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**MARIA A. OKUNIEWSKI, Ph.D.**

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**SUMMARY:**

Dr. Okuniewski joined the School of Materials Engineering (MSE) at Purdue University in January 2016 as an assistant professor. She also holds a courtesy appointment with the School of Nuclear Engineering. Previously, she spent the last seven years and eight months at Idaho National Laboratory (INL) as a research and development scientist and engineer. The overarching goals of her research focus on understanding the connections between the microstructure of nuclear materials and fuels and their mechanical properties. The microstructural evolution is studied as a function of radiation damage and/or fabrication and processing of the nuclear systems. This research aims to connect phenomena that span multiple spatial (atomistic to mesoscale) and temporal (picoseconds to seconds) scales. Her research utilizes both experimental and modeling techniques in a complementary fashion. She has also been instrumental in developing new techniques and expanding the capabilities of existing techniques to apply to nuclear fuels and materials such as positron annihilation spectroscopy, synchrotron X-ray diffraction and tomography, nanoindentation, neutron diffraction, and focused ion beam/scanning electron microscopy applications.

Dr. Okuniewski has continued her research at Purdue through the engagement of both undergraduate and graduate students alike. During her first four years at Purdue, she has supervised twelve undergraduate students and engaged over half of them in research conducted at the Advanced Photon Source at Argonne National Laboratory. Dr. Okuniewski has six graduate students in her research group. She recently graduated one Ph.D. student that she served as a co-advisor for in the School of Aeronautics and Astronautics. She also serves/d as a co-advisor for two MSE Ph.D. students, one of whom graduated in 2019. At Purdue she has taught five different courses, two undergraduate lab courses, one introductory lecture course, and two graduate lecture courses. She also has served as a mentor for the senior design teams for the last three academic calendar years.

During her career she has authored or co-authored 54 peer-reviewed journal articles or proceedings, 54 invited talks, 20 technical reports, and more than 100 conference presentation abstracts.

Dr. Okuniewski was also an adjunct faculty member at Idaho State University (ISU) in the Department of Nuclear Engineering and Health Physics. At ISU she co-developed and co-taught a new course entitled, "Advanced Materials Science" for upper level undergraduate and graduate students that focused on nuclear materials and fuels. Throughout her national laboratory career she was engaged in both undergraduate and graduate research and education through a variety of means, including acting as a mentor for one to two students each summer. The results of these efforts have led to both peer-reviewed publications and conference presentations by the students. She was also actively engaged in a number of students' research projects through the Nuclear Science User Facility where she served as a programmatic technical lead, principle investigator, or co-principle investigator.

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**EDUCATION:**

**Doctor of Philosophy, University of Illinois at Urbana-Champaign, Department of Nuclear, Plasma, and Radiological Engineering, Urbana, Illinois, 2008**

Dissertation: "Irradiation-Induced Microstructural Evolution and Mechanical Properties in Iron with and without Helium"

Advisor: Prof. James F. Stubbins

**Master of Science, University of Illinois at Urbana-Champaign, Department of Nuclear, Plasma, and Radiological Engineering, Urbana, Illinois, 2004**

Thesis: "Void and Helium Bubble Stability in Amorphous Silicon Subjected to Heavy Ion Irradiation"

**Bachelor of Science, University of Tampa, Biology and Marine Science, Tampa, Florida, 1994**

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**EXPERIENCE:**

February 2017 - **Assistant Professor**, Courtesy, School of Nuclear Engineering, Purdue University, West Lafayette, IN  
Current

January 2016 - **Assistant Professor**, School of Materials Engineering, Purdue University, West Lafayette, IN  
Current

- Principle investigator in nuclear materials and fuels.
- Total research portfolio >\$1M from external grants and research agreements.
- Research group currently includes five graduate students and five undergraduate students in Materials Engineering.
- Co-advising three graduate students within Aeronautics and Astronautics.
- Graduate and undergraduate teaching within the School of Materials Engineering.

August 2013 - **Adjunct Faculty**, Department of Nuclear Engineering and Health Physics, Idaho State University, Pocatello, ID  
2015

- Co-developed and co-taught a new course (Advanced Materials Science) that focused on nuclear materials and fuels for junior to graduate level students

April 2008 - **Research & Development Scientist and Nuclear Engineer**, Idaho National Laboratory, Fuel Performance and Design, Idaho Falls, ID  
January 2016

- Understand the processing parameter impacts on the microstructure and mechanical properties for metallic fuel plates by designing, conducting, and analyzing experiments (positron annihilation spectroscopy, neutron diffraction, synchrotron X-ray diffraction, and nanoindentation).
- Developing new techniques and expanding the capabilities of existing techniques to apply to nuclear fuels and materials such as positron annihilation spectroscopy, nanoindentation, synchrotron X-ray diffraction and tomography, neutron diffraction, and focused ion beam applications.

- Designing of spatially resolved positron annihilation spectroscopy systems to analyze unirradiated and irradiated materials.
- Managing and directing research of atomistic to meso-scale modeling of simple metallic fuels to understand microstructural evolution under irradiation damage
- Designing and conducting irradiation experiments, followed by characterization (SEM, TEM, synchrotron X-ray diffraction, positron annihilation spectroscopy, neutron diffraction, nanoindentation) to closely coordinate with the modeling mentioned above in simple metallic fuels. This research focuses on a systematic set of experiments to understand microstructural evolution and the impact on mechanical properties in various metallic fuels subjected to low fluence irradiations.
- Represent programs at various review meetings of DOE NE, NNSA, and INL.

August 2003 –  
April 2008

- Research Assistant**, University of Illinois, Department of Nuclear, Plasma, and Radiological Engineering, Urbana, IL, Prof. James Stubbins
- Designing, conducting, and analyzing experiments (positron annihilation spectroscopy, *in situ* and *ex situ* transmission electron microscopy, X-ray scattering, and nanohardness) to understand the implications of helium in a BCC iron system that is radiation damaged
  - Conducting and analyzing molecular dynamics and kinetic Monte Carlo simulations of BCC iron containing helium bubbles subjected to irradiation to understand the microstructural evolution process and relate to experimental findings

June 2003 –  
August 2003

- Student Intern**, Los Alamos National Laboratory, Materials Science and Technology Division, Los Alamos, New Mexico, Dr. Stuart Maloy and Dr. Srinivasan Srivilliputhur
- Conducted and analyzed molecular dynamics simulations of BCC iron containing helium bubbles subjected to irradiation

January 2003 –  
May 2003 and -  
January 2001 -  
May 2001

- Teaching Assistant**, University of Illinois, Department of Nuclear, Plasma, and Radiological Engineering, Urbana, Illinois, Prof. David Ruzic
- Grading, teaching, and tutoring students
  - Initiated and maintained course website

May 2001 -  
January 2003

- Graduate Research Assistant**, University of Illinois, Department of Nuclear, Plasma, and Radiological Engineering, Urbana, Illinois, Prof. Brent Heuser
- Conducted and analyzed molecular-dynamics simulations of voids and helium bubbles in amorphous silicon subjected to heavy ion bombardment
  - Designed, performed, and analyzed experiments focused on helium implantation of quartz (simplified radioactive waste matrix)

May 2000 -  
December 2000

- Engineering Intern**, Amergen, Clinton Nuclear Power Plant, Configuration Management, Clinton, IL, Ms. Betty Heinrich

- Designed, constructed, and populated database for plant systems drawings
- January 1999 -  
May 2001
- Graduate Research Assistant**, University of Illinois, Department of Nuclear, Plasma, and Radiological Engineering, Urbana, Illinois, Prof. George Miley
- Designed and conducted experiments focused on electrolytic cells with specific emphasis on hydrogen isotope loading in thin-film metal lattices
- July 1996 -  
October 1998
- Laboratory Manager / Research Scientist**, Clean Energy Technologies, Inc., Sarasota, Florida, Dr. Lou Furlong
- Formulated and conducted experiments focused on hydrogen fuel cells, environmental remediation, and hydrogen isotope separations
  - Manufactured and constructed experimental modules
  - Project management
  - Prepared reports, correspondences, and presentations
  - Presented papers at technical conferences
  - Represented company on technical panels
  - Instructed and trained scientists, engineers, and laboratory assistants
  - Conducted technical seminars and demonstrations
  - Interpreted and analyzed technical data
  - Developed and implemented protocols
- May 1994 -  
July 1996
- Laboratory Manager / Biologist**, Bio Lab of Florida, Port Charlotte, Florida, Ms. Susan Rodgers
- Conducted aquatic bioassay toxicity testing under EPA and FDEP regulations
  - Interpreted EPA and FDEP permits
  - Supervised and trained laboratory technicians and assistants
  - Performed quality control and quality assurance inspections
  - Water chemistry analyses
  - Maintained laboratory cultures
  - Prepared and standardized chemical reagents
  - Represented company at conferences and trade shows
- September 1990 -  
May 1994
- Research Assistant**, University of Tampa, Biology Department, Tampa, Florida, Dr. Stanley Rice
- Performed barnacle colonization and adhesion strength studies
  - Supervised and trained field technicians
  - Prepared and edited technical reports
  - Collected, organized, and interpreted field data
  - Technical data entry and statistical analyses
  - Maintained laboratory cultures
- September 1993 -  
May 1994
- Peer Enrichment Person**, University of Tampa, Biology Department, Tampa, Florida
- Teacher assistant for introductory biology
  - Laboratory preparation and maintenance
  - Performed and prepared lectures
  - Student tutor

- January 1994 - May 1994      **Research Assistant**, Environmental Protection Commission of Hillsborough County, Ecosystems Management, Tampa, Florida
- Benthic community analysis
- June – August 1993, and January 1994      **Research Assistant**, National Oceanic and Atmospheric Administration, Ann Arbor, Michigan, Mr. Thomas Nalepa
- Benthic community analysis
  - Biomass analysis
  - Field techniques: macrofauna collection and water chemistry sampling
- June – July 1991 and 1992      **Teacher / Laboratory Assistant**, National Science Foundation Workshop for Environmental and Behavioral Biology, Kellogg Biological Station, Hickory Corners, Michigan, Prof. Howard Hagerman
- Performed water and soil chemistry analyses
  - Interpreted technical data
  - Instructed participants in procedural methods
  - Laboratory preparation and maintenance
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**PEER REVIEWED PUBLICATIONS:**

- 1) H. Wang, J. Thomas, M. A. Okuniewski, and V. Tomar, Thermal Conductivity Measurement of Zircaloy-4 Using an Extended Raman Thermometry Method, Submitted to *Journal of Nuclear Materials*, Feb. 16, 2020. Under review.
- 2) H. Wang, J. Thomas, M. A. Okuniewski, and V. Tomar, Constitutive Modeling of  $\delta$ -Phase Zircaloy Hydride Based on Strain Rate Dependent Nanoindentation and Nano-scale Impact Dataset, Accepted with revisions to *International Journal of Plasticity*, Feb. 13, 2020.
- 3) J. Thomas, A. Figueroa, S. T. Nori, R. Ren, P. Kenesei, J. Almer, J. Harp, M. A. Okuniewski, The Application of Synchrotron Micro-Computed Tomography to Characterize Three-Dimensional the Microstructure in Irradiated Nuclear Fuel, Submitted to *Journal of Nuclear Materials*, Aug. 15, 2019. Under review.
- 4) W. J. Williams, M. A. Okuniewski, S. C. Vogel, J. Zhang, “An In-Situ Neutron Diffraction Study of Crystallographic Evolution and Thermal Expansion Coefficients in U-22.5at.%Zr During Annealing,” *JOM*, (2020) In press. <https://doi.org/10.1007/s11837-020-04086-8>
- 5) D. Wen, C.-H. Chang, S. Matsunaga, G. Park, L. Ecker, S. K. Gill, M. Topsakal, M. A. Okuniewski, S. Antonov, D. R. Johnson, M S. Titus, “Structure and Tensile Properties of  $M_x(\text{MnFeCoNi})_{100-x}$  Solid Solution Strengthened High Entropy Alloys,” *Materialia*, vol. 9 (2020) 100539.
- 6) W. J. Williams, D. M. Wachs, M. A. Okuniewski, S. van den Berghe, Assessment of Swelling and Constituent Redistribution in Uranium-Zirconium Fuel Using Phenomena Identification and Ranking Tables, *Annals of Nuclear Energy*, vol. 136 (2020) 107016.
- 7) B. Beeler, Y. Zhang, M. Okuniewski, and C. Deo, Calculation of the Displacement Energy of  $\alpha$  and  $\gamma$  Uranium, *Journal of Nuclear Materials*, vol. 508 (2018) p. 181.
- 8) S. Biswas, D. Schwen, M. Okuniewski, and V. Tomar, Phase Field Modeling of Sintering in 2D: Role of Grain Orientation and Anisotropic Properties, *Computational Materials Science*, vol. 148 (2018) p. 307.

