

# Jason Hou

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## Current position

2022- *Associate Professor*, Department of Nuclear Engineering, North Carolina State University

## Education

2013 PHD in Nuclear Engineering, The Pennsylvania State University

2010 MSc in Nuclear Engineering, University of Michigan

2008 MSc in Nuclear Engineering, University of Tennessee

2005 BSc in Engineering Physics, Tsinghua University, China

## Appointments held

2019-2022 Assistant Professor, Department of Nuclear Engineering, North Carolina State University

2016-2019 Research Assistant Professor, Department of Nuclear Engineering, North Carolina State University

2014-2015 Postdoctoral Scholar, Department of Nuclear Engineering, University of California, Berkeley

2011 Intern, Energy and Advanced Concepts Group, General Atomics

## Publications

### JOURNAL ARTICLES

2022 Rivas, A., Martin, N. P., Bays, S. E., Palmiotti, G., Xu, Z., & Hou, J. "Nuclear Data Uncertainty Propagation Applied to the Versatile Test Reactor Conceptual Design," *Nuclear Engineering and Design*, 392:111744.

2022 Rivas, A., Delipei, G., Hou, J. "Predictions of Component Remaining Useful Lifetime Using Bayesian Neural Network," *Progress in Nuclear Energy*, 146:104143.

2021 Xu, Y., Hou, J. Ivanov, K. "Methodology for Discontinuity Factors Generation for Simplified P3 Solver Based on Nodal Expansion Formulation," *Energies*, 14(20):6478.

2021 Delipei, G., Hou, J., Avramova, M., Ivanov, K. "Summary of Comparative Analysis and Conclusions from OECD/NEA LWR-UAM Benchmark Phase I," *Nuclear Engineering and*

*Design*, 384, 111474.

- 2021 Avramova, M., Arbaca, A., Hou, J., Ivanov, K. "Innovations in Multi-Physics Methods Development, Validation, and Uncertainty Quantification," *Journal of Nuclear Engineering*, 2:44-56.
- 2021 Rivas, A., Stauff, N., Sumner, T., Hou, J. "Propagating neutronic uncertainties for FFTF LOFWOS Test #13," *Nuclear Engineering and Design*, 375, 111047.
- 2021 Avramova, M., Abarca, A., Hou, J., Ivanov, K. "Innovations in Multi-Physics Methods Development, Validation, and Uncertainty Quantification," *Journal of Nuclear Engineering*, 2(1):44-56.
- 2020 J. Hou, M. Avramova, K. Ivanov, "Best-Estimate Plus Uncertainty Framework for Multi-scale, Multiphysics Light Water Reactor Core Analysis," *Science and Technology of Nuclear Installations*, 2020, 7526864.
