

Henry John Squire

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EDUCATION

University of California, Berkeley

Berkeley, California

Ph.D. in Chemical and Biomolecular Engineering (NDSEG Fellow)

Expected May 2026

Advisor: Markita Landry (Professor, Chemical and Biomolecular Engineering)

Case Western Reserve University

Cleveland, Ohio

B.S.E. in Chemical and Biomolecular Engineering: GPA 3.97/4.00 *summa cum laude*

May 2020

M.S. in Chemical and Biomolecular Engineering: GPA 4.00/4.00

May 2020

Thesis: Characterization of solvents for electrochemical energy storage: deep eutectic solvents and ionic liquids

Advisor: Burcu Gurkan (Professor, Chemical and Biomolecular Engineering)

EXPERIENCE

Procter & Gamble

Cincinnati, Ohio

R&D Associate Materials Scientist

September 2020-August 2021

- Served as a technical material owner for Perfume Delivery Technologies (PDT) in the Fabric Care Business unit
- Led R&D scale-up qualification of new PDTs for Fabric Care initiatives and product launches
- Managed technical current business of PDTs including third party production, global supply chain, and in-house production
- Conceived and developed up-stream innovations for new PDTs resulting in five internal technical publications

Energy Lab at CWRU

Cleveland, Ohio

Undergraduate/Graduate Researcher

October 2017-June 2020

- Characterized complex solvents for application as electrolytes in grid-scale energy storage devices
- Quantified ionicity of ionic liquids (ILs) to understand electrode-electrolyte interfacial structures
- Developed standards for preparation, handling, and characterization of deep eutectic solvents (DESS)
- Investigated transport of redox active solutes in ILs and DESS with voltammetry, rheology, and Raman spectroscopy

Key Laboratory of Mechanics on Disaster and Environment in Western China

Lanzhou, China

Research Assistant

June 2018-August 2018

- Investigated the impact of particle size on triboelectric charging of dust through lab experiments
- Collaborated with an international team conducting field experiments to understand transport of windblown dust
- Developed a model for long range dust transport accounting for electrostatic forces based on lab and field results

Cobb County Water System

Marietta, Georgia

Intern

June 2017-August 2017

- Performed stream and industrial water monitoring through biological, chemical, and geomorphology assessments
- Ensured compliance with state and federal guidelines for sample collection, preservation, and testing

PUBLICATIONS

*Denotes equal contribution

6. Y Zhang, H Squire, B Gurkan, E Maginn. Refined Classical Force Field for Choline Chloride and Ethylene Glycol Mixtures over Wide Composition Range. *J. Chem. Eng. Data* **under review**
5. J Klein*, H Squire*, W Dean, B Gurkan. From salt in solution to solely ions - solvation of methylviologen in deep eutectic solvents and ionic liquids. *J. Phys. Chem. B* (2020). DOI: [10.1021/acs.jpcb.0c03296](https://doi.org/10.1021/acs.jpcb.0c03296)

PUBLICATIONS (cont.)

4. Y Zhang, D Poe, L Heroux, **H Squire**, B Doherty, Z Long, M Dadmun, B Gurkan, M Tuckerman, E Maginn. Liquid Structure and Transport Properties of the Deep Eutectic Solvent Ethaline. *J. Phys. Chem. B* (2020). DOI: [10.1021/acs.jpcc.0c04058](https://doi.org/10.1021/acs.jpcc.0c04058). *cited over 25 times*
3. J R Toth III*, S Rajupet*, **H Squire**, B Volbers, J Zhou, L Xie, R M Sankaran, D J Lacks. Electrostatic forces alter particle size distributions in atmospheric dust. *Atmos. Chem. Phys.* (2019). DOI: [10.5194/acp-20-3181-2020](https://doi.org/10.5194/acp-20-3181-2020)
2. J Klein, **H Squire**, B Gurkan. An electroanalytical investigation of the electrode-electrolyte interface of quaternary ammonium ionic liquids: Impact of alkyl chain length and ether functionality. *J. Phys. Chem. C* (2019). DOI: [10.1021/acs.jpcc.9b08016](https://doi.org/10.1021/acs.jpcc.9b08016). *cover article*
1. B Gurkan, **H Squire**, E Pentzer. Metal-Free Deep Eutectic Solvents: Preparation, Characterization, and Considerations. *J. Phys. Chem. Lett.* (2019). DOI: [10.1021/acs.jpclett.9b01980](https://doi.org/10.1021/acs.jpclett.9b01980). *invited perspective, cover article, cited over 35 times*

