

Lingfeng He

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BIOGRAPHY

Dr. Lingfeng He earned his B.S. in Metallurgical Engineering from Central South University in 2003 and his Ph.D. in Materials Science from the Chinese Academy of Sciences in 2009. After completing his doctoral degree, he held postdoctoral positions at Nagaoka University of Technology, Japan, and the University of Wisconsin-Madison. In 2014, Dr. He joined Idaho National Laboratory (INL) as a staff scientist, where he worked his way up to become a distinguished staff scientist (Level V) and the High-Resolution Materials Characterization (HRMC) group lead in the Advanced Characterization Department.

In August 2022, Dr. He joined NC State as an Associate Professor of Nuclear Engineering. He specializes in studying materials behavior in extreme environments, focusing on the environmental degradation of materials in nuclear power systems. Dr. He investigates how processing and radiation/corrosion environments affect the microstructure, mechanical/thermal properties, and structural integrity/durability of materials and components.

Dr. He has served as the PI/Co-PI for 11 Laboratory Directed Research and Development (LDRD) projects, 2 Energy Frontier Research Centers (EFRCs), 1 Basic Energy Sciences (BES) Core Program, 1 International Nuclear Energy Research Initiative (I-NERI) project, 3 Nuclear Energy University Program (NEUP) projects (2 as the lead PI), 1 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) project, and 49 Nuclear Science User Facility (NSUF) Rapid Turnaround Experiments, in addition to supporting multiple DOE programs at INL. He is the top collaborator at NSUF.

Dr. He has mentored 5 postdoctoral researchers (now 2 tenure-track faculty and 3 staff scientists at INL), 7 graduate students (2 of whom have graduated and become staff scientists at INL), and 7 summer intern students from Michigan, MIT, RPI, Texas A&M, Virginia Tech, and Wisconsin at INL. He has published 141 peer-reviewed journal articles, 22 peer-reviewed conference proceedings, 1 book chapter, and held 5 patents. Dr. He has given over 35 invited/plenary talks at conferences/workshops/university seminars. He is an Associate Editor for Materials Science Section in Heliyon (a Cell Press / Elsevier journal). He is an ad hoc reviewer for 58 journals, including Nature Communications, PNAS, Acta Materialia, Corrosion Science, Journal of Nuclear Materials, and Journal of the American Ceramic Society. He is also an active reviewer for proposals from National Science Foundation, DOE Office of Energy Efficiency and Renewable Energy, AMMTO, Office of Nuclear Energy, NEUP, NSUF, DOE Office of Science, SBIR/STTR, and LDRD at INL. Dr. He was the recipient of the INL Laboratory Director's 2020 Exceptional Scientific Achievement Award.

EDUCATION

PhD in Materials Science with distinction, June 2009

Chinese Academy of Sciences, Beijing, China

"Synthesis, Microstructure, Mechanical, Thermal and Oxidation Properties of Ternary Carbides in Zr-Al-C and Hf-Al-C Systems"

BSc in Metallurgical Engineering with distinction, June 2003

Central South University, Changsha, China

PROFESSIONAL EXPERIENCE

Associate Professor, Department of Nuclear Engineering, NC State University, August 2022 – Present
Leading the Materials In eXtreme (MIX) lab focused on studying materials behavior in extreme environments.

Joint Faculty Appointment, Characterization and Advanced PIE Division, Idaho National Laboratory, January 2024 – Present

Deputy Director, the Center of Thermal Energy Transport under Irradiation (TETI), an Energy Frontier Research Center (EFRC), Idaho National Laboratory, January 2021 – August 2022

HRMC Group Leader, Idaho National Laboratory, September 2017 – August 2022

Distinguished Staff Scientist (Level 5), Idaho National Laboratory, December 2019 – August 2022

Senior Staff Scientist (Level 4), Idaho National Laboratory, September 2016 – December 2019

Staff Scientist (Level 3), Idaho National Laboratory, September 2014 – September 2016

Worked on microstructural characterization of as-fabricated and irradiated nuclear fuels (UO₂, ThO₂, MOX, UN, TRISO, U-Si, U-Mo and U-Zr) and structural materials (ceramics, steels, and nickel-based alloys) using advanced transmission electron microscopy and spatially resolved spectroscopy techniques.

Assistant Scientist, University of Wisconsin-Madison, May 2014 – September 2014

Postdoctoral Research Associate, University of Wisconsin-Madison, May 2011 – May 2014

Worked on radiation damage on UO₂ and corrosion behavior of stainless steels and nickel-based alloys in supercritical CO₂ and supercritical H₂O.

Postdoctoral Research Associate, Nagaoka University of Technology, Nagaoka, Niigata, Japan, July 2009 – April 2011

Worked on synthesis of Y-Ti-O oxide ceramics and Al₂O₃-based nanocomposites and characterization of their microstructure and mechanical properties. Develop a new synthesis method for inorganic nanotubes by using pulsed wire discharge method.

Research Assistant, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, Liaoning, China, September 2003 – May 2009

Worked on synthesis, microstructure, mechanical, thermal and oxidation behavior studies of ternary carbides and associated composites and coatings in Zr-Al-C and Hf-Al-C systems.

TECHNICAL AND RESEARCH EXPERIENCE

1. Microstructural characterization: radiation induced defects, precipitates, grain boundaries, crystal structure, and phase composition characterization down to atomic scale using advanced microscopy and spectroscopy techniques.
2. Material property evaluation: mechanical properties (elastic modulus, internal friction, hardness, strength, fracture toughness), physical properties (coefficient of thermal expansion, thermal conductivity, and electrical conductivity), corrosion/oxidation resistance, and radiation tolerance.
3. Materials synthesis method and fabrication technique development: developed a hydrothermal synthesis method for uranium oxide nanowires and developed a pulsed wire discharge method to synthesize inorganic nanotubes; developed an in situ reactive hot press sintering technique to prepare ternary carbides in Zr-Al-C and Hf-Al-C ceramics and discovered three compounds of Hf-Al-C

and contributed three JCPDS cards (JCPDS No. 59-310 for $\text{Hf}_3\text{Al}_3\text{C}_5$; JCPDS No. 59-311 for $\text{Hf}_3\text{Al}_4\text{C}_6$; JCPDS No. 59-312 $\text{Hf}_2\text{Al}_4\text{C}_5$) to the International Centre for Diffraction Data.

PUBLICATIONS

Peer-Reviewed Journal Papers (141 total; *Corresponding authors)

1. C.H. Hung, J. Ferrigno, R.O. Gentile, M. Khafizov, **L. He***, Evolution of extended defects in UO₂ during high temperature annealing, *J. Nucl. Mater.* 593 (2024) 154997.
2. J. Yang, L. Hawkins, Z. Shang, E.A. McDermott, B.K. Tsai, **L. He**, Y. Lu, M. Song, H. Wang, X. Lou*, Dislocation channel broadening – a new mechanism to improve irradiation-assisted stress corrosion cracking resistance of additively manufactured 316L stainless steel, *Acta Mater.* 266 (2024) 119650.
3. X. Chen, F. Wang, X. Zhang, S. Hu, S. Humphry-Baker, M. Gao, **L. He**, Y. Lu, B. Cui*, Novel refractory high-entropy metal-ceramic composites with superior mechanical properties, *Inter. J. Refract. Metals & Hard Mater.* 119 (2024) 106524.
4. H. Ma, Z. Hua, A. Sen, T. Yao, M.S. Bryan, A. Alatas, E.K. Nosal, S. Adnan, E. Xiao, A. French, M. Bachhav, C.A. Marianetti, M. Khafizov, L. Shao, **L. He**, J. Wharry, D.H. Hurley, M.E. Manley*, Impacts of irradiation-induced nanostructure on phonon linewidths and thermal conductivity in U-Zr alloy, *Phy. Rev. B* 108 (2023) 104318.
5. B. Miller, M. Bachhav*, B. Kombaiah, C. Smith, A. Aitkaliyeva, **L. He**, D. Keiser, J. Madden, A. Robinson, J. Gan, Evidence of X-incorporation in the bubble superlattice in irradiated U-Mo fuel, *J. Nucl. Mater.* 587 (2023) 154743.
6. L. Hawkins*, J. Yang, M. Song, D. Schwen, Y. Zhang, L. Shao, X. Lou, **L. He***, The effect of secondary phases on microstructure and irradiation damage in an as-built additively manufactured 316 L stainless steel with a hafnium compositional gradient, *J. Nucl. Mater.* 587 (2023) 154708.
7. H.J. Qu, M. Higgins, H. Abouelella, F. Cappia, J. Burns, **L. He**, C. Massey, J. Harp, K.G. Field, R. Howard, R.V. Umretiya, A.K. Hoffman*, J.P. Wharry, R.B. Rebak, *J. Nucl. Mater.* 587 (2023) 154717.
8. S.K. Mazumder, K. Bawane*, J.M. Mann, A. French, L. Shao, **L. He**, and A. El-Azab*, Evolution of dislocation loops and voids in post-irradiation annealed ThO₂: A combined in-situ TEM and cluster dynamics investigation, *J. Nucl. Mater.* 586 (2023) 154686.
9. J. Thomas, X. Liu, **L. He**, D. Murray, F. Teng, B. Kombaiah, A. Winston, M.A. Okuniewski*, Transmission Electron Microscopy Investigation of Phase Transformation and Fuel Constituent Redistribution in Neutron Irradiated U-10wt.% Zr Fuel, *J. Nucl. Mater.* 581 (2023) 154443.
10. X. Liu, K. Bawane, X. Zheng, M. Ge, P. Halstenberg, D.S. Maltseve, A.S. Ivanov, S. Dai, X. Xiao, W.-K. Lee, **L. He**, Y.K. Chen-Wiegart*, Temperature-Dependent Morphological Evolution during Corrosion of the Ni-20Cr Alloy in Molten Salt Revealed by Multiscale Imaging, *ACS App. Mater. Inter.* 15 (2023) 13772-13782.
11. M. Song*, J. Yang, L. Hawkins, **L. He**, Y. Zhang, Z. Jiao, D. Schwen, X. Lou*, Void swelling in additively manufactured 316L stainless steel with Hafnium composition gradient under self-ion irradiation, *J. Nucl. Mater.* 578 (2023) 154351.
12. J. Yang, L. Hawkins, **L. He**, S. Mahmood, M. Song, K. Schulze, X. Lou*, Intragranular Irradiation-Assisted Stress Corrosion Cracking (IASCC) of 316L Stainless Steel Made by Laser Direct Energy Deposition Additive Manufacturing: Delta Ferrite-Dislocation Channel Interaction, *J. Nucl. Mater.* 577 (2023) 154305.

13. Z. Yu*, M. Bachhav, F. Teng, **L. He**, M. Dubey, A. Couet, STEM/EDS and APT Study on the Microstructure and Microchemistry of Neutron Irradiated ZIRLOTM, *J. Nucl. Mater.* 573 (2023) 154139.
14. T.M. Copeland-Johnson*, D. Murray, G. Cao*, **L. He**, Assessing the Interfacial Corrosion Mechanism of Inconel 617 in Chloride Molten Salt Corrosion Using Multi-modal Advanced Characterization Techniques, *Front. Nucl. Eng.* 1 (2022) 1049693.
15. W.R. Deskins, A. Khanolkar*, S. Mazumder, C.A. Dennett, K. Bawane, Z. Hua, J. Ferrigno, **L. He**, J.M. Mann, M. Khafizov, D.H. Hurley, A. El-Azab*, A combined theoretical-experimental investigation of thermal transport in low-dose irradiated thorium dioxide, *Acta Mater.* 241 (2022) 118379.
16. J. Sure, S.K. Gill*, Y. Wang, K.K. Bawane, **L. He**, P. Halstenberg, S. Dai, S.M. Mahurin, J. F. Wishart, K. Sasaki*: Electrochemical Noise Studies on Localized Corrosion of Ni and Ni-20Cr in Molten ZnCl₂, *Electrochim. Acta* (2022) 141126.
17. V.S. Chauhan, J. Ferrigno, S. Adnan, J. Pakarinen, **L. He**, D. Hurley, M. Khafizov*: Comprehensive Characterization of Irradiation Induced Defects in Ceria: Impact of Point Defects on Vibrational and Optical Properties, *J. Appl. Phys.* 132 (2022) 085105.
18. M. Pena, A. Morell-Pacheco, C.-H. Shiao, B. Kombaiah, **L. He**, L. Hawkins, A. Gabriel, F.A. Garner, L. Shao: Microstructural Changes of Proton Irradiated Hastelloy-N and In Situ Micropillar Compression Testing of One Single Domain at Different Local Damage Levels, *J. Nucl. Mater.* 570 (2022) 153939.
19. Y. Wang, X. Liu, D.J. Murray, F. Teng, W. Jiang, M. Bachhav, L. Hawkins, E. Perez, C. Sun, J. Lian, C. Judge, J. H. Jackson, R. G. Carter, **L. He***: The Measurement of Grain Boundary Strength of Inconel X-750 Alloy Using Micro-Tensile Testing Techniques in SEM/FIB System, *Mater. Sci. Eng. A* 849 (2022) 143475.
20. C. Parkin, M. Moorehead, M. Elbakhshwan, N. Anderson, X. Zhang, P. Xiu, **L. He**, M. Bachhav, K. Sridharan, A. Couet, Phase Stability, Mechanical Properties, and Ion Irradiation Effects in Face-Centered Cubic FeCrMnNi Compositionally Complex Solid-Solution Alloys at High Temperatures, *J. Nucl. Mater.* 565 (2022) 153733.
21. S.D. Herrmann*, H. Zhao, K. Bawane, **L. He**, K.R. Tolman, X. Pu: Synthesis and Characterization of Uranium Trichloride in Alkali-Metal Chloride Media, *J. Nucl. Mater.* 565 (2022) 153728.
22. **L. He***, T. Yao, K. Bawane, M. Jin, C. Jiang, X. Liu, W.-Y. Chen, J.M. Mann, D. Hurley, J. Gan, M. Khafizov*: Dislocation Loop Evolution in Kr-irradiated ThO₂, *J. Am. Ceram. Soc.* 105 (2022) 5419-5435.
23. *C. Jiang, **L. He**, C.A. Dennett, J.M. Mann, M. Khafizov, D.H. Hurley, Unraveling Small-scale Defects in Irradiated ThO₂ Using Kinetic Monte Carlo Simulations, *Scripta Mater.* 214 (2022) 114684.
24. A. Gabriel, L. Hawkins, A. French, Y. Li, Z. Hu, **L. He**, P. Xiu, M. Nastasi, F.A. Garner, L. Shao*: Effects of DPA Rate on the Temperature Regime of Voids Swelling in Ion-Irradiated Pure Chromium, *J. Nucl. Mater.* 561 (2022) 153519.
25. J. Yang, L. Hawkins, M. Song, **L. He**, M. Bachhav, Q. Pan, L. Shao, D. Schwen, X. Lou*: Compositionally graded specimen by laser additive manufacturing as a high-throughput method for studying radiation damages and irradiation-assisted stress corrosion cracking, *J. Nucl. Mater.* 560 (2022) 153493.
26. J. Yang, X. Liu, M. Song, **L. He**, S. Bankson, M. Hamilton, B. Prorok, X. Lou*: Sensitization, Desensitization, and Carbide Evolution of Alloy 800H Made by Laser Powder Bed Fusion, *Add. Manu.* 50 (2022) 102547.