- 2020 I. Trivedi, J. Hou, G. Grasso, K. Ivanov, F. Franceschini, "Nuclear Data Uncertainty Quantification and Propagation for Safety Analysis of Lead-cooled Fast Reactors," *Science and Technology of Nuclear Installations*, 2020, 3961095.
- 2020 M. Altahhan, S. Bhaskar, D. Ziyad, P. Balestra, C. Fiorina, J. Hou, N. Smith, M. Avramova, "Preliminary design and analysis of Liquid Fuel Molten Salt Reactor using multi-physics code GeN-Foam," *Nuclear Engineering and Design*, 369.
- 2020 C. Wan, Z. Sui, L. Cao, Z. Liu, B. Wang, J. Hou, "Nuclear-data Uncertainty Propagation in Transient Simulation for the C5G7-TD Benchmark Problem," *Annals of Nuclear Energy* 120, 103184.
- 2020 K. Zeng, N.E. Stauff, J. Hou, T.K. Kim, "Development of Multi-Objective Core Optimization Framework and Application to Sodium-cooled Fast Test Reactors," *Progress of Nuclear Energy* 140, 107122.
- 2019 K. Zeng, J. Hou, M. Jessee, K. Ivanov, "Uncertainty Quantification and Propagation of Multi-Physics Simulation of the Pressurized Water Reactor Core," *Nuclear Technology*, 205:12, 1618-1637.
- 2019 S. Sihlangu, V. Naicker, J. Hou, F. Reitsma, "Further development of methodology to model TRISO fuel and BISO absorber particles and related uncertainty quantification using SCALE 6," *Journal of Nuclear Science and Technology*, 56:8, 690-709.
- 2018 Q. Li, Y. Jiao, M. Avramova, P. Chen, J. Yu, J. Chen, J. Hou, "Development, verification and application of a new model for active nucleation site density in boiling systems," *Nuclear Engineering and Design*, 328:1-9.
- 2017 J. Hou, K. Ivanov, V. Boyarinov, P. Fomichenko, "OECD/NEA Benchmark for Time-Dependent Neutron Transport Calculations without Spatial Homogenization," *Nuclear Engineering and Design*, 317:177-189.
- 2017 L. Wang, J. Guo, F. Li, J. Hou, K. Ivanov, "Effect of Nuclear Data on Fuel Element Neutronic Characteristics of Pebble-bed High Temperature Gas-cooled Reactor," *Atomic Energy Science and Technology*, 51, 9 (2017). [In Chinese]
- 2016 J. Hou, S. Qvist, R. Kellogg, E. Greenspan, "3D In-core Fuel Management Optimization for Breed-and-Burn Reactors," *Progress in Nuclear Energy*, 88:58-74.
- 2015 S. Qvist, J. Hou, E. Greenspan, "Design and Performance of 2D and 3D-shuffled Breed-and-Burn Cores," *Annals of Nuclear Energy*, 85:93-114.
- 2015 J. Hou, H. Choi, K. Ivanov, "Development of An Iterative Diffusion-Transport Method based on MICROX-2 Cross Section Libraries," *Annals of Nuclear Energy*, 77:335-342.