- 9) D. P. Mohanty, H. Wang, M. Okuniewski, and V. Tomar, A Nanomechanical Raman Spectroscopy Based Assessment of Stress Distribution in Irradiated and Corroded SiC, *Journal of Nuclear Materials*, vol. 497 (2017) p. 128.
- 10) A. P. Moore, C. Deo, M. I. Baskes, M. A. Okuniewski, D. McDowell, Understanding the Uncertainty of Interatomic Potentials' Parameters and Formulism, *Computational Materials Science*, vol. 126 (2017) p.308. (Editor's Choice)
- 11) D. W. Brown, M. A. Okuniewski, B. Clausen, G. A. Moore, T. A. Sisneros, Neutron Diffraction Measurement of Residual Stresses, Dislocation Density, and Texture in a Zr-bonded U-10Mo "Mini" Fuel Foils and Plates, *Journal of Nuclear Materials*, vol. 482 (2016) p. 63.
- 12) A. P. Moore, C. Deo, M. I. Baskes, M. A. Okuniewski, Atomistic Mechanisms of Morphological Evolution and Segregation in U-Zr Alloys, *Acta Materialia*, vol. 115 (2016) p. 178.
- 13) W.-Y. Chen, Y. Miao, J. Gan, M. A. Okuniewski, S. A. Maloy, J. F. Stubbins, Neutron Irradiation Effects in Fe and Fe-Cr at 300°C, *Acta Materialia*, vol. 111 (2016) p. 407.
- 14) D. W. Brown, M. A. Okuniewski, B. Clausen, G. A. Moore, T. A. Sisneros, Neutron Diffraction Measurement of Residual Stresses in Al-clad U-10Mo Fuel Plates, *Journal of Nuclear Materials*, vol. 474 (2016) p. 8.
- 15) A. Moore, B. Beeler, C. Deo, M. I. Baskes, M. A. Okuniewski, Atomistic Modeling of High Temperature Uranium-Zirconium Alloys Structure and Thermodynamics, *Journal of Nuclear Materials*, vol. 467 (2015) p. 802.
- 16) W.-Y. Chen, Y. Miao, Y. Wu, C. A. Tomchik, K. Mo, J. Gan, M. A. Okuniewski, S. A. Maloy, J. F. Stubbins, Corrigendum to "Atom Probe Study of Irradiation Enhanced  $\alpha'$  Precipitation in Neutron-Irradiated Fe-Cr Model Alloys," *Journal of Nuclear Materials*, vol. 467 (2015) p.392.
- 17) K. R. Lund, K. G. Lynn, M. H. Weber, C. Macchi, A. Somoza, A. Juan, M. A. Okuniewski, Impurity Migration and Effects on Vacancy Formation Enthalpy in Polycrystalline Depleted Uranium, *Journal of Nuclear Materials*, vol. 466 (2015) p. 343.
- 18) W.-Y. Chen, Y. Miao, Y. Wu, C. A. Tomchik, K. Mo, J. Gan, M. A. Okuniewski, S. A. Maloy, J. F. Stubbins, Atom Probe Study of Irradiation Enhanced  $\alpha'$  Precipitation in Neutron-Irradiated Fe-Cr Model Alloys, *Journal of Nuclear Materials*, vol. 462 (2015) p. 242.
- 19) J. Hunter, D. Brown, M. Okuniewski, Evaluation of Computed Tomography of Mock Uranium Fuel Rods at the Advanced Photon Source, *Canadian Institute for Non-Destructive Evaluation Journal*, vol. 36 (2015) p. 12-15 (Feature Article).
- 20) Y. Miao, B. Beeler, C. Deo, M. Baskes, M. A. Okuniewski, J. F. Stubbins, Defect Structures Induced by High-Energy Displacement Cascades in  $\gamma$  Uranium, *Journal of Nuclear Materials*, vol. 456 (2015) p. 1.
- 21) D. W. Brown, D. J. Alexander, K. D. Clarke, B. Clausen, M. A. Okuniewski, T. A. Sisneros, Elastic Properties of Rolled Uranium-10 wt.% Molybdenum Nuclear Fuel Foils, *Scripta Materialia*, vol. 69 (2013) p. 666.
- 22) P. Hosemann, J. N. Martos, D. Frazer, G. Vasudevamurthy, T.S. Byun, J. D. Hunn, B. C. Jolly, K. Terrani, M. Okuniewski, Mechanical Characteristics of SiC Coating Layer in TRISO Fuel Particles, *Journal of Nuclear Materials*, vol. 442 (2013) p. 133.
- 23) D. W. Brown, M. A. Okuniewski, J. D. Almer, L. Balogh, B. Clausen, J. S. Okasinski, B.H. Rabin, High Energy X-ray Diffraction Measurement of Residual Stresses in a Monolithic Aluminum Clad Uranium-10 wt% Molybdenum Fuel Plate Assembly, *Journal of Nuclear Materials*, vol. 441 (2013) p. 252.
- 24) B. Beeler, C. Deo, M. Baskes, M. Okuniewski, First Principles Calculations of the Structure and Elastic Constants of  $\alpha$ ,  $\beta$ , and  $\gamma$  Uranium, *Journal of Nuclear Materials*, vol. 433 (2013) p. 143.

- 25) B. Beeler, C. Deo, M. Baskes, M. Okuniewski, Atomistic Properties of Gamma Uranium, *Journal of Physics: Condensed Matter*, vol. 24 (2012) p. 075401.
- 26) B. Beeler, B. Good, S. Rashkeev, C. Deo, M. Baskes, and M. Okuniewski, First Principles Calculations of the Stability and Incorporation of Helium, Xenon, and Krypton in Uranium, *Journal of Nuclear Materials*, vol. 425 (2012), p. 2.
- 27) R. R. Mohanty, J. Bush, M. A. Okuniewski, Y. H. Sohn, Thermotransport in  $\gamma$ (BCC) U-Zr alloys: A Phase-Field Model Study, *Journal of Nuclear Materials*, vol. 414 (2011), p. 211.
- 28) B. Beeler, B. Good, S. Rashkeev, C. Deo, M. Baskes, and M. Okuniewski, First Principles Calculations for Defects in U, *Journal of Physics Condensed Matter*, vol. 22, n. 50 (2010), 505703.
- 29) C. S. Deo, S. G. Srinivasan, M. I. Baskes, S. A. Maloy, M. R. James, M. A. Okuniewski, and J. F. Stubbins, Kinetics of the Migration and Clustering of Extrinsic Gas in BCC Metals, *ASTM Special Technical Publication*, vol. 1492 (2008), p.177.
- 30) C. S. Deo, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, M. A. Okuniewski, and J. F. Stubbins, Kinetics of the Migration and Clustering of Extrinsic Gas in BCC Metals, *Journal of ASTM International*, vol. 4, n. 9 (2007), JA1100698.
- 31) C. S. Deo, M. A. Okuniewski, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, The Effects of Helium on Irradiation Damage in Single Crystal Iron, *Journal of Nuclear Materials*, v. 367-370 (2007), p. 451.
- 32) C. S. Deo, M. A. Okuniewski, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, Helium Bubble Nucleation in BCC Iron Studied by Kinetic Monte Carlo Simulations, *Journal of Nuclear Materials*, v. 361 (2007), p. 141.
- 33) M. A. Okuniewski, D. P. Wells, F. A. Selim, S. A. Maloy, M. R. James, J. F. Stubbins, C. S. Deo, S. G. Srinivasan, and M. I. Baskes, Positron Annihilation Spectroscopy of Proton Irradiated Single Crystal BCC Iron, *Journal of Nuclear Materials*, v. 351 (2006), p.149.
- 34) A. Terekhov, B. J. Heuser, M. A. Okuniewski, R. S. Averback, S. Seifert, and P. R. Jemian, Small-Angle X-ray Scattering Measurements of Helium Bubble Formation in Borosilicate Glass, *Journal of Applied Crystallography*, v. 39 (2006), p. 647.
- 35) M. A. Okuniewski, Y. Ashkenazy, B. J. Heuser, and R. S. Averback, Molecular Dynamics Simulations of Void and Helium Bubble Stability in Amorphous Silicon During Heavy-Ion Bombardment, *Journal of Applied Physics*, v. 96, n. 8 (2004), p. 4181.

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**CONFERENCE PAPERS and PROCEEDINGS:**

- 1) W. Williams, C. Hale, E. Sikik, M. Sprenger, G. Borghmans, D. M. Wachs, S. Van den Berghe, M. A. Okuniewski, T. Maddock, and B. Boer. "Thermal-Hydraulics and Neutronics Overview of the DISECT Experiment." American Nuclear Society Transactions, 120, 2019, 348-351.
- 2) W. Williams, M. Okuniewski, "Disc Irradiation for Separate Effects Testing with Control of Temperature," Nuclear Science User Facilities Annual Report 2018, 120-127. (Invited)
- 3) J. Thomas, S. T. Nori, A. Figueroa, R. Ren, M. A. Okuniewski, P. Kenesei, J. S-Park, J. Almer, J. Harp, Assessment of Radiation Damage and Microstructural Changes in Neutron Irradiated U-10Zr Fuels with High Energy X-Rays," *Transactions of the American Nuclear Society*, v. 118, p 1406-1407, June 2018, *Transactions of the American Nuclear Society and Embedded Topical Meeting Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, NFSM 2018*.
- 4) W. J Williams, M. A. Okuniewski, L. Sudderth, D. Wachs, S. Van den Berghe, Fabrication and Characterization of U-Zr foils for the DISECT Project, *Transactions of the American Nuclear Society*, v. 118, p 1385-1386, June 2018, *Transactions of the*

- American Nuclear Society and Embedded Topical Meeting Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, NFSM 2018.*
- 5) M. A. Okuniewski, L. E. Ecker, M. Elbakhshwan, D. Sprouster, D. Velazquez, R. L. Seibert, D. Lee, J. H. Terry, Y. Sohn, B. D. Miller, and R. S. Fielding, High Energy X-ray Applications for the Characterization of Metallic Uranium Alloys, *Transactions of the American Nuclear Society*, v. 114, p 1258, June 2016, *Transactions of the American Nuclear Society and Embedded Topical Meeting Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, NFSM 2016.*
  - 6) A. E. Craft, D. M. Wachs, M. A. Okuniewski, D. L. Chichester, W. J. Williams, G. C. Papaioannou, A. T. Smolinski, Neutron Radiography of Irradiated Nuclear Fuel at Idaho National Laboratory, *Proceedings from 10<sup>th</sup> World Conference on Neutron Radiography*, October 5-10, 2014, Grindelwald, Switzerland, *Physics Procedia* v. 69 (2015) pp. 483-490.
  - 7) J. L. McDuffee, G. L. Bell, R. J. Ellis, R. W. Hobbs, M. A. Okuniewski, L. L. Snead, Design, Fabrication, and Testing of Gadolinium-Shielded Metal Fuel Samples in the Hydraulic Tube of the High Flux Isotope Reactor, *Proceedings from 2014 Water Reactor Fuel Performance Meeting/Top Fuel/LWR Fuel Performance Meeting*, Sendai, Japan, Sept. 14-17, 2014, Paper 100084.
  - 8) J. Hunter, D. Brown, M. Okuniewski, Evaluation of Computed Tomography of Mock Uranium Fuel Rods at the Advanced Photon Source, *Proceedings of iCT, 5th Conference on Industrial Computed Tomography*, Wels, Austria, Feb. 25-28, 2014, pp. 361-362.
  - 9) M. A. Okuniewski, G. Bell, J. McDuffee, R. Ellis, L. Snead, B. Sitterson, S. Voit, L. Ecker, B. Miller, S. Hayes, Microstructural Evolution in a UZr Alloy Irradiated at Low Fluences, *Transactions of the American Nuclear Society*, v. 110, p 788-789, January 2014.
  - 10) W.Y. Chen, Y. Miao, C. A. Tomchik, K. Mo, J. Gan, M. A. Okuniewski, Y. Q. Wu, S. A. Maloy, J. F. Stubbins, TEM, APT and Hardness Studies of Neutron-Irradiated Ferritic Fe-Cr Single Crystals, *Transactions of the American Nuclear Society*, v. 110, p 1006-1008, January 2014.
  - 11) A. P. Moore, B. Beeler, M. Baskes, M. Okuniewski, C. S. Deo, Atomistic Ordering in Body Centered Cubic Uranium-Zirconium Alloy, *MRS Proceedings, Symposium HH: Advances for Materials in Nuclear Energy*, vol. 1514, January 2013, pp. 27-35.
  - 12) B. Beeler, C. Deo, S. Rashkeev, M. Baskes, M. Okuniewski, Atomistic Investigations of Intrinsic and Extrinsic Point Defects in BCC Uranium, *ASTM Special Technical Publication, Effects of Radiation on Nuclear Materials: 25th Volume*, vol. 1547 STP, January 2013, pp. 231-247.
  - 13) K. R. Lund, K. G. Lynn, M. H. Weber, M. A. Okuniewski, Vacancy Formation Enthalpy in Polycrystalline Depleted Uranium, *Journal of Physics: Conference Series, 16th International Conference on Positron Annihilation*, vol. 443 (1), June 2013, pp. 1-4.
  - 14) M. A. Okuniewski, D. W. Akers, M. W. Drigert, C. L. Shull, L. G. Roybal, Spatially Resolved Positron Annihilation Spectroscopy of Nuclear Fuels, *Transactions of the American Nuclear Society*, v. 106, p 1296, 2012, *Transactions of the American Nuclear Society and Embedded Topical Meeting Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, NFSM 2012.*
  - 15) B. Beeler, C. Deo, M. Baskes, M. Okuniewski, Calculation of the Displacement Energy in B.C.C. U at 800 K, *Transactions of the American Nuclear Society*, v. 106, p 1214-1215, 2012, *Transactions of the American Nuclear Society and Embedded Topical Meeting Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, NFSM 2012.*
  - 16) M. Okuniewski, X. Pan, C. Tomchik, M. Kirk, J. F. Stubbins, Radiation Damage in Model FeCr and FM Steels, *Transactions of the American Nuclear Society*, v. 102, p 711-



