ALEXANDER H QUINN

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Education

Massachusetts Institute of Technology – Cambridge, MA **09/2019 – Present**
Ph.D. student – chemical engineering | Brushett Research Group
Tentative thesis topic: Rechargeable liquid organic fuel cells for hydrogen transport and energy storage

Texas A&M University – College Station, TX **08/2014 – 12/2018**
Bachelor of science – *chemical engineering* | Minor – *computer science*
Overall GPA - 3.89

Experience

National Renewable Energy Laboratory – Vehicle Electrification Intern **01 – 08/2019**
Electric vehicle lithium-ion battery material studies to facilitate fast-charging
- Investigated cathode particle architecture using electron backscattering diffraction (publication 1)
- Studied phase behavior of graphite during fast-charging using synchrotron X-ray data (publication 2)

Lutkenhaus Group – Structural Electrode Research for Coursework **09 – 12/2018**
Energy-storing and load-bearing composite research
- Fabricated thin-film pseudocapacitor electrode composites using vacuum filtration
- Characterized electrode electrochemical and tensile properties

NASA Johnson Space Center – Safe High Power Batteries Intern **06 – 08/2018**
Design of safe, energy-dense, high-power batteries for terrestrial and space applications
- Modified and tested battery designs to accommodate high heat generation during quick discharge
- Developed extensive plans for evaluating battery tolerance to thermal runaway propagation

NASA Marshall Space Flight Center – Propellant Development Intern **08 – 12/2018**
Particle production & ingredient prep lead for inert propellant development
- Developed inert propellant with team as a safe and cost-effective alternative to chemically reactive propellant for Europa Lander de-orbit stage radiation studies

OSIsoft – Software Intern for Academic Program **05 – 08/2017**
Integration of PI and data science tools
- Coded C# plugin using PI Web API to retrieve CSV data with minimal input in MATLAB, Python, or R
- Developed intuitive webpage for plugin using Python/Django backend

BioSyM Lab at Texas A&M – Student Assistant (Biosensor Research) **06/2016 – 05/2018**
Continuous implantable urea sensor research
- Demonstrated proof-of-concept for urea sensor (publication 3)

Leadership

Tau Beta Pi Engineering Honor Society **09/2015 – 12/2018**
Vice President *(06/2017 – 12/2018*) | Corporate Chair *(05/2016 – 05/2017*)
- Supervised and scheduled events
- Established high school outreach program

Aggie Orientation Leader Program – Orientation Leader **05 – 08/2016**
- Performed informational skits on sensitive college topics for audiences of 300+
- Supported student orientation sessions

Honors

MIT Presidential Graduate Fellow	09/2019
Alfred P. Sloan-MIT University Center of Exemplary Mentoring (UCEM) Scholar	09/2019
National Science Foundation Graduate Research Fellowship	04/2019
Academic Excellence Award – A&M Dept. of Chemical Engineering	12/2018
Undergraduate Research Award – A&M Dept. of Chemical Engineering	12/2018
Outstanding Achievement Award – National Aeronautics and Space Administration (NASA)	08/2018
Lindsay Scholarship – A&M Dept. of Chemical Engineering	08/2015–12/2018

Skills

Languages

Spanish – Fluent speaker, moderate writer

Software

- Blender 3D
- Adobe After Effects, Premier, Illustrator, and Photoshop

Programming

Numerical methods, GUI, algorithms, and website projects across multiple languages

- Proficient | MATLAB, C#, Python, Java
- Familiar | C++, Haskell, JavaScript

Publications

1. Finegan, Donal P., Alexander Henry Quinn, David Wragg, Andrew Colclasure, Xuekun Lu, Chun Tan, Thomas Heenan et al. "Spatial dynamics of lithiation and lithium plating during high-rate operation of graphite electrodes." Energy & Environmental Science (2020). https://doi.org/10.1039/D0EE01191F
2. Quinn, Alexander, Helio Moutinho, Francois Usseglio-Viretta, Ankit Verma, Kandler Smith, Matthew Keyser, and Donal Finegan. " Electron backscatter diffraction for investigating lithium-ion particle architectures." CR-PHYS-SCI-D-20-00062.
3. Quinn, Alexander, Yil-Hwan You, and Michael J. McShane. "Hydrogel Microdomain Encapsulation of Stable Functionalized Silver Nanoparticles for SERS pH and Urea Sensing." *Sensors* 19.16 (2019): 3521. https://doi.org/10.3390/s19163521