27. D.H. Hurley*, A. El-Azab, M.W.D. Cooper, C.A. Dennett, K. Gofryk, **L. He**, M. Khafizov, G.H. Lander, M.E. Manley, J.M. Mann, C. Marianetti, F.A. Selim, M.R. Tonks, J.P. Wharry: Thermal Energy Transport in Oxide Nuclear Fuel, *Chem. Rev.* 122 (2022) 3711-3762.
28. A. Ditter, D. Smiles, D. Lussier, A. Altman, M. Bachhav, **L. He**, C. Degueldre, S.G. Minasian, D.K. Shuh*: Chemical and Elemental Mapping of Spent Nuclear Fuel Sections by Soft X-ray Spectromicroscopy, *J. Synch. Rad.* 29 (2022) 67-79.
29. K. Bawane*, X. Liu, R. Gakhar, M. Woods, M. Ge, X. Xiao, W.-K. Lee, P. Halstenberg, S. Dai, S. Mahurin, S.M. Pimblott, J.F. Wishart, Y.K. Chen-Wiegart, **L. He***: Visualizing Time-Dependent Microstructural and Chemical Evolution during Molten Salt Corrosion of Ni-20Cr Model Alloy using Correlative Quasi In Situ TEM and In Situ Synchrotron X-ray Nano-tomography, *Corro. Sci.* 195 (2022) 109962.
30. Y. Sun, T. Wu, Y. Bao*, Y. Li, D. Wan, K. Li, **L. He**: Preparation and Strengthening Mechanism of Pre-Stressed Ceramic Tile Components, *Int. J. Appl. Ceram. Tech.* 19 (2022) 604-611.
31. J. Pakarinen*, **L. He**, J. Gan, A.T. Nelson, A. El-Azab, M. Khafizov, T.R. Allen: Proton Irradiation - Induced Blistering in UO₂, *MRS Adv.* 6 (2021) 1032-1036.
32. H. Yan*, X. Liu, **L. He**, J. Stubbins: Phase Stability and Microstructural Evolution in Neutron-Irradiated Ferritic-Martensitic Steel HT9, *J. Nucl. Mater.* (2021) 153252.
33. P. Xiu*, M. Jin, K. Bawane, B. Tyburska-Püschel, B.J. Jaques, K.G. Field, J.J. Giglio, **L. He***: Dislocation Loops in Proton Irradiated Uranium-Nitrogen-Oxygen System. *J. Nucl. Mater.* 557 (2021) 153244.
34. H. Yan*, X. Liu, **L. He**, J. Stubbins: Early-Stage Microstructural Evolution and Phase Stability in Neutron-Irradiated Ferritic-Martensitic T91, *J. Nucl. Mater.* 557 (2021) 153207.
35. X. Liu, M.N. Cinbiz*, B. Kombaiah, **L. He**, F. Teng, E. Lacroix: Structure of the Pellet-Cladding Interaction Layer of a High-Burnup Zr-Nb-O Nuclear Fuel Cladding, *J. Nucl. Mater.* 556 (2021) 153196.
36. J. Yang, M. Song, L.R. Lawkins, X. Liu, **L. He**, X. Lou*: Effects of Heat Treatment on Corrosion Fatigue and Stress Corrosion Crack Growth of Additively Manufactured Alloy 800H in High-temperature Water, *Corr. Sci.* 191 (2021) 109739.
37. Z. Yu*, M. Bachhav, F. Teng, **L. He**, A. Couet: Nanoscale redistribution of alloying elements in high-burnup AXIOM-2 (X2[®]) and their effects on in-reactor corrosion, *Corr. Sci.* 190 (2021) 109652.
38. C.A. Dennett*, W.R. Deskins, M. Khafizov, Z. Hua, A. Khanolkar, K. Bawane, L. Fu, J.M. Mann, C.A. Marianetti, **L. He**, D.H. Hurley, A. El-Azab*: An Integrated Experimental and Computational Investigation of Defect and Microstructural Effects on Thermal Transport in Thorium Dioxide, *Acta Mater.* 213 (2021) 116934.
39. A. Khanolkar*, T. Yao, Z. Hua, C.A. Dennett, S.J. Reese, R.S. Schley, **L. He**, J.R. Kennedy, D.H. Hurley: In-situ Monitoring of Microstructure Evolution during Thermal Processing of Uranium-Zirconium Alloys using Laser-Generated Ultrasound, *J. Nucl. Mater.* 553 (2021) 153005.
40. K. Bawane*, X. Liu, T. Yao, M. Khafizov, A. French, J.M. Mann, L. Shao, J. Gan, D. Hurley, **L. He***: TEM Characterization of Dislocation Loops in Proton Irradiated Single Crystal ThO₂, *J. Nucl. Mater.* 552 (2021) 152998.
41. Z. Xiao, **L. He**, and X.-M. Bai*: First Principles Studies of Effects of Solute Segregation on Grain Boundary Strength in Ni-Based Alloys, *J. Alloys Compd.* 874 (2021) 159795.
42. T. Yao, A. Sen, A. Wagner, F. Teng, M. Bachhav, A. El-Azab, D. Murray, J. Gan, D.H. Hurley, J.P. Wharry*, M.T. Benson*, and **L. He***: Understanding Spinodal and Binodal Phase Transformations in U-50Zr Alloy, *Materialia*, 16 (2021) 101092.

43. R. Yuan, J. Zhang, **L. He**, J.-M. Zuo*: Training Artificial Neural Networks for Precision Orientation and Strain Mapping using 4D Electron Diffraction Datasets, *Ultramicroscopy*, 231 (2021) 113256.
44. F.G. Di Lemma*, C.B. Jensen, J.J. Kane, W.-Y. Chen, X. Liu, L. Carpiotti, C.A. Adkins, B. Kombariah, A.J. Winston, **L. He**, and D. Wachs, Metallic Fast Reactor Separate Effect Studies for Fuel Safety, *J. Nucl. Eng. Rad. Sci.* 7 (2021) 041602.
45. **L. He***, M. Khafizov, C. Jiang, B. Tyburska-Püschel, B. Jaques, P. Xiu, P. Xu, M. Meyer, K. Sridharan, D. Butt, and J. Gan: Phase and Defect Evolution in Uranium-Nitrogen-Oxygen System under Irradiation, *Acta Mater.* 208 (2021) 116778.
46. K. Bawane*, P. Manganaris, Y. Wang, J. Sure, A. Ronne, P. Halstenberg, S. Dai, S. K. Gill, K. Sasaki, Y. K. Chen-Wiegart, R. Gakhar, S. Mahurin, S. M. Pimblott, J. F. Wishart, **L. He***: Determining Oxidation States of Transition Metals in Molten Salt Corrosion using Electron Energy Loss Spectroscopy, *Scripta Mater.*, 197 (2021) 113790.
47. V.S. Chauhan, J. Pakarinen, T. Yao, **L. He**, D. Hurley, M. Khafizov*: Indirect Characterization of Point Defects in Proton Irradiated Ceria, *Materialia* 5 (2021) 101019.
48. S. K. Gill*, J. Sure, Y. Wang, B. Lane, **L. He***, S. Mahurind, J. F. Wishart, K. Sasaki*: Investigating Corrosion Behavior of Ni and Ni-20Cr in Molten ZnCl₂ Salt, *Corro. Sci.* 179 (2021) 109105.
49. X. Liu*, L. Capriotti*, T. Yao, J.M. Harp, M.T. Benson, Y. Wang, and **L. He**: Fuel-Cladding Chemical Interaction of a Prototype Annular U-10wt.%Zr Fuel with HT-9 Cladding, *J. Nucl. Mater.* 544 (2021) 152588.
50. C.A. Dennett*, Z. Hua, A. Khanolkar, T. Yao, P.K. Morgan, T.A. Prusnick, N. Poudel, A. French, K. Gofryk, **L. He**, L. Shao, M. Khafizov, J.M. Mann, D.H. Hurley: The Influence of Lattice Defects, Recombination, and Clustering on Thermal Transport in Single Crystal Thorium Dioxide, *APL Mater.* 8 (2020) 111103.
51. T. Yao, L. Capriotti, X. Liu, Y. Wang, J. Harp, J. Gan, M. Benson*, **L. He***: α -U and ω -UZr₂ in Neutron Irradiated U-10Zr Annular Metallic Fuel, *J. Nucl. Mater.* 542 (2020) 152536.
52. C. Parkin*, M. Moorehead, M. Elbakhshwan, W.-Y. Chen, J. Hu, M. Li, **L. He**, K. Sridharan, A. Couet: In Situ Microstructural Evolution in FCC and BCC Complex Concentrated Solid-Solution Alloys under Heavy Ion Irradiation, *Acta Mater.* 198 (2020) 85-99.
53. S.K. Gill*, M. Topsakal, E. Jossou, X. Huang, K. Hattar, J. Mausz, M. Elbakhshwan, H. Yan, Y.S. Chu, C. Sun, **L. He**, J. Gan, L. Ecker: Impact of Krypton Irradiation on a Single Crystal Tungsten: Multi-modal X-ray Imaging Study, *Scr. Mater.* 188 (2020) 296-301.
54. A. Hoffman*, M. Arivu, H. Wen*, L. He, K. Sridharan, X. Wang, W. Xiong, X. Liu, **L. He**, Y. Wu: Enhancing Resistance to Irradiation Induced Ferritic Transformation in Nanostructured Austenitic Steels, *Materialia*, 13 (2020) 100806.
55. Z. Yu*, T. Kim, M. Bachhav, X. Liu, **L. He**, A. Couet: Effect of Proton Pre-irradiation on Corrosion of Zr-0.5Nb Model Alloy with Different Nb Distribution, *Corr. Sci.* 173 (2020) 108790.
56. T. Chen*, **L. He**, M. Cullison, C. Hay, J. Burns, Y. Wu, L. Tan*: The Correlation between Microstructure and Nanoindentation Property of Neutron-Irradiated Advanced Stainless Steel D9, *Acta Mater.* 195 (2020) 1-13.
57. S. Johns, **L. He**, K. Bustillo, W.E. Windes, R. Uvic, C. Karthik*: Fullerenes-Like Defects in High-Temperature Neutron-Irradiated Nuclear Graphite, *Carbon*, 166 (2020) 113-122.
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60. M. Khafizov*, M. F. Riyad, Y. Wang, J. Pakarinen, **L. He**, T. Yao, A. El-Azab, D. Hurley: Combining Mesoscale Thermal Transport and X-ray Diffraction Measurements to Characterize Early-stage Evolution of Irradiation-Induced Defects in Ceramics, *Acta Mater.* 193 (2020) 61-70.
61. Z. Hua*, T. Yao, A. Khanolkar, X. Ding, K. Gofryk, **L. He**, M. Benson, D. Hurley: Intragranular thermal transport in U50Zr, *J. Nucl. Mater.* 534 (2020) 152145.
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63. S. Johns, **L. He**, J.J. Kane, W.E. Windes, R. Uvic, C. Karthik*: Experimental Evidence for "Buckle, Ruckle and Tuck" in Neutron Irradiated Graphite, *Carbon*, 159 (2020) 119-121.
64. A. Cheniour, M. Tonks*, B. Gong, T. Yao, **L. He**, J. Harp, J. Lian, B. Beeler, Y. Zhang: Development of A Grain Growth Model for U₃Si₂ using Experimental Data, Phase Field Simulation and Molecular Dynamics, *J. Nucl. Mater.*, 532 (2020) 152069.
65. T. Yao, A. Wagner, X. Liu, A. El-Azab, J. Harp, J. Gan, D. Hurley, M. Benson*, **L. He***: On Spinodal-like Phase Decomposition in U-50Zr Alloy, *Materialia* 9 (2020) 100592.
66. F. Cappia*, B.D. Miller, **L. He**, D.J. Murray, B.J. Frickey, J.D. Stanek, J. Harp: Electron Microscopy Characterization of Fast Reactor MOX Joint Oxyde-Gaine (JOG), *J. Nucl. Mater.* 531 (2020) 151964.
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68. Y. Bao*, F. Kuang, Y. Sun, Y. Li, D. Wan, Z. Shen, D. Ma, **L. He**: A Simple Way to Make Pre-Stressed Ceramics with High Strength, *J. Materiomics*, 5 (2019) 657-662.
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Contributions to ICDD Powder Diffraction Files

1. JCPDS No. 59-310 Hf₃Al₃C₅. International Centre of Diffraction Data. Newton Square, PA, 2009.
2. JCPDS No. 59-311 Hf₃Al₄C₆. International Centre of Diffraction Data. Newton Square, PA, 2009.
3. JCPDS No. 59-312 Hf₂Al₄C₅. International Centre of Diffraction Data. Newton Square, PA, 2009.