- 2014 J. Hou, H. Choi, K. Ivanov, "Assessment of MICROX-2 Code with New ENDF/B-VII.0 Master Library," *Nuclear Technology*, 186,3:305-316.
- 2014 J. Hou, H. Choi, K. Ivanov, "Self-shielding Models of MICROX-2 Code: Review and Updates," *Annals of Nuclear Energy*, 64:256-263.

#### CONFERENCE PROCEEDINGS

- 2022 Choi, Y-J., Palamone, G., Heagy, S., Frepoli, C., Ogujiuba, K., Rollins, N., Delipei, G\*, Hou, J., & Blakely, C. "Modeling and Simulation Needs and Capabilities for Artificial Intelligence Based Plant Reload Optimization Platform," Probabilistic Safety Assessment and Management PSAM 16, Honolulu, Hawaii, June 26-July 1, 2022.
- 2022 Ogujiuba, K., Delipei, G\*, Merturek, U., Hou, J., Wieselquist, W., & Ivanov, K. "Estimation of Recoverable Energies in Neutron-Induced Fission and Capture with Associated Uncertainties," International Conference on Physics of Reactors 2022 (PHYSOR 2022). Pittsburgh, PA. May 15-20, 2022.
- 2022 Altahhan, M., Delipei, G\*, Holler, D., Hou, J., Avramova, M., & Ivanov, K. "Julia for Enhancing Nuclear Engineering Simulations (JENES): Introduction to the JENES Project and Platform," International Conference on Physics of Reactors 2022 (PHYSOR 2022). Pittsburgh, PA. May 15-20, 2022.
- 2022 Ni, K., Cao, Y., Stauff, N.E., & Hou, J. "Assessment of Griffin Cross-Section Interpolation Capability on TRISO-Fueled Heat-Pipe Micro-Reactor," International Conference on Physics of Reactors 2022 (PHYSOR 2022). Pittsburgh, PA. May 15-20, 2022.
- 2022 Ni, K. & Hou, J. "An Efficient High-To-Low Informing Scheme for Core Neutronics Calculations Based on NEAMS Tools," International Conference on Physics of Reactors 2022 (PHYSOR 2022). Pittsburgh, PA. May 15-20, 2022.
- 2022 Trivedi, I., Zeng, K., Hou, J., & Stauff, N.E. "Impact of Nuclear Data Covariance Libraries on Uncertainty Quantification of Sodium Cooled Fast Reactor Simulation," International Conference on Physics of Reactors 2022 (PHYSOR 2022). Pittsburgh, PA. May 15-20, 2022.
- 2022 Williams, J., Howe, T., & Hou, J. "Neutronics Modeling of the Pulsed Plasma Rocket Reactor Using Rattlesnake," International Conference on Physics of Reactors 2022 (PHYSOR 2022). Pittsburgh, PA. May 15-20, 2022.
- 2022 L. Bullerwell, A. Abarca, M. Avramova, J. Hou, "Development of a Steady-State solver and Nonlinear Iteration in the Residual Formulation of CTF," 19th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-19), March 6-11, 2022.
- 2022 S. Bhaskar, D. Holler, M. Avramova, J. Hou, "Liquid Fuel Molten Salt Reactor Uncertainty Analysis Using Gen-Foam and Dakota," 19th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-19), March 6-11, 2022.
- 2021 A. Rivas, G.K. Delipei, I. Davis, Y. Britts, J. Hou, "Transient Characterization in High-temperature Gas-cooled Reactors Using Deep Neural Networks," *Transactions of the American Nuclear Society*, Vol. 125, 778-781, 2021 ANS Winter Meeting, November 30-December 3, 2021.
- 2021 J. Chen, J. Hou, K. Ivanov, "A Hybrid Monte Carlo Method for k-eigenvalue Problem," *Proceedings of M&C 2021 Conference*, 220-229, Raleigh, NC, October 3-7, 2021.
- 2021 G. K. Delipei, K. Zeng, J. Hou, "Impact of Covariances Estimation on Uncertainty Propagation in Reactor Core Simulations," *Proceedings of M&C 2021 Conference*, 1656-1665, Raleigh,

NC, October 3-7, 2021.