- 712, 2010, *Transactions of the American Nuclear Society and Embedded Topical Meeting Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, NFSM 2010*.
- 17) D. E. Burkes, D. M. Wachs, D. D. Keiser, M. A. Okuniewski, J-F Jue, F. J. Rice, R. Prabhakaran, Update on Fresh Fuel Characterization of U-Mo Alloys, *Transactions from the Thirteenth International Topical Meeting on Research Reactor Fuel Management, RRFM 2009* (Vienna, Austria, March 2009).
  - 18) D. E. Burkes, D. M. Wachs, D. D. Keiser, J-F. Jue, J. Gan, F. J. Rice, R. Prabhakaran, B. D. Miller, M. A. Okuniewski, Fresh Fuel Characterization of U-Mo Alloys, *Proceedings of the 30th International Meeting on Reduced Enrichment for Research and Test Reactors (RERTR 2008)*, (Washington D.C., October 2008).
  - 19) C. A. Tomchik, M. A. Kirk, J. F. Stubbins, M. A. Okuniewski, and S. A. Maloy, In Situ Ion Irradiation of Iron Chromium Alloys, *Proceedings of the First Workshop on the Use of In Situ TEM / Ion Accelerator Techniques in the Study of Radiation Damage in Solids*, June 2008, pp. 91-98.
  - 20) M. A. Okuniewski, C. S. Deo, S. G. Srivilliputhur M. I. Baskes, M. R. James, S. A. Maloy, J. F. Stubbins, Irradiation Effects of Helium and Hydrogen in BCC Single Crystal Iron, *Transactions of the American Nuclear Society*, v. 94, p 837, *Transactions of the American Nuclear Society 2006 Annual Meeting and Embedded Topical Meeting - Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, NFSM 2006*.
  - 21) B. J. Heuser, A. Terekhov, M. Okuniewski, Small-angle X-ray Scattering Measurements of Helium Bubble Formation in Borosilicate Glass, *Transactions of the American Nuclear Society*, v. 94, p 339-340, *Transactions of the American Nuclear Society 2006 Annual Meeting and Embedded Topical Meeting - Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, NFSM 2006*.
  - 22) C. S. Deo, S G. Srivilliputhur, M. Baskes, S. Maloy, M. James, M. Okuniewski, J. Stubbins, Kinetics of the Nucleation and Growth of Helium Bubbles in BCC Iron, *Materials Research Society Symposium Proceedings: Materials in Extreme Environments*, vol. 929, 2006, pp. 21-26.
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#### INVITED PRESENTATIONS:

- 1) M. A. Okuniewski, W. J. Williams, S. Vogel, and J. Zhang, "Phase Evolution in Uranium-Zirconium Alloys Using In-Situ Annealing and Neutron Diffraction," THERMEC 2020, (Vienna, Austria, postponed to May 9-14, 2021).
- 2) M. A. Okuniewski, W. J. Williams, S. Vogel, D. Brown, B. Clausen, and J. Zhang, "Microstructural Evolution During the Fabrication Processes of Metallic Nuclear Fuels," American Conference of Neutron Scattering, (Boulder, CO, July 12-16, 2020)
- 3) M. A. Okuniewski, A. El Azab, Y. Shin, A. Strachan, M. Titus, J. Wharry, "An Architecture for Accelerated Nuclear Material and Fuel Discovery to Qualification," Nuclear Materials Discovery and Qualification Initiative Working Meeting, Idaho National Laboratory, (Idaho Falls, ID, October 17-18, 2019).
- 4) M. A. Okuniewski, J. Thomas, W. Williams, L. He, X. Liu, "Constituent Redistribution and Lanthanide Migration in Neutron Irradiated Uranium Zirconium Fuel", Actinide and Lanthanide Materials III, (Materials Science & Technology 2019), (Portland, OR, September 29 - October 3, 2019).
- 5) M. A. Okuniewski, Neutron Sciences in Support of Nuclear Power 2019 Workshop, (Oak Ridge National Laboratory, Oak Ridge, TN, May 16-17, 2019).
- 6) J. Thomas, M. Okuniewski, X. Liu, L. He, D. Murray, B. Miller, J. Harp, "Microstructural Phase Characterization of Irradiated and Control U-10Zr Fuels,"

- American Nuclear Society Student Conference, (NSUF Users Organization Meeting 2019), (Richmond, VA, April 4-5, 2019).
- 7) M. A. Okuniewski, J. Thomas, A. Figueroa, G. Park, W. Williams, "Phase Transformations in Neutron Irradiated Metallic Fuels," The Minerals, Metals, and Materials Society (TMS) Spring Meeting 2019 (San Antonio, TX, March 10-14, 2019).
  - 8) M. A. Okuniewski, W. J. Williams, S. Vogel, D. W. Brown, B. Clausen, J. Zhang, "Where We Have Been and Where We Could Go with LANSCE-Based Research at Purdue (and Beyond)," Los Alamos Neutron Scattering Center User Group Meeting, (Santa Fe, NM, November 5-7, 2018).
  - 9) M. A. Okuniewski, M. Weber, K. G. Lynn, F. A. Selim, P. Hosemann, M. A. Kirk, S. A. Maloy, J. F. Stubbins, "Linking Nanostructural Changes in Irradiated Iron to Nanoscale Mechanical Properties," The 18<sup>th</sup> International Conference on International Conference on Positron Annihilation – 18 (ICPA-18), (Orlando, FL August 21, 2018).
  - 10) M. A. Okuniewski, "Assessing Irradiated Metallic Nuclear Fuels and Materials in Multiple Dimensions Utilizing Novel Techniques", Istanbul Technical University, (Istanbul, Turkey, May 8, 2018).
  - 11) M. A. Okuniewski, "Metallic Nuclear Fuel Behavior—From the Atomic Scale to the Microscale, Materials Research Society Spring Meeting," (Phoenix, AZ, April 2-6, 2018).
  - 12) M. A. Okuniewski, "Positron Annihilation Spectroscopy of Hydrogen and Helium Bubbles in Iron and Iron Alloys," ArcelorMittal (East Chicago, IL, September 7, 2017).
  - 13) M. A. Okuniewski, "Microstructural Evolution in Nuclear Materials and Fuel," Los Alamos National Laboratory (Los Alamos, NM, August 2, 2017).
  - 14) M. A. Okuniewski, "Microstructural Evolution in Irradiated Metallic Nuclear Fuels: Insight from Synchrotron Generated High Energy X-rays," University of Cincinnati, Materials Science and Engineering Program Graduate Seminar Series (Cincinnati, OH, February 17, 2017).
  - 15) M. A. Okuniewski, "Multidimensional Characterization of Nuclear Fuel Microstructure and Mechanical Properties Utilizing Neutrons and Synchrotron X-rays," Virginia Commonwealth University, Mechanical and Nuclear Engineering Graduate Seminar Series (Richmond, VA, January 27, 2017).
  - 16) M. A. Okuniewski, "Nuclear Fuel Characterization of Microstructural and Mechanical Properties Utilizing of Neutrons and Synchrotron X-rays," Ohio State University, Nuclear Engineering Program Graduate Seminar Series (Columbus, OH, November 16, 2016).
  - 17) M. A. Okuniewski, "Understanding the Microstructure of Nuclear Materials and Fuels: 2D, 3D, and 4D Characterization," Center for Electronics Defense Systems Meeting, Purdue University (West Lafayette, IN, November 3, 2016).
  - 18) M. A. Okuniewski, "Understanding Microstructural and Mechanical Properties in Nuclear Fuels and Materials through the Utilization of Neutrons and Synchrotron X-rays," Purdue University, School of Nuclear Engineering Seminar Series (West Lafayette, IN, October 26, 2016).
  - 19) M. A. Okuniewski, A. Aitkaliyeva, J. Harp, K. Wright, B. Miller, R. Seibert, D. Velazquez, J. Terry, H. Sharma, P. Kenesei, J. S. Park, J. Hunter, R. Pokharel, F. Zhang, V. Ganapathy, P. Cassutt, B. Hamilton, J. Almer, "Synchrotron Characterization of Irradiated Metallic Fuel," American Chemical Society National Meeting (Philadelphia, PA, August 21-25 2016).
  - 20) M. A. Okuniewski, The Small Scale Characterization of Nuclear Fuels and Materials Via Synchrotron Techniques, Studiecentrum voor Kernenergie/Centre d'Etude de l'Energie Nucléaire/ Belgian Nuclear Research Centre (SCK•CEN), (Mol, Belgium, July 12, 2016).

- 21) M. A. Okuniewski, L. E. Ecker, M. Elbakhshwan, D. Sprouster, D. Velazquez, R. L. Seibert, D. Lee, J. H. Terry, Y. Sohn, B. D. Miller, and R. S. Fielding, "High Energy X-ray Applications for the Characterization of Metallic Uranium Alloys," American Nuclear Society Meeting Annual Meeting and Embedded Topical Meeting - Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, NFSM, (New Orleans, LA, June 12-16, 2016).
- 22) M. A. Okuniewski, "Low Fluence Irradiations of Metallic Fuels: Preliminary Post-Irradiation Characterization Using Synchrotron X-rays," Nuclear Science User Facility Meeting (Idaho Falls, ID, June 6-9, 2016).
- 23) M. A. Okuniewski, D. W. Brown, B. Clausen, S. Vogel, T. A. Sisneros, L. Balogh, G. A. Moore, B. Rabin, "Neutron Diffraction Characterization of Nuclear Fuels," LANSCE User Group Meeting (Santa Fe, NM, November 2-3, 2015).
- 24) M. A. Okuniewski, "Residual Stress and Microstructural Evolution in Nuclear Fuel Plates," Nuclear Science User Facilities Review Board Meeting, (Idaho Falls, ID, July 22, 2015).
- 25) M. A. Okuniewski, D. Sprouster, J. Hunter, D. Brown, L. Ecker, P. Kenesei, B. Clausen, J. Sinsheimer, "Utilization of Synchrotron X-ray Techniques for Microstructural Analyses in Irradiated Metallic Nuclear Fuels and Structural Materials," The Minerals, Metals, and Materials Society (TMS) Spring Meeting 2015 (Orlando, FL, March 15-19, 2015).
- 26) M. A. Okuniewski, D. Sprouster, L. Ecker, J. Sinsheimer, J. McDuffee, R. Ellis, L. Snead, G. Bell, S. Voit, B. Miller, "Low Fluence Irradiation Effects in a Uranium Zirconium Fuel," Materials Research Society Fall Meeting (Boston, MA, November 30 – December 5, 2014).
- 27) M. A. Okuniewski, "Utilizing Neutrons and Synchrotron X-rays to Understand Microstructural and Mechanical Properties in Nuclear Fuels and Materials," University of Florida, Department of Nuclear Engineering Graduate Seminar (Gainesville, FL, November 20, 2014).
- 28) M. A. Okuniewski, "Utilizing Basic Energy Science User Facilities to Pursue Nuclear Energy Missions," presentation given for Dr. Pat Dehmer (Head of Basic Energy Sciences, Department of Energy) and Congressman Simpson, Idaho National Laboratory (Idaho Falls, ID, August 12, 2014).
- 29) M. A. Okuniewski, D. Brown, B. Clausen, E. Perez, T. Sisneros, D. Keiser, G. Moore, "Microstructural and Mechanical Evolution in Monolithic Uranium 10 wt. % Molybdenum Nuclear Fuel Plates Subjected to Various Fabrication Parameters," 17<sup>th</sup> US National Congress on Theoretical & Applied Mechanics (East Lansing, MI, June 15-20, 2014).
- 30) M. A. Okuniewski, "Conducting ATR-NSUF Experiments at the Advanced Photon Source: An Overview," Advanced Test Reactor National Scientific User Facility User's Meeting (Idaho Falls, ID, June 4-6, 2014).
- 31) M. A. Okuniewski, "Residual Stress and Microstructural Evolution in Plate Type Fuels," poster given for Nuclear Science & Technology Directorate Review, Idaho National Laboratory (Idaho Falls, ID, June 4, 2014).
- 32) M. A. Okuniewski, et al. "From First Principles Calculations to Low Fluence Irradiation Experiments in Uranium Alloys," The Minerals, Metals, and Materials Society (TMS) Spring Meeting 2014 (San Diego, CA, February 16-20, 2014).
- 33) M. A. Okuniewski, et al. "Irradiation Induced Microstructural Evolution in Nuclear Fuels Subjected to Low Fluences," Panel Discussion on Progress in DOE's Fuel Cycle Research and Development Program, Chaired by Andy Griffith, American Nuclear Society Winter Meeting (Washington DC, November 10-14, 2013).

