

DEAN R. WHEELER
CURRICULUM VITAE

EDUCATION

University of California, Berkeley	<i>Ph.D. Chemical Engineering</i> , 2002 John Newman, Advisor NSF Graduate Research Fellowship
Brigham Young University Provo, Utah	<i>B.S. Chemical Engineering, magna cum laude</i> , 1996 Minor in Arabic Ezra Taft Benson Scholarship

WORK EXPERIENCE

- Department Chair (2022-present), Professor (2016-present), Associate Professor (2009-2016), and Assistant Professor (2003-2009), Chemical Engineering, Brigham Young University
- Consultant for Safety Management Services (2022), Hall Labs (2021–2022), Fish & Richardson (2021), Caldera (2016–2017, 2021), SpectraPower (2020–2021), Thorpe North & Western (2016–2017), Novatek (2010–2011), Airgyro Aviation (2006-2008), Parr Waddoups (2007), Phoenix Systems (2006), and vSpring Capital (2005)
- Educational Advisor, AMIDEAST Foundation, Amman, Jordan (1996–1997)

TECHNICAL EXPERTISE

Electrochemical engineering, with applications including lithium-ion batteries, alkaline batteries, low-temperature fuel cells, and electrodeposition.

HONORS AND AWARDS

- William Pope Professorship (endowed chair, 2018-2023) and Outstanding Faculty Award (2011), BYU Chemical Engineering Department
- Karl G. Maeser Research and Creative Arts Award (2019) and Faculty Young Scholar Award (2010), Brigham Young University.
- NSF Faculty Early Career Development Award (2006).

PEER-REVIEWED ARCHIVAL PUBLICATIONS (62 TOTAL; MOST RECENT 8 GIVEN HERE)

- B. Liu, N. James, A. Hamed, A. Yao, S. Trask, B.A. Mazzeo, D.R. Wheeler, "Direct measurements of ionic transport behavior of dual-layer porous electrodes," *J. Electrochem. Soc.* 170, 020501 (2023).
- A. Hamed, A. Yao, R. Martin, R. Roig, R. Valadez, D. Pile, A. Shellikeri, B. Liu, D.R. Wheeler, "Multi-layer anodes for high-current applications," *Electrochimica Acta* 439, 141649 (2023).

- M. Nikpour, B. Liu, P. Minson, Z. Hillman, B.A. Mazzeo, D.R. Wheeler, "Li-ion electrode microstructure evolution during drying and calendering," *Batteries* 8, 107 (2022).
- J. Vogel, J. Sederholm, E. Shumway, G. Abello, S.E. Trask, D.R. Wheeler, B.A. Mazzeo, "Li-ion battery electrode contact resistance estimation by mechanical peel test," *J. Electrochem. Soc.* 169, 080508 (2022).
- B.A. Mazzeo, J. Vogel, D.R. Wheeler, E. Hardy, D. Clement, "Flexible electric probe," US Patent 11,340,261 (2022).
- A. Hamed, F. Pouraghajan, F. Sun, M. Nikpour, D.R. Wheeler, "Interplay of electrode heterogeneity and lithium plating," *J. Electrochem. Soc.* 169, 020551 (2022).
- B. Liu, K. Prugue, M. Nikpour, K. Ward, B.A. Mazzeo, and D.R. Wheeler, "Heterogeneity in MacMullin number of Li-ion battery electrodes studied by means of an aperture probe," *J. Electrochem. Soc.* 169, 010517 (2022).
- M. Nikpour, B.A. Mazzeo, and D.R. Wheeler, "A Model for investigating sources of Li-ion battery electrode heterogeneity: Part II. Active Material Size, Shape, Orientation, and Stiffness," *J. Electrochem. Soc.* 168, 120518 (2021).