- 2021 K. Ni, J. Hou, M. Avramova, "Development of a High-to-Low Informing Scheme for Core Neutronics Calculations Based on NEAMS Tools," *Proceedings of M&C 2021 Conference*, 1394-1403, Raleigh, NC, October 3-7, 2021.
- 2021 Y. Xu, J. Hou, K. Ivanov, "A Transport Corrected SP<sub>3</sub> Solver Development with Nodal Expansion Method," *Proceedings of M&C 2021 Conference*, 1729-1739, Raleigh, NC, October 3-7, 2021.
- 2021 B. Andersen, A. Godfrey, J. Hou, D. Kropaczek, "Application of Deep Learning Networks to Surrogate Modeling of Crud Deposition," *Proceedings of M&C 2021 Conference*, 1782-1791, Raleigh, NC, October 3-7, 2021.
- 2021 L. Bullerwell, P. C. Shriwise, P. K. Romano, J. Hou, "Development of an OpenFOAM interface for ENRICO," *Proceedings of M&C 2021 Conference*, 641-650, Raleigh, NC, October 3-7, 2021.
- 2020 Y. Xu, J. Hou, K. Ivanov, "Improvement to NEM SP<sub>3</sub> Modelling and Simulation," *Proceedings of PHYSOR 2020: Transition to a Scalable Nuclear Future*, Cambridge, UK, Mar 29-Apr 4, 2020.
- 2020 B. Andersen, J. Hou, D. Kropaczek, "Minimizing CRUD Deposition through Optimization of Associated Parameters," *Proceedings of PHYSOR 2020: Transition to a Scalable Nuclear Future*, Cambridge, UK, Mar 29-Apr 4, 2020.
- 2020 K. Ni, J. Hou, M. Avramova, "Implementation and Comparison of Assembly Discontinuity Factors for PROTEUS-MOCEX," *Proceedings of PHYSOR 2020: Transition to a Scalable Nuclear Future*, Cambridge, UK, Mar 29-Apr 4, 2020.
- 2020 M. Avramova, A. Abarca, J. Hou, K. Ivanov, "Innovations in Multi-Physics Methods' Development, Validation, and Uncertainty Quantification," *Proceedings of PHYSOR 2020: Transition to a Scalable Nuclear Future*, Cambridge, UK, Mar 29-Apr 4, 2020.
- 2019 K. Zeng, N. Stauff, J. Hou, "Sensitivity and Uncertainty Analysis of the Advanced Burner Reactor Core Using NEAMS Workbench," *2019 ANS Winter Meeting Transactions*, Washington DC, November 17-21, 2019.
- 2019 M. Avramova, J. Hou, K. Ivanov, "Contributions of Mark Williams to OECD/NEA LWR-UAM Multi-Scale Reactor Physics Framework," *2019 ANS Winter Meeting Transactions*, Washington DC, November 17-21, 2019.
- 2019 K. Zeng, J. Hou, K. Ivanov, "Uncertainty Analysis of Pressurized Water Reactor Core Cycle Depletion Calculation," *2019 ANS Winter Meeting Transactions*, Washington DC, November 17-21, 2019.
- 2019 B. Andersen, D. Kropaczek, J. Hou, "BWR Fuel Bundle Optimization Based on Three-Dimensional Fuel Rods," *2019 ANS Winter Meeting Transactions*, Washington DC, November 17-21, 2019.
- 2019 K. Zeng, J. Hou, K. Ivanov, "Impact of Spatial Coupling Schemes and Perturbation Options on Uncertainty Quantification of PWR Core Simulation," *Proceedings of M&C 2019 Conference (pp. 2755-2764)*, Portland, Oregon, Aug 25-29, 2019.
- 2019 J. Hou, C. Maras, C. Gozum, M. Avramova, K. Ivanov, "Comparative Analysis of Solutions of Neutronics Exercises of the LWR UAM Benchmark," *Proceedings of M&C 2019 Conference (pp. 2726-2735)*, Portland, Oregon, Aug 25-29, 2019.
- 2019 I. Trivedi, J. Hou, G. Grasso, K. Ivanov, "Uncertainty Quantification On Feedback and Safety Parameters of Lead-Cooled Fast Reactors," *Proceedings of M&C 2019 Conference (pp.*

