Shuya Wei
Assistant Professor
Department of Chemical and Biological Engineering
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EDUCATION

Cornell University, School of Chemical and Biomolecular Engineering, Ithaca, NY, 2017
PhD, Chemical Engineering, Advisor Prof. Lynden A. Archer
Nanyang Technological University, School of Chemical and Biomedical Engineering, Singapore, 2013
B. Eng., Bioengineering, (Honor Degree)

ACADEMIC EXPERIENCE

Assistant Professor, Department of Chemical and Biological Engineering***, UNM*** *Aug 2019 – now*
Postdoctoral Fellow, *The Koch Institute, **MIT*** *Sept 2017-Aug 2019*

PUBLICATIONS

1. **Shuya Wei**, Jifa Qi, Shengnan Huang, Geran Zhang and Angela M. Belcher, 'A Nanostructured Sodium Transition Metal Oxide Cathode Promises High-Energy Sodium-ion Storage', (submitted)
2. William C. Records, **Shuya Wei** and Angela M. Belcher, 'Virus-templated nickel phosphide nanofoams as additive-free, thin-film Li-ion microbattery anodes', *Small*, 2019, 15 (44), 1903166.
3. Geran Zhang[†], **Shuya Wei**[†] and Angela M. Belcher, 'Biotemplated zinc sulfide nanofibers as anode materials for sodium-ion batteries', *ACS Applied Nano Materials*, 2018, 1 (10), 5631 (†: equal contribution)
4. **Shuya Wei**, Zhu Cheng, Pooja Nath, Mukul D. Tikekar, Gaojin Li and Lynden A. Archer[*], 'Stabilizing Electrochemical Interfaces in Viscoelastic Liquid Electrolytes', *Science Advances*, 2018, 4 (3), eaao6243
5. Zhengyuan Tu, Snehashis Choudhury, Michael Zachman, **Shuya Wei**, Kaihang Zhang, Lena Kourkoutis and Lynden A. Archer 'Solid-solid interphases for hybrid rechargeable battery anodes', *Nature Energy*, 2018, 3 (4), 310
6. Lei Fan[†], **Shuya Wei**[†*], Qi Li, Yingying Lu[*], 'Recent Progress of the Solid-state Electrolytes for High Energy Metal-based Batteries', *Advanced Energy Materials,* 2018, 8 (11), 1702657 (†: equal contribution, *: corresponding author)
7. **Shuya Wei**, Snehashis Choudhury, Zhengyuan Tu, Kaihang Zhang and Lynden A. Archer[*], 'Electrochemical Interphases for High-Energy Storage Using Reactive Metals Anodes', *Accounts of Chemical Research,* 2017, 51 (1), 80-88
8. Qing Zhao, Zhengyuan Tu, **Shuya Wei**, Kaihang Zhang, Snehashis Choudhury, Xiaotun Liu and Lynden A. Archer, 'Building Organic/Inorganic Hybrid Interphases for Fast Interfacial Transport in Rechargeable Metal Batteries', *Angewandte Chemie*, 2017, 57 (4), 992-996 (***Featured in Cover***)
9. Snehashis Choudhury[†], **Shuya Wei**[†], Yalcin Ozhabes, Deniz Gunceler, Michael Zachman, Zhengyuan Tu, Jung Hwan Shin, Pooja Nath, Akanksha Agrawal, Lena Kourkoutis, Tomas Arias, Lynden A. Archer[*], 'Designing Solid-liquid Interphases for Sodium Batteries', *Nature Communication*, 2017, 8 (1), 898 (†: equal contribution)

