materials Science, Electrochemistry and Engineering in Energy Storage Technologies”, Materials Today Award Presentation, December 14, 2020
49. J. Xiao, “Electrochemistry in Rechargeable Lithium Metal Batteries”, ECS Webinar November 11, 2020.
50. J. Xiao, “Integrating Materials Science, Electrochemistry and Engineering in Energy Storage Technologies”, ECS PRiME Virtual Meeting, October 4, 2020.
51. J. Xiao, “Battery 500 Consortium: Understanding and Addressing the Fundamental Challenges in Rechargeable Lithium Metal Batteries”, 20th Annual Advanced Automotive Battery Conference (AABC) Virtual, November 3rd, 2020.
52. J. Xiao, “Energy Storage: Integration of Materials Chemistry, Electrochemistry and Engineering”, Virtual Seminar for University of Washington/Clean Energy Institution, April 16th, 2020
53. 2019 MRS Fall Meeting, “Single Crystal Ni-Rich Cathode for Advanced Li-ion Batteries”, Boston, MA, 2019.
54. J. Xiao, “Lithium Metal Anodes: Origin of Lithium Dendrites and their Implications in Rechargeable Lithium Metal Batteries”, Seminar at Sustainable Power and Energy Center at UC San Diego, San Diego, October 2nd, 2019.
55. 236th ECS Fall Meeting, “Ni-rich and Low-Co Cathode Materials for Advanced Lithium Ion Batteries”, Atlanta, GA, 2019
56. 236th ECS Fall Meeting, “Understanding Lithium Sulfur Batteries at Different Scales”, Atlanta, GA2019.
57. Advanced Lithium Batteries for Automobile Applications (ABAA) 12, “Battery500 Consortium: Addressing the Fundamental Challenges to Enable Next-generation Battery Technologies”**,** Ulm, Germany, 2019.
58. International Conference for Advanced Cathodes in Lithium & Sodium Ion Batteries, “Understanding Ni-rich Cathode Materials at Thick Electrode Levels”, Seoul, Korea, 2019.
59. International Conference on Lithium-Sulfur Batteries, “Understanding Rechargeable Lithium Sulfur Pouch Cells”, Beijing, 2019
60. 2019 Spring Biannual Meeting Electric Flight Batteries, University of Maryland, College Park, 2019
61. 235th ECS Spring Meeting “Battery500 Consortium: Addressing the Fundamental Challenges to Enable High-Energy Rechargeable Li Metal Batteries”, Dallas, TX 2019
62. International Battery Association (IBA) Meeting, “Lithium Sulfur Batteries: From Fundamental Understanding to Pouch Cell Integration”, San Diego, CA, 2019
63. DOE/Office of Electricity Workshop on “Non-Aqueous Redox Flow Cells”, “Standardizations of rechargeable lithium metal battery research”, Santa Fe, NM, 2019