- 1483–1492), Portland, Oregon, Aug 25-29, 2019.
- 2019 S. Bhaskar, M. Altahhan, P. Balestra, J. Hou, M. Avramova, N. Smith, C. Fiolina, “GeN-Foam 3D Coupled Calculation of Liquid Fuel Molten Salt Reactor Primary Loop,” *Proceedings of NURETH 18*, Portland, Oregon, Aug 18-23, 2019.
- 2019 J. Hou, K. Ni, A. Hawari, “An Artificial Neural Network Based Anomaly Detection Algorithm for Nuclear Power Plants,” *Proceedings of 2019 ANS Annual Meeting*, Minneapolis, MN, June 9-13, 2019.
- 2019 L. Bullerwell, N. Smith, J. Hou, “Design of a Small Modular Molten Salt Reactor,” *Proceedings of 2019 ANS Annual Meeting*, Minneapolis, MN, June 9-13, 2019.
- 2018 M. Altahhan, S. Bhaskar, P. Balestra, J. Hou, M. Avramova, N. Smith, “Advanced Liquid Fuel Molten Salt Reactor Core Simulation Using Gen-Foam,” *Proceedings of Advances in Thermal Hydraulics (ATH 2018)*, Orlando, FL, November 11-15, 2018.
- 2018 M. Altahhan, P. Balestra, J. Hou, M. Avramova, “Implementation of the Multigroup Telegraph Based P<sub>1</sub> Approximation and Comparison to the Multigroup Diffusion Based P<sub>1</sub> Approximation in Gen-Foam,” *Proceedings of PHYTRA<sub>4</sub>*, Marrakech, Morocco, September 17-19, 2018.
- 2018 S. Bhaskar, M. Altahhan, Devshibhai Ziyad, P. Balestra, J. Hou, M. Avramova, “Modelling and Simulation of a Liquid Fuel Molten Salt Reactor Core Using Gen-Foam,” *Proceedings of PHYTRA<sub>4</sub>*, Marrakech, Morocco, September 17-19, 2018.
- 2018 Y. Xu, J. Hou, K. Ivanov, “New Implementation of Second-Order Discontinuity Factor for Simplified P<sub>3</sub> Theory in NEM,” *Proceedings of PHYTRA<sub>4</sub>*, Marrakech, Morocco, September 17-19, 2018.
- 2018 G. Zhang, K. Zeng, N. Stauff, J. Hou, T.K. Kim, T.H. Fanning, “Uncertainty Quantification of ABR Transient Safety Analysis,” *ANS Best Estimate Uncertainty International Conference (BEPU 2018)*, Lucca, Italy, May 13-19, 2018.
- 2018 N.E. Stauff, K. Zeng, G. Zhang, G. Aliberti, J. Hou, T. Fanning, and T. K. Kim, “Uncertainty Quantification of ABR Transient Safety Analysis – Nuclear Data Uncertainties,” *ANS Best Estimate Uncertainty International Conference (BEPU 2018)*, Lucca, Italy, May 13-19, 2018.
- 2018 I. Trivedi, J. Hou, J. Lin, G. Grasso, F. Franceschini, K. Ivanov, “Impact of Nuclear Data Uncertainties on Lead-cooled Fast Reactors,” *ANS Best Estimate Uncertainty International Conference (BEPU 2018)*, Lucca, Italy, May 13-19, 2018.
- 2018 K. Zeng, J. Hou, M. Jessee, K. Ivanov, “Uncertainty Quantification on Pressureized Water Reactor Coupled Core Simulation Using Stochastic Sampling Method,” *ANS Best Estimate Uncertainty International Conference (BEPU 2018)*, Lucca, Italy, May 13-19, 2018.
- 2018 S.F. Sihlangu, V.V. Naicker, J. Hou, F. Reitsma, “Uncertainty Quantification in the MHGTR-350 Fuel Compact and Block Using TSUNAMI-3D Clutch Method and Sampler,” *ANS Best Estimate Uncertainty International Conference (BEPU 2018)*, Lucca, Italy, May 13-19, 2018.
- 2018 Y. Xu, J. Hou, K. Ivanov, “Implementation of Second-Order Discontinuity Factor for Simplified P<sub>3</sub> Theory in NEM,” *PHYSOR 2018: Reactors Physics paving the way towards more efficient systems*, Cancun, Mexico, April 22-26, 2018.
- 2017 K. Zeng, J. Hou, K. Ivanov, and M. Jessee, “Uncertainty Analysis of Light Water Reactor Core Simulations Using Statistic Sampling Method,” *M&C 2017 - International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering*, Jeju, Korea, April 16-20 2017.
- 2017 J. Hou, K. Ivanov, V. Boyarinov and P. Fomichenko, “C<sub>5</sub>G<sub>7</sub>-TD Benchmark for Time-

