



Exponent[®]
Engineering & Scientific Consulting

Nick Schulman, Ph.D.

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Professional Profile

Dr. Schulman applies concepts of chemical engineering, material science and chemistry to investigate and analyze incidents involving reactive materials, explosions, fires, and chemical processes. Dr. Schulman has studied the nature and mechanism of explosion in reactive materials in the context of hazardous waste treatment, storage, and disposal. He additionally has experience investigating chemical process incidents, such as distillation and extraction processes. Dr. Schulman has extensive experience in the synthesis and characterization of nanomaterials for energy storage related applications. He is well trained in many laboratory techniques, especially the use of microscopic and spectroscopic methods such as Raman, FTIR, UV-Vis and SEM/TEM. Dr. Schulman has additional expertise and experience using such computational tools such as MATLAB, Octave, Julia, Mathematica and process simulation tool such as Aspen Plus and HYSYS.

After graduating from CCNY, Dr. Schulman began pursuing his Ph.D. at Cornell University. Before beginning his graduate studies, Dr. Schulman interned at Corning Incorporated and examined the surface texturing of gorilla glass with nanomaterials for biomedical application. Dr. Schulman's dissertation work at Cornell University focused on cost effective graphene synthesis via liquid phase exfoliation for energy storage applications. Additionally, Dr. Schulman researched CFD modeling of planar flow casting of glassy metallic alloys via OpenFOAM, using modified fluid dynamic packages. During his Ph.D., Dr. Schulman routinely focused on scaling production for industrial usage and routinely meeting with industry sponsors (executives, scientist, and engineers) to demonstrate and present his work.

Academic Credentials & Professional Honors

Ph.D., Chemical Engineering, Cornell University, 2023

M.S., Chemical Engineering, Cornell University, 2022

B.E., Chemical Engineering, City College of New York, 2018

GEM Fellowship, Cornell University, 2018-2019

Graduate Dean's Scholar, Cornell University, 2018-2019

Mini-Circuits Scholar, City College of New York, 2014-2018

Omega Chi Epsilon, Chemical Engineering Honor Society (OCE)-member

Licenses and Certifications

40-Hour Hazardous Waste Operation and Emergency Response Certification (HAZWOPER) (IL)

Certified Fire and Explosion Investigator (CFEI) (IL)

Prior Experience

Graduate Research Assistant, Chemical and Biomolecular Engineering, Cornell University, 2018-2022

Research and Development Intern, Corning Incorporated, 2018

Professional Affiliations

American Institute of Chemical Engineers (AIChE)-member

National Association of Fire Investigators (NAFI)-member

National Fire Protection Association (NFPA)-member

Publications

Salim, M. G., Vasudevan, V., Schulman, N., Zamani, S., Kersey, K. D., Joshi, Y., AlAmer, M., Choi, J. I., Jang, S. S., Joo, Y. L., Thermoresponsive Conductivity of Graphene-Based Fibers. *Small* 2023, 2204981. <https://doi.org/10.1002/smll.202204981>

Presentations

Mattson, J, Theisen, E, Schulman, N, et al. Rapidly solidified glassy metallic ribbons-a vitrifying-flow model. Virtual Presentation. 20th ISCST Symposium Virtual Event. 2020.

Schulman, N., Chen, G., Sionnest, PG. Mercury Telluride Quantum Dots: Study of their synthesis for application in infrared photoconductors and photodetectors. University of Chicago MRSEC REU Program, Chicago, IL, 2017.

Schulman, N., Wolfgang, V., Strom, V., Belvoa, L. ZnO films developed via inkjet printing technology for application in dye sensitized solar cells. Poster Presentation, Royal Institute of Technology, Stockholm, Sweden, 2016.

Project Experience

- Conducted modeling of granular material piling and evaluated the effects of reactivity and moisture content on angle of repose.
- Evaluated heat transfer properties of self-heating reactive materials and analyzed kinetic modeling of self-heating in thermal runaway scenarios.