64. Detroit Sectional of The Electrochemical Society (ECS), "Battery500 Consortium: Fundamental Research to Enable Next-generation Battery Technologies", Detroit, MI, 2019
65. Seminar at General Motor Global R&D Center, "Challenges and Opportunities of Lithium Metal Anode", Warren, 2019
66. 6th International Renewable and Sustainable Energy Conference (keynote speaker), "Fundamental Challenges of Rechargeable Lithium Metal Batteries", Rabat, Morocco, 2018.
67. 233rd ECS Meeting, "Fundamental Challenges to Develop High-Energy Lithium Sulfur Batteries", Seattle, 2018.
68. 233rd ECS Meeting, "Reactions or no reaction: Lithium Deposition on the Surface of Solid State Electrolyte", Seattle, 2018.
69. International Battery Seminar and Exhibit, "Building Next-Generation Rechargeable Lithium Metal Batteries", Fort Lauderdale, 2018
70. US-China Vehicle Battery Technology Information Exchange, "Building Next-Generation Battery Technologies", San Diego, CA, 2018.
71. 11th International Conference on Advanced Lithium Battery for Automobile Applications (ABAA), "Challenges and Opportunities of Employing Li Metal Anode for the Next-Generation Battery Technologies", Huzhou, China, 2018
72. International Battery Association (IBA) Meeting, "The Interplay between Solid Electrolyte Interface (SEI) and Lithium Metal Growth", Japan, 2017
73. NASA Workshop on Battery Technologies, Cleveland OH, August 2017.
74. Joint symposium between the ECS and China Society of Electrochemistry meeting, "Research Progress of Lithium Sulfur Batteries", Shanghai, China, 2017
75. International Battery Association (IBA) and Pacific Power Source Symposium joint meeting, "High Voltage Spinel Controlled by Mn^{3+} Concentration and Site Disorder", Hawaii, 2012
76. The Technical Symposium (Keynote Speaker), "Progress of Battery500 Program", Las Vegas NV September, 2017
77. Seminar at General Motor Global R&D Center, "Revisiting Fundamentals behind Lithium Sulfur Batteries at Cell level", Warren, 2017
78. The 229th Electrochemical Society (ECS) Spring Meeting, San Diego, CA, 2016
79. Departmental seminar at the Department of Materials Science and Engineering, University of Washington, "The Interplay between Solid Electrolyte Interface (SEI) and Lithium Metal Growth", Seattle, 2016
80. Materials Research Society (MRS) Spring Meeting, "Recent Progress of Lithium Sulfur Battery Research", Phoenix, 2016
81. DOE-Joint Center for Energy Storage Research (JCESR) workshop, "Understanding Li-S Batteries", Richland, 2016
82. The 248th American Chemical Society (ACS) Meeting, San Francisco, 2014
83. Beyond Lithium-ion Conference VII (Argonne National Laboratory, Illinois, 2014
84. 38th International Conference and Exposition on Advanced Ceramics and Composites, Florida, 2014
85. Materials Challenges in Alternative & Renewable Energy, American Ceramic Society, Florida, 2014
86. Seminar at Ulsan National Institute of Science and Technology, "Lithium Sulfur Batteries", Korea, 2014
87. U.S.-China Electric Vehicle and Battery Technology Workshop, Seattle, 2014
88. SPIE Defense, Security, and Sensing, Baltimore, 2014
89. Seminar at General Motor Global R&D Center, "Fundamental Research on Lithium Sulfur

Batteries", Warren, 2014

90. Seminar Series at Department of Chemical Engineering of University of Waterloo, Waterloo, Canada, 2014
91. CIBF-2012, "High Voltage Spinel Cathodes for Advanced Lithium Ion Batteries", Shenzhen, China, 2012
92. Workshop on Materials Science and Materials Chemistry for Energy, Beijing, China, 2012
93. 7th Beijing International Forum on Li-ion Battery Technology & Industrial Development, Beijing, China, 2012
94. Seminar at Electrochemical Energy Storage Lab (Prof. Yang Shao-Horn's group) at Massachusetts Institute of Technology, Boston, 2011

Selected Publications and Book Chapters

**** Indicates corresponding author***

2025

1. **J.Xiao***, X.Cao, B.Gridley, W.Golden, Y.Ji,S.Johnson,D.Lu, F.Lin, J.Liu, Z.Liu, H.N.Ramesh, F.Shi, J.Schrooten, M.J.Sims, S.Sun, Y.Shao, A.Vaisman, J.Yang, M.S.Whittingham, "From Mining to Manufacturing: Scientific Challenges and Opportunities behind Battery Production", *Chemical Reviews*, 2025, https://doi.org/10.1021/acs.chemrev.4c00980
2. B. Wu, R. Yi, Y. Xu, P. Gao, Y.Bi, L.Novák, Z. Liu, E. Hu, N. Wang, J.Rijssenbeek, S.Venkatachalam, J. Wu, D. Liu, X.Cao, **J. Xiao***, "Unusal Li_2O sublimation promotes single-crystal growth and sintering", *Nature Energy*, 2025, https://doi.org/10.1038/s41560-025-01738-4