- 34) M. A. Okuniewski, et al. "Residual Stress and Strain in U-Mo Fuel Plates and Foils," Residual Stress Summit 2013 (Idaho Falls, ID, October 8-10, 2013).
- 35) M. A. Okuniewski, "How Neutrons and Synchrotron X-rays Can Be Used to Understand Microstructural and Mechanical Properties in As-Fabricated Nuclear Fuel Plates," Georgia Institute of Technology, Woodruff School of Mechanical Engineering, Nuclear & Radiological Engineering and Medical Physics Program Seminar (Atlanta, GA, April 23, 2013).
- 36) M. A. Okuniewski, "Nuclear Fuels and Structural Materials: Fabrication Techniques and Irradiation Effects," Workshop on Nanomaterials & Engineered Microstructures for Nuclear Applications, Brookhaven National Laboratory (Brookhaven, NY, February 28-March 1, 2013).
- 37) M. A. Okuniewski, et al. "Spatially Resolved Residual Stresses in As-Fabricated Nuclear Fuel Plates," International Workshop on Scattering Techniques for Nuclear Materials, (Berkeley, CA, October 17-19, 2012).
- 38) M. A. Okuniewski, "Characterization Examples of Nuclear Fuels and Structural Materials," Idaho State University, Advances in Nuclear Science and Engineering Working Conference, (Pocatello, ID, July 2012).
- 39) M. A. Okuniewski, "Applications of Positron Annihilation Spectroscopy to Nuclear Fuels and Materials Research," poster given for Nuclear Science & Technology Directorate Review, Idaho National Laboratory (Idaho Falls, ID, June 2012).
- 40) M. A. Okuniewski, "Opportunities for Students at Idaho National Laboratory," University of Central Florida (Orlando, FL, March 2012).
- 41) M. A. Okuniewski, "Positron Annihilation Spectroscopy in Nuclear Materials and Fuels," Idaho State University, Seminar for Nuclear Engineering and Health Physics (Pocatello, ID, February 2012).
- 42) M. A. Okuniewski, "Microstructural Evolution in Nuclear Fuels: Connecting Experiments and Simulations," Idaho National Laboratory for the Under Secretary of Energy, Dr. Arun Majumdar (Idaho Falls, ID, January 2012).
- 43) M. A. Okuniewski, "Positron Annihilation Spectroscopy in Nuclear Materials and Fuels," Georgia Institute of Technology, The George W. Woodruff School of Mechanical Engineering, Nuclear & Radiological Engineering & Medical Physics Program, (Atlanta, GA, December 2011).
- 44) M. A. Okuniewski, J. Harp, R. Fielding, S. L. Hayes, G. L. Bell, J. McDuffee, R. J. Ellis, L. J. Ott, D. Heatherly, R. Sitterson, R. W. Hobbs, Low Fluence Irradiations in Metallic Fuels, The 5<sup>th</sup> Annual Asia-Pacific Nuclear Energy Forum on Materials for Nuclear Applications and 2<sup>nd</sup> Annual U.S. Department of Energy Nuclear Energy Programs Materials Science and Engineering Materials Cross-cut Workshop (Berkeley, CA, June 2011).
- 45) M. A. Okuniewski, "Fundamental Issues in Nuclear Fuels and Materials: How Can Synchrotrons Help?," Workshop on Synchrotron X-Ray Studies of Advanced Nuclear Energy Systems at NSLS II, Brookhaven National Laboratory (Brookhaven, NY, April 2011).
- 46) M. A. Okuniewski, "Microstructural Evolution in Nuclear Fuels: Connecting Experiments and Simulations," Idaho National Laboratory for Secretary of Energy, Dr. Steven Chu (Idaho Falls, ID, September 2010).
- 47) M. A. Okuniewski, "Modeling Nuclear Fuels and Structural Materials," ATR National Scientific User Facility Nuclear Operations Internship Lecture (Idaho Falls, ID, July 2009).
- 48) M. A. Okuniewski and D. Akers, "Investigation of the Applications of Positron Annihilation Spectroscopy to RERTR Fuel Plates," poster given for Nuclear Fuels & Materials Division Peer Review, Idaho National Laboratory (Idaho Falls, ID, June 2009).

- 49) M. A. Okuniewski, S. L. Hayes, D. F. Keiser, Y. Sohn, Y. Wang, and J. Morral, "Challenges Associated with the Global Nuclear Energy Partnership Nuclear Fuels and Structural Materials," The Minerals, Metals, and Materials Society Annual Meeting, (San Francisco, CA, February 2009).
- 50) M. A. Okuniewski, "The Applications of Positron Annihilation Spectroscopy to Nuclear Fuels and Structural Materials," Idaho National Laboratory Vino Rosso Seminar Series (Idaho Falls, ID, February 2009).
- 51) M. A. Okuniewski, C. S. Deo, S. A. Maloy, and J. F. Stubbins, "Irradiation Effects on Single Crystal Iron with and without Helium," In-Situ TEM / Ion Accelerator Workshop (University of Salford, Manchester, England, June 2008).
- 52) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, "The Effects of Helium and Hydrogen in Irradiated BCC Iron: A Modeling and Experimental Study," The 19<sup>th</sup> International Conference on the Applications of Accelerators in Research and Industry (Fort Worth, TX, August 2006).
- 53) M. A. Okuniewski and F. Teruel, "The World Nuclear University: An Amazing Summer Institute Experience," Nuclear, Plasma, and Radiological Engineering Undergraduate and Graduate Seminars, University of Illinois Urbana-Champaign (Urbana, Illinois, January 2006).
- 54) M. A. Okuniewski, "Molecular Dynamics Study of Helium Bubble Stability in Amorphous Silicon Subjected to Irradiation," Nuclear, Plasma, and Radiological Engineering Undergraduate Seminar, University of Illinois Urbana-Champaign (Urbana, Illinois, March 2004).

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**SELECTED PRESENTATIONS:**

- 1) J. Thomas, A. Figueroa, L. He, X. Liu, D. Murray, P. Kenesei, J. Almer, J. Harp, M. Okuniewski, "Meso-, Micro-, and Nano-scale Characterization of Neutron Irradiated U-10Zr Metallic Fuels via Synchrotron  $\mu$ -CT and Electron Microscopy", The Minerals, Metals and Materials Society Annual Meeting (San Diego, CA, February 23-27, 2020).
- 2) S. T. Nori, A. Figueroa, J. Thomas, G. Park, W. Williams, H. Sharma, J. -S. Park, P. Kenesei, J. Almer, Z. Lee, M. Warren, J. Terry, M. A. Okuniewski, "Study of Neutron Irradiation Damage of HT-UPS Steel Using Synchrotron X-ray Techniques", The Minerals, Metals and Materials Society Annual Meeting (San Diego, CA, February 23-27, 2020).
- 3) M. A. Okuniewski, A. Figueroa, J. Thomas, S. T. Nori, P. Kenesei, and J. Almer, "Three-Dimensional Radiation Effects in Neutron Irradiated Uranium-Molybdenum Fuel," The Minerals, Metals and Materials Society Annual Meeting (San Diego, CA, February 23-27, 2020).
- 4) A. Figueroa, J. Pribe, W. Williams, A.R.G. Sreekar, E. Garcia, M. Okuniewski, "Modeling Irradiation Induced Grain Refinement Utilizing Cahn's Time Cone Method," Materials Research Society Fall Meeting (Boston, MA, December 1-6, 2019).
- 5) M. A. Okuniewski, S. T. Nori, A. Figueroa, J. Thomas, H. Sharma, J.-S. Park, P. Kenesei, R. Pokharel, J. F. Hunter, J. Almer, "Elucidating Three-Dimensional Microstructural Evolution in Neutron Irradiated HT-UPS Steel," Materials in Nuclear Energy Systems (MiNES 2019), (Baltimore, MD, October 6-10, 2019).
- 6) G. Park, M. A. Okuniewski, and B. Beeler, "An Atomistic Study of the Variation of Defect Energetics and Diffusivity with respect to Composition and Temperature in U and

- U-Mo Alloys”, Intern Poster Session, Idaho National Laboratory (Idaho Falls, ID, August 8, 2019).
- 7) W. Williams, C. Hale, E. Sikik, M. Sprenger, G. Borghmans, D. Wachs, S. Van den Berghe, M. Okuniewski, T. Maddock, B. Boer, “Thermal-Hydraulics and Neutronics Overview of the DISECT Experiment,” American Nuclear Society Conference (Minneapolis, MN, June 9-13 2019).
  - 8) M. A. Okuniewski, J. Thomas, S. T. Nori, G. Park, A. Figueroa, W. Williams, Characterization of microstructural evolution in metallic fuels occurring over multiple length scales, The Nuclear Materials Conference (NuMat 2018), (Seattle, WA, October 10-14, 2018).
  - 9) J. Thomas, S. T. Nori, A. Figueroa, M. Okuniewski, P. Kenesei, J.-S. Park, J. Almer, J. Harp, “Microstructural characterization of radiation damage in neutron irradiated U-10wt%Zr fuels”, The Nuclear Materials Conference (NuMat 2018), (Seattle, WA, October 14-18, 2018).
  - 10) W. Williams, E. Perez, B. Forsmann, J. Burns, D. Wachs, M. Okuniewski, L. Sudderth, “SEM characterization of rolled and annealed uranium zirconium foils,” The Nuclear Materials Conference (NuMat 2018), (Seattle, WA, October 14-18, 2018)
  - 11) S. T. Nori, A. Figueroa, J. Thomas, M. Okuniewski, H. Sharma, J.-S. Park, P. Kenesei, R. Pokharel, J. Hunter, and J. Almer, “Comparative study of neutron irradiated and unirradiated HT-UPS using high-energy X-ray diffraction microscopy,” The Nuclear Materials Conference (NuMat 2018), (Seattle, WA, October 14-18, 2018)
  - 12) G. Park, K. Bemis, R. Seibert, D. Velazquez, W. Williams, S. T. Nori, Z. Lee, M. Warren, J. Terry, J. Wright, E. Dooryhee, M. Abeykoon, M. Topsakal, L. Ecker, and M. Okuniewski, “Evaluation of radiation damage of molybdenum and uranium-molybdenum alloy fuel with extended X-ray absorption fine structure (EXAFS) spectroscopy and pair distribution function (PDF)”, The Nuclear Materials Conference (NuMat 2018), (Seattle, WA, October 14-18, 2018)
  - 13) J Startt, A. P. Moore, C. Deo, and M. Okuniewski, First Principles Investigation into the  $\delta$ -UZr<sub>2</sub> Phase, The Nuclear Materials Conference (NuMat 2018), (Seattle, WA, October 10-14, 2018).
  - 14) J. Thomas, S. Nori, A. Figueroa, R. Ren, M. A. Okuniewski, P. Kenesei, J. Sang-Park, J. Almer, J. Harp, “Assessment of Radiation Damage and Microstructural Changes in Neutron Irradiated U-10Zr Fuels with High Energy X-Rays,” American Nuclear Society Annual Meeting, Nuclear Fuels and Structural Materials Topical, (Philadelphia, PA, June 17-21, 2018).
  - 15) W. J Williams, M. A. Okuniewski, L. Sudderth, D. Wachs, S. Van den Berghe, “Fabrication and Characterization of U-Zr foils for the DISECT Project,” American Nuclear Society Annual Meeting, Nuclear Fuels and Structural Materials Topical, (Philadelphia, PA, June 17-21, 2018).
  - 16) A. Figueroa and M. Okuniewski, “Synchrotron micro-computed tomography of a neutron irradiated U-Mo alloy fuel plate,” ASM International Poster Night, (Purdue University, West Lafayette, IN, April 11, 2018).
  - 17) A. Figueroa and M. Okuniewski, “Synchrotron micro-computed tomography of a neutron irradiated U-Mo alloy fuel plate,” Purdue Undergraduate Research Conference, (Purdue University, West Lafayette, IN, April 10, 2018).
  - 18) G. Park, K. Bemis, R. Seibert, D. Velazquez, J. Terry, D. Sprouster, M. Elbakhshwan, L. Ecker, and M. Okuniewski, “Evaluation of Radiation Damage in Uranium-Molybdenum Alloys Using Extended X-ray Absorption Fine Structure and Synchrotron X-ray Diffraction,” Materials Research Society Spring Meeting, (Phoenix, AZ, April 2-6, 2018).

