Somerville, MA
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AVERY NGUYEN

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY — Cambridge, MA

Ph.D. candidate in Nuclear Science and Engineering — Sept. 2022 - Present

Thesis title: Measuring the mechanisms and signatures of low dose ion irradiation in fluoropolymers for reconstruction of uranium enrichment histories, supervised by Prof. Michael Short

Coursework: Physical metallurgy, kinetic processes in materials, polymer physics, radiation damage in materials, atomistic modeling, ...

B.S. in Chemical Engineering & B.S. in Literature — Sept. 2018 - May 2022

GPA: 4.96/5.0, Concentration in Materials Process and Design

Coursework: Chemical kinetics and reactors, transport processes, principles of electrochemical engineering, fluid mechanics, ...

EXPERIENCE

MIT MESOSCALE NUCLEAR MATERIALS GROUP — Cambridge, MA

Graduate Research Assistant — Sept. 2022 - Present

- Design, prepare, and perform experiments to support development of a nuclear archaeology method based on differential scanning calorimetry (DSC) in fluoropolymers, for application to verification of historic uranium enrichment activities
- Perform characterization experiments (Raman, SAXS/WAXS, ...) for mechanistic origins of radiation damage effects
- Standardize, automate, and document data analysis toolchains in Python and Matlab, for use across various DSC projects
- Mentor undergraduate and high school students on independent research projects

MAESTRO TECHNOLOGIES — Trenton, NJ

Technical Writer — June 2020 - Aug. 2021

- Prepared internal and external knowledge base documentation for information technology tools and procedures
- Developed marketing use cases and capabilities statements for over a dozen company projects and core competencies
- Produced articles on diverse subjects, including environmental responsibility, local economic history, and social issues
- Contributed major sections to government and corporate RFP responses, including multiple winning proposals over $1m

PUBLICATIONS AND PRESENTATIONS

- Connick, R.C., Hirst, C.A., Woller, K.B., **Nguyen, A.K.**, Logan, J.V., Kemp, R.S., & Short, M.P (2024). “Measuring very low radiation doses in PTFE for nuclear forensic enrichment reconstruction.” *Journal of Radiation Physics and Chemistry.* https://doi.org/10.1016/j.radphyschem.2024.112256
- **Nguyen, A.K.**, Reinfurt, D.R., Hong, Y., Hu, Z., Shao, L., Quan, Y., Ouyang, Y., Connick, R.C., Hirst, C.A., Kemp, R.S., & Short, M.P. “Measuring Forensic Signatures of Historical Uranium Enrichment in Fluoropolymers.” The Nuclear Materials Conference, Oct. 2024, Singapore.
- **Nguyen, A.K.**, Connick, R.C., Reinfurt, D.R., Hirst, C.A., Kemp, R.S., & Short, M.P. “Signatures of α-irradiation in PCTFE.” American Nuclear Society Winter Meeting, Nov. 2023, Washington, D.C.
- White, A., & **Nguyen, A.** (2021). How Often Do People Vote While Incarcerated? Evidence from Maine and Vermont. *Journal of Politics*. https://doi.org/10.1086/714927
- Ghosn, R., Jazairy, E., Fellebaum, R., Koh, K., Kuo, M., Mabsout, J., Weng, J.J., Li, A., Hutton, M., Ariana, A., **Nguyen, A.**, & Stradley, M. “The Planet After Geoengineering.” Biennale Architettura, 2021, Venice.
- **Nguyen, A.**, Khare, E., Buehler, M.J., & Holten-Andersen, N. Molecular Dynamics Simulation of the Effect of Metal Coordination Bonds on Mechanical Strength of Ni-Polyhistidine Complexes. *American Chemical Society* Spring Meeting, April 2021, Virtual.

SERVICE AND EXTRACURRICULARS

- MIT NSE Graduate Application Assistance Program (2022, 2023, 2024): volunteer mentor for students from traditionally underrepresented backgrounds, assisting with graduate school preparation and application materials
- Reactors reading group (2024 - present): focused on understanding practical aspects and unique features of both historic and current reactor designs, including features such as fuel performance, safety and security features, and reactor economics
- MIT NSE REFS (2024 - present): trained peer mediator and mentor for graduate student community
- Examiner for practice qualifying exams (2023 - present): in the areas of nuclear materials, nuclear security and policy