PRESENTATIONS

4. **236th Electrochemical Society Meeting**. Electrochemical Behavior of Redox Active Organic Molecules in Ethaline Deep Eutectic Solvent. Poster Presentation. Atlanta, GA. (October 2019).
3. **Breakthrough Electrolytes for Energy Storage (BEES) All Hands Meeting**. Physical Properties of Metal Salts in Ethaline. Poster Presentation. Cleveland, OH. (September 2019).
2. **AIChE Annual Meeting**. Triboelectric Charging of Windblown Sand and Implications on Sand Transport: Particle Size Effects. Poster Presentation. Pittsburgh, PA. (October 2018)
1. **The 4th international workshop on Static-Tribo-Electricity of Powder (4th STEP)**. Triboelectric Charging in Lab-Scale Simulated Sandstorms. Oral Presentation. Lanzhou, China. (July 2018)

TEACHING EXPERIENCE

Case Western Reserve University

Teaching Assistant- Introduction to Chemical Systems

Cleveland, Ohio

August 2019-December 2019

- Mentored newly declared chemical engineering undergraduate students
- Tutored, held office hours, and graded for a core chemical engineering course

Case Western Reserve University

Teaching Assistant- Thermodynamics, Fluid Dynamics, Heat and Mass Transfer

Cleveland, Ohio

August 2018-December 2018

- Instructed a recitation section of 25 undergraduate students developing class curriculum and quizzes

TECHNICAL SKILLS

Computational: Julia | MATLAB | Origin | Python | Wolfram Mathematica

Experimental: DSC | Impedance Spectroscopy | Rheology | Spectroscopy (Raman, FTIR, UV-Vis) | TGA | Voltammetry |

LEADERSHIP

Procter & Gamble CWRU Recruiting Team

Member

Cincinnati, OH

October 2020-August 2021

- Aided in talent acquisition from CWRU for full-time and internship positions within R&D
- Managed a technical workshop series for summer interns from CWRU

LEADERSHIP (cont.)

NCAA Division III Men's Varsity Tennis

Cleveland, Ohio

Member

August 2016–May 2020

- Dedicated over 25 hours per week to rigorous training, practice, and matches
- Reached a top 10 national team ranking with four year individual ITA Scholar-Athlete recognition

Food Recovery Network at CWRU

Cleveland, Ohio

Volunteer Coordinator

September 2016–May 2020

- Educated campus on environmental issues related to food production and food waste
- Coordinated a network of volunteers to recover wasted food around campus to feed the food insecure of the community

Case Association of Student Athletes

Cleveland, Ohio

Men's Varsity Tennis Representative

August 2017–May 2019

- Represented the Men's Varsity Tennis team in CWRU Athletic Department meetings
- Organized monthly nutrition, fitness, or sport psychology events for varsity athletic teams

HONORS AND AWARDS

NDSEG Fellow

2021–2024

- Department of Defense graduate fellowship for PhD students in STEM disciplines

R&D Materials Equity Award: Technical Rigor

January 2021

- P&G Materials award to the R&D scientists conducting the most outstanding technically rigorous work

William H. Schuette Memorial Award

May 2020

- Awarded to an outstanding CWRU senior in chemical engineering

Future Leader in Chemical Engineering

October 2019

- A national award symposium for undergraduate researchers sponsored by North Carolina State University

CWRU SOURCE Travel Grant

October 2019

- Grant awarded to undergraduates to fund travel for conference presentations

CWRU Chemical Engineering Outstanding Junior Award

May 2019

- Awarded to junior chemical engineers for outstanding academic performance

CWRU Ultimate Spartan Award

May 2019

- Awarded to the varsity athlete who best represents the spirit of CWRU

CWRU SOURCE STEM Grant

May 2019

- Grant awarded to deserving summer research proposals from undergraduates in STEM

CWRU Van Horn Society

2019, 2020

- Awarded to junior and senior student-athletes with a cumulative GPA of 3.8 or higher

Intercollegiate Tennis Association Scholar-Athlete

2017, 2018, 2019, 2020

- Awarded to student-athletes who are varsity tennis letter earners and have a GPA of at least 3.5

Cobb County Boys Tennis Player of the Year

May 2016

- Varsity tennis player nominated by regional high school coaches for best on-court performance

Eagle Scout of America

December 2013

- The highest attainable rank in the Boy Scouts of America