DR. RISHI GURNANI

Email: rishipgurnani@gmail.com | **>1200 academic citations** | **h-index = 10**
Personal Website | GitHub Profile

EDUCATION

Georgia Institute of Technology | Atlanta, GA | GPA: 4.00

- **Doctor of Philosophy, Materials Science & Engineering (MSE)** (2019 - 2023)
- **Master of Science, Computer Science**

University of California, Berkeley | Berkeley, CA

- **Bachelor of Science, Materials Science & Engineering** (2014 - 2018)

Relevant Courses: Polymer Chemistry, Biomacromolecular Structure, Deep Learning, Semi-Supervised Learning

NOTABLE PUBLICATIONS

(Additional on next page)

1. **AI-assisted discovery of high-temperature dielectrics for energy storage** (Nature). Read online.
    - Discovered a polymer dielectric with energy density **>11x** any commercially available polymer.
2. **Design of functional and sustainable polymers assisted by artificial intelligence** (Nature). Read online.
3. **polyGNN: Multitask graph neural networks for polymer informatics** (2023). Read online.

WORK EXPERIENCE

Matmerize Inc. | Atlanta, GA

Director of Software Engineering & Algorithms (March 2021 - Present)

- Oversee the development of an **enterprise ML software** (~2000 commits, ~100k lines of code, 5 languages) serving **>1000 users from >20 companies**.
- End-to-end experience with ML model development & deployment: **data-wrangling, web scraping, ML model prototyping & optimization, graphical user interface, unit testing, end-to-end testing, cloud deployment (AWS)**.
- **Expert in:**
  - `Physics-informed ML`, `Graph Neural Networks`, `Cheminformatics`, `(Un)supervised Learning`, `Dimensionality Reduction`, `Clustering`, `Regression`, `Classification`.
- **Deep knowledge of:**
  - `RDKit`, `PyTorch`, `SymPy`, `Numpy`, `Pandas`, `Scikit-learn`, `Selenium`, `Playwright`, `BS4`, `Flask`, `D3`, `SQL`, `PyTest`, `Cypress`, `Vitest`, `Full Stack Development`.

NOTABLE AWARDS AND INVITED TALKS

(Additional on next page)

1. **Keynote address**, Research, Innovation & Science for Engineered Fabrics Conference (2024).
2. **Graduate Student Award in Polymer Science (Finalist)**, ACS Division of Polymeric Materials (2024).
3. **Best Ph.D. Thesis**, Georgia Tech Chapter of Sigma Xi (2024).
4. **Graduate Student Award**, Materials Research Society (2023).
5. **Gold Medal for Best Presentation**, 2nd Energy & Informatics International Forum (2022).
6. **Best Talk**, Georgia Tech Student Polymer Network Spring Symposium (2022).

OPEN-SOURCE CODE

1. **polyGNN**: Code for training fast and accurate structure-property models.
    - Used for the companion paper polyGNN: Multitask graph neural networks for polymer informatics.
    - View on GitHub (**38 stars** ⭐).

ADDITIONAL PUBLICATIONS / WRITINGS

- polyG2G: Machine learning applied to generative design of polymer dielectrics (2021).
- A Physics-Enforced Neural Network to Predict Polymer Melt Viscosity (2024).
- Gas permeability, diffusivity, and solubility in polymers: Simulation-experiment data fusion and multi-task ML (2024).
- Interpretable ML-based predictions in metal–organic frameworks (2020).
- Machine-learning predictions of polymer properties with Polymer Genome (2020).

Complete publication list on my website.

ADDITIONAL AWARDS AND INVITED TALKS

1. **Programs to Predict the Properties of New Polymers**, It's a Material World Podcast (2023). View online.
2. **Debugging Neural Networks**, Hands-on Data Science & ML Training Series, nanoHUB (2021). Watch on YouTube.
3. **polyG2G: ML Algorithm for Generative Design of Polymer Dielectrics**, 2nd Energy & Informatics International Forum, Tokyo Institute of Technology (2022). View online.
4. **Polymer Genome: Accelerating Materials Discovery via Data-Driven Approaches**,
    - 76th Annual Meeting & Exhibition, Society of Tribologists and Lubrication Engineers (2022). View online.
    - Materials Machine Learning Symposium, Sandia National Laboratory (2021). View online.