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 NUCLEAR ENGINEERING AND INDUSTRIAL MANAGEMENT DEPARTMENT  
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**EDUCATION AND TRAINING**

University of California-Berkeley · Doctor of Philosophy · Nuclear Engineering	2006
Worcester Polytechnic Institute · Master of Science · Civil/Environmental Engineering	1999
Worcester Polytechnic Institute · Bachelor of Science · Mechanical/Nuclear Engineering	1996

**RESEARCH AND PROFESSIONAL EXPERIENCE**

**University of Idaho · Idaho Falls Center for Higher Education**  
**Nuclear Engineering and Industrial Management Department**

Assistant Professor	July 2015 -
Coordinator - NPP Decommissioning and Used Fuel Management Certificate	August 2019 -
Affiliate - Boise State University Energy Policy Institute	August 2019 -
State of Idaho Professional Engineer, Faculty Restricted	October 2019 -
University of California-Berkeley · Department of Nuclear Engineering · Postdoctorate Researcher	2007, 2009-12
The University of Tokyo · Department of Nuclear Engineering/Management · Research Associate	2007-09

**AWARDED PROJECTS**

- (1) Athi Varuttamaseni (PI), Shinjae Yoo (co-PI) - Brookhaven National Laboratory, R. A. Borrelli (co-PI) - University of Idaho. Adaptive control and monitoring platform for autonomous operation of advanced reactors. NEUP 20-19280. **\$1,000,000**. 2020.10.01 - 2023.09.30.
- (2) Lee Ostrom (PI), Richard N. Christensen, R. A. Borrelli, Haiyan Zhao (co-PIs) - University of Idaho. ORED Fall 2019 EIS: Portable XFR for use in supporting material research. ORED Equipment and Infrastructure Support. **\$40,000**. 2019.12.01 - 2020.11.30
- (3) R. A. Borrelli (PI) - University of Idaho, Mark. D. DeHart (co-PI) - Idaho National Laboratory. Application and enhancement of MAMMOTH depletion capabilities. **\$33,521**. 2020.01.13 - 2020.12.31
- (4) Richard N. Christensen (PI), R. A. Borrelli, Michael G. McKellar, Michael Haney, David Arcilesi (co-PIs) - University of Idaho, Richard Jacobson (co-PI) Idaho State University. NuScale Simulator at the Center for Advanced Energy Studies. Department of Energy Scientific Infrastructure Support for Consolidated Innovative Nuclear Research. **\$285,763**. 2019.10.01 - 2020.09.30
- (5) R. A. Borrelli (PI) - University of Idaho, Dennis D. Keiser, Jr., (co-PI) - Idaho National Laboratory. Graduate Research Assistantship: Connecting U-Mo Fuel Processing, Microstructure, and Irradiation Performance. **\$91,835**. 2018.10.01-2021.05.30
- (6) R. A. Borrelli (PI), Richard N. Christensen (co-PI) - University of Idaho, Brian J. Jaques (co-PI) - Boise State University, Piyush Sabharwall (co-PI) - Idaho National Laboratory, Mark Delligatti (co-PI) - Table Rock, LLC, Sakae Casting USA, LLC (co-PI). Modeling and design of borated aluminium cask for used fuel cooling. Idaho Global Entrepreneurial Mission (IGEM) - Idaho Commerce, **\$237,898**. 2018.01.01-2019.05.31
- (7) R. A. Borrelli (PI) - University of Idaho, Dennis D. Keiser, Jr., (co-PI) - Idaho National Laboratory. Graduate Research Assistantship: Connecting U-Mo Fuel Processing, Microstructure, and Irradiation Performance. **\$36,180**. 2017.11.01-2018.05.31
- (8) R. A. Borrelli (PI), Lee Ostrom (Senior Advisor) - University of Idaho, Stephen G. Johnson (Senior Advisor) - Idaho National Laboratory. Performance assessment of americium as fuel in radioisotope thermoelectric generators for deep space exploration. Idaho NASA EPSCoR Research Initiation Grant. **\$55,000**. 2017.08.01-2018.04.30

