

Gianmarco Terrones

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Education

Ph.D. Chemical Engineering

Expected Spring 2025

Massachusetts Institute of Technology, Cambridge, MA

Cumulative Graduate GPA: 5.0

B.S. Chemical Engineering

June 2020

California Institute of Technology, Pasadena, CA

GPA: 4.0

Teaching Experience

Teaching Assistant

Fall 2019

- Transport Phenomena. Held weekly office hours and reviewed exams to gauge difficulty.

Teaching Assistant

Fall 2021

- Computational Chemistry. Answered questions during in-class work time.

Research Experience

The Kulik Group, Cambridge, MA

Spring 2021-Present

Graduate researcher

- Developed a website to increase accessibility to software for analyzing metal-organic frameworks.
- Generated machine learning models for the property prediction of phosphorescent iridium complexes.

The Callies Group, Pasadena, CA

Summer 2019

Summer researcher

- Worked in the Callies Group of the California Institute of Technology to develop and test a parallelized ocean model in Julia using Strang splitting and sound waves.
- Simulated different dynamics, such as Ekman transport and eddy formation, using different boundary conditions and parameters.
- Compared the model's output with theoretical and published ocean dynamics to assess the model's accuracy.

The Lewis Group, Pasadena, CA

Summer 2018

Summer researcher

- Worked in the Lewis Group of the California Institute of Technology to modify silicon microwires through surface treatments such as platinum sputtering and silanization.
- Analyzed resulting substrates through scanning electron microscopy, contact angle goniometry, and ImageJ in order to predict hydrogen bubble positioning in devices for solar fuel production.
- Interpreted results by comparing them to theoretical Cassie-Baxter and Wenzel contact angles calculated using MATLAB, and derived modified contact angle equations.

The Kumar Lab, State College, PA

Summers 2014-2015

Summer researcher

- Worked in the Kumar Lab of the Pennsylvania State University to harvest and purify outer membrane protein F (OmpF) from *E. coli* through lysis, centrifugation, and high-performance

liquid chromatography (HPLC).

- Prepared OmpF-infused block copolymer membranes through crystallization.
- Analyzed resulting membranes through flux measurements and through HPLC and total organic carbon measurements of filtrate in order to determine their viability for water filtration.

Publications

- Nandy, A., **Terrones, G.**, Arunachalam, A., Duan, C., Kastner, D.W., & Kulik, H.J. (2021). MOFSimplify: machine learning models with extracted stability data of three thousand metal-organic frameworks. *arXiv preprint arXiv:2109.08098*.

Awards

- Alfred P. Sloan Foundation's Minority Ph.D. scholarship

Volunteering

Caltech Y Rise Tutoring

Summer 2019-Spring 2020

- Tutored several disadvantaged high school students from the Pasadena area once a week.

MIT English as a Second Language Program

Spring-Summer 2021

- Tutored an MIT employee in English once a week.

Programming Skills

- Highly proficient in Python, Java, Julia, Mathematica, and MATLAB
- Familiar with R, C, C++, COMSOL, and SolidWorks

Languages

- English (Native)
- Spanish (Native)
- French (Proficient)