Jordyn Polito *Curriculum vitae*

2234 EECS Building
University of Michigan
1301 Beal Ave
Ann Arbor, MI 48109-2122, USA

jopolito@umich.edu

Research Interests

Plasma modeling, plasma-nanoparticle synthesis, plasma-surface interactions, plasma chemistry, low temperature plasmas

Education

University of Michigan Ann Arbor, MI
Ph.D. Candidate, Chemical Engineering, Expected Summer 2023
- Advisor: Mark J. Kushner

University of Michigan Ann Arbor, MI
M.S., Chemical Engineering, December 2019

Mississippi State University Mississippi State, MS
B.S., Chemical Engineering, May 2018 GPA: 3.91
- Spanish Minor

Research Experience

University of Michigan Oct. 2018 - present
Graduate Research Assistant, Computational Plasma Science and Engineering Group
- 2-dimensional modeling of nanoparticle synthesis in low temperature plasmas.
- Develops code for implementation into existing plasma-hydrodynamics model for exploring plasma-nanoparticle interactions and relationships.
- 0-dimensional modeling for plasma surface functionalization of polymers and plasma interactions with proteins in liquids
- Develops reaction mechanisms for predicting occupancy of oxygen containing functional groups on surfaces of polymers after plasma treatment.

Mississippi State University Oct. 2017 - Sep. 2018
Molecular Science and Engineering Laboratory- Dr. Neeraj Rai
- Performed molecular dynamics simulations on hierarchical zeolites used for the conversion of biomass to fuels and chemicals.
- Studied adsorption characteristics and electrostatic properties of anions on amorphous silicas.

Professional Experience

Graduate Student Instructor Sep. 2021 – Dec. 2021
Jovan Kamcev – Assistant Professor, Chemical Engineering Ann Arbor, MI.

- Assisted in preparation of class materials.
- Delivered supplemental lectures (recitations) once a week.

Site Design Intern May 2017 – Aug. 2017
Southern Nuclear Dothan, AL

- Executed special field test concerning pressurization criteria for determination of conformity with technical specifications.
- Created a comprehensive maintenance record for sixteen valves in support of a design change.

Summer Intern May 2016 – Aug. 2016
Schreiber Water LLC. Trussville, AL

- Assisted in set-up, troubleshooting and test runs of Fuzzy Filter test in Pennsburg, PA.
- Managed data of a Continually Sequencing Reactor (CSR) Controls Optimizations Study.
- Presented CSR Optimization Study to company owner.

Conference Presentations

1. **J. Polito,** S. J. Lanham, M. J. Kushner, E. Husmann, E. J. Thimsen. "Silicon Nanoparticle Nucleation and Growth in Processes in Low Temperature Flowing Plasmas." Oral Presentation. *49th International Conference on Plasma Sciences,* Seattle, Washington. May 26, 2022.
2. **J. Polito,** S. J. Lanham, M. J. Kushner, E. Husmann, E. J. Thimsen. "Computational Investigation of Nucleation Processes Leading to Silicon Nanoparticle Growth in a Low Temperature Capacitively Coupled Plasma." Poster Presentation. *Michigan Institute for Plasma Science and Engineering Symposium,* Ann Arbor, Michigan. November 17, 2022.
3. **J. Polito,** S. J. Lanham, M. J. Kushner, E. Husmann, E. J. Thimsen. "Nucleation Processes Leading to Si Nanoparticle Growth in Low Temperature Flowing Plasmas." Oral presentation. *74th Annual Gaseous Electronics Conference,* Virtual. October 4, 2021.
4. **J. Polito,** S. J. Lanham, M. J. Kushner, Z. Xiong, and U. R. Kortshagen "Modelling of Nanoparticle Growth and Charging in Flowing Plasmas." Oral presentation. *47th International Conference on Plasma Sciences,* Virtual. December 6, 2020.
5. **J. Polito**, M. Denning, D. Frost, R. Stewart, and M. J. Kushner "A Global Model for the Atmospheric Pressure Plasma Surface Functionalization of Polystyrene." Oral presentation. *73rd Annual Gaseous Electronics Conference,* Virtual. October 9, 2020.
6. **J. Polito**, S. J. Lanham, and M. J. Kushner. "Reactor Scale Modeling of Nanoparticle Synthesis in Low Temperature Plasmas." Oral Presentation. *72nd Annual Gaseous Electronics Conference*, College Station, Texas. October 30, 2019.

7. **J. Polito**, S. J. Lanham, and M. J. Kushner. “Reactor Scale Modeling of Nanoparticle Synthesis in Low Temperature Plasmas.” Poster Presentation. *Michigan Institute for Plasma Science and Engineering Symposium,* Ann Arbor, Michigan. November 13, 2019.

Publications

1. **J. Polito**, M. Denning, D. Frost, R. Stewart, and M. J. Kushner. “Atmospheric Pressure Plasma Functionalization of Polystyrene.” *J. Vac. Sci. Technol.* 40, 043001(2022). [Selected as an Editor’s Pick for J. Vac. Sci. Technol. Vol 40, Issue 4, Jul. 2022.]
2. Z. Xiong, S. Lanham, E. Husmann, G. Nelson, M. A. Eslamisaray, **J. Polito**, Y. Liu, J. Goree, E. Thimsen, M. J. Kushner and U. R. Kortshagen, "Particle Trapping, Size-filtering, and Focusing in the Nonthermal Plasma Synthesis of sub-10 Nanometer Particles", *J. Phys. D: Appl. Phys.* 55, 235202 (2022).
3. S. J. Lanham, **J. Polito**, X. Shi, P. Elvati, A. Violi and M. J. Kushner, "Scaling of Silicon Nanoparticle Growth in Low Temperature Flowing Plasmas", J. Appl. Phys. **130**, 163302 (2021). [Selected for cover of J. Appl. Phys. Vol. 130, Issue 16, Oct. 2021.]

Honors and Awards

Michigan Institute of Plasma Science and Engineering (MIPSE) Fellowship. – Spring 2021
University of Michigan Department of Chemical Engineering Outstanding Service Award – Fall 2021

Extra Curriculars

Co-President, Women in MIPSE. Jan. 2021 - Present
Director, Ann Arbor Ultimate League. May 2020 - Present
President, University of Michigan, Graduate Society of Chemical Engineers. Dec. 2020 – Dec. 2021
Social Chair, University of Michigan, Graduate Society of Chemical Engineers. Jan. 2019 – Dec. 2020
Recruitment Chair, University of Michigan Chemical Engineering Department. Sep. 2019 – Mar. 2020
University of Michigan Campus Band. Sep. 2018- Mar. 2020
Section Leader, Mississippi State University Famous Maroon Band. Aug. 2014 – May 2018

Outreach and Community Service

Facilitator, University of Michigan Common Reading Experience. Fall 2019, Fall 2020
Graduate Student Mentor, University of Michigan Society of Women Engineers. Fall 2018 – Winter 2020
Outreach Co-chair, University of Michigan ChE Undergraduate DEI, Summer 2020 – Summer 2021