Katherine Gruenewald

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EDUCATION

CU Boulder, Boulder, CO
Master of Science, Materials Science and Engineering, January 2020 - present
Expected completion: May 2022

SUNY Polytechnic, Albany, NY
Bachelor of Science, Nanoscience, September 2013-May 2017 GPA: 3.82

TEACHING EXPERIENCE

Chemistry/biology laboratory TA Chemistry/Ecology and Evolutionary
August 2020-December 2021 (3 semesters) Biology Department, CU Boulder

Oversaw the remote/hybrid laboratory instruction of two sections each of a general and engineering chemistry laboratory as well as a general biology laboratory. In parallel, taught two hybrid general chemistry recitation sections.

RESEARCH EXPERIENCE

Graduate research assistant Prof. Andres Montoya-Castillo
May 2021 - August 2021 CU Boulder, Chemistry Department

Investigated parameterizing spectroscopic models for the Fenna-Matthews-Owen photosynthetic complex of deep sea bacteria to obtain further explanatory insight of its dynamics.

Graduate research assistant Prof. Orit Peleg
May 2020 - December 2020 CU Boulder, Computer Science Dep.

Examined mechanical stability of simulated bee swarms to oscillatory perturbations with an aim to understand wider adaptive collective behavior for applications in swarm robotics and active materials.

Research aide Prof. Mengbing Huang
November 2015 - October 2017 SUNY Polytechnic, Ion Beam Laboratory

Performed materials characterization on hafnia mirror samples for Lawrence Livermore National Laboratory's National Ignition Facility. Assisted in preparation and characterization of erbium doped glass for applications in telecommunications. Led investigation as part of my undergraduate capstone research into implanting and performing X-ray photoelectron characterization of a niobium-doped molybdenum disulfide sample which resulted in a publication in MRS Advances.

TECHNICAL BACKGROUND

Programming: julia, python, bash, git, LaTeX
Visualization: Makie.jl (GPU-powered plotting and animation), AlgebraofGraphics.jl
AWS: S3, Route53, IAM
Web Development: Franklin.jl (julia static site generator), basic html/css

RELEVANT PROJECTS

Lotka-Volterra networks: Sensitivity analysis of the Lotka-Volterra equations on a graph as a model for an ecosystem. Extended this model to examine emergence of cooperative/parasitic adaptions in mycorrhizal fungus-plant symbiosis.

Interactive molecular dynamics of polymer strain Used capabilities of the Makie.jl plotting package to interactively visualize stress-strain relationship of a polymer in a self-implemented molecular dynamics simulation.