PRESENTATIONS (221 Total, 69 Invited/Plenary; *Speaker)

1. ***L. He**, Advanced Characterization of Irradiated Nuclear Fuels, Seminar at Chemistry Department, Washington State University, April 22, 2024, Pullman, WA (**Invited**).
2. ***L. He**, Y. Lu, C.B. Howard, L. Malakkal, C. Jiang, S. Biswas, D. Yushu, J. Burns, W.-Y. Chen, Nanoprecipitates and Nanostructures in Spent UO₂ Fuels, 2024 MRS Spring Meeting & Exhibit, April 22-26, 2024, Seattle, WA (**Invited**).
3. ***L. He**, Electron Microscopy Characterization of Molten Salt Corrosion in Metals, TMS 2024 Annual Meeting & Exhibition, March 3-7, 2024, Orlando, FL (**Invited**).
4. *R. Gentile, M. Woods, L. Hawkins, R. Gakhar, T. Copeland-Johnson, D. Murray, Z. Hu, L. Shao, **L. He**, Corrosion Behavior of Pre- and Post-irradiated Metals in Molten Chloride Salts, TMS 2024 Annual Meeting & Exhibition, March 3-7, 2024, Orlando, FL (Oral).
5. *L. Hawkins, J. Yang, Z. Hu, M. Woods, R. Gakhar, L. Shao, X. Lou, D. Murray, **L. He**, Molten Salt Corrosion of Proton Irradiated Additively Manufactured 316L Stainless Steel Doped with Hafnium, TMS 2024 Annual Meeting & Exhibition, March 3-7, 2024, Orlando, FL (Oral).
6. *B. Cui, X. Chen, F. Wang, X. Zhang, S. Hu, X. Liu, S. Humphry-Baker, M. Gao, **L. He**, Y. Lu, Novel Refractory High-Entropy Metal-ceramic Composites with Superior Mechanical Properties, TMS 2024 Annual Meeting & Exhibition, March 3-7, 2024, Orlando, FL (Oral).
7. *Y. Xie, M. Benson, C. Jiang, J. Harp, **L. He**, J. Zhang, R. Mariani, Mitigating Lanthanide-Induced Fuel-Cladding Chemical Interaction In U-Zr Based Fuels, TMS 2024 Annual Meeting & Exhibition, March 3-7, 2024, Orlando, FL (Oral).
8. *Y. Lu, C. Howard, W.-Y. Chen, S. Biswas, C. Jiang, D. Yushu, J. Burns, **L. He**, In Situ Ion Irradiation of a Spent UO₂ Fuel, TMS 2024 Annual Meeting & Exhibition, March 3-7, 2024, Orlando, FL (Oral).
9. *B. Cui, F. Wang, L. Trinh, L. Wadle, K. Bawane, Z. Hua, L. Malakkal, **L. He**, C. Dennett, F. Monteverde, Will "High Entropy" Carbides be Enabling Materials for Extreme Environments, TMS 2024 Annual Meeting & Exhibition, March 3-7, 2024, Orlando, FL (**Invited**).
10. *S. Biswas, **L. He**, D. Yushu, P. Veerappan, L. Malakkal, C. Howard, C. Jiang, High-burnup Structure Formation and Associated Fission Product Diffusion in UO₂, TMS 2024 Annual Meeting & Exhibition, March 3-7, 2024, Orlando, FL (Oral).
11. ***L. He**, Advanced Characterization of Materials Corrosion in Molten Salt Environments, Nuclear Engineering Seminar at Mechanical Engineering Department, Virginia Tech, October 13, 2023, Blacksburg, VA (**Invited**).
12. ***L. He**, Y. Lu, C.B. Howard, C. Jiang, S. Biswas, D. Yushu, J. Burns, W.-Y. Chen, In Situ Characterization and Modeling of Spent UO₂ Fuel under Ion Irradiation, Materials Science & Technology 2023, October 1-4, Columbus, OH (**Invited**).
13. ***L. He**, Multimodal Characterization of Materials Corrosion in Molten Salts, Materials Science & Technology 2023, October 1-4, Columbus, OH (**Invited**).
14. ***L. He**, X. Pu, E. Hershkovitz, T. Yoo, H. Kim, K. Bawane, F. Di Lemma, T. Nakayama, H. Suematsu, K. Niihara, Microstructure and Mechanical Properties of Ceramics in Yi-Ti-O System, Materials Science & Technology 2023, October 1-4, Columbus, OH.

15. *L. Hawkins, J. Yang, M. Woods, R. Gakhar, L. Shao, X. Lou, D. Murray, **L. He**, Corrosion Behavior of Compositionally Gradient Additively Manufactured 316L Stainless Steel Doped with Hafnium in Eutectic NaCl-MgCl₂ Molten Salt at 700 °C. *Materials Science & Technology 2023*, October 1-4, Columbus, OH.
16. *K. Bawane, L. Trinh, F. Teng, Z. Hua, L. Malakkal, S. Ruitz, F. Wang, B. Cui, **L. He**, Investigating the Effects of Irradiation on Microstructure, Micromechanical and Thermal Properties of High Entropy Carbide Ceramics, *Materials Science & Technology 2023*, October 1-4, Columbus, OH (**Invited**).
17. *B. Cui, F. Wang, L. Trinh, L. Wadle, Y. Lu, K. Bawane, Z. Hua, L. Malakkal, **L. He**, C. Dennett, F. Monteverde, Will High-Entropy Carbides Be Enabling Materials for Extreme Environments? *Materials Science & Technology 2023*, October 1-4, Columbus, OH (**Invited**).
18. *M. Khafizov, S. Adnan, E. Nosal, M. Jin, L. Malakkal, A. Khanolkar, S. Zhou, Z. Hua, K. Bawane, B. Kombaiah, C. Jiang, **L. He**, M. Manley, D. Hurley, Atomistic Understanding of Thermal Conductivity Degradation in Irradiated Oxide Fuels, *Materials Science & Technology 2023*, October 1-4, Columbus, OH (**Invited**).
19. *K. Bawane, **L. He**, B. Kombaiah, J.M. Mann, L. Shao, M. Khafizov, D.H. Hurley, In-Situ Transmission Electron Microscopy Study of the Evolution of Extended Defects in Oxide Nuclear Fuels, *Microscopy and Microanalysis 2023*, July 23 – July 27, 2023, Minneapolis, MN (**Invited**).
20. *T. Yoo, E. Hershkovitz, X. Pu, **L. He**, H. Kim, Conjoining Simple Supervised and Unsupervised Machine Learning Methods with 4D-STEM to Identify Complex Nanostructures, *Microscopy and Microanalysis 2023*, July 23 – July 27, 2023, Minneapolis, MN.
21. ***L. He**, K. Bawane, X. Liu, T. Teng, W. Zhou, L. Hawkins, T. Copeland-Jonson, Y. Wang, M. Woods, R. Gakhar, D. Murray, P. Halstenberg, K. Chen-Wiegart, S. Mahurin, S. Dai, M. Short, L. Shao, S. Pimblott, J. Wishart, Molten Salt Corrosion of Ni-20Cr Model Alloy, *TMS 2023 Annual Meeting & Exhibition*, February 19-March 23, 2023, San Diego, CA (**Invited**).
22. * **L. He**, M. Bachhav, C. Jiang, Advanced Characterization and Modeling of Nanoprecipitates in Spent Nuclear Fuel, *TMS 2023 Annual Meeting & Exhibition*, February 19-March 23, 2023, San Diego, CA (Oral).
23. *M. Khafizov, J. Ferrigno, E. Nosal, S. Adnan, K. Bawane, A. Khanolkar, M. Jin, L. Malakkal, C. Jiang, **L. He**, D. Hurley, Comprehensive Characterization of Damage in Ion Irradiated Ceramics for Validation of Atomistic Models, *TMS 2023 Annual Meeting & Exhibition*, February 19-March 23, 2023, San Diego, CA (**Invited**).
24. *T. Copeland-Johnson, X. Quintana, M. Woods, R. Gakhar, D. Murray, G. Cao, **L. He**, Elucidating the Corrosion Mechanism of Commercial Ni-based Superalloys in UCl₃ Containing-chloride Molten Salt Systems, *TMS 2023 Annual Meeting & Exhibition*, February 19-March 23, 2023, San Diego, CA (**Invited**).
25. *M. Jin, H. Arkoub, **L. He**, C. Jiang, M. Khafizov, D. Hurley, Atomistic Investigation of Radiation-induced Defects in ThO₂, *TMS 2023 Annual Meeting & Exhibition*, February 19-March 23, 2023, San Diego, CA (**Invited**).
26. *C. Jiang, **L. He**, C. Dennett, M. Khafizov, J. Mann, D. Hurley, Hidden Defect Evolution Mechanism in ThO₂ Revealed by Atomistic Modeling, *TMS 2023 Annual Meeting & Exhibition*, February 19-March 23, 2023, San Diego, CA (**Invited**).
27. *K. Quillin, H. Yeom, T. Dabney, E. Willing, D. Frazer, **L. He**, L. Jamison, K. Sridharan, Microstructure and Mechanical Behavior of Cr Coatings for Mitigating Hydrothermal Corrosion of SiC-SiCf Fuel Cladding, *TMS 2023 Annual Meeting & Exhibition*, February 19-March 23, 2023, San Diego, CA (Oral).

28. *S. Vijayan, K. Bawane, **L. He**, F. Di Lemma, J. Jinschek, Observations of 'Far from Equilibrium' Phenomena under in Reactor Thermal Conditions Using In Situ TEM, TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA (Oral).
29. *J. Yang, L. Hawkins, **L. He**, M. Song, Y. Lu, G. Was, X. Lou, The Origin of Superior IASCC Resistance of Additively Manufactured 316L Stainless Steel after Hot Isostatic Pressing in Oxygenated BWR Water, TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA (Oral).
30. *J. Ferrigno, C-Y. Hung, **L. He**, M. Khafizov, Extended Defect Coalescence in Kr Irradiated UO₂ During High Temperature Annealing, TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA (Oral).
31. L. Hawkins, J. Yang, M. Woods, T. Copeland-Johnson, R. Gakhar, L. Shao, X. Lou, D. Murray, ***L. He**, Corrosion Behavior of Compositionally Gradient Additively Manufactured 316L Stainless Steel Doped with Hafnium in Eutectic NaCl-MgCl₂ Molten Salt at 700 °C, TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA (Oral).
32. *J. Rittenhouse, M. Luebke, M. Cinbiz, **L. He**, H. Wen, Irradiation and Corrosion Behavior of Nanostructured Grade 91 and FeCrAl Alloys for Nuclear Applications, TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA (Oral).
33. *T. Yao, M. Bachhav, F. Xu, L. Capriotti, M. Benson, **L. He**, The Fabrication, Advanced Characterization, Advanced Test Reactor Irradiation, Post Irradiation Examination, and Materials Informatics for Annular U-10Zr Metallic Fuel, TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA (Oral).
34. *B. Cui, F. Wang, L. Trinh, X. Yan, Y. Lu, K. Bawane, Z. Hua, L. Malakkal, **L. He**, C. Dennett, High-entropy Carbide Ceramics: New Materials for Extreme Environments in Nuclear Energy Applications, TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA (**Invited**).
35. *K. Bawane, Z. Hua, L. Malakkal, F. Teng, J. Hachtel, L. Trinh, S. Ruiz, F. Wang, Y. Lu, B. Cui, **L. He**, Microstructural, Mechanical and Thermal Characterization of High Entropy Carbide Ceramics, TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA (Oral).
36. *T. Copeland-Johnson, X. Quintana, M. Woods, R. Gakhar, D. Murray, G. Cao, **L. He**, Elucidating the Role of UCl₃ in the Corrosion Mechanism of Ni-based Superalloys Exposed to Chloride Molten Salts, TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA (**Invited**).
37. ***L. He**, Radiation Effects in Ceramic Nuclear Fuels, Seminar at Department of Materials Science & Engineering, University of Florida, December 1st, 2022, Gainesville, FL (**Invited**).
38. Y. Peng, P. Halstenberg, K. Bawane, **L. He**, S. Gill, S. Dai, J.F. Wishart, K. Sasaki, Electrochemical Corrosion Study on Nickel and Chromium with Different Surface Orientations in Molten MgCl₂-KCl, 242nd ECS Meeting, Oct. 9-13, Atlanta, GA (Oral).
39. X. Liu, K. Bawane, Y. Liu, M. Ge, X. Zheng, A. Ronne, A. Plonka, C. Clark, D. Olds, E. Stavitski, D. Leshchev, J. Bai, L.-C. Yu, C.-H. Lin, B. Layne, P. Halstenberg, M. Woods, R. Gakhar, D.S. Maltsev, A. Ivanov, S. Antonelli, S. Dai, W.-K. Lee, S. Mahurin, J.F. Wishart, X. Xiao, A.I. Frenkel, **L. He**, Y.K. Chen-Wiegart, Revealing 3D Morphological Evolution and Reaction Kinetics of Metals and Alloys in Molten Salts Via Synchrotron X-Ray Nano-Tomography and Multimodal Studies, 242nd ECS Meeting, Oct. 9-13, Atlanta, GA (Oral).
40. ***L. He**, K. Bawane, P. Xiu, T. Yao, C. Jiang, M. Khafizov, M. Jin, Y. Xie, L. Shao, Microstructural Evolution in Ceramic Nuclear Fuels and Their Surrogates under Irradiation, Materials Science & Technology 2022, October 9-12, Pittsburgh, PA (**Invited**).

41. *L. Malakkal, K. Bawane, C. Dennett, Z. Hua, L. He, Y. Lu, B. Cui, Phonon Broadening and Thermal Conductivity in High Entropy Ceramic Carbide, Materials Science & Technology 2022, October 9-12, Pittsburgh, PA (Oral).
42. *K. Bawane, R. Gakhar, M. Woods, P. Manganaris, Y. Wang, J. Sure, A. Ronne, P. Halstenberg, S. Gill, K. Sasaki, Y. K. Chen-Wiegart, S. Dai, S. Mahurin, S. Pimblott, J. Wishart, **L. He**, Elucidating Interfacial Phenomena in Molten Salt Corroded Nickel-Chromium Alloys using Analytical Transmission Electron Microscopy, Materials Science & Technology 2022, October 9-12, Pittsburgh, PA (**Invited**).
43. *S.B. Kadambi, D. Schwen, Y. Zhang, **L. He**, Phase-field Modeling of Radiation Induced Segregation for Multicomponent Alloys: Kinetic Monte Carlo and CALPHAD-Informed Simulations, Materials Science & Technology 2022, October 9-12, Pittsburgh, PA (Oral).
44. L. Hawkins, J. Yang, M. Song, D. Schwen, Y. Zhang, L. Shao, X. Lou, ***L. He**, Microstructural Evolution of High-throughput Additively Manufactured 316L Stainless Steel with Increasing Hafnium Dopants, Materials Science & Technology 2022, October 9-12, Pittsburgh, PA (Oral).
45. T. Yao, K. Bawane, S. Vijayan, A. Khanolkar, F.G. Di Lemma, ***L. He**, In Situ Microstructural Characterization of Metallic Nuclear Fuels, Materials Science & Technology 2022, October 9-12, Pittsburgh, PA (**Invited**).
46. **L. He**, Laura Hawkins, Jingfan Yang, Miao Song, Yongfeng Zhang, Xiaoyuan Lou, Lin Shao, Daniel Schwen, Radiation Effects in Additively Manufactured 316L Stainless Steel and its Modified Variants, OECD Nuclear Energy Agency International Workshop on Structural Materials for Innovative Nuclear Systems, September 12-15, 2022, Idaho Falls, ID (Oral)
47. *S. Vijayan, K. Bawane, F.G. Dilemma, **L. He**, C. Fink, J.R. Jinschek, In Situ TEM Observations of Thermally Activated Phenomena in Materials under Far-From-Equilibrium Conditions, Microscopy and Microanalysis 2022, July 31 - August 4, 2022, Portland, OR (Oral).
48. K.G. Field, P. Patki, N. Sharaf, K. Sun, L. Hawkins, M. Lynch, R. Jacobs, D.D. Morgan, **L. He**, C.R. Field, Real-time, On-Microscope Automated Quantification of Features in Microcopy Experiments Using Machine Learning and Edge Computing, Microscopy and Microanalysis 2022, July 31 - August 4, 2022, Portland, OR (**Invited**).
49. ***L. He**, T. Yao, K. Bawane, M. Khafizov, M. Jin, C. Jiang, W-Y. Chen, J. Gan, In Situ Microstructural Evolution in Actinide Oxides under Irradiation, the 6th International Workshop on TEM with In Situ Irradiation, July 27-29, 2022, Ann Arbor, MI (**Invited**).
50. *T. Yao, L. He, C. Jiang, W-Y. Chen, J. Gan, In Situ Microstructural and Phase Evolution in U-50Zr Alloy under Irradiation, July 27-29, 2022, Ann Arbor, MI (**Invited**).
51. ***L. He**, K. Bawane, P. Xiu, T. Yao, M. Khafizov, M. Jin, J. Gan, Dislocation Loops in Ceramic Nuclear Fuels, 2022 MRS Spring Meeting & Exhibit, May 8-13, 2022, Honolulu, HI (**Invited**).
52. M. Khafizov, J. Ferrigno, S. Adnan, K. Bawane, Am. Khanolkar, L. Malakkal, C. Dennett, C. Jiang, **L. He**, D. Hurley, Rate Theory Modeling of Defect Evolution in Fluorite Oxides, 2022 MRS Spring Meeting & Exhibit, May 8-13, 2022, Honolulu, HI.
53. ***L. He**, Radiation Damage in Ceramic Nuclear Fuels, Seminar at Department of Nuclear Engineering, North Carolina State University, April 21st, 2022, Raleigh, NC (**Invited**).
54. ***L. He**, Radiation Damage in Oxide and Nitride Nuclear Fuels, Seminar at Department of Nuclear Engineering, Purdue University, April 13th, 2022, West Lafayette, IN (**Invited**).
55. *F. Teng, W. Zhou, Y. Wang, D. Murray, M. Short, **L. He**, Effects of Molten Salt Corrosion Associated with Proton Irradiation on the Micro-tensile Strength of Grain Boundaries in a Ni-20Cr Alloy, TMS 2022 Annual Meeting & Exhibition, February 27-March 3, 2022, Anaheim, CA (Oral).