- (9) Kelley M. Verner (PI), R. A. Borrelli, Marc T. Skinner, Emma K. Redfoot, Jieun Lee, Seth Dustin, John Peterson (co-PIs) - University of Idaho. Increasing the Go-on Rate in Southeast Idaho Through the Nexus of Food, Energy, and Water. University of Idaho Vandals Big Ideas Project. **\$23,984**. 2017.07.01-2018.06.30
- (10) R. A. Borrelli (PI) - University of Idaho, Jason Hales (co-PI) - Idaho National Laboratory. Graduate Research Assistantship: Idaho National Laboratory Code Documentation. **\$35,435**. 2016.10.01-2017.06.30
- (11) Vivek Utgikar (PI), Fatih Aydogan, Krishnan Raja, Raghunath Kanakala, R. A. Borrelli, Haiyan Zhao, Matthew Swenson (co-PIs) - University of Idaho. University of Idaho Nuclear Engineering Faculty Development Program. United States Regulatory Commission Faculty Development Grant. **\$434,048**. 2015.09.29 - 2019.09.30

## RELEVANT PUBLICATIONS

\*STUDENTS

- (1) Borrelli, R. A., Delligatti, Mark S., Heidrich, Brenden J., 2020. Borated aluminum cask design for onsite intermediate storage - Preliminary neutronics design and certification analysis. Nuclear Engineering and Design 363, doi:10.1016/j.nucengdes.2020.110666.
- (2) \*Carter, John P., Borrelli, R. A., 2020. Neutron physics study of an integral molten salt reactor using Monte Carlo N-Particle code. Nuclear Engineering and Design 365, doi.org/10.1016/j.nucengdes.2020.110718.
- (3) \*Widdicombe, Teyen, Borrelli, R. A., 2020. MCNP modelling of radiation effects of the Dragonfly mission's RTG on Titan. Acta Astronautica, doi.org/10.1016/j.actaastro.2020.12.033.
- (4) Christensen, Joseph, Borrelli, R. A., 2020. Nuclear criticality safety aspects for the future of HALEU: Evaluating heterogeneity in intermediate-enrichment uranium using critical benchmark experiments. Nuclear Science and Engineering, doi.org/10.1080/00295639.2020.1819143.
- (5) \*Peterson, John, Haney, Michael, Borrelli, R. A., 2019. An overview of methodologies for cyber security vulnerability assessments conducted in nuclear power plants. Nuclear Engineering and Design 346, 75.
- (6) \*Lee, Jieun, Borrelli, R. A., 2019. Sensitivity analysis and application of advanced nuclear accounting methodologies on the high reliability safeguards model: Use of discrete event simulation for material throughput in fuel fabrication. Nuclear Engineering and Design 345, 183.
- (7) \*Lee, Jieun, \*Shigrekar, Amey, Borrelli, R. A., 2019. Hazard and operability analysis of a pyroprocessing facility. Nuclear Engineering and Design 348, 131.
- (8) \*Redfoot, Emma K., Borrelli, R. A., 2018. Analysis of nuclear renewable hybrid energy systems modeling and nuclear fuel cycle simulators. Nuclear Technology 204, 249.

## RELEVANT COURSES TAUGHT

### *University of Idaho · Idaho Falls Center for Higher Education · Nuclear Engineering Program*

NE527: Nuclear material storage, transport, disposal

NE535: Nuclear Criticality Safety I & II

TM529: Risk Assessment

NE450: Principles of Nuclear Engineering

### *University of California-Berkeley · Department of Nuclear Engineering*

NE92: Issues in Nuclear Science and Engineering

NE375: Teaching Techniques in Nuclear Engineering

E124: Ethics and the Impact of Technology on Society

### *The University of Tokyo · Department of Nuclear Engineering/Management*

Technical English for Scientists

### *Diablo Valley Community College (CA) · Department of Architecture and Engineering*

ENGIN110: Introduction to Engineering

## SYNERGISTIC ACTIVITIES

- (1) American Nuclear Society: Executive Committee - Fuel Cycle and Waste Management Division
- (2) American Nuclear Society: Executive Committee - Nuclear Nonproliferation Policy Division
- (3) American Nuclear Society: Executive Committee - Student sections Committee
- (4) University of Idaho: Faculty Advisor - American Nuclear Society University of Idaho Student Section
- (5) Idaho Section of the American Nuclear Society: Coordinator - Smoke Detector Donation Program