

Pierre Kawak, Ph.D.

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- Computational polymer scientist with 11 years of experience in simulation, analysis, & mentorship across materials & drug delivery research.
- Enjoy building scalable tools & models to accelerate discovery in polymers, crystallization, & therapeutic systems – with 5 publications & 27+ conference presentations.
- Seeking research-driven roles in industry or government where I can lead impactful projects at the intersection of materials science, computation, & collaboration.

Technical Skills

- **Programming & Automation:** Python, C++, C, CUDA, MATLAB, Bash, R
- **Simulation & Modeling:** LAMMPS, GROMACS, Gaussian, AMBER, OPLS, Monte Carlo methods, Molecular Dynamics, Atomistic, Coarse-Graining
- **Data Analysis & Visualization:** VMD, OVITO, NumPy, Pandas, Matplotlib, Free Energy Calculations
- **HPC & Workflow Optimization:** Slurm, Open MPI, Cluster Management, Parallelization, Large-Scale Data Processing (50TB+)
- **Experimental Techniques:** Drug Encapsulation, DLS, NMR, Liposomal Formulations, Nanoparticle Synthesis
- **Communication & Leadership:** Public Speaking (27+ conferences), Scientific Writing (5 publications), Mentoring, DEI Advocacy, Event Coordination

Research Experience

Postdoc	University of South Florida	Prof. David Simmons	2022 – Present
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- Simulate polymer deformation & stress, generating high-throughput nanoscale insights for composite design.
- Improve copolymer T_g by simulating specific sequences, optimizing stability without altering feedstock or process.
- Develop custom polymer rheology & dynamics analysis tools & extend in-house code-base, streamlining group workflows & accelerating junior researchers' productivity.
- Streamline HPC workflows to process 50+ TB datasets, accelerating studies by 90% & earning an NSF ACCESS grant.
- Mentor 11 researchers in HPC, Git, & simulation methods, fostering collaboration & earning APS Career Mentor Fellowship.
- Present at 17 conferences, winning awards at GRC (2024) & USF Symposium (2023) for research on rubber & copolymer design.

Ph.D. Brigham Young University Prof. Douglas Tree 2017 – 2022

- Wrote two Monte Carlo simulation codes in C++/CUDA from scratch, accelerating crystallization studies 100× & enabling published 3D free energy landscapes.
- Constructed advanced phase diagrams using custom crystalline & orientational order parameters, quantifying key molecular transitions.
- Analyzed large 3D datasets via VMD & OVITO, extracting structural & kinetic insights across crystallization pathways.
- Mentored 4 undergraduates, co-authoring 2 papers & 6 conference abstracts, & supporting their admission to graduate programs.
- Earned APS Distinguished Student Award (2022) & BYU Presentation Award (2021) for scientific communication & research excellence.
- Played key role in a successful \$500K NSF CAREER proposal.

M.S. American University of Sharjah Prof. Ghaleb Hussein 2015 – 2017

- Designed & synthesized estrone-functionalized ultrasound-sensitive drug carriers, improving drug stability & controlled release in breast cancer chemotherapy.
- Validated & characterized encapsulation & release kinetics using DLS & NMR, optimizing ultrasonic parameters for clinical stability and efficacy.
- Standardized lab protocols to improve reproducibility, collaboration, & data integrity, increasing research efficiency across teams.
- Presented at 3 conferences, earning Best Talk Award at AUS Biomed. Eng. Symposium.

Leadership & Community Engagement

- **President, Early Career Researchers in Polymer Physics (2022–):** Led a global 550-member community & organized the 2023 Virtual Symposium with 150+ attendees.
- **President & Founder, USF Postdoctoral Scholar Association (2023–):** Served 200+ postdocs via career events, DEI initiatives, & the NPA-funded ELEVATE Talk Series.
- **President & Founder, BYU Chem. Eng. Grad. Student Council (2019–2022):** Directed recruitment, outreach, & well-being programs impacting department policy.

Education

Ph.D.	Chemical Engineering	Brigham Young University	2022
M.S.	Chemical Engineering	American University of Sharjah	2017
B.S.	Chemical Engineering (Econ. Minor)	American University of Sharjah	2015

Comprehensive & updated **list of publications & presentations** available online at linktr.ee/pkawak