56. *K. Bawane, X. Liu, R. Gakhar, M. Woods, M. Ge, X. Xiao, W.-K. Lee, S. Pimblott, J. Wishart, Y.-c. Chen-Wiegart, **L. He**, Understanding Molten Salt Corrosion in Ni-20Cr Model Alloy Using Multimodal Characterization, TMS 2022 Annual Meeting & Exhibition, February 27-March 3, 2022, Anaheim, CA (Oral).
57. X. Liu, A. Ronne, K. Bawane, X. Zheng, Y. Liu, L.-C. Yu, M. Ge, P. Halstenberg, X. Xiao, S. Mahurin, S. Dai, W.-K. Lee, J. Wishart, **L. He**, *Y.-c. Chen-Wiegart, Elucidating the Kinetics for Three-dimensional Bicontinuous Structures Formation in Molten Salt Dealloying via In Situ Synchrotron X-ray Nanotomography, TMS 2022 Annual Meeting & Exhibition, February 27-March 3, 2022, Anaheim, CA (Oral).
58. *X. Liu, X. Zheng, K. Bawane, M. Woods, M. Ge, P. Halstenberg, S. Dai, X. Xiao, W.-K. Lee, S. Mahurin, R. Gakhar, L. He, Y.-c. Chen-Wiegart, Study of the Influence of Metal Ions on the Kinetics of Molten Salt Corrosion with Transmission Electron Microscopy and In Situ Synchrotron X-ray Nanotomography, TMS 2022 Annual Meeting & Exhibition, February 27-March 3, 2022, Anaheim, CA (Oral).
59. *T. Copeland-Johnson, M. Woods, R. Gakhar, G. Cao, **L. He**, Multi-modal Characterization of Interfacial Corrosion of Ni-based Alloys in Chloride-based Molten Salts, TMS 2022 Annual Meeting & Exhibition, February 27-March 3, 2022, Anaheim, CA (Oral).
60. *J. Yang, L. Hawkins, M. Song, **L. He**, Z. Jiao, Y. Zhang, D. Schwen, X. Lou, Compositionally Graded Specimen: A High-throughput Approach for Nuclear Material Development, TMS 2022 Annual Meeting & Exhibition, February 27-March 3, 2022, Anaheim, CA (Oral).
61. *J. Yang, L. Hawkins, J. Snitzer, X. Liu, M. Song, **L. He**, X. Lou, Sensitization of Austenitic Alloys Made by Laser Powder Bed Fusion, TMS 2022 Annual Meeting & Exhibition, February 27-March 3, 2022, Anaheim, CA (Oral).
62. *X. Lou, J. Yang, L. Hawkins, **L. He**, D. Schwen, Nanomechanical Approach to Reveal the Origins of Superior Intergranular Cracking Resistance in Irradiated Additively Manufactured Stainless Steel, TMS 2022 Annual Meeting & Exhibition, February 27-March 3, 2022, Anaheim, CA (Oral).
63. *L. Hawkins, J. Yang, X. Lou, M. Song, Y. Zhang, D. Schwen, L. Shao, **L. He**: Microstructural Evolution of Compositionally Graded Proton Irradiated 316 Stainless Steel as a High Throughput Alloy, TMS 2022 Annual Meeting & Exhibition, February 27-March 3, 2022, Anaheim, CA (Oral).
64. ***L. He**, Dislocation Loops in UO₂ and its Surrogates, GEMMA Project Workshop: Ion and Neutron Irradiation of Nuclear Materials (Virtual), Nov 22-23 (**Invited**).
65. *J. Yang, L. Hawkins, **L. He**, M. Song, Z. Jiao, Y. Zhang, D. Schwen, L. Shao, X. Lou, Mitigating Irradiated Assisted Stress Corrosion Cracking with Minor Refractory Element Modification – A High-throughput Approach Using Compositionally-graded Specimen, Materials in Nuclear Energy Systems (MiNES) 2021, Nov 8-11, Pittsburgh, PA.
66. *C. Parkin, M. Moorehead, M. Elbakhshwan, K. Sridharan, **L. He**, A. Couet, Comparison of temperature-dependent swelling behavior in FCC compositionally complex alloys and 316H stainless steel under heavy-ion irradiation, Materials in Nuclear Energy Systems (MiNES) 2021, Nov 8-11, Pittsburgh, PA.
67. ***L. He**, K. Bawane, T. Yao, P. Xiu, M. Khafizov, M. Jin, C. Jiang, C. Dennett, Z. Hua, A. El-Azab, D. Hurley, J. Gan, Studying Radiation Effects in Nuclear Fuels via Advanced Characterization and Modeling, Materials Science & Technology 2021, Oct 17-Oct 20, Columbus, OH (**Invited**).

68. V. Chauhan, J. Ferrigno, S. Adnan, Z. Utegulov, C. Dennett, A. Khanolkar, Z. Hua, **L. He**, D. Hurley, *M. Khafizov, Tailoring Thermal Transport in Insulators Using Energetic Ions, Materials Science & Technology 2021, Oct 17-Oct 20, Columbus, OH.
69. Y. Bao, F. Kuang, Y. Sun, Y. Li, D. Wan, Z. Shen, D. Ma, ***L. He**, Making Pre-stressed Ceramics with High Strength and High Damage Tolerance, Materials Science & Technology 2021, Oct 17-Oct 20, Columbus, OH (**Invited**).
70. *M. Khafizov, S. Adnan, J. Ferrigno, V. Chauhan, A. Khanolkar, C. Dennett, Y. Wang, K. Bawane, L. Malakkal, M. Jin, Z. Hua, C. Jiang, **L. He**, C. Marianetti, A. El-Azab, D. Hurley, Characterization of Defects, Thermal Transport, and Elastic Properties in As-fabricated and Irradiated Single Crystal of ThO₂, Materials Science & Technology 2021, Oct 17-Oct 20, Columbus, OH (**Invited**).
71. ***L. He**, Advanced Characterization of Radiation Damage in Ceramic Nuclear Fuels, Frontiers of Energy Science Seminar, Idaho National Laboratory, September 29, 2021, Virtual (**Invited**).
72. ***L. He**, Radiation Damage in Ceramic Nuclear Fuels, The 5th International Symposium on Hybrid Materials and Processing (HyMaP 2021), August 4-6, 2021, Virtual (**Plenary**).
73. ***L. He**, L. Hawkins, J. Yang, X. Liu, M. Song, X. Lou, Y. Zhang, L. Shao, D. Schwen, Advanced Characterization of Additively Manufactured 316L Stainless Steel for Nuclear Applications, Microscopy and Microanalysis 2021, August 1-5, 2021, Virtual (**Invited**).
74. R. Yuan, J. Zhang, **L. He**, J.-M. Zuo, Machine Learning Based Precision Orientation and Strain Mapping from 4D Diffraction Datasets, Microscopy and Microanalysis 2021, August 1-5, 2021, Virtual (Oral).
75. M. Bachhav, J. Kane, F. Teng, F. Caplia, **L. He**, Isotopic Analysis of Irradiated Ceramic Fuel for Burnup and Microchemical Assessment Using Atom Probe Tomography, Microscopy and Microanalysis 2021, August 1-5, 2021, Virtual (Oral).
76. *X. Lou, J. Yang, X. Liu, M. Song, **L. He**, Sensitization/Desensitization and Carbide Evolution of Alloy 800H Made By Laser Powder Bed Fusion, NACE Corrosion 2021 Conference and EXPO, April 19-30, 2021, Virtual (**Invited**).
77. X. Liu, A. Ronne, L.-C. Yu, M. Ge, **L. He**, P. Halstenberg, C.-H. Lin, B. Layne, S. Dai, W.-K. Lee, S. Mahurin, J. Wishart, X. Xiao, *Y.-c. Chen-Wiegart, Mechanistic Understanding of 3D Morphological Evolution of Metals in Molten Salts by In Situ X-ray Nano-tomography, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
78. *K. Bawane, P. Manganaris, Y. Wang, J. Sure, A. Ronne, X. Liu, P. Halstenberg, S. Gill, K. Sasaki, Y.-c.K. Chen-Wiegart, S. Mahurin, S. Pimblott, J. Wishart, **L. He**, Electron Energy Loss Spectroscopy Characterization of Molten Salt Corrosion Damage in Pure Ni and Model Ni-20Cr Binary Alloy, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Poster).
79. *T. Yao, F. Teng, D. Murray, J. Gan, M. Benson, **L. He**, In-situ TEM Heating Chip Experiments to Study Thermal Behavior of U-Zr Metallic Fuel, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
80. *M. Khafizov, V. Chauhan, **L. He**, J. Pakarinen, D. Hurley, Multiscale Characterization of Defects in Ion Irradiated Ceramics for Validation of Atomic Model, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
81. *P. Xu, **L. He**, B. Jaques, K. Sridharan, D. Butt, Development of UN/UO₂ Composite Fuels for LWR Applications, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
82. *J. Yang, X. Liu, M. Song, **L. He**, Y. Zhang, X. Lou, Irradiation-assisted Stress Corrosion Cracking (IASCC) of Austenitic Stainless Steels with Oversized Solute in High-Temperature Water, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).

83. *M. Bachhav, **L. He**, B. Miller, X. Liu, F. Cappia, J. Gan, Microstructural and Fission Products Analysis from Irradiated UO₂ Fuel Using Atom Probe Tomography, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
84. *A. Khanolkar, Z. Hua, C. Dennett, M. Khafizov, T. Yao, K. Bawane, **L. He**, J.M. Mann, A. El-Azab, J. Gan, D. Hurley, Thermal Conductivity Degradation from Irradiation-induced Microstructural Defects in Single Crystal Thorium Dioxide, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (**Invited**).
85. *Z. Hua, T. Yao, A. Khanolkar, C. Dennett, X. Ding, K. Gofryk, M. Benson, **L. He**, J. Gan, D. Hurley, Thermal Transport Behavior of U-50Zr at the Mesoscale: Before and After Irradiation, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (**Invited**).
86. *M. Khafizov, L. He, M. Jin, D. Hurley: Impact of Dislocation Loops on Thermal Conductivity of CeO₂, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
87. *D. Hurley, M. Khafizov, C. Dennett, A. Khanolkar, Z. Hua, **L. He**, J. Gan, A. El-Azab, M. Salaken, C. Jiang, M. Jin, R. Deskins, K. Bawane, C. Marianetti, M. Mann, Comprehensive Treatment of Thermal Transport under Irradiation in ThO₂, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (**Invited**).
88. *K. Bawane, X. Liu, T. Yao, M. Khafizov, A. French, M. Mann, L. Shao, J. Gan, D. Hurley, **L. He**, TEM Characterization of Dislocation Loops in Ion-irradiated Single Crystal ThO₂, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
89. *E. Jossou, M. Topsakal, X. Huang, K. Hattar, H. Yan, Y. Chu, C. Sun, **L. He**, J. Gan, L. Ecker, S. Gill, X-ray Based Nanodiffraction to Study Strain in Materials for Nuclear Energy, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
90. A. El-Azab, *W. Deskins, M. Singh, S. Mazumder, K. Tomohisa, J. Peng, M. Khafizov, Z. Hua, **L. He**, D. Hurley, Thermal Transport in Irradiated ThO₂: A Combined Experimental and Phonon Level Investigation, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (**Invited**).
91. *X. Lou, J. Yang, M. Song, **L. He**, Y. Zhang, D. Schwen, Compositionally Graded Bulk Specimen: A High-throughput Approach for Nuclear Alloy Development at Qualification, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
92. *M. Song, J. Yang, X. Liu, X. Lou, Y. Zhang, **L. He**, D. Schwen, A Superb Void Swelling Resistant Type 316L Stainless Steel Developed by Additive Manufacturing Enabled High Throughput Microalloying, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
93. *Y. Zhang, M. Song, X. Liu, **L. He**, D. Schwen, X. Lou, Improving Irradiation Resistance of Alloys by Controlling Defect Diffusion: A Modeling Perspective, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
94. *A. Couet, Z. Yu, T. Kim, H. Zhang, M. Bachhav, **L. He**, Irradiation Effects on Zirconium Alloy Oxides and Their Impacts on In-reactor Corrosion Rates, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (**Invited**).
95. *X. Liu, J. Yang, M. Song, X. Lou, Y. Zhang, **L. He**, D. Schwen, Proton Irradiation Induced Microstructural Evolution in Compositionally Graded Type 316L Stainless Steel, TMS 2021 Annual Meeting & Exhibition, March 15-18, 2021, Virtual (Oral).
96. ***L. He**, Characterization of Radiation Damage in Ceramic Nuclear Fuels, Seminar at Department of Nuclear Engineering, The Pennsylvania State University, Mar 4th, 2021, State College, PA (**Invited**).
97. ***L. He**, TEM Characterization of Extended Defects in Nuclear Fuels, Advanced Microscopy for Nuclear Fuels and Materials Workshop, Jan 25-27, 2021, McMaster University, Virtual (**Invited**).

