ROBERT ANGELO BORRELLI

ASSISTANT PROFESSOR · UNIVERSITY OF IDAHO · IDAHO FALLS CENTER FOR HIGHER EDUCATION

ENGINEERING/TECHNOLOGY MANAGEMENT, INDUSTRIAL TECHNOLOGY, AND NUCLEAR ENGINEERING 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 Program

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) 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

(2) 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

(3) 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

(4) 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. **$86,848.** 2018.10.01-2021.05.30

(5) 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

(6) 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

(7) 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

(8) 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

(9) 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

(10) 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, 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 missions RTG on Titan. AIAA Journal of Spacecraft and Rockets, [*under review*].

(4) *Mena, Pedro, Borrelli, R. A., Kerby, Leslie, 2020. Nuclear reactor transient diagnostics using classification and AutoML. IFAC Journal of Systems and Control, [*under review*].

(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.

(9) *Lee, Jieun, *Tolman, Malachi, Borrelli, R. A., 2017. High reliability safeguards approach to remotely handled nuclear processing facilities: Use of discrete event simulation for material throughput for fuel fabrication. Nuclear Engineering and Design 324, 54.

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
NE585: Nuclear Fuel Cycle Analysis
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