SCIENTIFIC AND INVITED PRESENTATIONS (113 TOTAL; MOST RECENT 8 GIVEN HERE)

- D. Wheeler, "Li-ion electrode manufacturing and heterogeneity," Crosstalk, Utah Advanced Materials and Manufacturing Initiative, Price UT, 2022.
- F. Sun, N. Rosborough, N. Clarke, S. Smith, B. Mazzeo, and D. Wheeler, "Binder effect on electrochemical performance of silicon anodes," 242nd Meeting of the Electrochemical Society, Atlanta GA, 2022.
- B. Liu, N. James, B. Mazzeo, and D. Wheeler, "Effect of calendering on local ionic and electronic transport of porous electrodes," 242nd Meeting of the Electrochemical Society, Atlanta GA, 2022.
- A. Hamed, A. Yao, and D. Wheeler, "Optimizing multi-layer anodes for fast charging of Li-ion batteries," Gordon Research Conference – Batteries, Ventura CA, 2022
- B. Liu and D. Wheeler, "Tools for characterizing electrode ionic and electronic transport heterogeneity," Gordon Research Conference – Batteries, Ventura CA, 2022
- J. Sederholm, E. Shumway, J. Miles, J. Vogel, B. Mazzeo, and D. Wheeler, "Measuring and reducing contact resistance at the current collector," 240th Meeting of the Electrochemical Society (Digital), 2021.
- A.S. Hamed, A. Yao, and D. Wheeler, "Multi-layer anodes for fast charging of Li-ion batteries," ECS Meeting Abstracts 473, 2021.
- M. Nikpour, D. Wheeler, and B. Mazzeo, "Predictive modeling of transport and elastic moduli of porous extreme fast charging Li-ion electrodes," ECS Meeting Abstracts 479, 2021.

EXTERNAL COMPETITIVE RESEARCH GRANTS (\$6.7M TOTAL, \$5.3M AS PI; MOST RECENT 8 GIVEN HERE)

- Javier Alvara and D. Wheeler (BYU PI), “Development of High-Energy-Density Reserve Lithium-Oxygen Batteries with Integrated Chemical Oxygen Generator”, US Army, Phase I STTR, \$65k, 6 months beginning 9/21/2022
- D. Wheeler (PI), “Electrochemical Modeling of Advanced Multilayer Electrodes”, EnPower Inc., \$50k, 10 months beginning 6/01/2022
- D. Wheeler (PI), “Domestic Halloysite-Derived Silicon as a Low-Cost High-Performance Anode Material for Li-Ion Batteries”, US Department of Energy, Phase I and Phase II STTR (2 grants), \$200k+\$1100k, cumulatively three years beginning 7/01/2021.
- D. Wheeler (PI) and B. Mazzeo, “Enabling Electrified Flight through Utah-Sourced Material for Improving Lithium-Ion Batteries”, Utah NASA Space Grant Consortium, \$24k, one year beginning 6/01/2020
- D. Wheeler (PI), “Local Mapping of Electrode Properties for Extreme Fast Charging,” US Department of Energy XCEL program, \$125k, two years beginning 2/26/2020.
- T. Liu, J. Louie, and D. Wheeler (BYU PI), “Designer Metal Organic Frameworks (MOFs) Energy Materials for Li Metal Rechargeable Batteries,” Utah Energy Research Triangle, \$100k, one year beginning 7/31/2017
- D. Wheeler (PI) and B. Mazzeo, “Addressing Heterogeneity in Electrode Fabrication Processes,” US Department of Energy BMR program, \$1050k, three years beginning 10/01/2016.
- D. Wheeler (PI) and B. Mazzeo, “Predicting microstructure and performance for optimal cell fabrication,” US Department of Energy BMR program, \$794k, four years beginning 4/10/2013.