98. W. Zhou, Y. Yang, M. Jin, L. He, A. Minor, S. Short: Explaining the Corrosion Morphology of Structural Materials in Molten Fluoride Salts with/without Radiation, Materials Science & Technology 2020, Nov 2-6, Virtual (**Invited**).
99. ***L. He**, Radiation Effects in Ceramic Nuclear Fuels, Seminar at Nebraska Center for Materials & Nanoscience (NCMN), University of Nebraska-Lincoln, Nov. 18, 2020, Lincoln, NE (**Invited**).
100. *X. Liu, A. Ronne, L.-C. Yu, **L. He**, M. Ge, X. Xiao, P. Halstenberg, S. Dai, W.-K. Lee, S. Mahurin, Y.K. Chen-Wiegart, 4D in Situ Temperature-Dependent Study on Morphological and Chemical Evolution of Metals in Molten Salt Environments by Multimodal Microscopy, 2020 PRiME ECS Meeting, Oct. 4-9 (Oral).
101. *J. Sure, S. Gill, K. Bawane, Y. Wang, **L. He**, S. Mahurin, S. Dai, J.F. Wishart, K. Sasaki, Investigating the Effect of CrCl_3 on Corrosion Behavior of Ni and Ni-20Cr in Molten ZnCl_2 Salt by Electrochemical Noise Measurements, 2020 PRiME ECS Meeting, Oct. 4-9 (Oral).
102. *M. Bachhav, **L. He**, J. Kane, X. Liu, J. Gan, F. Vurpiliot, Atom Probe Tomography for Burnup and Fission Product Analysis for Nuclear Fuels, Microscopy and Microanalysis 2020, August 1-5, 2020, Milwaukee, WI (Oral).
103. *V. Chauhan, **L. He**, J. Pakarinen, D. Hurley, and M. Khafizov: Impact of Irradiation Induced Nanoscale Defects on Optical and Thermal Properties of Cerium Dioxide, 2020 MRS Spring Meeting & Exhibit, April 13-17, 2020, Phoenix, AZ (Oral).
104. **L. He**: Advanced Characterization of Oxide Fuels, Seminar at Department of Materials Science and Engineering, The University of Utah, Mar. 4, 2020, Salt Lake City, UT (**Invited**).
105. *T. Yao, M. Benson, J. Harp, **L. He**, and J. Gan: Synthesis of Intermetallic UZr_{2+x} and its Phase Transformation, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
106. *Z. Fu, **L. He**, X. Liu, I. Rooyen, and Y. Yang: Microstructural and Micro-Chemical Characterization of Safety Tested TRISO UCO Fuel Kernels Irradiated in the Advanced Test Reactor, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
107. *M. Khafizov, Y. Wang, M. Riyad, J. Pakarinen, **L. He**, A. El-Azab, and D. Hurley: Impact of Ionization Effects and Defect Trapping on Microstructure Evolution in Light Ion Irradiated Uranium Dioxide, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
108. *A. Morell-Pacheco, **L. He**, R. Gakhar, Y. Wang, A. Gabriel, and L. Shao: Microstructural Changes and Corrosion of Proton-pre-Irradiated Hastelloy N in FliNaK Molten Salt, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
109. *X. Liu, L. Capriotti, T. Yao, J. Harp, and **L. He**: Microstructure of HT-9 Cladding after Fuel-Cladding Chemical Interaction with an Annular U-10Zr Fuel Irradiated to 3.3% FIMA, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
110. *J. Yang, X. Liu, M. Song, **L. He**, B. Prorok, and X. Lou: Sensitization of Alloy 800H Made by Laser Powder Bed Fusion, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
111. *A. Khanolkar, Z. Hua, M. Khafizov, V. Chauhan, Y. Wang, T. Yao, L. He, M. Mann, A. El-Azab, J. Gan, and D. Hurley: Influence of Irradiation-Induced Microstructural Defects on the Thermal Conductivity of Single Crystal Thorium Dioxide, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
112. *V. Chauhan, **L. He**, J. Pakarinen, D. Hurley, and M. Khafizov: Impact of Irradiation Induced Nanoscale Defects on Optical and Thermal Properties of Ceramic Dioxide, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).

113. T. Yao, V. Chauhan, M. Singh, A. Khanolkar, Z. Hua, M. Khafizov, M. Mann, T. Wiss, A. El-Azab, J. Gan, D. Hurlley, and ***L. He**: Radiation Effects on Phonon Transport in UO_2 and ThO_2 , TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (**Invited**).
114. ***F. Cappia**, G. Beausoleil, A. Winston, D. Murray, B. Miller, **L. He**, and F. Teng: Investigation of High Burnup Ceramic Fuel Microstructure at Idaho National Laboratory, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (**Invited**).
115. ***W. Zhou**, Y. Yang, **L. He**, A. Minor, and M. Short: Investigation of the Mechanism behind Proton Irradiation Decelerated Corrosion in Molten Fluorides, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
116. ***L. He**, A. Ronne, S. Gill, K. Sasaki, Y. Xie, Y. Wang, P. Halstenberg, D. Dolzhenkov, Y.K. Chen-Wiegart, and S. Mahurin: Advanced Characterization of Corrosion Behavior of Metals in Molten Chloride Salts, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
117. ***A. Ronne**, Y. Xie, P. Halstenberg, M. Ge, X. Xiao, Y. Wang, W.-K. Lee, **L. He**, S. Mahurin, and Y.K. Chen-Wiegart: Multimodal Characterization of the Morphological and Chemical Evolution of Ni and Ni-20Cr Microwires in Purified Molten KCl:MgCl_2 , TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
118. ***S. Gill**, J. Huang, J. Mausz, K. Sasaki, M. Topsakal, R. Gakhar, W. Phillips, **L. He**, S. Mahurin, P. Halstenberg, L. Ecker, and A. Frenkel: X-Ray Absorption Studies to Elucidate Structure and Speciation of Metals in Molten Salt Systems, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
119. ***Z. Yu**, K. Linton, **L. He**, M. Bachhav, X. Liu, and A. Couet: Microstructure and Microchemistry Characterization of Neutron Irradiated M5[®] and X2[®] Fuel Cladding, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
120. ***M. Singh**, T. Yao, **L. He**, and A. El-Azab: Equilibrium and Irradiation-Induced Point-Defect Disorder in ThO_2 and U-Doped ThO_2 : Modeling and Ion Irradiation Experiments, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Poster).
121. ***Y. Zhang**, A. Manzoor, D. Aidhy, M. Song, X. Lou, and **L. He**: The Effect of Minor Additives on Radiation Induced Segregation in Austenitic Steel Alloys, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
122. ***Z. Xiao**, A. Seoane, X. Bai, and **L. He**: First Principle Studies of Effects of Solute Segregation on Grain Boundary Strength in Ni-based X-750 Alloy, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Oral).
123. ***F.F. Athena**, S. Majumder, T. Yao, **L. He**, and A. El-Azab: Defect Clustering in Irradiated Alpha Uranium: Cluster Dynamics Modeling and Ion Irradiation Experiments, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Poster).
124. ***Y. Wang**, X. Liu, D. Murray, F. Teng, M. Bachhav, W. Jiang, **L. He**, C. Sun, Z. Xiao, X. Bai, J. Jackson, and R. Carter: Small Scale Tensile Testing of Grain Boundary Strength of Pristine and Neutron Irradiated Ni Based X-750 Alloy, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Poster).
125. ***J. Thomas**, A. Figueroa, **L. He**, X. Liu, D. Murray, P. Kenesei, J. Almer, J. Harp, and M. Okuniewski: Meso-, Micro-, and Nano-Scale Characterization of Neutron Irradiated U-10Zr Metallic Fuels via Synchrotron μ -CT and Electron Microscopy, TMS 2020 Annual Meeting & Exhibition, February 23-27, 2020, San Diego, CA (Poster).
126. ***M. Singh**, T. Yao, **L. He**, and A. El-Azab: Equilibrium and Irradiation-Induced Point-Defect

- Disorder in ThO₂ and U-doped ThO₂: Modeling and Ion Irradiation Experiments, 2019 MRS Fall Meeting, Dec. 1-6, 2019, Boston, MA (Oral).
127. *F.F. Athena, T. Yao, **L. He**, and A. El-Azab: Cluster Dynamics Modeling and Ion Irradiation Experiments, 2019 MRS Fall Meeting, Dec. 1-6, 2019, Boston, MA (Oral).
128. T. Yao, V. Chauhan, M. Singh, Z. Hua, M. Khafizov, A. El-Azab, M. Mann, T. Wiss, J. Gan, D. Hurley, and ***L. He**: Radiation Effects in ThO₂, 2019 MRS Fall Meeting, Dec. 1-6, 2019, Boston, MA (**Invited**).
129. ***L. He**, T. Yao, V. Chauhan, A. Sen, Z. Hua, M. Bachhav, M. Khafizov, J. Wharry, M. Mann, T. Wiss, J. Gan, and D. Hurley: Advanced Characterization of UO₂ and ThO₂, AVS 66th International Symposium & Exhibition, Oct. 20-25, 2019, Columbus, OH (**Invited**).
130. ***L. He**: Advanced Characterization of Nuclear Materials: Capabilities and Examples, Seminar at Department of Mechanical and Aerospace Engineering, The Ohio State University, Oct. 23, 2019, Columbus, OH (**Invited**).
131. *X. Liu, M. Bachhav, and **L. He**: Atom Probe Tomography and Energy Dispersive X-ray Spectroscopy Study of Radiation-Induced Segregation in Fe-9Cr Model Alloy, The 19th International Conference on Fusion Reactor Materials (ICFRM-19), Oct. 27-Nov. 1, 2019, La Jolla, CA (Oral).
132. *X. Liu, M.N. Cinbiz, **L. He**, and D. Jadernas: Characterization of A Neutron-Irradiated Zr-Nb-O Alloy Using Analytical Scanning Transmission Electron Microscopy, Materials in Nuclear Energy Systems (MiNES), Oct 6-10, 2019, Baltimore, MD (Oral).
133. *A. Couet, Z. Yu, **L. He**, and M. Bachhav: Fundamental Understanding of Coupled Irradiation and Corrosion Effects on ZrNb Fuel Cladding, Materials in Nuclear Energy Systems (MiNES), Oct 6-10, 2019, Baltimore, MD (Oral).
134. *M.T. Benson, Y. Xie, J.A. King, J.M. Harp, **L. He**, I. Charit, S. Choudhury, and J. Zhang: Fuel Additives to Mitigate FCCI in Metallic Fuels, Materials in Nuclear Energy Systems (MiNES), Oct 6-10, 2019, Baltimore, MD (Oral).
135. *F. Cappia, K. Wright, **L. He**, D. Murray, B. Miller, and J. Harp: Advanced Characterization of Annular Fast Reactor MOX, Materials in Nuclear Energy Systems (MiNES), Oct 6-10, 2019, Baltimore, MD (Oral).
136. *M. Okuniewski, J. Thomas, W. Williams, **L. He**, and X. Liu: Constituent Redistribution and Lanthanide Migration in Neutron Irradiated Uranium Zirconium Fuel, Materials Science & Technology 2019, Sep 29-Oct 3, Portland, OR (**Invited**).
137. *M.T. Benson, Y. Xie, J.A. King, D. Murray, **L. He**, I. Charit, S. Choudhury, and J. Zhang: Investigation of Antimony as a Fuel Additive to Control FCCI in a Transmutation Fuel, Global/Top Fuel 2019, September 22-26, 2019, Seattle, WA (Oral).
138. *A. Ronne, **L. He**, D. Dolzhanov, M. Ge, X. Xiao, Y. Wang, W.-K. Lee, S.M. Mahurin, and K. Chen-Wiegart: Morphological and Chemical Evolution of Ni and Ni-20Cr Microwires in Molten KCl:MgCl₂, ACS Fall 2019 National Meeting & Exposition, Aug 25-29, 2019, San Diego, CA (Poster).
139. A. Ronne, **L. He**, D. Dolzhanov, M. Ge, X. Xiao, Y. Wang, W.-K. Lee, S.M. Mahurin, and *K. Chen-Wiegart: Visualization of Molten Salt Interaction with Ni and Ni-20Cr Alloy via Multiscale Imaging, ACS Fall 2019 National Meeting & Exposition, Aug 25-29, 2019, San Diego, CA (**Invited**).
140. *S.K. Gill, K. Sasaki, M. Topsakal, R.Gakhar, W.C. Phillip, **L. He**, S.M. Mahurin, L. Ecker, and A. Frenkel: Investigating Structure and Speciation of Metals in Molten Salt System using X-ray Absorption Fine Structure, ACS Fall 2019 National Meeting & Exposition, Aug 25-29, 2019, San Diego, CA (**Invited**).
141. ***L. He**, M. Bachhav, C. Jiang, D. Sprouster, D. Shuh, B. Miller, L. Ecker, and J. Gan: Advanced Characterization of Fission Products in Nuclear Fuels, ACS Fall 2019 National Meeting & Exposition, Aug 25-29, 2019, San Diego, CA (**Invited**).

142. V.S. Chauhan, **L. He**, J. Pakarinen, D. Huley, *M. Khafizov: Impact of Irradiation Induced Defects on Optical and Thermal Properties of Cerium Dioxide, 20th International Conference on Radiation Effects in Insulators, Aug 19-23, 2019, Astana, Kazakhstan (Poster).
143. ***L. He**, X. Liu, M. Bachhav, D. Murray, E. Perez, C. Sun, Z. Xiao, X. Bai, J. Jackson, and R. Carter: Understanding the Relationships between Grain Boundary Character, Microchemistry and Strength in both Pristine and Neutron Irradiated X-750 Alloy by Advanced Characterization and Modeling Techniques, The 19th Environmental Degradation of Materials in Nuclear Power Systems, August 18-22, 2019, Boston, MA, USA (Oral).
144. *J.F. Wishart, S.M. Pimblott, S.M. Mahurin, L.E. Ecker, Y.K. Chen-Wiegart, E. Dooryhee, A.I. Frenkel, S.K. Gill, B. Ocko, K. Sasaki, R. Gakhar, **L. He**, G. Horne, V. Bryantsev, S. Dai, X. Sun, C.J. Margulis, J.A. LaVerne, E.J. Maginn: Molten Salts in Extreme Environments, Energy Frontier Research Centers Principal Investigators' Meeting, July 29-30, 2019, Washington D.C. (Oral).
145. ***L. He**, A. Ronne, Y. Xie, Y. Wang, D. Dolzhenkov, M. Ge, X. Xiao, W.-K. Lee, S.M. Mahurin, Y.K. Chen-Wiegart: Multi-Scale Characterization of Interfacial and Corrosion Processes in Molten Salt Environments, Energy Frontier Research Centers Principal Investigators' Meeting, July 29-30, 2019, Washington D.C. (Oral).
146. *S.K. Gill, K. Sasaki, M. Topsakal, R. Gakhar, W.C. Phillips, **L. He**, P. Halstenberg, S. Mahurin, L. Ecker, A.I. Frenkel: Investigation Chemical Speciation and Thermodynamics of Metals in Molten Salts using In Situ X-Ray Absorption Spectroscopy, Energy Frontier Research Centers Principal Investigators' Meeting, July 29-30, 2019, Washington D.C. (Oral).
147. *A. Ronne, **L. He**, D. Dolzhenkov, M. Ge, X. Xiao, W.-K. Lee, S.M. Mahurin, K. Chen-Wiegart: Visualization of Molten Salt Interaction with Ni and Ni-20Cr Alloy via Multiscale Imaging, Energy Frontier Research Centers Principal Investigators' Meeting, July 29-30, 2019, Washington D.C. (Poster).
148. *D. Hurley, J. Gan, M. Manley, A. El-Azab, M. Khafizov, K. Gofryk, M. Bachlav, J. Harp, **L. He**, Z. Hua, M. Mann, C. Marianetti, J. Wharry, Y. Zhang: Center for Thermal Energy Transport under Irradiation, Energy Frontier Research Centers Principal Investigators' Meeting, July 29-30, 2019, Washington D.C. (Poster).
149. *M. Singh, A. El-Azah, J. Wharry, A. Sen, M. Khafizov, **L. He**, J. Gan, T. Yao, Z. Hua, D. Hurley: Equilibrium and Non-Equilibrium Defect Disorder in U-Doped ThO₂ and Implications for Lattice Thermal Conductivity, Energy Frontier Research Centers Principal Investigators' Meeting, July 29-30, 2019, Washington D.C. (Oral).
150. *M. Mann, D. Turner, K. Richert, J. Harp, T. Yao, **L. He**, J. Gan, M. Benson: Single Crystal Synthesis of Advanced Nuclear Fuels (UxTh1-xO2 and Uzr2-x): First Step to Develop a First Principle Understanding of Thermal Transport under Irradiation, Energy Frontier Research Centers Principal Investigators' Meeting, July 29-30, 2019, Washington D.C. (Poster).
151. *M. Khafizov, Y. Wang, V. Chauhan, **L. He**, T. Yao, Z. Hua, A. Khanolkar, M. Mann, A. El-Azab, D. Hurley: Impact of Ionization and Defect Trapping on Microstructure Evolution and Thermal Transport in Irradiated Fluoride Oxides, Energy Frontier Research Centers Principal Investigators' Meeting, July 29-30, 2019, Washington D.C. (Poster).
152. *Y. Xie, M.T. Benson, **L. He**, and J.A. King: Diffusion Behaviors between Fe and Pd-Containing Metallic Fuel, 2019 ANS Annual Meeting, June 9-13, Minneapolis, MN (Oral).
153. *M.T. Benson, Y. Xie, **L. He**, and J.A. King: Characterization of U-Pu-Zr Alloys with Pd as a Minor Additive, 2019 ANS Annual Meeting, June 9-13, Minneapolis, MN (Oral).
154. *F. Cappia, B. Miller, D. Murray, **L. He**, and J. Harp: Electron Microscopy Characterization of Fuel-Cladding Chemical Interaction Layer of Fast Reactor MOX, European Materials Research Society (E-MRS) 2019 Spring Meeting, May 27-31, 2019, Nice, France (Oral).