- 19) S. T. Nori, H. Sharma, J.-S. Park, P. Kenesei, J. Almer, and M. Okuniewski, "Three-dimensional characterization of neutron irradiated and unirradiated HT-UPS using high-energy X-rays," Materials Research Society Spring Meeting, (Phoenix, AZ, April 2-6, 2018).
- 20) W. Williams, M. Okuniewski, Daniel Wachs, Sven Van den Berghe, Laura Sudderth, "Disc Irradiation for Separate Effects Testing with Control of Temperature (DISECT)," Materials Research Society Spring Meeting, (Phoenix, AZ, April 2-6, 2018).
- 21) M. A. Okuniewski, J. Thomas, S. Nori, A. Figueroa, P. Kenesei, J.-S. Park, H. Sharma, J. Almer, "3D Characterization of High Fluence Irradiated UZr and UMo Fuels," The Minerals, Metals, and Materials Society (TMS) Spring Meeting 2018 (Phoenix, AZ, March 11-15, 2018).
- 22) J. Thomas, S. T. Nori, A. Figueroa, R. Ren, P. Kenesei, J. Almer, J. Harp, M. Okuniewski, "Assessment of Irradiation Damage and Chemical Interactions in Neutron Irradiated U-10Zr Fuel and HT9 Cladding with High Energy X-rays," Materials Research Society (MRS) Fall Meeting, (Boston, MA, November 26 – December 1, 2017).
- 23) Debapriya P Mohanty, Maria Okuniewski, and Vikas Tomar, "Prediction of Stress Distribution on Corroded and Ion Irradiated SiC Sample as the Function of Oxide and Defects Distribution," The Minerals, Metals, and Materials Society (TMS) Spring Meeting 2017 (San Diego, CA, February 26 – March 2, 2017).
- 24) Debapriya P Mohanty, Maria Okuniewski, and Vikas Tomar, "Investigation of Stress Distribution Around the Notch of Corroded and Ion-Irradiated Zircaloy-4 Sample Based on the Microstructure," The Minerals, Metals, and Materials Society (TMS) Spring Meeting 2017 (San Diego, CA, February 26 – March 2, 2017).
- 25) Maria A. Okuniewski, James Hunter, Hemant Sharma, Peter Kenesei, Reeju Pokharel, Jun-Sang Park, Jon Almer, Assel Aitkaliyeva, Jason Harp, Brandon Miller, Jim Madden, Fan Zhang, Varsha Ganapathy, Paul Cassutt, and Brenden Hamilton, "Three Dimensional Synchrotron X-ray Characterization of Nuclear Fuels," The Nuclear Materials Conference (NuMat 2016), (Montpellier, France, November 7–10, 2016).
- 26) Maria A. Okuniewski, Hemant Sharma, Peter Kenesei, James Hunter, Reeju Pokharel, Assel Aitkaliyeva, Jason Harp, Karen Wright, Brandon Miller, Fan Zhang, Varsha Ganapathy, Paul Cassutt, Brenden Hamilton, Jon Almer, "High-energy X-ray Microscopy and Computed Tomography of Nuclear Fuels and Materials" The Denver X-ray Conference, (Rosemont, IL, August 1-5 2016).
- 27) Bjørn Clausen, Donald W. Brown, Maria A. Okuniewski, Levente Balogh, Thomas A. Sisneros, "Measuring Residual Stresses in Monolithic Fuel Foils using Neutron Diffraction," ICM 12 – 12<sup>th</sup> International Conference on the Mechanical Behavior of Materials (Karlsruhe, Germany, May 10–14, 2015).
- 28) A. Moore, C. Deo, M. Baskes, M. Okuniewski, L. Ecker, D. Sprouster, "Atomistic Modeling and Diffraction Analysis of Metallic Uranium Alloys," The Minerals, Metals, and Materials Society (TMS) Spring Meeting 2015 (Orlando, FL, March 15-19, 2015).
- 29) A. Moore, E. Chen, C. Deo, M. Okuniewski, Computational Nanoscale Plasticity Simulations of Uranium, Materials Research Society Fall Meeting (Boston, MA, November-December, 2014).
- 30) Chen, W.-Y., Y. Miao, C. A. Tomchik, J. Gan, M. Okuniewski, Y. Q. Wu, S. A. Maloy, and J. F. Stubbins, 2014, Microstructure and Mechanical Property Studies on Neutron-Irradiated Ferritic Fe-Cr Model Alloys, The Nuclear Materials Conference (NuMat 2014), (Clearwater, Florida, October 27–30, 2014).
- 31) M.A. Okuniewski, L. Ecker, D. Sprouster, J. Sinsheimer, J.L. McDuffee, R.J. Ellis, L.L. Snead, G.L. Bell, S.L. Voit, B.D. Miller Microstructural evolution of a uranium-zirconium fuel subjected to low fluence irradiations," The Nuclear Materials Conference (NuMat 2014), (Clearwater, Florida, October 27–30, 2014).

- 32) J. McDuffee, G. Bell, R. Ellis, R. Hobbs, M. Okuniewski, L. Snead, S. Voit, Design, Fabrication, and Testing of Gadolinium-Shielded Metal Fuel Samples in the Hydraulic Tube of the High Flux Isotope Reactor, Water Reactor Fuel Performance Meeting/ Top Fuel/ LWR Fuel Performance Meeting 2014, (Sendai, Japan, September 2014).
- 33) M. A. Okuniewski, L. Ecker, J. McDuffee, G. Bell, R. Ellis, L. Snead, S. Voit, B. Miller, High Energy Synchrotron X-ray Diffraction Measurements of a Uranium-Zirconium Alloy Irradiated at Low Fluences, 63<sup>rd</sup> Annual Conference on Applications of X-ray Analysis, The Denver X-ray Conference, (Big Sky, MT, July-August 2014).
- 34) D. W. Brown, M. A. Okuniewski, L. Balogh, B. Clausen, T.A. Sisneros, Microstructural Evolution of Monolithic Fuel Foils During Processing, 63<sup>rd</sup> Annual Conference on Applications of X-ray Analysis, The Denver X-ray Conference, (Big Sky, MT, July-August 2014).
- 35) B. Clausen, D. W. Brown, T.A. Sisneros, M. A. Okuniewski, L. Balogh, Measuring Residual Stresses in Monolithic Fuel Foils using Neutron Diffraction, 63<sup>rd</sup> Annual Conference on Applications of X-ray Analysis, The Denver X-ray Conference, (Big Sky, MT, July-August 2014).
- 36) A. Moore, E. Chen, M. Baskes, C. Deo, M. Okuniewski, Atomistic Properties of Metallic Uranium, 17<sup>th</sup> US National Congress on Theoretical & Applied Mechanics, (East Lansing, MI, June 2014).
- 37) M.A. Okuniewski, G. Bell, J. McDuffee, R. Ellis, L. Snead, B. Sitterson, S.t Voit, L. Ecker, B. Miller, and S. Hayes, Microstructural Evolution in a UZr Alloy Irradiated at Low Fluences, American Nuclear Society Annual Meeting, Nuclear Fuels and Structural Materials Topical, (Reno, NV, June 2014).
- 38) W.-Y. Chen, Y. Miao, C. A. Tomchik, K. Mo, J. Gan, M. A. Okuniewski , Y. Q. Wu, S. A. Maloy, J. F. Stubbins, American Nuclear Society Annual Meeting, Nuclear Fuels and Structural Materials Topical, (Reno, NV, June 2014).
- 39) C. Deo, B. Beeler, M. Okuniewski, M. Baskes, Atomistic Modeling of Radiation Damage in bcc Uranium, The Minerals, Metals, and Materials Society Annual Meeting (TMS), (San Diego, CA, February 2014).
- 40) B. Beeler, C. Deo, M. Baskes, M. Okuniewski, Molecular Dynamics Study of Voids and Bubbles in BCC Uranium, The Minerals, Metals, and Materials Society Annual Meeting (TMS), (San Diego, CA, February 2014).
- 41) A. Moore, M. Baskes, B. Beeler, M. Okuniewski, C. Deo, Atomistic Separation and Ordering at Equilibrium in High Temperature U-Zr Alloys, The Minerals, Metals, and Materials Society Annual Meeting (TMS), (San Diego, CA, February 2014).
- 42) W. Chen, Y. Miao, C. Tomchik, K. Mo, J. Gian, M. Okuniewski, Y. Wu, S. Maloy, J. Stubbins, Microstructure and Mechanical Property Studies on Neutron-Irradiated Ferritic FeCr Model Alloys, The Minerals, Metals, and Materials Society Annual Meeting (TMS), (San Diego, CA, February 2014).
- 43) Y. Miao, B. Beeler, C. Deo, M. I. Baskes, M. Okuniewski, J. F. Stubbins, Defect Structures Induced by High-Energy Displacement Cascades in  $\gamma$  Uranium, Materials Modeling and Simulation for Nuclear Fuels Workshop (MMSNF), (Chicago, IL, October, 2013).
- 44) M. A. Okuniewski, D. W. Brown, E. Tulk, B. Clausen, L. Balogh, J. Almer, J. Okasinski, D.J. Alexander, K.D. Clarke, T.A. Sisneros, B. Rabin, Spatially Resolved Residual Strains and Stresses in As-Fabricated Nuclear Fuel Plates, 62<sup>nd</sup> Annual Conference on Applications of X-ray Analysis, The Denver X-ray Conference, (Westminster, CO, August, 2013).
- 45) S. C. Vogel, D. W. Brown, M. Okuniewski, Chemical Segregation of U-10wt.% Mo Fuel Foils During Simulated Bonding Cycles, Actinides 2013, (Karlsruhe, Germany, July 2013).



- 46) M. A. Okuniewski, G. Bell, R. Ellis, J. McDuffee, L. Ott, L. Snead, D. Glasgow, D. Chandler, R. Hobbs, S. Hayes, B. Miller, A. Aitkaliyeva, J. Gan, and J. Madden, Microstructural Evolution of a Uranium-Zirconium Alloy at Low Fluences, The Minerals, Metals, and Materials Society Annual Meeting (TMS), (San Antonio, TX, March, 2013).
- 47) B. W. Beeler, C. Deo, M. Baskes, M. Okuniewski, Molecular Dynamics Study of Voids and Bubbles in BCC Uranium, The Minerals, Metals, and Materials Society Annual Meeting (TMS), (San Antonio, TX, March, 2013).
- 48) W. Sprowes, M. Okuniewski, Y. Sohn, Experimental Observation on Redistribution of Composition and Microstructure in U-10wt.%Zr Alloy after Anneals Under Temperature Gradient, The Minerals, Metals, and Materials Society Annual Meeting (TMS), (San Antonio, TX, March, 2013).
- 49) A. Oaks, Y. Miao, W-Y. Chen, B. Ye, D. Yun, M. Okuniewski, M.A. Kirk, J.F. Stubbins, Gas Migration and Clustering in Irradiated Metals and Ceramics, International Workshop on Spallation Materials Technology, (Ghent, Belgium, November, 2012).
- 50) M. A. Okuniewski, D. W. Akers, M. W. Drigert, C. L. Shull, and L. G. Roybal, Spatially Resolved Positron Annihilation Spectroscopy in Nuclear Fuels, The 16<sup>th</sup> International Conference on Positron Annihilation (ICPA-16), (Bristol, United Kingdom, August 2012).
- 51) K. R. Lund, K. G. Lynn, M. H. Weber, and M. A. Okuniewski, Vacancy Formation and Phase Transformation in Polycrystalline Uranium, The 16<sup>th</sup> International Conference on Positron Annihilation (ICPA-16), (Bristol, United Kingdom, August 2012).
- 52) M. A. Okuniewski, D.W. Akers, M. W. Drigert, C. L. Shull, and L. G. Roybal, Spatially Resolved Positron Annihilation Spectroscopy of Nuclear Fuels, American Nuclear Society Spring Meeting, Embedded Topical Meeting Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, (NFSM), (Chicago, Illinois, June 2012).
- 53) B. Beeler, C. Deo, M. Baskes, M. Okuniewski, Calculation of the Displacement Energy in B.C.C. U at 800 K, American Nuclear Society Spring Meeting, Embedded Topical Meeting Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors, (NFSM), (Chicago, Illinois, June 2012).
- 54) P. Shukla, B. Beeler, E. Hayward, C. Deo, M. Baskes, M. Okuniewski, Investigation of the Stability and Energies of Defect and Defect Clusters in bcc-U Using Atomic Level Simulations, Materials Research Society (MRS) Spring Meeting, (San Francisco, CA, April 2012).
- 55) B. Beeler, C. Deo, M. Baskes, S. Rashkeev, M. Okuniewski, A Semi-Empirical Interatomic Potential for bcc U, The Minerals, Metals, and Materials Society Annual Meeting (TMS), (Orlando, FL, March 2012).
- 56) P. Shukla, B. Beeler, E. Hayward, C. Deo, M. Baskes, M. Okuniewski, Investigation of the Stability and Energies of Defect and Defect Clusters in bcc-U Using Atomic Level Simulations, The Minerals, Metals, and Materials Society Annual Meeting (TMS), (Orlando, FL, March 2012).
- 57) J. Martos, M. A. Okuniewski, R. J. Stromberg, K. Terrani, and P. Hosemann, Material Characterization of TRISO Fuel Particles Using Nanoindentation, The 5<sup>th</sup> Annual Asia-Pacific Nuclear Energy Forum on Materials for Nuclear Applications and 2<sup>nd</sup> Annual U.S. Department of Energy Nuclear Energy Programs Materials Science and Engineering Materials Cross-cut Workshop (Berkeley, CA, June 2011). First Place Poster Award
- 58) M. A. Okuniewski, D. W. Brown, L. Balogh, J. A. Neal, J. Terry, D. Olive, Y. Trenikhina, J. Okasinski, H. Ganegoda, J.-F. Jue, B. Rabin, G. Moore, and B. Park, Synchrotron X-Ray Diffraction Measurements of Spatially Resolved Strain Fields in