- Dependent Heterogeneous Neutron Transport Calculations,” *M&C 2017 - International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering*, Jeju, Korea, April 16-20 2017.
- 2016 L. Wang, J. Guo, F. Li, J. Hou and K. Ivanov, “Effect of Double Heterogeneity Treatment on Neutronics Modeling of HTGR Unit Cell,” *2016 International Topical Meeting on High Temperature Reactor Technology (HTR2016)*, Las Vegas, NV, Nov 2016.
- 2016 Q. Li, M. Avramova, J. Yu, Y. Jiao and J. Hou, “A new model for active nucleation site density in boiling systems,” *International Topical Meeting on Advances in Thermal Hydraulics 2016 (ATH 16)*, New Orleans, LA, June 2016.
- 2016 J. Hou, S. Qvist, R. Kellogg and E. Greenspan, “In-core Fuel Management Optimization for Breed-and-Burn Reactors with 3D Fuel Shuffling,” *PHYSOR 2016 - Unifying Theory and Experiments in the 21st Century*, Sun Valley, Idaho, May 2016.
- 2015 J. Hou, S. Qvist and E. Greenspan, “3-D Fuel Shuffling for Reduced Peak Burnup and Increased Uranium Utilization of Breed-and-Burn Reactors,” *ICAPP 2015 - Nuclear Innovations for a Low-carbon Future*, Nice, France, May 03-06 2015.
- 2014 J. Hou, F. Heidet, P. Gorman and E. Greenspan, “On Multi-Group Cross Sections for Breed-and-Burn Reactors,” *Transaction of the American Nuclear Society*, Anaheim, CA, November 2014.
- 2014 P. Gorman, S. Bogetic, J. Hou, J. E. Seifried, G. Zhang, J. Vujic and E. Greenspan, “Thorium Fuelled Resource-Renewable BWR (RBWR) Design Update,” *Transaction of the American Nuclear Society*, Anaheim, CA, November 2014.
- 2014 J. Hou, H. Choi and K. Ivanov, “Development of An Iterative Lattice-Core Coupling Method Based on MICROX-2 Cross Section Libraries,” *PHYSOR 2014 - The Role of Reactor Physics Toward a Sustainable Future*, Kyoto, Japan, September 2014.
- J. Hou, H. Choi and K. Ivanov, “Self-shielding Models of MICROX-2 Code,” *Int’l Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering*, Sun Valley, Idaho, May 2013.
- J. Hou, H. Choi and K. Ivanov, “Pin Cell Benchmark Calculations of MICROX-2 Library,” *Transaction of the American Nuclear Society*, San Diego, CA, November 2012.
- J. Hou, H. Choi and K. Ivanov, “MICROX-2 Cross Section Library Generation Based on ENDF/B-VII,” *PHYSOR 2012 - Advances in Reactor Physics Linking Research, Industry, and Education*, Knoxville, Tennessee, April 2012.
- J. Hou, J. Preston and L. Miller, “Artificial Neural Network for Spectrum Unfolding Bonner Sphere Data,” *11th International Conference of Radiation Shielding*, Pine Mountain, GA, May 2008.
- L. F. Miller, J. Hou, J. McConn, J. Preston and M. Humberstone, “Uncertainty Analysis Methods for Equilibrium Fuel Cycles,” *Transaction of the American Nuclear Society*, Boston, MA, June 2007.
- D. R. Osborne, J. Hou, L. F. Miller and G. Graves, “Development of a Modern Pressurized Water Reactor Simulator: Instrumentation, Design and Data Acquisition,” *IEEE Nuclear Science Symposium and Medical Imaging Conference*, Honolulu, HI, October 2007.
- J. Hou and L. Miller, “Development of Pressurized Water Reactor (PWR) Simulator,” *ANS Student Conference*, Corvallis, OR, May 2007.

