GWENDOLYN J. CHEE

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EDUCATION

PhD **University of Illinois at Urbana-Champaign** 2019 - Present
Nuclear, Plasma and Radiological Engineering
Graduate Concentration: Computational Science and Engineering
Research focus: Leveraging Machine Learning for Generative Reactor Designs

MS **University of Illinois at Urbana-Champaign** 2017 - 2019
Nuclear, Plasma and Radiological Engineering
Thesis: Sensitivity Analysis of Nuclear Fuel Cycle Transitions

BASc **Queen's University at Kingston, Canada** 2013 - 2017
Engineering Physics, Material Science focus
Thesis: Designing a System to Gaseous Hydrogen Charge Zirconium Alloys

RESEARCH EXPERIENCE

University of Illinois at Urbana-Champaign 2017 - Present
Research Assistant, Advanced Reactors and Fuel Cycles *Urbana, IL*
Advisor: Professor Kathryn D. Huff
Developed demand-driven deployment algorithms for Cyclus, and coupled Cyclus with Dakota to perform sensitivity analysis on nuclear fuel cycle transitions. Currently working on leveraging genetic algorithms to optimize Fluoride-salt High-temperature Reactor designs.

Argonne National Laboratory Summer 2019
Research Aide *Lemont, IL*
Advisor: Dr. Bo Feng
Coupled Dymond with Dakota to perform sensitivity analysis on nuclear fuel cycle transitions.

Queen's University at Kingston 2016 - 2017
Research Assistant, Nuclear Materials Research Group *Kingston,ON*
Advisor: Professor Mark Daymond
Designed a Sieverts Apparatus to gaseously charge hydrogen gas into zirconium alloys to mimic hydrogen embrittlement of zirconium alloys used in nuclear reactors.

National University of Singapore Summer 2016
Research Assistant, Centre for Advanced 2D Materials *Singapore*
Advisor: Professor Jens Martin
Developed a MATLAB script to study the effect of Berry Curvature on electrons in graphene and the effects of changing the geometry of graphene devices on their electric fields.

Nanyang Technological University Summer 2015
Research Assistant, Polymeric Biomaterials Group *Singapore*
Conducted experiments to characterize nanoparticle enhanced polymer materials to determine the material combination that best increases the mechanical properties of biodegradable heart stents.

PROFESSIONAL SERVICE

U.S. Women in Nuclear 2018 - Present
President *Urbana, IL*
Leads the UIUC WiN chapter to uplift the mission of professional development, educational outreach, and a sense of community amongst our members (WiN CV).

ANS Student Conference 2021 2019 - Present
Technical Subcommittee Chair *Urbana, IL*
Works with the Technical Co-Chair to process student abstracts, and organize technical workshops, panels, and sessions.

TEACHING EXPERIENCE

University of Illinois at Urbana-Champaign Spring 2020
Teaching Assistant, NPRE Department *Urbana, IL*
NPRE 412, Nuclear Power Economics and Fuel Management

Queen's University at Kingston 2015 - 2017
Teaching Assistant, Physics Department *Kingston,ON*
Conducted weekly help sessions for students who required extra guidance in first year physics courses (PHYS 104/106).

JOURNAL PUBLICATIONS

[1] Jin Whan Bae, Andrei Rykhleskii, Gwendolyn J. Chee, and Kathryn D. Huff. Deep Learning Approach to Nuclear Fuel Transmutation in a Fuel Cycle Simulator. *Annals of Nuclear Energy*, 2020. github.com/jbae11/depletion_rom

CONFERENCE PROCEEDINGS

[1] Gwendolyn Chee, Jin Whan Bae, Kathryn D. Huff, Robert R. Flanagan, and Roberto Fairhurst. Demonstration of Demand-Driven Deployment Capabilities in Cyclus. In *Proceedings of Global/Top Fuel 2019*, Seattle, WA, United States, September 2019. American Nuclear Society

[2] Gwendolyn J. Chee and Kathryn D. Huff. Simulation of Spent Nuclear Fuel loading into a Final Waste Repository. In *WM Symposia 2019 Proceedings*, Phoenix, AZ, April 2019. Roy G. Post Foundation

[3] Gwendolyn Chee, Gyutae Park, and Kathryn D. Huff. Validation of Spent Nuclear Fuel Output by Cyclus, a Fuel Cycle Simulator Code. In *Proceedings of the American Nuclear Society Winter Meeting 2018*, Orlando, FL, November 2018. American Nuclear Society

[4] Gwendolyn Chee, Jin Whan Bae, and Kathryn D. Huff. Numerical Experiments for testing Demand-Driven Deployment Algorithms. In *Proceedings of the American Nuclear Society 2018 National Student Conference,*, Gainesville, FL, United States, April 2018. American Nuclear Society

TECHNICAL REPORTS

[5] Gwendolyn Chee, Roberto Fairhurst, and Kathryn Huff. Transition Scenario Demonstrations of CYCAMORE Demand Driven Deployment Capabilities. Technical Report UIUC-ARFC-2019-03, University of Illinois at Urbana-Champaign, Urbana, IL, June 2019

SELECTED AWARDS AND RECOGNITION

Women in Nuclear Chapter Excellence Award 2019
Queens University Deans Scholar 2014-2017

SCIENTIFIC COMPUTING SKILLS

Languages	bash, Python, C++, XML, HTML
Build Systems	make, cmake
Meshing Software	Trelis, FreeCAD
Databases	SQL, hdf5
Test Frameworks	nose, pytest
Other Tools	LaTeX, Mathematica, Jupyter, MatLab, Dakota, CUDA
Nuclear Software	Cyclus, PyNE, Serpent