- RERTR Fuel Plates, The Fifteenth International Topical Meeting on Research Reactor Fuel Management, RRFM, (Rome, Italy, March 2011).
- 59) D. E. Burkes, M. Okuniewski, R. Prabhakaran, D. M. Wachs, Overview of Thermophysical and Mechanical Properties of Monolithic U-10wt% Mo, The Fifteenth International Topical Meeting on Research Reactor Fuel Management, RRFM, (Rome, Italy, March 2011).
  - 60) M. A. Okuniewski, D. W. Brown, L. Balogh, J. Terry, D. Olive, Y. Trenikhina, J. Okasinski, S. Seifert, S. Chattopadhyay, T. Shibata, H. Ganegoda, J.-F. Jue, B. Rabin, G. Moore, and B. Park, Spatially Resolved Strain Fields in Nuclear Fuel Plates Determined by Synchrotron X-Ray Diffraction, The Minerals, Metals, and Materials Society (TMS) Annual Meeting, (San Diego, CA, February 2011).
  - 61) G. L. Bell, J. McDuffee, R. W. Hobbs, L. J. Ott, R. J. Ellis, M. A. Okuniewski, and S. L. Hayes, Preparations for Low Fluence Fuels Testing in the High Flux Isotope Reactor Hydraulic Rabbit Facility, OECD Nuclear Energy Agency Eleventh Information Exchange Meeting on Actinide and Fission Product Partitioning and Transmutation (San Francisco, CA, November 2010).
  - 62) M. A. Okuniewski, D. W. Brown, L. Balogh, J. Terry, D. Olive, Y. Trenikhina, P. Medvedev, H. Ozaltun, S. Seifert, S. Chattopadhyay, T. Shibata, H. Ganegoda, J.-F. Jue, B. Rabin, G. Moore, and B. Park, Synchrotron X-ray Diffraction Measurements of Spatially Resolved Strain Fields in Nuclear Fuel Plates, The Nuclear Materials Conference, NuMat 2010, (Karlsruhe, Germany, October 2010).
  - 63) S. C. Vogel, D. W. Brown, M. A. Okuniewski, J.-F. Jue, and B. Park, Chemical Segregation of U-10wt.% Mo Fuel Foils During Simulated Bonding Cycles, The Nuclear Materials Conference, NuMat 2010, (Karlsruhe, Germany, October 2010).
  - 64) B. Beeler, B. Good, C. Deo, M. Okuniewski, S. Rashkeev, and M. Baskes, First Principles Analysis of Fission gases in B.C.C. Uranium and an Evaluation of a MEAM Potential for Metallic Uranium, The Nuclear Materials Conference, NuMat 2010, (Karlsruhe, Germany, October 2010).
  - 65) R. R. Mohanty, J. Bush, M. A. Okuniewski, and Y. H. Sohn, Phase-field Simulation of Constituent Redistribution in bcc- $\gamma$  Phase of U-Zr Alloys Due to an Applied Temperature Gradient, The Nuclear Materials Conference, NuMat 2010, (Karlsruhe, Germany, October 2010).
  - 66) M. A. Okuniewski, M. H. Weber, K. G. Lynn, B. W. Beeler, B. J. Good, C. S. Deo, M. I. Baskes, S. A. Maloy, and J. F. Stubbins, Positron Annihilation Spectroscopy in Nuclear Structural Materials and Fuels, The Twelfth International Workshop on Slow Positron Beam Techniques (Magnetic Island, Australia, August 2010).
  - 67) M. A. Okuniewski, X. Pan, C. Tomchik, M. A. Kirk, and J. F. Stubbins, Radiation Damage in Model FeCr Alloys and FM Steels, American Nuclear Society Meeting (San Diego, CA, June 2010).
  - 68) M. A. Okuniewski, R. Prabhakaran, F. J. Rice, B. H. Rabin, D. W. Brown, D. M. Wachs, and D. E. Burkes, An Integrated Approach to the Mechanical Behavior of U-Mo Monolithic Fuel, The Fourteenth International Topical Meeting on Research Reactor Fuel Management, RRFM, (Marrakech, Morocco, March 2010).
  - 69) B. Good, B. Beeler, C. Deo, S. Rashkeev, M. Okuniewski, and M. Baskes, First Principles Calculations of Uranium and Uranium-Zirconium Alloys, The Minerals, Metals, and Materials Society Annual Meeting, (Seattle, WA, February 2010).
  - 70) B. Beeler, B. Good, C. Deo, S. Rashkeev, M. Okuniewski, and M. Baskes, Modeling of Phase Separation in Uranium-Zirconium Alloys via Monte Carlo Methods, The Minerals, Metals, and Materials Society Annual Meeting, (Seattle, WA, February 2010).
  - 71) M. A. Okuniewski, D. M. Wachs, D. E. Burkes, R. Prabhakaran, F. J. Rice, and P. Medvedev, An Integrated Approach to the Mechanical Behavior of U-Mo Monolithic

- Fuel, International Meeting for Research and Test Reactors, RERTR, (Beijing, China, November 2009).
- 72) M. A. Okuniewski and D. W. Akers, The Applications of Spatially Resolved Positron Annihilation Spectroscopy to RERTR Fuel Plates, International Meeting for Research and Test Reactors, RERTR, (Beijing, China, November 2009).
  - 73) M. A. Okuniewski, D. W. Akers, and D. E. Burkes, Investigation of the Applications of Positron Annihilation Spectroscopy to RERTR Fuel Plates, The Thirteenth International Topical Meeting on Research Reactor Fuel Management, RRFM, (Vienna, Austria, March 2009).
  - 74) D. E. Burkes, D. M. Wachs, D. D. Keiser, M. A. Okuniewski, J-F Jue, F. J. Rice, R. Prabhakaran, Update on Fresh Fuel Characterization of U-Mo Alloys, The Thirteenth International Topical Meeting on Research Reactor Fuel Management, (Vienna, Austria, March 2009).
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  - 76) D. E. Burkes, D. M. Wachs, D. D. Keiser, J. Gan, F. J. Rice, R. Prabhakaran, B. D. Miller, M. A. Okuniewski, Fresh Fuel Characterization of U-Mo Alloys, 30th International Meeting on Reduced Enrichment for Research and Test Reactors (RERTR 2008), (Washington D.C., October 2008).
  - 77) M. A. Okuniewski, C. S. Deo, M. H. Weber, F. A. Selim, K. G. Lynn, P. Hosemann, S. Seifert, S. Srivilliputhur, S. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, Effects of Helium on the Irradiation Induced Microstructure in Iron, The Minerals, Metals, and Materials Society Annual Meeting, (New Orleans, LA, March 2008).
  - 78) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, M. I. Baskes, S. A. Maloy, M. R. James and J. F. Stubbins, An Experimental and Modeling Study of Helium in Irradiated BCC Iron, The Thirteenth International Conference on Fusion Reactor Materials, ICFRM-13 (Nice, France, December 2007).
  - 79) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, M. I. Baskes, S. A. Maloy, M. R. James, and J. F. Stubbins, Positron Annihilation Spectroscopy of Helium in Irradiated Body-Centered Cubic Iron, The Eighth International Topical Meeting on Nuclear Applications and Utilization of Accelerators, AccApp'07, (Pocatello, ID, July 2007).
  - 80) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, M. R. James, M. I. Baskes, S. A. Maloy, and J. F. Stubbins, The Effects of Helium in Irradiated Body-Centered Cubic Iron, The 11<sup>th</sup> International Workshop on Slow Positron Beam Techniques for Solids and Surfaces, SLOPOS-11, (Orléans, France, July 2007).
  - 81) M. A. Okuniewski, C. S. Deo, M. H. Weber, F. A. Selim, K. G. Lynn, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, The Effects of Helium and Hydrogen in Irradiated BCC Iron, , The Minerals, Metals, and Materials Society Annual Meeting, (Orlando, FL, February 2007).
  - 82) M. A. Okuniewski, C. S. Deo, M. H. Weber, F. A. Selim, K. G. Lynn, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, The Effects of Helium and Hydrogen in Irradiated Body-Centered Cubic Iron, Materials Research Society Annual Meeting, (Boston, MA, November 2006).
  - 83) J. F. Stubbins, M. A. Okuniewski, C. A. Tomchik, C. S. Deo, M. H. Weber, F. A. Selim, K. G. Lynn, S. G. Srivilliputhur, M. R. James, S. A. Maloy, and M. I. Baskes, The Effects of Hydrogen and Helium on Irradiated Body-Centered Cubic Iron and Iron-Chromium,

- Eighth International Workshop on Spallation Materials Technology (Taos, NM, October 2006).
- 84) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, Irradiation Effects of Helium and Hydrogen in BCC Single Crystal Iron, International School on Experimental Quantification of Irradiation Damage (Rochehaut, Belgium, September 2006).
  - 85) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, M. R. James, S. A. Maloy, M. I. Baskes, and J. F. Stubbins, Helium and Hydrogen Effects in Irradiated Single Crystal Body-Centered Cubic Iron, The XIVth International Conference on Positron Annihilation (Hamilton, Ontario, Canada, July 2006).
  - 86) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srinivasan, M. I. Baskes, M. R. James, S. A. Maloy, and J. F. Stubbins, Experimental and Modeling Study of the Effects of Helium and Hydrogen in Irradiated Single Crystal BCC Iron, ASTM 23<sup>rd</sup> Symposium on Effects of Radiation on Materials (San Jose, CA, June 2006).
  - 87) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, Irradiation Effects of Helium and Hydrogen in BCC Single Crystal Iron, American Nuclear Society Meeting (Reno, NV, June 2006).
  - 88) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, The Effects of Helium and Hydrogen in Irradiated Single Crystal BCC Iron: An Experimental and Modeling Study, 2006 Users Meeting for DOE/BES User Facilities (Argonne National Laboratory, Chicago, IL, May 2006).
  - 89) M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, The Effects of Helium and Hydrogen in Irradiated Single Crystal Body-Centered Cubic Iron, The Minerals, Metals, and Materials Society Annual Meeting, (San Antonio, TX, March 2006).
  - 90) M. A. Okuniewski, C. S. Deo, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, and J. F. Stubbins, The Effects of Helium on Irradiation Damage in Single Crystal Iron, Twelfth International Conference on Fusion Reactor Materials (Santa Barbara, CA, December 2005).
  - 91) M. A. Okuniewski, C. S. Deo, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, J. F. Stubbins, and D. P. Wells, A Modeling and Experimental Study of the Effects of Hydrogen and Helium on Irradiated Body-Centered Cubic Iron, Seventh International Workshop on Spallation Materials Technology, (Thun, Switzerland, June 2005).
  - 92) M. A. Okuniewski, D. P. Wells, F. A. Selim, S. A. Maloy, M. R. James, J. F. Stubbins, C. S. Deo, S. G. Srivilliputhur, and M. I. Baskes, Positron Annihilation Spectroscopy of Irradiation Damage in BCC Iron, The Minerals, Metals, and Materials Society Annual Meeting, (San Francisco, CA, February 2005).
  - 93) M. A. Okuniewski, S. G. Srivilliputhur, C. S. Deo, S. A. Maloy, M. I. Baskes, M. R. James, J. F. Stubbins, D. P. Wells, and F.A. Selim, Experimental Study and Atomistic Simulations of the Effects of Helium and Hydrogen in Irradiated Body-Centered Cubic Iron: A Work in Progress, International School on Radiation Effects, (Erice, Italy, July 2004).
  - 94) J. F. Stubbins, M. A. Okuniewski, S. G. Srivilliputhur, S. A. Maloy, M. I. Baskes, M. R. James, Molecular Dynamics Simulations of the Effects of Helium in BCC Iron Subjected

- to Irradiation Damage, Sixth International Workshop on Spallation Materials Technology, (Hayama, Japan, November, 2003).
- 95) M. A. Okuniewski, Y. Ashkenazy, B. J. Heuser, and R. S. Averback, Void and Helium Bubble Stability in Amorphous Silicon Subjected to Irradiation, Materials Research Society Annual Meeting, (Boston, MA, November 2003).
- 96) M. A. Okuniewski, B. J. Heuser, Y. Ashkenazy, and R. S. Averback, Molecular Dynamics Simulations of Void Stability in Amorphous Si, Materials Research Society Annual Meeting, (Boston, MA, November 2001).

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**TECHNICAL REPORTS:**

- 1) M. A. Okuniewski, D. Velazquez, R. Seibert, J. Terry, V. Ganapathy, B. Hamilton, D. Sprouster, L. Ecker, M. Elbakhshwan, P. Cassutt, F. Zhang, *Synchrotron Characterization of U-Mo and U-Zr Alloys and the Modeling Results*, September 2016, Report No. INL/EXT-16-40130, Idaho National Laboratory, Idaho Falls, ID.
- 2) S. Voit, J. McDuffee, R. J. Ellis, R. Howard, M. Okuniewski, *Summary Report: Redesign of the Gadolinium-Shielded High Flux Isotope Reactor Rabbit Capsule*, February 2015, Report No. ORNL/LTR-2015/49, Oak Ridge National Laboratory, Oak Ridge, TN.
- 3) L. Ecker, D. Sprouster, M. A. Okuniewski, *Microstructural Evolution of a Uranium-Zirconium Fuel Subjected to Low Fluence Irradiation Experiments*, January 2015, Brookhaven National Laboratory, Brookhaven, NY.
- 4) R. H. Howard, J. L. McDuffee, M. A. Okuniewski, *Build Redesigned HFIR Rabbit Capsules and Make Ready for Insertion for Irradiation in HFIR*, September 2015, ORNL/SPR-2015/555/AF5810000, Oak Ridge National Laboratory, Oak Ridge, TN.
- 5) M. A. Okuniewski, L. Ecker, D. Sprouster, *PIE Status Report on HFIR Metallic Fuel Specimens*, Report No. INL-LTD-14-32830, August 2014, Idaho National Laboratory, Idaho Falls, ID.
- 6) D. W. Brown, M. A. Okuniewski, T. A. Sisneros, B. Clausen, G. A. Moore, L. Balogh, *Neutron Diffraction Measurement of Residual Stresses, Dislocation Density and Texture in Zr-bonded U-10Mo "Mini" Fuel Foils and Plates*, Report No. LA-UR-14-22709, August 2014, Los Alamos National Laboratory, Los Alamos, New Mexico.
- 7) D. W. Brown, M. A. Okuniewski, T. A. Sisneros, B. Clausen, G. A. Moore, *Neutron Diffraction Measurement of Residual Stresses in Al-Clad U-10Mo Fuel Plates*, LA-UR-14-22258, August 2014, Los Alamos National Laboratory, Los Alamos, New Mexico.
- 8) A. E. Craft, W. J. Williams, G. C. Papaioannou, M. A. Okuniewski, A. T. Smolinski, *Assessment of the Utilization of NRAD for Advanced PIE and Path Forward*, Report No. INL-LTD 14-31806, April 2014, Idaho National Laboratory, Idaho Falls, ID.
- 9) M. A. Okuniewski, *Disassembly of HFIR Capsules Irradiated in FY12*, October 2013, Idaho National Laboratory, Idaho Falls, ID.
- 10) D.W. Brown, B. Clausen, T. A. Sisneros, M. A. Okuniewski, *Neutron Diffraction Measurement of Residual Stresses in 'OSU Plate'*, Report No. LA-UR-13-24618, August 2013, Los Alamos National Laboratory, Los Alamos, New Mexico.
- 11) M. A. Okuniewski, K. Lynn, M. Weber, K. Lund, D. Akers, C. Shull, M. Drigert, L. Roybal, *Idaho National Laboratory Directed Research and Development FY-2012: Microstructural Evolution of UO<sub>2</sub> and U Under Irradiation*, Report No. INL/EXT-12-27701, March 2013, Idaho National Laboratory, Idaho Falls, ID.
- 12) M. A. Okuniewski, D. Brown, E. Tulk, L. Balogh, *Synchrotron X-ray Diffraction Measurements in As-Fabricated RERTR Foils and Fuel Plates*, Report No. INL/INT-12-27777, November 2012, Idaho National Laboratory, Idaho Falls, ID.
- 13) M. A. Okuniewski, Assel Aitkaliyeva, Randall Fielding, Jian Gan, Jeffrey Giglio, Jason Harp, Paul Hansen, James Madden, Brandon Miller, Jessica Reisterer, Avishai Ofan,

