Somerville, MA
avng@mit.edu
averyaviary.github.io

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, …

TEACHING AND MENTORSHIP

Teaching Assistant, 22.02 (Introduction to Applied Nuclear Physics) — Spring 2025

- Prepared and delivered recitations, hosted office hours, and graded homeworks. Course material included introductory quantum mechanics, nuclear structure and decays, and nuclear interactions with matter
- Overall evaluations 6.0/7.0

Supervisor, undergraduate research project — Spring 2024 - Spring 2025

- Project on measuring the energy stored in defects in metallic systems using DSC and nano-DSC
- Provided guidance on experimental techniques, automated analyses, and sample preparation

Mentor, Winsor High School Science Internship Program — Summer 2024

- Project on measuring processing differences between polymer specimens with nano-DSC

Supervisor, undergraduate research project — Fall 2023

- Project on radiation effects in the oxide layer of maraging steels

Course assistant, 3.024x (Electronic, Optical, and Magnetic Properties of Materials, MITx) — Summer 2021

- Adapted and tested course content for MOOC, including course notes, problem sets, and exams
- Material included introductory quantum mechanics, electronic states and electronic structure, optical and magnetic materials

PUBLICATIONS AND PRESENTATIONS

- Connick, R.C., Hirst, C.A., Woller, K.B., **Nguyen, A.K.**, Logan, J.V., Kemp, R.S., & Short, M.P (2025). “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
- Temaugee, S.T., et al. (2025). “Proton-induced radiation damage on lutetium-aluminium and gold microstructures using XRD and TEM techniques.” *Radiation Effects and Defects in Solids*. https://doi.org/10.1080/10420150.2025.2484724
- **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
- 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