Wesley Chang

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EDUCATION

PhD, Princeton University 2017 - 2021
Department of Mechanical Engineering, Princeton University
Department of Chemical Engineering, Columbia Electrochemical Energy Center, Columbia University
Advisor: Daniel Steingart
Spatial dynamics and chemo-mechanics of lithium-ion and lithium-metal batteries

MS, Stanford University 2014 - 2016
Department of Chemical Engineering, Stanford University
Advisor: Zhenan Bao
Investigation of self-healing-polymer/silicon-microparticle anodes

BS, Stanford University 2010 - 2014
Department of Chemical Engineering, Stanford University
Advisor: Hongjie Dai
Synthesis and functionalization of metal oxide nanoparticles as ORR/OER catalysts

PUBLICATIONS

1. **Chang, W.***, May, R.*, Wang, M., Sakamoto, J., Marbella, L, Steingart, D. Evolving Contact Mechanics and Microstructure Formation Dynamics of the Lithium Metal – $Li_7La_3Zr_2O_{12}$ (LLZO) Interface, *Under Review*
2. **Chang, W.**, Steingart, D. Operando 2D Acoustic Characterization of Li-ion Battery Spatial Dynamics, *Under Review*
3. **Chang, W.***, Bommier, C.*, Mohr, R., Steingart D. Impact of Non-Arrhenius Temperature Behavior on Fast-Charging Capabilities of $LiCoO_2$-Graphite Lithium-ion Batteries, *Journal of Physical Chemistry C*, 125, 3, 1731-1741, DOI: 10.1021/acs.jpcc.0c09972 (2021)
4. Sarkar, A., May, R., Ramesh, S., **Chang, W.**, Marbella, L. Recovery and Reuse of Composite Cathode Binder in Lithium-Ion Batteries, *ChemistryOpen*, 10, 1-9, DOI: 10.1002/open.202100060 (2021)
5. **Chang, W.**, Mohr, R., Kim, A., Raj, A., Davies, G., Denner, K., Park, J.H., Steingart, D. Measuring Effective Stiffness of Li-ion Batteries from Acoustic Signal Processing, *Journal of Materials Chemistry A*, DOI: 10.1039/D0TA05552B (2020)
6. **Chang, W.**, Park, J.H., Dutta, N., Arnold, C.B., Steingart, D. Morphological and Chemical Mapping of Columnar Lithium Metal, *Chemistry of Materials*, 32, 7, 2803-2814, DOI: 10.1021/acs.chemmater.9b04385 (2020)
7. **Chang, W.***, Bommier, C.*, Fair, T., Yeung, J., Patil, S., Steingart, D. Understanding Adverse Effects of Temperature Shifts on Li-ion Batteries: An *Operando* Acoustic Study, *Journal of the Electrochemical Society* Focus Issue, 167, 9, DOI:10.1149/1945-7111/ab6c56 (2020)
8. Bommier, C.*, **Chang, W.***, Lu, Y., Yeung, J., Davies, G., Mohr, R., Williams, M., Steingart, D. *In Operando* Acoustic Detection of Lithium Metal Plating in Commercial $LiCoO_2$/Graphite Pouch Cells, *Cell Reports Physical Science*, 1, 100035, DOI: 10.1016/j.xcrp.2020.100035 (2020)
9. Bommier, C.*, **Chang, W.***, Li, J.L., Biswas, S., Nanda, J., Steingart D. Operando Acoustic Monitoring of SEI Formation and Long-Term Cycling in NMC/SiGr Composite Pouch Cells, *Journal of the Electrochemical Society*, 167, 2, DOI: 10.1149/1945-7111/ab68d6 (2020)
10. **Chang, W.**, Park, J.H., Steingart, D. Poor Man's Atomic Layer Deposition of LiF for Additive-Free Growth of Lithium Columns, *Nano Letters*, 18, 11, 7066-7074, DOI: 10.1021/acs.nanolett.8b03070 (2018)
11. Liang, Y., Wang, H., Diao, P., **Chang, W.**, Hong, G., Li, Y., Gong, M., Xie, L., Zhou, J., Wang, J., Regier, T., Wei, F., Dai, H. Oxygen reduction electrocatalyst based on strongly coupled cobalt oxide nanocrystals and carbon nanotubes, *Journal of the American Chemical Society*, 134, 38, 15849-14857, DOI: 10.1021/ja305623m (2012)
12. Wang, H., Liang, Y., Gong, M., Li, Y., **Chang, W.**, Mefford, T., Zhou, J., Wang, J., Regier, T., Wei, F., Dai, H. An ultrafast nickel-iron battery from strongly coupled inorganic nanoparticle/nanocarbon hybrid materials, *Nature Communications*, 3, 917, DOI: 10.1038/ncomms1921 (2012)
13. **Chang, W.**, Nelson S., Rack shadows and their invariants, *Journal of Knot Theory and its Ramifications*, 20, 1259-1269, DOI: 10.1142/S0218216511009315 (2011)