2024

3. **J.Xiao***, N.Adelstein, Y. Bi, W. Bian,J. Cabana, C. L. Cobb, Y. Cui, S. J. Dillon, M. M. Doeff , S. M. Islam, K. Leung, M. Li, F. Lin, J. Liu, H.Luo, A. C. Marschilok, Y. S. Meng, Y.Qi, R. Sahore, K.G. Sprenger, R. C. Tenent, M. F. Toney, W.Tong, L. F. Wan, C. Wang, S. E. Weitzner, B.Wu, Y. Xu, "Assessing Cathode-Electrolyte Interphases in Batteries", *Nature Energy*, **2024**, https://doi.org/10.1038/s41560-024-01639-y
4. D. Liu, B. Wu, Y.Xu, J.Ellis, A. Baranovskiy, D. Lu, J. Lochala, C. Anderson, K. Baar, D.Qu, J.Yang, D. Galvez-Aranda, K.-J. Lopez, P. B. Balbuena, J. M. Seminario, J. Liu, **J. Xiao*** "Controlled large-area lithium deposition to reduce swelling of high-energy lithium metal pouch cells in liquid electrolytes', *Nature Energy*, **2024**, https://doi.org/10.1038/s41560-024-01488-9
5. B. Wu, J. Quinn, J. Li, Q. Li, D. Liu, W. Martin, K. Baar, L. Zhong, C.Wang and **J.Xiao*,** "Understanding and Enhancing Silicon Nanoparticle Distribution during Electrode Processing", *J. Electrochem. Soc*., **2024**, 171, 050542.
6. J.Quinn, J.M. Kim,R.Yi,J.-G.Zhang, **J.Xiao***, C.Wang, Fluoro-Ethylene-Carbonate Plays a Double-Edged Role on the Stability of Si Anode-based Rechargeable Battery During Cycling and Calendar Aging, *Adv. Mater*., **2024**, 2402625.

2023

7. M.Stanley Whittingham, **Jie Xiao**, "Fifty Years of lithium-ion batteries and what is next?", *MRS Bulletin* (invited perspective), **2023**, 48, 1-7.
8. B. Wu, H. Koura, S.Lu, H.Li, X.Wang, **J.Xiao***, Z.Deng, "Functional materials for powering and implementing next-generation miniature sensors", *Materials Today* (invited), **2023**, 69, 333-354.

9. **J. Xiao*,** F.Shi, T.Glossmann, C.Burnett, Z.Liu, "From Laboratory Innovations to Materials Manufacturing for Lithium-based Batteries", *Nature Energy*, **2023**, 8, 329-339.
10. Y. Bi, R.Yi, D. Liu, P.Zuo, J.Hu, Q.Li, J.Wu, C.Wang, S.Tan, E.Hu, J.Li, R. O'Toole, L. Luo, X. Hao, S. Venkatachalam, J. Rijssenbeck, **J. Xiao***, "Simultaneous Single Crystal Growth and Segregation of Ni-Rich Cathode Enabled by Nanoscale Phase Seperation for Advanced Lithium-Ion Batteries", *Energy Storage Materials*, **2023**, 62, 102947.
11. C.M.Efaw, Q.Wu, N.Gao,Y.Zhang, H.Zhu, K.Gering, M.F, Hyrley,H. Xiong, X.Cao, W.Xu, J.-G.Zhang, E.J. Dufek, **J.Xiao**, X. Yang, J.Liu, Y.Qi and B.Li, "Localized high-concentration electrolytes get more localized through micelle-like structures", *Nature Materials*, **2023**, 22, 1531-1539.
12. S.Tan, J.Kim, A.Corrao, S.Ghose, H.Zhong, N.Rui, X.Wang, S.Senanayake, B.J.Polzin, P.Khalifah, **J.Xiao**, J. Liu, K.Xu. X-Yang,X.Cao, E.hu, "Unravelling the convoluted and dynamic interphasial mechanisms on Li metal anodes", *Nature Nanotechnology*, **2023**, 18, 243-249.