155. *M.T. Benson, Y. Xie, J.M. Harp, **L. He**, and J.A. King: Fuel Additives to Control Lanthanides in Metallic Nuclear Fuels, European Materials Research Society (E-MRS) 2019 Spring Meeting, May 27-31, 2019, Nice, France (Poster).
156. ***L. He**, Y. Xie, Y. Wang, A. Ronne, S. Gill, K. Sasaki, K. Chen-Wiegart, S. Mahurin, G. Zheng, D. Carpenter, TEM Characterization of Materials in Molten Salt Corrosion Environments from Simple to Complex Systems, NSLS-II and CFN Users' Meeting, May 20-22, 2019, Brookhaven National Laboratory, NY (**Invited**)
157. *S.K Gill, K. Sasaki, M. Topsakal, R. Gakhar, **L. He**, S. Mahurin, H.W. Phillip, L. Ecker, and A.I. Frenkel: X-ray Absorption Studies to Investigate Speciation of Metals in Molten Salt Systems, NSLS-II and CFN Users' Meeting, May 20-22, 2019, Brookhaven National Laboratory, NY (**Invited**)
158. A. Ronne, **L. He**, D. Dolzhnikov, M. Ge, X. Xiao, W.-K. Lee, S.M. Mahurin, and *K. Chen-Wiegart: Visualizing 3D Morphological Evolution of Ni and Ni Alloys Induced by Molten Salt with X-ray Nanotomography, NSLS-II and CFN Users' Meeting, May 20-22, 2019, Brookhaven National Laboratory, NY (**Invited**).
159. *V. Chauhan, **L. He**, J. Pakarinen, D. Hurley, and M. Khafizov: Impact of Irradiation Induced Nanoscale Defects on Thermal Conductivity of Cerium Dioxide, 2019 MRS Spring Meeting, April 22-26, Phoenix, AZ (Poster).
160. ***L. He**, M. Bachhav, D. Murray, X. Liu, E. Perez, W. Jiang, C. Sun, S. Teyseyre, and X. Bai: Effects of Element Segregation/Depletion and Precipitates on Grain Boundary Strength of Alloys, TMS 2019 Annual Meeting & Exhibition; March 10-14, 2019, San Antonio, TX (**Invited**).
161. ***L. He** and J. Harp: Microstructural Characterization of Transmutation Nitride Fuels for Fast Reactors, TMS 2019 Annual Meeting & Exhibition; March 10-14, 2019, San Antonio, TX (Oral).
162. *Y. Zhang, Y. Gao, C. Sun, D. Schwen, C. Jiang, **L. He**, J. Gan, D. Sprouster, and L. Ecker: Theoretical Predictions, Atomistic Simulations and Experimental Observations of Void and Gas Bubble Superlattice Formation under Irradiation, TMS 2019 Annual Meeting & Exhibition; March 10-14, 2019, San Antonio, TX (Oral).
163. *Z. Fu, **L. He**, I. Rooyen, and Y. Yang: Microstructural and Micro-chemical Comparisons of AGR-1 and AGR-2 TRISO UCO Fuel Kernels Irradiated in the Advanced Test Reactor, TMS 2019 Annual Meeting & Exhibition; March 10-14, 2019, San Antonio, TX (Oral).
164. *M. Moorehead, C. Parkin, **L. He**, J. Hu, M. Li, A. Couet, and K. Sridharan: Microstructural Characterization of High-Entropy Alloy Ion Irradiated at Cryogenic Temperatures, TMS 2019 Annual Meeting & Exhibition; March 10-14, 2019, San Antonio, TX (Poster).
165. **L. He**, M. Bachhav, D. Murray, *X. Liu, E. Perez, W. Jiang, C. Sun, S. Teyseyre, and X. Bai: Understanding Grain Boundary Strength of X-750 Alloy by Small Scale Tensile Testing and Advanced Characterization and Modeling, NuMat 2018, Oct. 14-18, Seattle, WA (Oral).
166. *M. Khafizov, M. F. Riyad, Y. Wang, V. Chauhan, J. Pakarinen, **L. He**, and D. Hurley: Impact of Low Dose and Low Temperature Displacement Damage by Hydrogen and Helium Ion Irradiations on Thermal Transport in Uranium Dioxide, NuMat 2018, Oct. 14-18, Seattle, WA (Oral).
167. *C. Parkin, M. Moorehead, A. Couet, K. Sridharan, L. He, **L. He**, A. Kareer, D. Armstrong, and J. Hu: Characterization of Radiation Damage Mechanisms in High-Entropy Alloys using Heavy Ion Irradiation, NuMat 2018, Oct. 14-18, Seattle, WA (Oral).
168. *T. Chen, **L. He**, J. Burns, Y. Wu, C. Knight, K. Sridharan, H. Xu, and L. Tan: Microstructure and Mechanical Properties of ATR-Irradiated Alloy D9 and NF709, NuMat 2018, Oct. 14-18, Seattle, WA (Oral).
169. T. Yao, B. Gong, **L. He**, J. Harp, M. Tonks, and *J. Lian: Microstructure Evolution and Response Behavior of U_3Si_2 by Extensive Ion Beam Irradiation, Materials Science & Technology 2018, Oct 14-18, 2018, Columbus, OH (**Invited**).
170. *M. Bachhav, J. Gan, B. Miller, **L. He**, D. Jadernas, and D. Keiser: Challenges and Opportunities in

- Analyzing Nuclear Material with Atom Probe Tomography, The 256th ACS National Meeting & Exposition, Aug 19-23, 2018, Boston, MA (Oral).
171. *M. Bachhav, J. Gan, **L. He**, and D. Keiser: Understanding Behavior and Performance of Nuclear Fuels via Atom Probe Tomography, The Atom Probe Tomography and Microscopy Symposium, June 10-15, 2018, NIST, Gaithersburg, MD (Oral).
 172. ***L. He**, D. Shuh, X. Bai, M. Moorehead, B. Miller, C. Degueldre, and J. Harp: Advanced Characterization of Irradiated UO₂ Fuel, TMS 2018 Annual Meeting & Exhibition, Mar. 11-15, 2018, Phoenix, AZ (Oral).
 173. *D. Sprouster, K. Hattar, C. Sun, Y. Gao, C. Jiang, **L. He**, Y. Zhang, J. Gan, and L. Ecker: Self-Organization of Gas Bubble Superlattices, TMS 2018 Annual Meeting & Exhibition, Mar. 11-15, 2018, Phoenix, AZ (Oral).
 174. *K. Wright, **L. He**, B. Miller, D. Jadernas, and B. Hernandez: The Irradiated Materials Characterization Laboratory—Current Capabilities and Recent Results, Materials Science & Technology 2017, Oct 8-12, 2017, Pittsburgh, PA (**Invited**).
 175. *R. Hoggan, J. Harp, and **L. He**: Interdiffusion Behavior of FeCrAl and U₃Si₂, The 18th International Conference on Environmental Degradation of Materials in Nuclear Power Systems-Water Reactors, Aug 13-17, Portland, OR (Oral).
 176. *R. Hoggan, J. Harp, and **L. He**: Interdiffusion Behavior of U₃Si₂ and FeCrAl via Diffusion Couple Studies, 2017 American Nuclear Society Annual Meeting, Jun. 11-15, 2017, San Francisco, CA (Oral).
 177. ***L. He**, J. Gan, M. Kirk, B. Tyburska-Pueschel, and B. Jaques: Radiation Damage on UO₂ and UN, TMS 2017 Annual Meeting & Exhibition, Feb 26-Mar. 2, 2017, San Diego, CA (**Invited**).
 178. ***L. He**, B. Miller, D. Blanton, K. Wright, A. Aitkaliyeva, and J. Gan: Irradiated Materials Characterization Laboratory at Idaho National Laboratory, TMS 2017 Annual Meeting & Exhibition, Feb 26-Mar. 2, 2017, San Diego, CA (Poster).
 179. ***L. He**, J. Harp, R. Hoggan, and A. Wagner: Microstructure Studies of Interdiffusion Behavior in U₃Si₂/Zircaloy and U₃Si₂/FeCrAl, Department of Nuclear Engineering, The University of Tennessee-Knoxville, Dec. 14, 2016. (**Invited**)
 180. *D. Keiser, Jr, J. Jue, J. Gan, B. Miller, T. Trowbridge, E. Perez, J. Madden, **L. He**, and A. Robinson: Microstructural Characterization of Support Development of Dispersion and Monolithic LEU U-Mo Fuels, 37th International Meeting on Reduced Enrichment for Research and Test Reactors, Oct. 23-27, 2016, Antwerp, Belgium (Oral).
 181. ***L. He**, J.M. Harp, R.E. Hoggan, and A.R. Wagner: Corrosion Behavior of U₃Si₂ in Pressurized Water at 300°C, Materials Science & Technology 2016 (MS&T16), Oct. 23-27, Salt Lake City, UT (Oral).
 182. J.M. Harp, ***L. He**, R.E. Hoggan, and A.R. Wagner: Corrosion and Interdiffusion Studies of U₃Si₂, Top Fuel (Light Water Reactor Fuel Performance Meeting), Sep. 11-16, 2016, Boise, ID (**Invited**).
 183. **L. He**, Radiation Effects in UO₂, Nuclear Science User Facilities (NSUF) Users Meeting June 6-9, 2016, Idaho Falls, ID (Invited).
 184. ***L. He**, J. Gan, and T.R. Allen: Microstructure Evolution in Ion-Irradiated UO₂, American Nuclear Society Annual Meeting 2016, Jun. 12-16, 2016, New Orleans, LA (Poster).
 185. *M.W. Barsoum, D.T. Tallman, **L. He**, and J. Gan: MAX Phases for the Nuclear Industry: Possibilities and Pitfalls, American Nuclear Society Annual Meeting 2016, Jun. 12-16, 2016, New Orleans, LA (**Invited**).
 186. ***L. He** and J. Gan: Characterization of Radiation Induced Microstructure in UO₂, Advances in Structural and Chemical Imaging (ASCI) Symposium, May. 18-20, 2016, Boise, ID (**Invited**).
 187. ***L. He**, J. Pakarinen, X. Bai, J. Gan, Y. Wang, A. El-Azab, and T.R. Allen: Inert Gas Measurement of Single Bubble in CeO₂, Microscopy and Microanalysis 2015, Aug. 4-8, 2015, Portland, OR (Oral).

