



Exponent[®]
Engineering & Scientific Consulting

Alex Quinn, Ph.D.

Associate | Materials Science and Electrochemistry
Natick
aquinn@exponent.com

Professional Profile

Dr. Alex Quinn is trained in chemical engineering and specializes at Exponent in lithium-ion (Li-ion) batteries and redox flow systems. With extensive research across diverse energy storage technologies, he solves complex challenges in battery device construction, performance optimization, and failure analysis.

Dr. Quinn supports clients by evaluating battery safety and reliability through rigorous materials characterization, electrochemical testing, and full-system investigations.

Before joining Exponent, Dr. Quinn earned his Ph.D. in Chemical Engineering at MIT, focusing on electrocatalytic processes for energy storage and conversion. His doctoral research utilized flow cell reactors and 3-electrode systems to evaluate catalyst performance and experimental reproducibility. To expand testing capabilities, he engineered custom flow cell architectures for advanced diagnostics and operation under elevated temperature and pressure conditions. Previously, he investigated Li-ion cathode materials and anode plating/intercalation behaviors at the National Renewable Energy Laboratory (NREL) using sophisticated spectroscopy techniques. At NASA Johnson Space Center, he assessed battery thermal performance and trained in the application of robust principles to mitigate Li-ion battery thermal runaway. Dr. Quinn holds a B.S. in Chemical Engineering with a minor in Computer Science from Texas A&M University.

Academic Credentials & Professional Honors

Ph.D., Chemical Engineering, Massachusetts Institute of Technology (MIT), 2026

B.S., Chemical Engineering, Texas A&M University, 2018

Prior Experience

Intern, National Renewable Energy Laboratory, 2019

Intern, National Aeronautics and Space Administration – Johnson Space Center, 2018

Intern, OSIsoft, 2017

Intern, National Aeronautics and Space Administration – Marshall Space Flight Center, 2017

Professional Affiliations

The Electrochemical Society — ECS

Publications

Quinn AH, Darst J, Keyser M, Coman PT, Barrera TP, Shearing PR, Petrushenko D, Finegan DP, Darcy E. "[Achieving passive thermal runaway propagation resistance in Li-ion battery packs.](#)" The Electrochemical Society Interface, 2024; 33.3:55-62

Quinn AH, Ripley KM, Matteucci NJ, Neyhouse BJ, Brown CAO, Woltmann WP, Brushett FR. "[Elucidating the effects of temperature on nonaqueous redox flow cell cycling performance.](#)" Journal of the Electrochemical Society, 2023; 170.12:120520

Quinn AH, Moutinho H, Usseglio-Viretta F, Verma A, Smith K, Keyser M, Finegan DP. "[Electron backscatter diffraction for investigating lithium-ion electrode particle architectures.](#)" Cell Reports Physical Science, 2020; 1.8:100137

Finegan DP, Quinn AH, Wragg DS, Colclasure AM, Lu X, Tan C, Heenan TMM, Jervis R, Brett DJL, Supratim D, Gao T, Cogswell DA, Bazant MZ, Michiel MD, Checchia S, Shearing PR, Smith K. "[Spatial dynamics of lithiation and lithium plating during high-rate operation of graphite electrodes.](#)" Energy & Environmental Science, 2020; 13.8:2570-2584

Presentations

Quinn AH, Bu LP, Brushett FR. On the Factors Influencing Isopropanol Oxidation on Platinum Electrodes. Oral Presentation. Electrochemical Society Meeting 247, Montréal, Canada 2025.

Quinn AH, Pagano GM, Brushett FR. Reference-Electrode Equipped Redox Flow Cells Enable Single-Electrode Characterization of the Polysulfide Redox Couple. Oral Presentation. Electrochemical Society Meeting 247, Montréal, Canada 2025.

Quinn AH, Bu LP, Brushett FR. On the Factors Influencing Isopropanol Oxidation on Platinum Electrodes. Invited Talk. Queen's University Belfast, Belfast, Northern Ireland 2025.

Quinn AH, Pagano GM, Brushett FR. Reference-Electrode Equipped Redox Flow Cells Enable Single-Electrode Characterization of the Polysulfide Redox Couple. Oral Presentation. Annual UK Flow Battery Network Symposium, Queen Mary University of London, London, UK 2025.

Quinn AH, Bu LP, Brushett FR. Systematic Exploration of Isopropanol Oxidation on a Rotating Disk Electrode. 9th Annual Illinois Sloan University Center for Exemplary Mentoring Conference, I Hotel and Illinois Conference Center, Champaign, IL 2024.

Quinn AH, Ripley KM, Matteucci NJ, Neyhouse BJ, Brown CAO, Woltmann WP, Brushett FR. Elucidating the Effects of Temperature on Non-Aqueous Redox Flow Cells. Annual UK Flow Battery Network Symposium, Queen Mary University of London, London, UK 2024.

Quinn AH, Bu LP, Brushett FR. Exploration of the Isopropanol-Acetone Redox Couple as a Rechargeable Electrofuel. The Role of Fundamental Interfacial Processes in Electrocatalysis, Manipulation of Interfaces in Electrocatalytic Systems, American Chemical Society Meeting, Indianapolis, IN 2023.

Quinn AH, Bu LP, Brushett FR. Investigation of the Isopropanol-Acetone Redox Couple for Rechargeable Liquid Organic Fuel Cells. Electrochemical Society Meeting 242, Atlanta, GA 2022.

Quinn AH, Ripley KM, Matteucci NJ, Neyhouse BJ, Brown CAO, Woltmann WP, Brushett FR. Exploring the Impact of Temperature on Non-Aqueous Redox Flow Cells. Electrochemical Society Meeting 242, Atlanta, GA 2022.