INSTITUTIONAL SERVICE

- BYU Chemical Engineering Department
 - Department chair (2022—present)
 - Graduate program chair (2009–2012) and committee member (2003–2009, 2020-present)
 - Faculty merit committee member (2016–2022)
 - Junior faculty peer mentor (2016–2022)
 - Advisor for AIChE Chem-E-Car student team (2004–2022)
 - Undergraduate committee member (2012–2020)
 - Honors program department coordinator (2017–2020)
 - Faculty search committee chair (2016–2017) and member (2007–2008, 2010–2011)
 - Co-taught FE exam preparation workshop (2010–2014)
 - Advisor for BYU AIChE student chapter (2008–2009) – awarded outstanding chapter by national organization
- BYU Ira A. Fulton College of Engineering
 - Head faculty advisor for Tau Beta Pi Engineering Honor Society (2012–

- 2017) – increased number of BYU students receiving national scholarships from average 3 per year (2005-2012) to average 18 per year (2013-2017)
 - Panel member for Faculty Development Seminar for new faculty (2008)
 - Presenter at NSF Career Award Workshop for new faculty (2011, 2012)
- BYU
 - Member, University Microscopy Committee (2017–present)
 - Faculty Advisory Council elected member (2017–2020); co-chair of Compensation and Benefits Committee (2018–2019); co-chair of Mental Health Committee (2019–2020)

PROFESSIONAL SERVICE

- Gordon Research Conference on Batteries (inaugurated 2012, held every 2 years)
 - Discussion Leader (2022)
 - Invited speaker (2018)
 - Conference chair (2016)
 - Conference co-chair (2014)
 - Discussion Leader (2012)
- The Electrochemical Society (ECS)
 - Co-chair for technical symposia (2010, 2011, 2012, 2015, 2018, 2019)
 - Member of exec committee for Energy Technology Division (2010–2018)
- American Institute of Chemical Engineers (AIChE)
 - Co-chair for technical symposia (2003, 2006, 2007)
- National Science Foundation
 - Proposal/panel reviewer (2005, 2007, 2010, 2013, 2015, 2018, 2021)
 - Speaker at fuel cell workshop (2005)
- US Department of Energy
 - “Battery Hub” (\$120M program) panel reviewer (2012, 2019)
 - Proposal reviewer (2015, 2017-2021)
- French National Research Agency (ANR)
 - Proposal reviewer (2021)
- Academic external reviewer
 - Research grant application, University of Freiburg (2021).
 - Tenure and promotion candidate, Indiana University Purdue University Indianapolis (2014)
 - Tenure and promotion candidate, University of Connecticut (2012)
 - PhD candidate, Queensland University of Technology (2012)
- Manuscript reviewer for multiple technical journals (2003–present)
- State and local government service
 - Invited member of Utah government-sponsored Lithium Battery Technical Advisory Council (2022)
 - Organized inaugural “Utah Battery Industry Meetup” networking event sponsored by Utah Governor’s Office of Economic Opportunity (2022).
 - Invited briefing to public utilities committee of Utah Legislature (2017)

Exhibit 2002

Ningde Amperex Technology Ltd.

IPR2023-00587, U.S. Patent No. 10,964,987

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- Invited speaker at annual conference of Utah Municipal Power Agency (2019)

STUDENT MENTORING

- Postdocs advised (1)
- Graduate students advised (20 total; 15 of whom have completed degree)
- Graduate students, member of committee (56, including 11 in other departments)
- Undergraduate research assistants (98)
- Undergraduate chem-E-car team members (115)

COURSES TAUGHT

- Undergraduate
 - ChEn 170* Introduction to Chemical Engineering
 - ChEn 199R Academic Internship
 - ChEn 263 Computational Tools
 - ChEn 285* Chemical Process and Fluids Laboratory
 - ChEn 345* Chemical Reaction and Materials Laboratory
 - ChEn 373 Thermodynamics
 - ChEn 376 Heat & Mass Transfer
 - ChEn 378 Materials Science for Engineers
 - ChEn 391 Career Skills for Chemical Engineers
 - ChEn 498R* Chem-E-Car Design
- Graduate
 - ChEn 531 Thermodynamics of Multicomponent Systems
 - ChEn 533 Transport Phenomena
 - ChEn 693R* Electrochemical Engineering
 - ChEn 691R/791R Graduate Student Seminar

*indicates courses designed or substantially redesigned by Wheeler