188. ***L. He**, B. Valderrama, M. Gupta, J. Pakarinen, J. Gan, M.A. Kirk, A.T. Nelson, M.V. Manuel, and T.R. Allen: Radiation Effects in UO_2 . TMS 2014 Annual Meeting & Exhibition; Feb 16-20, 2014, San Diego, CA (Oral).
189. ***L. He**, J. Pakarinen, M. Gupta, J. Gan, Y. Wang, M.A. Kirk, and T.R. Allen: Kr and Xe Bubbles in CeO_2 . TMS 2014 Annual Meeting & Exhibition, Feb 16-20, 2014, San Diego, CA (Oral).
190. ***L. He**, P. Roman, B. Leng, K. Sridharan, M. Anderson, and T.R. Allen: Corrosion Behavior of Alumina-Forming Austenitic Steels in Supercritical Carbon Dioxide, TMS 2014 Annual Meeting & Exhibition; Feb 16-20, 2014, San Diego, CA (Oral).
191. *M. Gupta, J. Pakarinen, S. Conradson, J. Terry, **L. He**, J. Gan, A. Nelson, and T.R. Allen: Damage Structure Evolution in Ion Irradiated UO_2 , TMS 2014 Annual Meeting & Exhibition, Feb 16-20, 2014, San Diego, CA (Oral).
192. *B. Valderrama, H.B. Henderson, **L. He**, J. Pakarinen, J. Gan, T.R. Allen, and M.V. Manuel: Radiation Effects in Oxide Ceramics and Novel LWR Fuels, TMS 2014 Annual Meeting & Exhibition, Feb 16-20, 2014, San Diego, CA (Oral).
193. *B. Valderrama, H.B. Henderson, **L. He**, C. Yablinsky, J. Gan, A.-R. Hassan, A. El-Azab, T.R. Allen, and M.V. Manuel: Fission Products in Nuclear Fuel: Comparison of Simulated Distribution with Correlative Characterization Techniques, Microscopy and Microanalysis 2013, August 4-8, 2013, Indianapolis, IN (Oral).
194. *B. Valderrama, H.B. Henderson, **L. He**, T.R. Allen, and M.V. Manuel: Comparison of Computationally Simulated Fission Product Distribution with Correlative Characterization Techniques in Surrogate Nuclear Fuel Materials, 2013 SACNAS National Conference, October 2-6, 2013, San Antonio, TX.
195. *M. Khafizov, J. Pakarinen, **L. He**, A. Chernatynskiy, J. Gan, S. Phillpot, T.R. Allen, and D.H. Hurley: Influence of Radiation Induced Microstructure on Thermal Transport in Ceramic Materials, 2013 MRS Fall Meeting & Exhibit. Dec 1-6, 2013, Boston, MA (Oral).
196. **L. He**, *G. Cao, K. Sridharan, T.R. Allen, T. Moss, G.S. Was, and T. Lian: Characterization of Oxide Films on Alloys 600 and 690 Exposed to Supercritical and Subcritical Water, The 16th Environmental Degradation of Materials in Nuclear Power Systems, August 11-15, 2013, Asheville, NC (Oral).
197. ***L. He**, M. Gupta, B. Valderrama, H.B. Henderson, A.-R. Hassan, J. Pakarinen, J. Gan, M.A. Kirk, M.V. Manuel, A.A. El-Azab, and T.R. Allen: Microstructural Investigations of Kr and Xe Irradiated UO_2 , Energy Frontier Research Centers Principal Investigators' Meeting. July 18-19, 2013, Washington D.C. (Oral).
198. *M. Khafizov, M. Gupta, J. Pakarinen, C. Yablinsky, **L. He**, B. Valderrama, M.V. Manuel, J. Gan, T.R. Allen, and D.H. Hurley: Measurement of Thermal Conductivity in Ion Irradiated Materials, MRS Spring 2013 Meeting & Exhibit. April 1-5, 2013, San Francisco, CA (Oral).
199. ***L. He**, M. Gupta, C. Yablinsky, J. Gan, M.A. Kirk, and T.R. Allen: Microstructural Investigation of Kr Irradiated UO_2 , TMS 2013 Annual Meeting & Exhibition, March 3-7, 2013, San Antonio, TX (Oral).
200. **L. He**, M. Gupta, J. Gan, C. Yablinsky, and *T.R. Allen: Microstructure of UO_2 Irradiated by In Situ and Ex Situ Kr Ions. NuMat 2012; Oct. 22-25, 2012, Osaka, Japan (Oral).
201. ***L. He**, C. Yablinsky, M. Gupta, T.R. Allen, and J. Gan: Irradiation Damage of CeO_2 with Xe and Kr Implantation, TMS 2012 Annual Meeting & Exhibition, March 11-15, 2012, Orlando, FL (Oral).
202. ***L. He**, J. Shirahata, T. Nakayama, T. Suzuki, H. Suematsu, W. Jiang, and K. Niihara: Synthesis of Boron Nitride Nanotubes by Pulsed Wire Discharge and High-Temperature Annealing. 2011 Annual Meeting of Ceramic Society of Japan, March 16-18, 2011, Shizuoka University, Japan (Oral).
203. ***L. He**, J. Shirahata, K. Kayamura, M. Takeda, T. Nakayama, T. Suzuki, H. Suematsu, and K. Niihara: Mechanical and Thermal Properties of $\text{Y}_2\text{Ti}_2\text{O}_7$ Ceramics, The 3rd International Congress on Ceramics, November 14-18, 2010, Osaka, Japan (Oral).
204. ***L. He**, H.D. Kim, T. Nakayama, T. Suzuki, H. Suematsu, and K. Niihara: Microstructure and

- Properties of Nanocomposites in $\text{Al}_2\text{O}_3\text{-Si}_3\text{N}_4$ System, The 3rd International Congress on Ceramics, November 14-18, 2010, Osaka, Japan (Oral).
205. ***L. He**, H.D. Kim, Y. Tokoi, T. Nakayama, T. Suzuki, H. Suematsu, and K. Niihara: Microstructure and Properties of $\text{Al}_2\text{O}_3\text{-Si}_3\text{N}_4$ Nanocomposites, The 7th International Conference on High Temperature Ceramic Matrix Composites, September 20-22, 2010, Bayreuth, Germany (Poster).
206. ***L. He**, J. Wang, Y. Bao, and Y.C. Zhou: Microstructure and Properties of Zr(Hf)-Al(Si)-C Ceramics. The 7th International Conference on High Temperature Ceramic Matrix Composites, September 20-22, 2010, Bayreuth, Germany (Oral).
207. *H. Nian, **L. He**, F. Li, J. Wang, and Y. Zhou: Synthesis and Microstructure of HfAl_4C_4 . The 7th International Conference on High Temperature Ceramic Matrix Composites, September 20-22, 2010, Bayreuth, Germany (Oral).
208. *Y. Zhou and **L. He**: New Carbides in Zr-Al(Si)-C and Hf-Al(Si)-C System for Ultrahigh Temperature Applications, The 34th International Conference & Exposition on Advanced Ceramics & Composites, January 24-29, 2010, Daytona Beach, FL (**Invited**).
209. *Z. Lin, Y. Zhou, **L. He**, M. Li, J. Wang, and Y. Zhao: Atomic-Scale Characterizations of Layered Ternary Ceramics, The 34th International Conference & Exposition on Advanced Ceramics & Composites, January 24-29, 2010, Daytona Beach, FL (**Invited**).
210. *J. Wang, **L. He**, and Y. Zhou: High Temperature and Ultrahigh Temperature Ternary Layered Carbides, The 9th National Conference on Internal Friction & Mechanical Spectroscopy in Solids, May 11-13, 2009, Shanghai, China (**Invited**).
211. **L. He** and *Y. Zhou: New Carbides in Zr-Al-C and Zr-Al-Si-C System for Ultrahigh Temperature Applications, The 33rd International Conference & Exposition on Advanced Ceramics & Composites, January 18-23, 2009, Daytona Beach, FL (Oral).
212. ***L. He**, Y. Bao, and Y. Zhou: Zirconium Aluminum Carbides: New Precursors for Synthesis of $\text{ZrO}_2/\text{Al}_2\text{O}_3$ Composites, The 3rd Asia-Oceania Ceramic Federation (AOCF-3) Conference, September 21-25, 2008, Lijiang, China (Oral).
213. *Y. Zhou, C. Li, M. Li, J. Zhang, and **L. He**: In-Situ Synthesis and Properties of $\text{Ti}_3\text{AlC}_2/\text{TiB}_2$ Composites, The 3rd Asia-Oceania Ceramic Federation (AOCF-3) Conference, September 21-25, 2008, Lijiang, China (**Invited**).
214. ***L. He**, Z. Lin, J. Wang, Y. Bao, and Y. Zhou: Structure Characteristics and Properties of Zr-Al(Si)-C Ceramics. The 32nd International Conference & Exposition on Advanced Ceramics & Composites, January 27- February 1, 2008, Daytona Beach, FL (Oral).
215. *L. Wu, **L. He**, Y. Bao, and Y. Zhou: Mechanical and Tribological Properties of Bulk $\text{Zr}_2\text{Al}_3\text{C}_4$ Ceramics. The 32nd International Conference & Exposition on Advanced Ceramics & Composites, January 27- February 1, 2008, Daytona Beach, FL (Oral).
216. Z. Lin, ***L. He**, Y. Zhou, J. Wang, and M. Li: Crystal Structure Determination and Mechanical Properties of Ternary Zr(Hf)-Al-C Ceramics. The 32nd International Conference & Exposition on Advanced Ceramics & Composites, January 27- February 1, 2008, Daytona Beach, FL (Poster).
217. ***L. He**, Z. Lin, J. Wang, Y. Bao, M. Li, and Y. Zhou: Mechanical Properties of Bulk $\text{Zr}_2\text{Al}_3\text{C}_4$ Ceramic. The 5th China International Conference on High-Performance Ceramics (CICC-5), May 10-13, 2007, Changsha, China (Oral).
218. *Y. Zhou, Z. Lin, **L. He**, and J. Wang: New Ternary Carbides in Zr-Al-C System for Ultrahigh Temperature Applications, The 5th China International Conference on High-Performance Ceramics, May 10-13, 2007, Changsha, China (**Invited**).
219. ***L. He**, Y. Zhou, Y. Bao, Z. Lin, and J. Wang: In-Situ Synthesis and Properties of Zr-Al-C Ceramics. The 31st International Conference & Exposition on Advanced Ceramics & Composites, January 21-26, 2007, Daytona Beach, FL (Oral).
220. *Y. Zhou, Z. Lin, **L. He**, and J. Wang: Multi-Scale Structure and Properties of New $\text{Zr}_2\text{Al}_3\text{C}_4$ and

Zr₃Al₃C₅ Ceramics. The 31st International Conference & Exposition on Advanced Ceramics & Composites, January 21-26, 2007, Daytona Beach, FL (Oral).

221. *Z. Lin, Y. Zhou, **L. He**, M. Li, and J. Wang: Microstructural Characterizations of Ternary Zr-Al-C Carbides. The 11th International Ceramics Congress & 4th Forum on New Materials, June 4-9, 2006, Acireale, Sicily, Italy (Oral).

PATENTS (5 included, 5 total, 0 licensed)

1. **L. He**, T. Nakayama, K. Niihara, H. Suematsu, and T. Suzuki: Boron Nitride Nanostructured Materials Supported by Metal Nanoparticles and Its Synthesis Method, Japanese Patent No. 5704640, 2015
2. Y. Zhou, **L. He**, and Y. Bao: Zr₂[Al(Si)]₄C₅-SiC Composites and Their Fabrication Method, CN 101824576 B. November 7, 2012
3. Y. Zhou, C. Hu, **L. He**, and Y. Bao: In-Situ Reaction Synthesis/Hot-Pressing of TaC-SiC Composites, CN 101417878 B. June 29, 2011
4. Y. Zhou, **L. He**, and Y. Bao: In-Situ Reaction Synthesis/Hot-Pressing of Bulk Zr-Al-C Ceramics, CN100519478 C. July 29, 2009
5. Y. Zhou, **L. He**, and Y. Bao: Synthesis of Oxidation-Resistant Zr-Al-C Powders, CN 100519479 C. July 29, 2009

PROFESSIONAL MEMBERSHIPS and ACTIVITIES

| | |
|--|----------------|
| The Minerals, Metals & Materials Society | 2016 – Present |
| The American Ceramic Society | 2011 – Present |
| Materials Research Society | 2019 – Present |
| The American Nuclear Society | 2020 – Present |

MENTORING ACTIVITIES (5 postdocs, 7 graduate students, and 5 summer interns)

| | |
|--|---------------|
| Justin Yarrington, Graduate Student at NC State University Radiation Effects on Mechanical Properties of Welded Alloys | 2023– Present |
| Sadman Sakib, Graduate Student at NC State University Radiation Effects of Zirconium Oxide | 2023– Present |
| Rashed Almasri, Graduate Student at NC State University Radiation Effects of Zirconium Carbide and Uranium Carbide | 2023– Present |
| Yunyuan Lu, Graduate Student at NC State University Radiation Effects of Spent Nuclear Fuels | 2023– Present |
| Bobby Gentile, Graduate Student at NC State University Advanced Characterization of Metals in Molten Salt Corrosion, Stress, and Radiation Extremes | 2022– Present |
| Trishelle Copeland-Johnson, Glenn T. Seaborg Distinguished Postdoctoral Research Associate at INL (now staff scientist at INL) Materials Corrosion in Actinide Molten Salts | 2021 – 2022 |
| Kaustubh Bawane, Postdoctoral Research Associate at INL (now staff scientist at INL) Molten Salt Corrosion of Alloys and Radiation Effects in Oxide Fuels | 2020 – 2021 |
| Tiankai Yao, Postdoctoral Research Associate at INL (now staff scientist at INL) Radiation Effects in Metallic Fuels | 2019 – 2020 |

| | |
|---|-------------|
| Yi Xie, Postdoctoral Research Associate at INL (now assistant professor at Purdue University) | 2019 – 2019 |
| Molten Salt Corrosion of Alloys | |
| Xiang Liu, Postdoctoral Research Associate at INL (now tenure track research professor at Zhejiang University, China) | 2018 – 2020 |
| Radiation Effects in Structural Materials | |
| Laura Hawkins, Graduate Student at Texas A&M University (now staff scientist at INL). | 2021– 2023 |
| Microstructural Characterization of Structural materials in Extreme Environments | |
| Yachun Wang, Graduate Student at Rensselaer Polytechnic Institute (now staff scientist at INL) | 2019 – 2020 |
| Small Scale Mechanical Testing of Grain Boundary Strength | |
| Ryan Bedell (Summer Intern), Graduate Student at Rensselaer Polytechnic Institute | 2022 |
| Molten Salt Corrosion and Microstructural Characterization of High-Entropy Alloys | |
| Pengyuan Xiu (Summer Intern), Graduate Student at University of Michigan | 2020 |
| Microstructural Characterization of Dislocation Loops in Uranium Nitrides | |
| Chang-Yu Hung (Summer Intern), Graduate Student at Virginia Tech | 2020 |
| Microstructural Characterization of Extended Defects in Krypton Irradiated UO ₂ | |
| Andres Morell-Pacheco (Summer Intern), Graduate Student at Texas A&M | 2019 |
| Corrosion of Proton Irradiated Hastelloy N in FLiNaK Molten Salt | |
| Weiyue Zhou (Summer Intern), Graduate Student at MIT | 2019 |
| The Influence of Simultaneous Proton Irradiation on Corrosion in Molten Salts | |
| Zefeng Yu (Summer Intern), Graduate Student at University of Wisconsin | 2019 |
| Microstructural Studies of Irradiated Zircalloys | |
| Michael Morehead (Summer Intern), Graduate Student at University of Wisconsin | 2018 |
| Microstructure Characterization of High-Entropy Alloys | |

TEACHING ACTIVITIES

| | |
|---|----------------------|
| NE 591 Special Topics in Nuclear Engineering “Advanced Characterization of Nuclear Materials”, 2023 Spring, 2024 Spring | |
| NE/MSE 409/509, Nuclear Materials | 2022 Fall, 2023 Fall |
| NE 201 Introduction of Nuclear Engineering, Guest Lecture, “Radiation Effects and Characterization” | 2022 Fall |
| Guest Lecture, “Advanced PIE and Characterization of Nuclear Materials at Idaho National Laboratory” | |
| University of Idaho, Idaho Falls, ID | 2019, 2021 |
| Guest Lecture, “Radiation Effects on UO ₂ ” for “Irradiation Effects in Materials” course. | |
| Idaho State University, Idaho Falls, ID | 2017 |
| Class, “Welding” for “Nuclear Materials Laboratory” course. | |
| University of Wisconsin, Madison, WI | 2012 |

AD HOC REVIEWER FOR JOURNALS ACTIVITIES (58 JOURNALS)

ACS Applied Energy Materials, Acta Materialia, Advanced Engineering Materials, Advanced Theory and

Simulations, AIP Advances, Annals of Nuclear Energy, Applied Physics Letter, Carbon, Ceramics International, Chemical Engineering Journal Advances, Chemical Physics Letters, Communications Chemistry, Composites Part A, Corrosion Science, Crystal, Crystal Research and Technology, Diamond and Related Materials, Frontiers in Nuclear Engineering, International Journal of Applied Ceramic Technology, Journal of Alloys and Compounds, Journal of Applied Physics, Journal of Asian Ceramic Societies, Journal of the American Ceramic Society, Journal of the European Ceramic Society, Journal of Materials Research, Journal of Materials Science, Journal of Materials Research and Technology, Journal of Materials Science and Technology, JOM, Journal of Nuclear Materials, Journal of Nuclear Science and Technology, Materialia, Materials Characterization, Materials Chemistry and Physics, Materials & Design, Materials Letters, Materials Research Letters, Materials Science and Engineering A, Metals, Metallurgical and Materials Transactions A, Micron, MRS Bulletin, MRS Communications, Nanomaterials, Nature Communications, npj Materials Degradation, Nuclear Engineering and Design, Nuclear Engineering and Technology, Nuclear Materials and Energy, Polymer Composites, Proceedings of the National Academy of Sciences of the United States of America (PNAS), Progress in Nuclear Energy, Review of Scientific Instruments, Science and Technology of Advanced Materials, Scientific Reports, Scripta Materialia, Tungsten, Vacuum

AD HOC REVIEWER FOR PROPOSALS

DOE Office of Energy Efficiency and Renewable Energy (EERE), Advanced Materials and Manufacturing Technologies Office (AMMTO); DOE Office of Nuclear Energy (NE), Nuclear Energy University Program (NEUP), Nuclear Science User Facilities (NSUF) Program; DOE Office of Science (SC), Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Program, and Laboratory Directed Research and Development (LDRD) at Idaho National Laboratory; National Science Foundation (NSF, 2024)

SYMPOSIUM ORGANIZATIONS

L. He, K. Carlson, M.K. Lang, J.W. Amoroso, B.J. Riley, E. Saez, J. Zhang, Ceramics for New Generation Nuclear Energy System Application, Materials Science & Technology 2023, October 1-4, Columbus, OH.