2022

13. **J. Xiao***, "A granular approach to electrode design", *Science*, **2022**, 376, 455.
14. J. Hu, L. Li, Y. Bi, J. Tao, J. Lochala, D. Liu, B.Wu, X.Cao, S. Chae, C. Wang, **J. Xiao***, "Locking Oxygen in Lattice: A Quantifiable Comparison of Gas Generation in Polycrystalline and Single Crystal Ni-Rich Cathodes", *Energy Storage Materials*, **2022**, 47, 195-202, https://doi.org/10.1016/j.ensm.2022.02.025
15. **J. Xiao***, C. Anderson, X.Cao, H.-J. Chang, R. Feng, Q. Huang, Y. Jin, H. Job, J.-M. Kim, P. M. L. Le, D. Liu, L. Seymour, N. Shamim, L. Shi, B. Sivakumar, "Electrochemistry in Understanding and Designing Electrochemical Energy Storage Systems" (invited), *Journal of The Electrochemical Society*, **2022**, 169, 010524.
16. Y. Bi, Q. Li, R.Yi and **J. Xiao***, "To Pave the Way for Large-Scale Electrode Processing of Moisture-Sensitive Ni-Rich Cathodes" (invited), *Journal of the Electrochemical Society*, **2022**, 169, 020521.
17. S. Feng, R.K.Singh, Y.Fu,Z.Li, Y.Wang, J.Bao,Z.Xu,G.Li,C.Anderson,L.Shi,Y.Lin, P.G. Khalifah, W.Wang, J.Liu, **J. Xiao**, D.Lu, "Low-tortuous and dense single-particle-layer electrode for high-energy lithium-sulfur batteries", *Energy & Environmental Science*, **2022**,15, 3842-3853.

2021

18. C. Niu, D.Liu, J.Lochala, C.S. Anderson, X.Cao, M.E.Gross, W.Xu, J.-G. Zhang, M.S. Whittingham, **J. Xiao***, J.Liu, "Balancing interfacial reactions to achieve long cycle life in high-energy lithium metal batteries", *Nature Energy*, **2021**,6, 723-732. https://doi.org/10.1038/s41560-021-00852-3
19. J.Hu, B.Wu, S.Chae, J.Lochala, Y.Bi, **J. Xiao***, "Achieving highly reproducible results in graphite-based Li-ion full coin cells", *Joule,* **2021**, 5, 1-5.
20. Z. Shadike, H. Lee, O. Borodin, X. Cao, X.Fan, X. Wang,R.Lin, S.-M. Bak, S.Ghose, K. Xu, C. Wang, J. Liu, **J. Xiao***, X.-Q. Yang and E. Hu, "Identification of LiH and nanocrystalline LiF in the solid–electrolyte interphase of lithium metal anodes", *Nature Nanotechnology*, **2021**, 16, 549-554.

21. J. Hu, L. Li, E.Hu, S. Chae, H.Jia, T.Liu, B.Wu, Y.Bi, K. Amine, C. Wang, J.-G.Zhang, J.Tao, **J.Xiao***, "Mesoscale-architecture-based crack evolution dictating cycling stability of advanced lithium ion batteries", *Nano Energy*, **2021**, 79, 105420.
22. Z. Shadike, H. Lee, O. Borodin, X.Cao, X. Fan, X. Wang, R.Lin, S. Bak, S. Ghose, K. Xu, C. Wang, J. Liu, **J. Xiao**, X. Yang, E.Hu, "Identification of LiH and nanocrystalline LiF in the solid-electrolyte interphase of lithium metal anodes", *Nature Nanotechnology*, **2021**,16, 549-554.

