

GWENDOLYN J. CHEE

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EDUCATION

PhD	University of Illinois at Urbana-Champaign Nuclear, Plasma and Radiological Engineering Graduate Concentration: Computational Science and Engineering <i>Research focus: Leveraging Machine Learning for Generative Reactor Designs</i>	2019 - Present
MS	University of Illinois at Urbana-Champaign Nuclear, Plasma and Radiological Engineering <i>Thesis: Sensitivity Analysis of Nuclear Fuel Cycle Transitions</i>	2017 - 2019
BASc	Queen's University at Kingston, Canada Engineering Physics, Material Science focus <i>Thesis: Designing a System to Gaseous Hydrogen Charge Zirconium Alloys</i>	2013 - 2017

RESEARCH EXPERIENCE

University of Illinois at Urbana-Champaign <i>Research Assistant, Advanced Reactors and Fuel Cycles</i> 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.	2017 - Present <i>Urbana, IL</i>
Argonne National Laboratory <i>Research Aide</i> Advisor: Dr. Bo Feng Coupled Dymond with Dakota to perform sensitivity analysis on nuclear fuel cycle transitions.	Summer 2019 <i>Lemont, IL</i>
Queen's University at Kingston <i>Research Assistant, Nuclear Materials Research Group</i> 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.	2016 - 2017 <i>Kingston, ON</i>
National University of Singapore <i>Research Assistant, Centre for Advanced 2D Materials</i> 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.	Summer 2016 <i>Singapore</i>
Nanyang Technological University <i>Research Assistant, Polymeric Biomaterials Group</i> Conducted experiments to characterize nanoparticle enhanced polymer materials to determine the material combination that best increases the mechanical properties of biodegradable heart stents.	Summer 2015 <i>Singapore</i>

PROFESSIONAL SERVICE

U.S. Women in Nuclear <i>President</i> Leads the UIUC WiN chapter to uplift the mission of professional development, educational outreach, and a sense of community amongst our members (WiN CV).	2018 - Present <i>Urbana, IL</i>
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ANS Student Conference 2021

Technical Subcommittee Chair

Works with the Technical Co-Chair to process student abstracts, and organize technical workshops, panels, and sessions.

2019 - Present

Urbana, IL

TEACHING EXPERIENCE

University of Illinois at Urbana-Champaign

Teaching Assistant, NPRE Department

NPRE 412, Nuclear Power Economics and Fuel Management

Spring 2020

Urbana, IL

Queen's University at Kingston

Teaching Assistant, Physics Department

Conducted weekly help sessions for students who required extra guidance in first year physics courses (PHYS 104/106).

2015 - 2017

Kingston, ON

JOURNAL PUBLICATIONS

- [1] Gwendolyn J. Chee, Roberto E. Fairhurst Agosta, Jin Whan Bae, Robert R. Flanagan, Anthony M. Scopatz, and Kathryn D. Huff. Demand Driven Deployment Capabilities in Cyclus, a Fuel Cycle Simulator. *Nuclear Technology*, 2020 (submitted)
- [2] Jin Whan Bae, Andrei Rykhlevskii, Gwendolyn Chee, and Kathryn D. Huff. Deep learning approach to nuclear fuel transmutation in a fuel cycle simulator. *Annals of Nuclear Energy*, 139:107230, May 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

Queens University Deans Scholar

2019

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	L ^A T _E X, Mathematica, Jupyter, MatLab, Dakota, CUDA
Nuclear Software	CYCLUS, PyNE, Serpent, OpenMC