*indicates equal contribution

FELLOWSHIPS AND AWARDS

F.M. Becket Fellowship of The Electrochemical Society ($5,000) 2021
Peter B. Lewis Fund for Student Innovation in Energy and Environment ($3,000) 2019
NDSEG Alternate Awardee 2019

Princeton School of Engineering Travel Grant ($1,000)	2018
Princeton Graduate Fellowship	2017 - 2018
Stanford School of Engineering Master's Scholarship ($36,000)	2015 - 2016
Stanford Undergraduate Summer Research Fellowship ($5,600)	2011
QuestBridge Match Scholarship ($240,000)	2010 - 2014

CONFERENCE PRESENTATIONS

Battery Modeling Webinar Series (Invited Talk)	May 2021
NY-BEST (Virtual Poster)	Nov 2020
Electrochemical Society Conference 2020 (Virtual Talk)	Oct 2020
Columbia Electrochemical Energy Center, New York, NY (Virtual Seminar Talk)	Apr 2020
Gordon Research Conference in Batteries, Ventura, CA (Poster)	Feb 2020
NY Battery and Energy Storage Workshop, New York, NY (Poster)	Oct 2019
236th ECS, Atlanta, GA (Invited Talk)	Oct 2019
Electrochemical Conference on Energy and the Environment, Glasgow, UK (Talk)	Jul 2019
NGenE – Next Generation Electrochemistry, University of Illinois, Chicago (Poster)	Jun 2019
256th ACS National Meeting and Exposition, Boston, MA (Invited Talk)	Aug 2018
Princeton E-ffiliates Conference, Princeton Club in New York (Poster)	Jun 2018
Gordon Research Conference in Batteries, Ventura, CA (Poster)	Feb 2018
Stanford Mason Lecture Series, Stanford University (Poster)	May 2013
Stanford Undergraduate Research Symposium, Stanford University (Poster)	Aug 2011

SERVICE, OUTREACH AND PROFESSIONAL DEVELOPMENT

NexTech: wrote grant/funding proposal for PI (successful)	2021
DoD DURIP Instrumentation Proposal: helped write grant proposal for PI (under review)	2021
Super User for Columbia Electrochemical Energy Center	2020
Princeton Inclusive Leadership Learning Cohort	2019
NGenE (Next Generation Electrochemistry) Workshop	2018
Judge for Princeton Energy Case Competition	2018
Technical Lead for Young Global Leaders Conference (YGL)	2018
Graduate Fellow for Princeton Scholars Institute Fellows Program (SIFP)	2017- 2018
Volunteer for Spark Clean Energy	2016
QuestBridge college admissions applicant reader	2014

TEACHING AND MENTORSHIP

Princeton Teaching Transcript and Pedagogy Certification	2021
Princeton MAE 206: Engineering Dynamics	Spring 2019
Princeton MAE 324: Intro to Materials	Fall 2018
Master's Student (Columbia): Gunnar Thorsteinnson	Summer 2021 -
• Acoustics signal processing and modeling	
Undergraduate (Columbia): Khushi Kabra	Summer 2021 -
• Cathode/electrolyte interfaces and cathode synthesis	
Undergraduate (Columbia): Agnes Thornberg	2020 - 2021
• Spatial acoustic imaging resolution and signal processing	
Master's Student (Columbia): Shripad Patil	Fall 2019
• Temperature effects of Li-ion batteries (work led to 1 publication)	
Undergraduate (Columbia): Silas Swanson	2019 – 2020
• Electrochemical analysis of Li-Zn alloy anodes	Fall 2018
Undergraduate (Princeton): Kate Denner	
• Design and build of pressure chuck for lithium-ion and lithium metal acoustic studies (work led to 1 publication)	