2020

23. Y. Bi, J. Tao, Y. Wu, L.Li, Y. Xu, E. Hu, B. Wu, J. Hu,C. Wang, J.-G. Zhang, Y Qi, **J. Xiao***, "Reversible planar gliding and microcracking in a single-crystalline Ni-rich cathode", *Science*, **2020**, 370, 1313-1317. https://science.sciencemag.org/content/370/6522/1313
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1. J.-G. Zhang, W. Wang, **J. Xiao**, W. Xu, G. L. Graff, G. Yang, D. Choi, D. Wang, X. Li, and J. Liu. "Silicon-Based Anode for Li-Ion batteries." in *Encyclopedia of Sustainability Science and Technology*, a Springer Reference book edited by Robert A. Meyers et al. ISBN 978-0-387-89469-0.

2. J.-G. Zhang, **J. Xiao**, and W. Xu, "Primary Li-Air Batteries" a chapter published in "Lithium air batteries: Fundamental and prospect," a Springer book edited by Peter Bruce et al. ISBN 978-1-4899-8061-8.

Patents and Pending Applications

1. Cost Effective Synthesis of Oxide Materials for Lithium Ion Batteries, Patent Number: 11,862,794

2. Cost Effective Synthesis of Oxide Materials for Lithium Ion Batteries, Patent Number: 12,030,789
3. Systems and Methods for Monitoring Organisms Within an Aquatic Environment, Patent Number: 11,793,165
4. Lithium Metal Pouch Cells AND Methods of Making The Same, Patent Number: 11,621,414
5. Methods for Attaching Transmitters to Animals, Patent Number: 11,381,263
6. Transmitters for Animals and Methods for Transmitting from Animals, Patent Number: 11,278,004
7. Cell Design and Fabrication of Li Metal Pouch Cells with cell-level energy of 300 Wh/kg or higher, Patent Number: 11,189,828
8. Methods for Attaching Transmitters to Animals, Patent Number: 11,139,840
9. Acoustic Transmission Device and Process for Tracking Selected Hosts, Patent Number: 10,739,434
10. Hybrid Anodes for Energy Storage Devices, Patent Number: 10,673,069
11. Systems and Methods for Monitoring Organisms Within an Aquatic Environment, Patent Number: 10,531,639
12. Signal Transmitter and Methods for Transmitting Signals from Animals, Patent Number: 10,236,920
13. Acoustic Transmission Device and Process for Tracking Selected Hosts, Patent Number: 10,101,429
14. Injectable Acoustic Transmission Devices and Process for Making and Using Same, Patent Number: 10,033,469
15. Acoustic Transmission Devices and Process for Making and Using Same, Patent Number: 10,033,470
16. Electrolyte for stable cycling of high-energy lithium sulfur redox flow batteries, Patent Number: 9,954,229
17. Polymer-Sulfur Composite Materials for Electrodes In Li-S Energy Storage Devices, Patent Number: 9,929,429
18. Electrolyte for Batteries with Regenerative Solid Electrolyte Interface, Patent Number: 9,722,277
19. Thick Electrodes Including Nanoparticles Having Electroactive Materials and Methods of Making Same, Patent Number: 9,577,250
20. Energy Storage Systems Having an Electrode Comprising LixSy, Patent Number: 9,406,960
21. Lithium compensation for full cell operation, Patent Number: 9,343,736
22. Hybrid Anode for Redox Flow Batteries, Patent Number: 9,214,695
23. Methods for making anodes for lithium ion batteries,Patent Number: 9,039,788
24. High-Energy Metal Air Batteries, Patent Number: 8,765,278
25. Graphene-Based Battery Electrodes Having Continuous Flow Paths, Patent Number: 8,758,947
26. Nanocomposite Protective Coatings for Battery Anodes, Patent Number: 8,632,915
27. High-Energy Metal Air Batteries, Patent Number: 8,481,187

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