## TECHNICAL REPORT

- 2021 J. Christensen, V. Agarwal, M. Avramova, M. Diaconeasa, J. Hou, S. Palmtag, Y. Azmy, "Fission Battery Initiative – Safety and Licensing Workshop Report," INL/EXT-21 Rev 0, September 2021.
- 2019 N. Stauff, P. Lartaud, Y.S. Jung, P. Seurin, C.H. Lee, K. Zeng, J. Hou, "Status of the NEAMS and ARC Neutronics Fast Reactor Tools Integration to the NEAMS Workbench," ANL/NEAMS-19/1, September 30, 2019.
- 2019 K. Zeng, J. Hou, "Modeling SFR-UAM Benchmark Using NEAMS Workbench," RDFMG\_UAM-SFR, August 2019.
- 2018 M. Altahhan, S. Bhaskar, D. Ziyad, J. Hou, P. Balestra, "NCSU Technical Report for the MSR Design Project," RDFMG\_MSRDES/001, April 2018.
- 2018 V. Boyarinov, P. Fomichenko, J. Hou, M. Avramov, K. Ivanov, A. Aures, W. Zwermann and K. Velkov "Deterministic Time-Dependent Neutron Transport Benchmark without Spatial Homogenization (C5G7-TD), Volume II: Dynamics Phase," NEA/NSC 2018.
- 2016 V. Boyarinov, P. Fomichenko, J. Hou, K. Ivanov, A. Aures, W. Zwermann and K. Velkov "Deterministic Time-Dependent Neutron Transport Benchmark without Spatial Homogenization (C5G7-TD), Volume I: Kinetics Phase," NEA/NSC 2016.
- 2014 J. Hou, T. Blyth, N. Porter, M. Avramova, K. Ivanov, E. Royer, E. Sartori, O. Cabellos, H. Feroukhi, and E. Ivanov, "Benchmark for Uncertainty Analysis In Modelling (UAM) for Design, Operation And Safety Analysis of LWRs, Volume II: Specification and Support Data for the Core Cases (Phase II)," NEA/NSC 2014.
- 2015 E. Greenspan, J. Hou, S. Qvist, P. Peterson and T.K. Kim, "A Pebble-Bed Breed and Burn Reactor," M2NU-13-CA-UCB\_-0701-022 Year 1 Annual Report for Project 13-5144, August 2015.
- 2012 J. Hou and H. Choi, "MICROX-2 Cross Section Library Generation Verification Report: User Manual," General Atomics, February 2012.
- 2011 J. Hou and H. Choi, "MICROX-2 Cross Section Library Generation Verification Report: Method and Test," General Atomics, August 2011.
- 2009 J. Hou, Y. Xu and T. Downar, "Multi-Cycle Depletion Capacity for PARCS," NRC-RES-07-115, December 2009.
- 2009 T. Downar, J. Hou, B. Collins and Y. Xu, "Technical Evaluation of the HITACHI Resource-Renewable BWR (RBWR) Design Concept Phase II - Final Report," September 2009.

## Teaching

- 2019 NE 402/502 Reactor Engineering
- 2019-2021 NE 591 Metal Cooled Reactors
- 2018-2020 NE 412/512 Nuclear Fuel Cycles
- 2017-2022 NE 403 Introduction to Nuclear Reactor Laboratory
- 2016-2017 NE 201 Introduction to Nuclear Engineering
- 2016,2018 NE 419 Introduction to Nuclear Energy

## Honors & Awards

- 2021 Andy Rivas, National Science Foundation (NSF) Graduate Research Fellowship, 2021.
- 2020 Ishita Trivedi, NC State College of Engineering Doctoral Scholar of the Year, 2020.
- 2019 Best paper, “Core design using PRISM and coupling Formosa to PRISM” in Fuel Cycle and Waste Management category in ANS Student Conference, 2019.
- 2019 Best paper, “Design and optimize Molybdenum-99 production capability” in Isotopes and Radiation category in ANS Student Conference, 2019.
- 2018 Best paper, “Design of a nuclear power system to support an asteroid refinery in space” in Aerospace Nuclear Science & Technology category in ANS Student Conference, 2018.
- 2013 Member, Alpha Nu Sigma of the American Nuclear Society.
- 2005 Zheng Geru Scholarship for Academic Excellence, Tsinghua University.

## Relevant professional activities

- Member, Executive Committee of the Reactor Physics Division (RPD), American Nuclear Society.
- Member, Program Committee of the RPD, American Nuclear Society.
- Reviewer, Nuclear Regulatory Committee (NRC) Integrated University Program (IUP) – Scholarship and Fellowship programs, 2016.
- Judge, American Nuclear Society Student Design Competition, 2016.
- Member, American Nuclear Society.
- Chair, NCSU Nuclear Engineering Department (NED) Graduate Recruitment and Admission Committee.
- Member, NCSU NED Graduate Recruitment and Admission Committee.
- Member, NCSU NED Computing Hardware and Software Resources Committee.