- Lynne Ecker, Simerjeet Gill, *Fabrication and Characterization of the High Flux Isotope Reactor Rabbit Specimens*, Report No. INL-LTD-12-26610, July 2012, Idaho National Laboratory, Idaho Falls, ID.
- 14) M. A. Okuniewski, Y. Sohn, W. Sprowes, *Element Redistribution in Metallic Fuel Studies*, Report No. INL-LTD-12-26462, June 2012, Idaho National Laboratory, Idaho Falls, ID.
  - 15) M. K. Meyer, G. A. Moore, J.F. Jue, D.D. Keiser Jr., I.Y. Glagolenko, D.M. Wachs, P.E. Murray, A.B. Robinson, F.J. Rice, H. Ozaltun, S. J. Miller, M.A. Okuniewski, B.H. Rabin, H.W. Glunz, N.J. Lybeck, *Investigation of the Cause of Low Blister Threshold Temperatures in the RERTR-12 and AFIP-4 Experiments*, Report No. INL/EXT-12-26500, June 2012, Idaho National Laboratory, Idaho Falls, ID.
  - 16) M. A. Okuniewski, *Idaho National Laboratory Directed Research and Development FY-2011: Microstructural Evolution of UO<sub>2</sub> and U Under Irradiation*, Report No. INL/EXT-11-23890, March 2012, Idaho National Laboratory, Idaho Falls, ID.
  - 17) J. R. Kennedy, R. Fielding, M. Fig, D. Hurley, T. Hyde, D. Janney, P. Lessing, R. Mariani, T. O'Holleran, M. Okuniewski, B. Sencer, J. Giglio, I. Glagolenko, D. Kotter, J. Riesterer, J. A. Smith, L. Squires, *Metallic Fuels Development Technical Area FY2011 Accomplishments Report*, Report No. INL/LTD-11-23739, October 2011, Idaho National Laboratory, Idaho Falls, ID.
  - 18) M. A. Okuniewski, Y. Sohn, W. Sprowes, and J. Bush, *Fundamental Element Redistribution Studies*, Update Presentation for Quarterly Meeting, Report No. INL/MIS-11-23228, September 2011, Idaho National Laboratory, Idaho Falls, ID.
  - 19) M. A. Okuniewski, *Test Plan for Metallic Fuel Irradiation in HFIR Hydraulic Rabbit*, PLN-3832, Rev. 0, April 2011, Idaho National Laboratory, Idaho Falls, ID.
  - 20) M. A. Okuniewski, *Idaho National Laboratory Directed Research and Development FY-2010: Microstructural Evolution of UO<sub>2</sub> and U Under Irradiation*, Report No. INL/EXT-10-20561, March 2011, Idaho National Laboratory, Idaho Falls, ID.
  - 21) M. A. Okuniewski, Y. Sohn, *Draft Report on Fundamental Fuel Constituent Migration*, Report No. INL/LTD-11-21402, March 2011, Idaho National Laboratory, Idaho Falls, ID.
  - 22) M. A. Okuniewski, *Synchrotron X-ray Diffraction Measurements of Spatially Resolved Strain Fields in Nuclear Fuel Plates*, Advanced Test Reactor National Scientific User Facility Annual Report, 2010, Idaho National Laboratory, Idaho Falls, ID.

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#### PROFESSIONAL TRAINING:

- 1) Advanced Light Source Rietveld Workshop, Berkeley, CA, 2012
- 2) International School on Experimental Quantification of Irradiation Damage, PERFECT and EUROTRANS / DEMETRA, Rochehaut s/Semois, Belgium, 2006
- 3) World Nuclear University Summer Institute, World Nuclear University, 2005
- 4) International School on Radiation Effects in Solids, NATO-ASI, Erice, Italy, 2004
- 5) Radiological Worker II Certification, Department of Energy, 2014, 2012, 2010, 2008, 2003, 1998
- 6) MCNPX workshop, Los Alamos National Laboratory, 2003
- 7) National X-ray and Neutron Scattering School, Argonne National Laboratory, 2001
- 8) LABVIEW workshop, National Instruments, 1997

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**AWARDS, HONORS, AND SCHOLARSHIPS:**

- 1) Ralph E. Powe Junior Faculty Enhancement Award, 2017.
- 2) Department of Energy, Nuclear Energy, Fuel Cycle Research & Development Excellence Award, 2013.
- 3) Exceptional Contributions Program Award, Idaho National Laboratory, 2014, 2013, 2011, 2010, 2009.
- 4) American Nuclear Society Materials Science and Technology Division Student Literary Award for 2012 for paper titled "Atomistic Properties of Gamma Uranium," *Journal of Physics: Condensed Matter*, vol. 24 (2012) p. 075401, B. Beeler, C. Deo, M. Baskes, M. Okuniewski.
- 5) James F. Schumar Scholarship, American Nuclear Society, Materials Science and Technology Division, 2006
- 6) Best student poster presentation, honorable mention, "Helium and Hydrogen Effects in Irradiated Single Crystal Body-Centered Cubic Iron," M. A. Okuniewski, M. H. Weber, F. A. Selim, K. G. Lynn, C. S. Deo, S. G. Srivilliputhur, M. R. James, S. A. Maloy, M. I. Baskes, and J. F. Stubbins, XIVth International Conference on Positron Annihilation (Hamilton, Ontario, Canada, July 2006).
- 7) American Nuclear Society Annual Meeting Travel Award, Materials Science & Technology Division, 2006
- 8) World Nuclear University Fellow, 2005
- 9) National Science Foundation Travel Award for the International School on Radiation Effects in Solids, Erice, Italy, 2004
- 10) Materials Research Society Annual Meeting Travel Award, Student Chapter, 2003
- 11) University of Illinois at Urbana-Champaign, Graduate College, Travel Grant, 2001, 2005
- 12) Presidential Scholarship University of Tampa, 1990-1994
- 13) Life Sciences Scholarship, University of Tampa, 1990-1994

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**TEACHING EXPERIENCE:***Purdue University*

- 1) MSE 335 – Material Characterization Laboratory (Junior), 3 credits, Fall 2018
- 2) MSE 190 – Introduction to Materials Engineering (First Year Undergraduates), 1 credit, Fall 2017
- 3) MSE 510 – Microstructural Characterization Techniques (Graduate, Upper Level Undergraduate), 3 credits, Spring 2017, Spring 2018 Spring 2019. Spring 2020
- 4) MSE 235 – Materials Properties Laboratory (Sophomore), 3 credits, Fall 2016
- 5) MSE 531 – Quantitative Microstructural Analysis, (Graduate, Upper Level Undergraduate), 3 credits, Fall 2019

*Idaho State University*

- 1) NE 4499/5599 – Advanced Materials Science (Junior-Graduate), 3 credits, Fall 2013. (Development of a new course that focused on nuclear materials and fuels.)

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**ACADEMIC MENTORING AND ADVISING:***Graduate Students – Advisor*

- 1) Sri Tapaswi Nori, Ph.D. expected 8/2020
- 2) Jonova Thomas, Ph.D. expected 8/2020
- 3) Gyuchul Park, Ph.D. expected 12/2020

- 4) Walt Williams, Ph.D. expected 12/2021
- 5) Alejandro Figueroa, Ph. D. expected 5/2022
- 6) Dulus Owen, Ph.D. expected 5/2023

*Graduate Students – Co-Advisor*

- 1) Priyam Patki, MSE, Ph.D. expected 5/2021
- 2) Kayla Yano, MSE, Ph.D. Completed 4/2019 – *In situ TEM Mechanical Testing of Irradiated Oxide Dispersion Strengthened Alloys*
- 3) Sudipta Biswas, AAE, Ph.D. Completed 12/2017 – *Multiphysics Modeling for Predicting Microstructural Evolution of Powder Materials during Solid State Sintering*

*Graduate Students – Committee Member*

- 1) Abbas Johar Jinia, NE, M.S., completed 12/2018
- 2) Keyou Mao, MSE, Ph.D., completed 8/2019
- 3) Xing Sun, MSE, Ph.D. completed 8/2019
- 4) Hao Wang, AAE, Ph.D. completed 12/2019
- 5) Enes Erickan, NE, M.S., completed 12/2019
- 6) Siyu Liu, IE, Ph.D., completed 3/2020
- 7) Shivam Tripathi, MSE, Ph.D. expected 5/2020
- 8) Yen-Yu Chen, MSE, Ph.D. expected 8/2020
- 9) Shoumya Nandy Shuvo, MSE, Ph.D. expected 8/2020
- 10) Amrita Sen, MSE, Ph.D. expected 5/2022
- 11) Caleb Clement, MSE, Ph.D. expected 5/2023

*Undergraduate Students*

- 1) Fan Zhang
- 2) Varsha Ganapathy
- 3) Paul Cassutt
- 4) Brenden Hamilton
- 5) Jianhan Gu
- 6) Alejandro Figueroa
- 7) Katie Bemis
- 8) Michael Krane
- 9) Zuha Adel
- 10) Kyle Petrosky
- 11) Brittney Bailey
- 12) Jack Gulley

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**INTERNSHIP STUDENTS SUPERVISED (at INL):**

- 1) Alex Moore, Georgia Institute of Technology, Nuclear & Radiological Engineering & Medical Physics Program, Ph.D. student, 2014. Understanding microstructural impacts on mechanical properties in uranium-molybdenum plate type nuclear fuels through development of focused ion beam polishing techniques to enable grain structure mapping with electron back scatter diffraction and nanoindentation. Development of a uranium-zirconium interatomic potential.
- 2) Elton Chen, Georgia Institute of Technology, Nuclear & Radiological Engineering & Medical Physics Program, undergraduate student, 2013. Conduct electron back scatter diffraction (EBSD) to map grain orientation and sizes in  $\alpha$  zirconium. Development of new polishing technique for EBSD of zirconium. Molecular dynamics modeling to determine grain boundary energetics between the  $\alpha$  and  $\gamma$  phases of uranium.



- 3) Jennifer Martos, University of California at Berkeley, Department of Nuclear Engineering, M.S. student, 2011. Examination of mechanical properties (elastic modulus, nanohardness, and fracture toughness) using small scale techniques in surrogate TRISO particles. Summer research resulted in First Place Poster Award, The 5<sup>th</sup> Annual Asia-Pacific Nuclear Energy Forum on Materials for Nuclear Applications, June 2011.
- 4) Benjamin Beeler, Georgia Institute of Technology, Nuclear & Radiological Engineering & Medical Physics Program, Ph.D. student, 2009 and 2010. First principles calculations of defects in uranium. Modeling of phase separation in uranium-zirconium alloys via Monte Carlo methods.
- 5) Benjamin Good, Georgia Institute of Technology, Nuclear & Radiological Engineering & Medical Physics Program, M.S. student, 2009. First principles calculations of uranium and uranium-zirconium alloys.

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**PROFESSIONAL AFFILIATIONS:**

- 1) American Nuclear Society
- 2) Materials Research Society
- 3) The Minerals, Metals, and Materials Society
- 4) American Chemical Society
- 5) Idaho Academy of Sciences
- 6) Alpha Nu Sigma (National Nuclear Engineering Honor Society)
- 7) Tau Beta Pi (Engineering Honor Society)
- 8) Society of Women Engineers
- 9) North American Young Generation in Nuclear (NA-YGN)
- 10) Phi Eta Sigma (Undergraduate Honor Society)
- 11) Beta Beta Beta (National Biological Honor Society)

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**PROFESSIONAL SERVICE:**

- 1) American Nuclear Society, Executive Committee of the Materials Science and Technology Division, 2007-2010, 2010-2013, 2017-2020.
- 2) The Minerals, Metals, and Materials Society, Nuclear Materials Committee, 2011-current.
- 3) Panel Member, TMS 2017, TMS Student Career Panel, Young Professionals Committee, February 26 – March 2, 2017.
- 4) Mentor, TMS 2017, Meet a Mentor, February 26 – March 2, 2017.
- 5) Center for Advanced Energy Studies (CAES) Lead for Fuels and Materials within the CAES Core Capabilities for Nuclear Science and Engineering, 2014-2016.
- 6) Researcher Community of Practice, Idaho National Laboratory, (Early Career Researchers selected to meet directly with the laboratory director), 2009 – 2014.
- 7) Idaho Academy of Sciences, Trustee, 2011-2013.