10. Zhengyuan Tu, Snehashis Choudhury, Michael J. Zachman, **Shuya Wei**, Kaihang Zhang, Lena F Kourkoutis, Lynden A. Archer, 'Designing Artificial Solid-electrolyte Interphases for Single-ion and High-efficiency Transport in Batteries', *Joule*, 2017, 1 (2), 394-406
11. **Shuya Wei**†, Snehashis Choudhury†, Jun Xu, Pooja Nath, Zhengyuan Tu, Lynden A. Archer*, 'Highly Stable Sodium Batteries Enabled by Functional Ionic Polymer Membranes' *Advanced Materials*, 2017, 29 (12), 1605512 (†: equal contribution, ***Featured in Cover***)
12. Zhengyuan Tu, Michael J. Zachman, Snehashis Choudhury, **Shuya Wei**, Lin Ma, Yuan Yang, Lena F Kourkoutis, Lynden A. Archer*, 'Nanoporous Hybrid Electrolytes for High-Energy Batteries Based on Reactive Metal Anodes', *Advanced Energy Materials*, 2017, 7 (8), 1602367 (***Featured in Cover***)
13. Mun Sek Kim, Lin Ma, Snehashis Coudhury, Surya Moganty, **Shuya Wei**, Lynden A. Archer*, 'Fabricating Multifunctional Nanoparticle Membranes by a Fast Layer-by-layer Langmuir-Blodgett Process: Application in Lithium-sulfur Batteries', *Journal of Materials Chemistry A*, 2016, 4 (38), 14709-14719
14. **Shuya Wei**, Shaomao Xu, Akanksha Agrawal, Snehashis Choudhury, Yingying Lu, Zhengyuan Tu, Li Ma Lynden A. Archer*, 'A Stable Room Temperature Sodium-sulfur Battery', *Nature Communication*, 2016, 7, 11722
15. Shaomao Xu, **Shuya Wei**, Hongsen Wang, Hector D. Abruna and Lynden A. Archer*, 'The Sodium–Oxygen/Carbon Dioxide Electrochemical Cell', ChemSusChem, 2016, 9 (13), 1600-1606
16. Snehashis Choudhury, Akanksha Agrawal, **Shuya Wei**, Emily Jeng and Lynden A. Archer*, 'Hybrid Hairy Nanoparticle Electrolytes Stabilize Lithium Metal Batteries' *Chemistry of Materials*, 2016, 28 (7), 2147-2157
17. Lin Ma, Houlong L. Zhuang, **Shuya Wei**, Kenville E. Hendrickson, Mun Sek Kim, Gil Chon, Richard G. Hennig and Lynden A. Archer*, 'Enhanced Li-S Batteries Using Amine-Functionalized Carbon Nanotubes in the Cathode', *ACS Nano*, 2016, 10 (1), 1050-1059
18. Lin Ma, **Shuya Wei**, Houlong L. Zhang, Kenville E. Hendrickson, Richard G. Hennig and Lynden A. Archer*, 'Hybrid Cathode Architectures for Lithium Batteries based on TiS_2 and Sulfur', *Journal of Materials Chemistry A*, 2015, 3 (39), 19857-19866
19. **Shuya Wei**, Lin Ma, Kenville E. Hendrickson, Zhengyuan Tu and Lynden A. Archer*, 'Lithium-Sulfur Battery Cathodes based on PAN-Sulfur Composites', *Journal of the American Chemical Society*, 2015, 137 (37), 12143-12152
20. Lin Ma, Kneville E. Hendrickson, **Shuya Wei** and Lynden A. Archer*, 'Nanomaterials: Science and Applications in the Lithium-Sulfur Battery', *Nanotoday*, 2015, 10 (3), 315-338
21. Hao Bin Wu, **Shuya Wei**, Lei Zhang, Rong Xu, Huey Hoon Hng, and Xiong Wen Lou*, 'Embedding Sulfur in MOF-Derived Microporous Carbon Polyhedrons for Lithium–Sulfur Batteries', *Chemistry – A European Journal,* 2013, 19 (33), 10804-10808

INVITED TALKS

- 'Rational design of solid-liquid interphases for high-energy metal batteries', Jan 14th, 2020, Sandia National Laboratories
- 'Rational Design of Solid-liquid interphases and Nanocomposite Cathodes for Metal-Sulfur Batteries', Mar 6th, 2019, University of New Mexico
- 'Rational Design of Solid-liquid interphases and Nanocomposite Cathodes for Metal-Sulfur Batteries', Feb 27th, 2019, Syracuse University

- 'Rational Design of Solid-liquid interphases and Nanocomposite Cathodes for Metal-Sulfur Batteries', Feb 27th, 2019, University of Alabama, Huntsville
- 'Rational Design of Stable Room-temperature Metal-sulfur Batteries', Mar 6st, 2018, University of Massachusetts, Lowell
- 'Stable Electrochemical Growth in Viscoelastic Flow', 2017 MRS Fall Meeting (MRS Graduate Student Awards), Boston, MA

PATENTS

Published Applications

1. Lynden A. Archer and **Shuya Wei**, 'A stable room-temperature sodium-sulfur battery', US Patent App. 16/081, 775
2. Angela M. Belcher, Jifa Qi and **Shuya Wei**, 'Sodium ion battery cathodes', US Patent App. 16/355, 810

Provisional Applications

3. Lynden A. Archer, Zhengyuan Tu, Snehashis Choudhury, **Shuya Wei** and Qing Zhao, 'Surface Protected Active Metal Electrodes for Hybrid Energy Storage', PCT/US2017/06358.
4. Lynden A. Archer, Zhengyuan Tu, Snehashis Choudhury, **Shuya Wei**, Qing Zhao and Dylan Vu, 'Protective Layers for Metal Electrodes Batteries' Provisional Application 62/572,943.
5. Angela M. Belcher, Jifa Qi and **Shuya Wei**, 'Al-CO_2 batteries'

AWARDS

- 2017 MRS (Materials Research Society) Graduate Student Awards (Awards intended to honor and encourage graduate students whose academic achievements and current materials research display a high level of excellence and distinction. MRS seeks to recognize students of exceptional ability who show promise for significant future achievement in materials research)
- 2009-2013 Dean's List

SYNERGISTIC ACTIVITIES

- NSF CBET Review Panelist
- 2019-2020 UNM Provost's Core Curriculum Teaching Fellow: Engaging undergraduate research in classroom
- Committee member of the Battery Division in the Electrochemical Society (ECS)
- The American Institute of Chemical Engineers (AIChE) session chair
- Manuscript Reviewer for Science Advances, Advanced Materials, Advanced Functional Materials, Nano Energy, Journal of Material Chemistry A, ACS Applied Materials & Interfaces

COURSES TAUGHT

Fall 2019: CBE 521 Advanced Transport Phenomena, Class Size: 9
(Effectiveness: 4; Approachability: 5)
CBE101 Introduction to Chemical Engineering (Guest Lecture)
CBE 477/577 Electrochemical Systems (Guest Lecture)
Spring 2020: CBE 302 Chemical Engineering Thermodynamics, Class Size:39

OUTREACH

- School of Engineering Open House, Sept 28th, 2019
- Discovery Festival, Nov 22nd, 2019