Alec Glisman — Curriculum Vitae

Education

California Institute of Technology **Pasadena, CA**
Ph.D. in Chemical Engineering, GPA: 3.9/4.0 *2019 – 2024 (expected)*
Honorable Mention: National Science Foundation Graduate Research Fellowship Program

The University of California, Berkeley **Berkeley, CA**
B.S. in Chemical Engineering, GPA: 3.91/4.0 *2015 – 2019*
Graduated with Highest Honors
Tau Beta Pi Honor Society
Phi Kappa Beta Honor Society
Regents' and Chancellor's Scholar
Chemical Engineering Departmental Honors
Dean's List

Skills

Languages: C/C++, Python, Bash, Perl, FORTRAN, Java

Tools: Linux, Git, Slurm, Docker, Ansible, CUDA, CMake, MATLAB, Mathematica, LaTeX, NumPy, SciPy, Pandas

Laboratory: SEM, Glovebox, ICP-OES, GC-MS

Experience

Academic Research

California Institute of Technology **Pasadena, CA**
Graduate Researcher, Advisor: Prof. Zhen-Gang Wang *2022 – Present*
Employed large-scale enhanced sampling and non-equilibrium molecular dynamics simulations to study both the structure and dynamics of aqueous polyelectrolytes in the presence of multivalent small ions. Generated phase diagrams of polyelectrolytes in an aqueous bulk and at crystalline interfaces with applications to prevention of calcium scale formation. Negotiated with funding agency to purchase a $100,000 high-performance computational cluster for both my work and the research group as a whole.

California Institute of Technology **Pasadena, CA**
Graduate Researcher, Advisor: Prof. John Brady *2019 – 2021*
Modelled hydrodynamic interactions between self-propelling bodies in high Reynolds number flow. Studied the effects of hydrodynamics on emergent properties (e.g. flocking) of many body suspensions. Developed a novel method to connect self-propulsive efficiency to Stokes flow via mathematical symmetries.

University of California, Berkeley **Berkeley, CA**
Research Assistant, Advisor: Prof. Kranthi Mandadapu *2017 – 2019*
Investigated the dynamics of phospholipid bilayer membranes using differential geometry and a balance law formulation to understand how surface geometry and in-plane flow are coupled. Found a new dimensionless number comparing out-of-plane bending forces and in-plane viscous forces.

Lawrence Berkeley National Lab **Berkeley, CA**
Research Assistant, Advisor: Prof. Nitash Balsara *2016 – 2017*
Fabricated solid-state polymer pouch cells to investigate ionic transport and conductivity properties. Tested cells via electrochemical impedance spectroscopy, and analyzed large data sets with MATLAB using numerical differentiation to find relationship between electrolyte concentration and cell performance.

Teaching

California Institute of Technology Chemical Engineering Department
Teaching Assistant: Graduate Transport (Fluids, Heat, & Mass) *Jan. 2021 – Jun. 2021*

Industry

Nissan: Automotive Energy Supply Corporation **Smyrna, TN**
Battery Cell Intern *May 2018 – Aug. 2018*
Developed automated system for evaluation of 25,000 battery cells per day based on voltage stability using Microsoft VBA, and trained colleagues on how to operate the new system for an annual savings of $50,000 in labor-hours. Found relationship between misalignment of the first layer cathode and anode in cell stack and eventual cell failure in later process. Proposed reducing tolerance limits for first layer electrodes and reduced material scrap costs by $55,000 annually.

Bosch Research & Technology Center **Palo Alto, CA**
Battery Research Intern *May 2017 – Aug. 2017*
Evaluated how electrode additive materials stabilize electric vehicle (EV) batteries by measuring their dissolution during expected EV conditions. Used inductively coupled plasma optical emission spectrometry (ICP-OES) to quantify lithium in various lithium-ion cell components to support development of advanced battery management system.

Publications

Amaresh Sahu, **Alec Glisman**, Joël Tchoufag and Kranthi K. Mandadapu, "Geometry and dynamics of lipid membranes: The Scriven-Love number", *Phys. Rev. E* **101** (2020) 05240

Awards

2019: **NSF GRFP Honorable Mention**
The NSF accords Honorable Mention to meritorious applicants who do not receive Fellowship awards. This is considered a significant national academic achievement and provides access to resources through the XSEDE.

2015: **Regents' and Chancellor's Scholarship**
The most prestigious scholarship offered by U.C. Berkeley, awarded to the top 2% of entering undergraduates.