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**UNIVERSITY SERVICE:**

- 1) Graduate Admissions Committee, School of Materials Engineering, Purdue University, 2019 – present
- 2) Mentor, Modeling, Experimentation & Validation (MeV) Summer School, Oak Ridge National Laboratory, Oak Ridge TN, July 15-25, 2019.
- 3) Faculty Affairs Committee, Purdue University, College of Engineering, August 2018 – July 2020

- 4) Poster Judge, Purdue Undergraduate Research Conference, Purdue University, West Lafayette, IN, April 10, 2018.
- 5) Mentor, Senior Design, MSE, Purdue University, August 2017 – May 2018 (Arcelor Mittal), August 2018 – May 2019 (Arcelor Mittal), August 2019 – May 2019 (Arconic).
- 6) Panelist, Future Engineering Faculty and Professionals Workshop Series, “Be a Competitive Candidate: Perspectives from New Faculty,” Purdue University, February 16, 2017.
- 7) Mentor, Modeling, Experimentation & Validation (MeV) Summer School, Oak Ridge National Laboratory, Oak Ridge TN, July 17-28, 2016.
- 8) Invited, U.S. Faculty Tour of French Nuclear Facilities, sponsored by SFANS (French Division of the American Nuclear Society), July 3-9, 2016.
- 9) Panel member for “Life After Graduate School” for Materials Engineering Graduate Student Association, Purdue University, April 8, 2016.
- 10) Safety Committee, School of Materials Engineering, Purdue University, 2016 - present
- 11) Undergraduate Committee, School of Materials Engineering, Purdue University, 2016 - 2019
- 12) Adjunct faculty, Department of Nuclear Engineering and Health Physics, Idaho State University, 2013-2015
- 13) Scientific Advisory Board Member, Institute of Nuclear Science and Engineering, College of Science and Engineering, Idaho State University, 2012-2015
- 14) Affiliate faculty, Center for Advanced Energy Studies, Idaho Falls, Idaho, 2012-2016
- 15) Affiliate faculty, Department of Nuclear Engineering and Health Physics, Idaho State University, 2010-2013
- 16) External reviewer, Senior design project, Georgia Institute of Technology, Nuclear & Radiological Engineering & Medical Physics Program, 2013
- 17) Graduate student representative, Department of Nuclear, Plasma, and Radiological Engineering, University of Illinois at Urbana-Champaign, 2005 - 2008
- 18) Mentor, Professional Development and Leadership Skills in Engineering Through Mentoring, University of Illinois at Urbana-Champaign, 2006
- 19) University of Tampa Environmental Protection Coalition President, 1993-1994

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**PUBLICATION AND TECHNICAL REVIEW SERVICE:**

- 1) *Materials Research Letters*, 2018 - present
- 2) *Nuclear Materials and Energy*, 2018 - present
- 3) *Computational Materials Science*, 2017 – present
- 4) *Nuclear Instruments and Methods in Physics Research: A*, 2017-present
- 5) *Journal of Nuclear Materials*, Reviewer, 2014-present
- 6) *Metallurgical and Materials Transactions A*, Reviewer, 2014-present
- 7) *Materials Characterization*, Reviewer, 2015-present
- 8) *Proceedings from Materials Research Society Meeting*, Reviewer, 2015-present
- 9) *Transactions of the American Nuclear Society Meeting*, Reviewer, 2008-present
- 10) Department of Energy, Nuclear Energy, Nuclear Energy University Proposals, USA, 2015 – present (3 pre-proposals and 3 full proposals per year)
- 11) Advanced Test Reactor National Scientific User Facility, Reviewer, 2013-2016
- 12) Laboratory Directed Research and Development Awards, Idaho National Laboratory, Reviewer, 2010-2015
- 13) Advanced Photon Source, Argonne National Laboratory, Beamline Review Panelist, MR CAT, March 6-7, 2017.
- 14) National Synchrotron Light Source II (NSLS-II), Brookhaven National Laboratory, High Energy Diffraction Proposal Review Panel, 2018-2021.

- 15) Los Alamos Neutron Science Center (LANSCE), Los Alamos National Laboratory, Diffraction and Imaging Proposal Review Panel, 2019.
- 16) Nazarbayev University Research Reviewer, Astana, Kazakstan, 2019.
- 17) Ralph E. Powe Junior Faculty Enhancement Award Reviewer, 2020.

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**CONFERENCE/WORKSHOP ORGANIZATION:**

- 1) Symposium Co-Organizer, Characterization of Nuclear Materials and Fuels with Advanced X-ray and Neutron Techniques, TMS Annual Meeting, 2021.
- 2) Symposium Co-Organizer, Radiation Effects in Metals and Ceramics, TMS Annual Meeting, 2020.
- 3) Tutorial Organizer, Nuclear Materials and Damage – Design and Impact, Materials Research Society Meeting, Fall 2019.
- 4) Symposium Organizer, Structure-Property-Processing-Performance Relationships in Materials for Nuclear Technologies Materials Research Society Meeting, Fall 2019.
- 5) Symposium Co-Organizer, Ceramic Materials for Nuclear Energy Research and Applications, TMS Annual Meeting, 2017.
- 6) Workshop Co-Organizer, Application of Synchrotron X-ray Scattering Techniques to Nuclear Materials, Argonne National Laboratory, Advanced Photon Source – Center for Nanoscale Materials Users Meeting, 2015.

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**SPONSORED RESEARCH:***Principle Investigator*

- 1) Idaho National Laboratory, *Atomistic Simulations of Defects in UMo*, \$18,690, Award period: 1/27/2020 – 6/30/2020.
- 2) Idaho National Laboratory, *A Reconfigurable Mechanical Properties Testing Vehicle Instrumented with Novel Sensors*, \$350,000, Award period: 8/1/2019 – 12/31/2020.
- 3) Idaho National Laboratory, PhD support for Walter Williams, Tuition (directly to Purdue) ~ \$199k and Research (to MSE – in process) ~ \$177k – Total ~ \$376k, Award period: 1/1/2018 – 12/31/2021.
- 4) Oak Ridge Associated Universities, Ralph E. Powe, Junior Faculty Enhancement Award in Engineering and Applied Science, \$10,000, Award period: 6/1/2017 – 5/31/2018
- 5) SCK-CEN (Belgian Nuclear Research Centre), *Study of the In-pile Recrystallization of Uranium Alloys and Intermetallics*, ~\$230k, Award period: 1/1/2017-12/31/2020
- 6) Department of Energy, Nuclear Energy, Nuclear Energy University Programs, *Microstructure, Thermal, and Mechanical Properties Relationships in U and UZr Alloys*, Refereed, \$800,000, Award period: 10/1/16 – 9/30/19
- 7) Idaho National Laboratory, Laboratory Directed Research and Development project, *New In Core Neutron Diagnostics*, ~\$250k over 3 years, Refereed, Award period: 6/1/15 – 9/30/17.
- 8) Department of Energy, Nuclear Energy, National Scientific User Facility, *Microstructural Evolution in Low Fluence Irradiated Metallic Fuels*, Refereed, Award period: 10/1/15 – 9/30/18 (~\$150,000 to Purdue)
- 9) Idaho National Laboratory, Laboratory Directed Research and Development project, *Microstructural Evolution of UO<sub>2</sub> and U Under Irradiation*, ~\$1M over 3 years, Refereed, Award period: 10/1/09 – 9/30/12.
- 10) Department of Energy, Nuclear Energy, Advanced Test Reactor National Scientific User Facility, *Synchrotron X-Ray Diffraction Measurements of Spatially Resolved Strain Fields in Nuclear Fuel Plates*, Refereed, Award period: 10/1/09 – 9/30/10.

- 11) Numerous other proposals have been awarded at various user facilities such as the Advanced Photon Source at Argonne National Laboratory, National Synchrotron Light Source at Brookhaven National Laboratory, Los Alamos Neutron Science Center, and Intermediate Voltage Electron Microscope at Argonne National Laboratory. These user facilities do not award money, but grant access to the experimental facilities.

*Co-Principle Investigator*

- 1) Department of Energy, Nuclear Energy, Nuclear Science User Facilities Rapid Turn-Around Experiment, Microstructural Characterization of Neutron Irradiated HT-UPS steel to Support High-energy X-ray Studies (20-2032), Refereed, Award period: 2/5/20-8/6/20, PI: Sri Tapaswi Nori, co-PI: Maria Okuniewski (\$50,000)
- 2) Department of Energy, Nuclear Energy, Nuclear Science User Facilities Rapid Turn-Around Experiment, Effects of Cold Rolling and Induction Casting on the Microstructural Evolution in Uranium-10wt.% Molybdenum (U-Mo) Alloys at Low Fluences and Low irradiation Temperatures, (2019-2929), Refereed, Award period: 2/5/20-8/6/20, PI: Gyuchul Park, co-PIs: Maria Okuniewski. Ben Beeler (\$50,000)
- 3) Department of Energy, Nuclear Energy, Nuclear Science User Facilities Rapid Turn-Around Experiment, Effects of Cold Rolling and Induction Casting on the Phase Decomposition and Distribution of Fission Gas Bubbles in Uranium-Molybdenum (U-Mo) Alloys at Low Fluences and Low Irradiation Temperatures (2019-2859), Refereed, Award period: 9/17/19-6/17/20, PI: Gyuchul Park, co-PIs: Maria Okuniewski. Ben Beeler. (\$50,000)
- 4) Department of Energy, Nuclear Energy, Nuclear Science User Facilities Rapid Turn-Around Experiment, High-Burnup U-Mo pore Analysis as a Function of Fission Density and Rate. (2019-1743), Refereed, Award period: 5/14/19-2/14/20, PI: Alejandro Figueroa, co-PIs: Maria Okuniewski, Dennis Keiser . (\$50,000)
- 5) Department of Energy, Nuclear Energy, Advanced Test Reactor National Scientific User Facility Rapid Turn-Around Experiment, Phase Evolution of Uranium-Zirconium Alloys Under In-Situ TEM Heating (#1570), Refereed, Award period: 9/17/18 – 6/1/19, PI: Walter Williams, co-PIs: Maria Okuniewski, Daniel Wachs, Yongfeng Zhang (\$50,000)
- 6) Department of Energy, Nuclear Energy, Advanced Test Reactor National Scientific User Facility Rapid Turn-Around Experiment, 3D Microstructural Assessment of Irradiated and Control U-10Zr Fuels, Refereed, Award period: 06/29/2018 – 03/29/19, PI: Jonova Thomas, co-PIs: Maria A. Okuniewski, Jason Harp. (\$50,000)
- 7) Department of Energy, Nuclear Energy, Advanced Test Reactor National Scientific User Facility Rapid Turn-Around Experiment, In-Situ Phase Analysis of Phase Transitions in U-(6, 10, 20, 30) wt% Zr Fresh Fuels. (#1437), Refereed, Award period: 5/17/18 – 2/17/19, PI: Walter Williams, co-PIs: Maria Okuniewski, Alejandro Figueroa (\$50,000)
- 8) Department of Energy, Nuclear Energy, Advanced Test Reactor National Scientific User Facility Rapid Turn-Around Experiment, Microstructural Phase Characterization of Irradiated and Control U-10Zr Fuels, Refereed, Award period: 10/12/17 – 07/12/18, PI: Jonova Thomas, co-PIs: Maria Okuniewski, Jason Harp, Brandon Miller. (\$50,000)
- 9) Nuclear Regulatory Commission, Faculty Development Grant, Award period: 6/30/2017 – 6/29/2020, PI: Klod Kokini, co-PI Tatyana Sizyuk (\$600,000)
- 10) Nuclear Regulatory Commission, Nuclear Science and Engineering Fellowship Program at Purdue University, Refereed, Award period: 08/01/2017 – 07/31/2021, PI: Allen

- Garner, co-PI Jason Harris (\$399,762)
- 11) Department of Energy, Nuclear Energy, Nuclear Energy Enabling Technology Infrastructure Award, X-ray Synchrotron Diffraction Tomography for Materials for Nuclear Energy Systems, Refereed, Award period: 10/1/15 – 9/30/17, PI: Lynne Ecker (\$624,600)
  - 12) Department of Energy, Nuclear Energy, Advanced Test Reactor National Scientific User Facility, *Low Fluence Behavior of Metallic Fuels*, Refereed, Award period: 10/1/09 – current, PI: Yongho Sohn
  - 13) Department of Energy, Basic Energy Sciences, Energy Frontier Research Center, *Center for Materials Science of Nuclear Fuel*, Refereed, Award period: 2009-2014, PI: Dieter Wolf
  - 14) Department of Energy, Nuclear Energy, Advanced Test Reactor National Scientific User Facility, *Irradiation Performance of Fe-Cr Base Alloys*, Refereed, Award period: 10/1/07 – 9/30/14, PI: James F. Stubbins

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**REFERENCES: AVAILABLE UPON REQUEST**