W. Luscher, X.-M. Bai, **L. He**, S. Biswas, S. Middleburgh, Ceramic Materials for Nuclear Energy Research and Applications at TMS 2023 Annual Meeting & Exhibition, February 19-March 23, 2023, San Diego, CA.

M. Jin, X. Wang, K. Ahmed, J. Bischoff, A. Couet, K. Field, **L. He**, R. Rebak, Tackling Structural Materials Challenges for Advanced Nuclear Reactors, Materials Science & Technology 2022, October 9-12, Pittsburgh, PA.

E. Buck, **L. He**, J.A. Soltis, Visualizing Heavy Element Contamination in the Environment at the Nanoscale, 256th American Chemical Society National Meeting & Exposition, August 19-23, 2018, Boston, MA.

L. He, A. Nelson, K. Sridharan, P. Xu, Accident Tolerant Fuels for Light Water Reactor, TMS 2018 Annual Meeting & Exhibition, March 11-15, 2018, Phoenix, AZ.

R. Kanakala, N. Li, T. Allen, J. Amoroso, Al. Csontos, **L. He**, Y. Katoh, J. Matyas, A. Misra, R. Rebak, K. Sridharan, Materials Development for Nuclear Applications and Extreme Environments, Materials Science & Technology 2016, October 23-27, Salt Lake City, UT.

OTHER SYNERGISTIC ACTIVITIES

Associate Editor, Materials Science Section (focus on Ceramic Materials and Special Alloys) in *Heliyon* (Cell Press / Elsevier journal) 05/2023 – Present
Editorial Board Member, *Tungsten* (Springer journal) 03/2023 – Present
Review Editor on the Editorial Board of Nuclear Materials (specialty section of *Frontiers in Nuclear Engineering*) 10/2021 – Present
Editorial Board Member, *Metals* (MDPI journal) 04/2021 – Present
DOE BES Early Career Network Representative, the Center for Thermal Energy Transport under Irradiation EFRC 2019-2020
Scientific Committee Member, European Materials Research Society (EMRS) Spring Meeting-Materials for Energy Symposium-Nuclear Materials 2019
TMS-Nuclear Materials Committee 03/2023 – Present
TMS-Energy Committee 02/2018 – Present

HONORS AND AWARDS

Journal of Nuclear Materials Best Paper Award of 2023. Intragranular Irradiation-Assisted Stress Corrosion Cracking (IASCC) of 316L Stainless Steel Made by Laser Direct Energy Deposition Additive Manufacturing: Delta Ferrite-Dislocation Channel Interaction, J. Yang, L. Hawkins, L. He, S. Mahmood, M. Song, K. Schulze, X. Lou.

Laboratory Director's 2020 Exceptional Scientific Achievement Award, Idaho National Laboratory (2021)

Outstanding Scientific Achievement Award, Characterization and Advanced PIE Division, Idaho National Laboratory (2020)

Group Leader Award, Characterization and Advanced PIE Division, Idaho National Laboratory (2020)

2018 Best Poster Awards (3rd place) at the 42nd International Conference on Advanced Ceramics and Composites (ICACC). *Crack-Healing Ability and Strength Recovery of Ytterbium Disilicate Ceramic Reinforced with Silicon Carbide Nanofillers*, S. T. Nguyen, H. Iwasawa, H. Suematsu, L. He, T. Suzuki, K. Niihara, T. Nakayama.

Outstanding reviewer for two journals: *Materials & Design* and *Progress in Nuclear Energy* (2015) Elsevier, Amsterdam, The Netherlands.

Finalist in the DOE Energy Frontier Research Center graduate and postdoctoral researcher competition (2013), Washington, D.C., USA

"Chu Yuet Wah" Award for outstanding PhD student (2009)
Chinese Academy of Sciences, Beijing, China

Top Prize of "Shi Changxu" Scholarship (2009)
Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China

The Second Place in oral presentation competition for domestic students (2007)
The 5th China International Conference on High-Performance Ceramics (CICC-5), Changsha, China

Excellent Graduate Award (2003)
Central South University, Changsha, China

COLLABORATIONS

Universities (People, affiliation): Profs. Kumar Sridharam, Adrien Couet, Yongfeng Zhang: University of Wisconsin-Madison; Profs. Todd Allen, Kelvin Field: University of Michigan; Profs. Anter El-Azab, Maria Okuniewski, Janelle Wharry, Xiaoyuan Lou, Yi Xie: Purdue University; Prof. Michel Barsoum: Drexel University; Profs. James Stubbins, Jian-Min Zuo: University of Illinois; Prof. Xianming Bai: Virginia Tech; Profs. Miaomiao Jin, Todd Palmer: Pennsylvania State University; Profs. Jie Lian, Emily Liu: Rensselaer Polytechnic Institute; Profs. Yong Yang, Michael Tonks, Assel Altkaliyeva, Michele Manuel: University of Florida; Prof. Marat Khafizov: Ohio State University; Prof. Haiming Wen, Missouri University of Science and Technology; Prof. Karen Chen-Wiegart: Stony Brook University; Prof. Jay LaVerne: University of Notre Dame; Prof. Chris Marianetti: Columbia University; Prof. Prof. Lin Shao, Dr. Francis Garner: Texas A&M University; Prof. Michael Short, Drs. David Carpenter, Guiqiu Zheng: Massachusetts Institute of Technology; Prof. Tianyi Chen: Oregon State University; Profs. Cui Bai, Yongfeng Lu: University Nebraska-Lincoln; Prof. Sarah Finkeldei: University of California-Irvine; Wei Xiong: University of Pittsburgh; Profs. Brian Jaques, Rick Ubc, Dr. Yaqiao Wu: Boise State University; Prof. Haiyan Zhao: University of Idaho; Profs. Tadachika Nakayama, Hisayuki Suematsu, and Koich Niihara: Nagaoka University of Technology, Japan; Prof. Claude Degueldre, Lancaster University, UK

National Laboratories and Industries (People, affiliation): Drs. Jian Gan, Tiankai Yao, Kaustubh Bawane, Trishelle Copeland-Jonson, Laura Hawkins, Yachun Wang, Mukesh Bachhav, Boopathy Kombaiyah, Brandon Miller, Cheng Sun, Fidelma Giulia Dilemma, Xiaofei Pu, Zilong Hua, Amey Khanolkar, Steven Herrmann, Ruchi Gakhar, Michael Woods, Daniel Murray, Sudipta Biswas, Chao Jiang, Jia-Hong Ke, Linu Malakkal, Shuxiang Zhou, Wen Jiang, Larry Agesen, Michael Benson, John Jackson, Jeffrey Giglio, Simon Pimblott, David Hurley; Drs. Andrew Nelson, Jason Harp, Lizheng Tan, Shannon Mahurin, Sheng Dai, Michael Manley: Oak Ridge National Laboratory; Dr. David Shuh: Lawrence Berkeley National Laboratory; Drs. James Wishart, Simerjeet Gill, Kotaro Sasaki: Brookhaven National Laboratory; Drs. Marqius Kirk, Wei-Ying Chen, Meimei Li: Argonne National Laboratory; Drs. Josh White, Nan Li: Los Alamos National Laboratory; Dr. Matthew Mann: Air Force Research Laboratory; Drs. Bob Carter, Peter Chou: EPRI; Dr. Andrew Hoffman: GE; Drs. Arash Parsi, Michael Ickes: Westinghouse; Drs. Yiwang Bao, Detian Wan: China Building Materials Academy, China; Dr. Thierry Wiss: JRC-Karlsruhe, Germany; Dr. Janne Pakarinen: VTT, Finland; Drs. Ann Leenaers, Sven van den Berghe: SCK•CEN, Belgium

FEDERAL FUNDING

R&D Awards

| | |
|--|------------------|
| NSUF CFA-24-31410, (Lead PI), Office of Nuclear Energy, DOE Radiation Effects of High Entropy Alloys Total cost: \$1,100,000 Role: PI (team lead on radiation effects of high entropy alloys) | 8/1/24-9/30/27 |
| NEUP CFA-24-31912, (Lead PI), Office of Nuclear Energy, DOE Assessing molten salt corrosion resistance of stainless steel 316H in nuclear reactor environments Total cost: \$1,100,000 Role: PI (team lead on molten corrosion studies of stainless steel 316H) | 8/1/24-9/30/27 |
| LDRD 23A1070-050FP (PI: S. Biswas @INL), INL High-Burnup Structure Formation and Associated Fission Product Diffusion Total cost: \$1,500,000 Role: co-PI/university PI (technical lead on advanced characterization of spent nuclear fuels) | 10/01/22-9/30/25 |
| LDRD 22P1065-024FP, (PI: X. Pu @INL), INL Phase Stability of Yttrium-Titanium Oxides | 02/01/22-1/31/23 |

Total cost: \$125,000

Role: co-PI (mentor on advanced characterization of yttrium-titanium oxides)

LDRD 22A1059-067FP, (Lead PI/university PI) INL 10/01/21-9/30/24

Mass Transport in Extreme Environment (MTEE)-the Role of Grain Boundary

Total cost: \$1,200,000

Role: PI (team lead on understanding mass transport of model alloys under stress, radiation, and molten salt corrosion)

LDRD 22A1059-067FP (PI: K. Bawane @ INL), INL 10/01/21-9/30/24

Understanding Deformation and Phonon Transport Mechanisms in Irradiated High Entropy Carbide Ceramics

Total cost: \$750,000

Role: co-PI (mentor on characterization of radiation damage of high entropy carbide ceramics)

Energy Frontier Research Centers (PI: D. Hurley @ INL), Office of Science, DOE 8/01/18-7/30/22

The Center for Thermal Energy Transport under Irradiation (TETI)

Total cost: \$11,500,000

Role: Co-PI (deputy director and technical lead on ion irradiation and microstructural characterization of oxide and metallic fuels)

Energy Frontier Research Centers (PI: J. Wishart @ BNL), Office of Science, DOE 10/01/18-9/30/22

Molten Salts in Extreme Environments (MSEE)

Total cost: \$11,750,000

Role: Co-PI (technical lead on microstructural characterization of metals under irradiation and molten salt corrosion)

LDRD 21P1062-019FP (LDRD seed), INL 7/01/21-6/30/22

Oxidation of Cerium Nitride under Irradiation

Total cost: \$125,000

Role: PI (team lead on understanding oxidation behavior of cerium nitride under irradiation)

SBIR DE-SC0021936 (PI: Christopher Field @ Theia Scientific, LLC), DOE 7/01/21-3/31/22

A Scalable Platform for Real-Time Microscopy Image Analysis Using Artificial Intelligence and Machine Learning

Total cost: \$200,000

Role: co-PI (INL PI, team lead on in situ TEM characterization of defect evolution in nuclear materials)

LDRD 21P1062-019FP (PI: T. Copeland-Johnson @ INL), INL 4/01/21-3/31/23

Characterizing Corrosion Mechanisms of Structural Alloys in Actinide-based Molten Chloride Salt

Total cost: \$200,000

Role: co-PI (mentor for a Seaborg distinguished postdoc on microstructural characterization of structural alloys corroded in molten salts)

LDRD 21P1055-003FP (PI: F. Di Lemma @ INL; LDRD seed), INL 4/01/21-3/31/22

Real Time Non-Equilibrium Studies for Nuclear Materials Performance

Total cost: \$125,000

Role: co-PI (mentor for a junior staff on in situ microstructural characterization of metallic fuels)

LDRD 19A42-017FP (LDRD seed), INL 3/01/19-9/30/20

Development of a Quantitative Measurement Technique for Fission Gas Bubbles Pressure at Nanoscale using Advanced Characterization and Modeling Techniques

Total cost: \$125,000

Role: PI (team lead on development of a quantitative measurement technique for fission gas bubble pressure in neutron irradiated UO₂ and U-Zr fuels)

LDRD 19A39-071FP (PI: Y. Zhang @ INL), Idaho National Laboratory 10/01/18-9/30/21
Mitigating Irradiation Assisted Stress Corrosion Cracking by Rapid Alloy Design

Total cost: \$1,500,000

Role: Co-PI (technical lead on microstructural characterization of advanced alloys)

I-NERI 2017-005-E, Office of Nuclear Energy, DOE 01/31/18-9/30/20
Investigating Radiation Damage in Nuclear Fuels by Microscopy Techniques

Total cost: \$50,000

Role: PI (team lead on an international collaboration with JRC-Karlsruhe, Germany on microstructural characterization of nuclear fuels)

LDRD 18A12-150FP, INL 10/01/17-9/30/20

Small Scale Tensile Testing Technique for Measuring Grain Boundary Strength of Neutron-Irradiated Materials in Focused Ion Beam Systems

Total cost: \$750,000

Role: PI (team lead on small scale mechanical testing and microstructural characterization using TEM and APT techniques as well as modeling)

NEUP 17-12463 (PI: A. Couet @ U of Wisconsin), Office of Nuclear Energy, DOE 10/01/17-9/30/20
Radiation Resistant High Entropy Alloys for Fast Reactor Cladding Applications

Total cost: \$800,000

Role: Subcontract PI/Co-investigator (technical lead on advanced microstructural characterization of high entropy alloys)

FY 2017 BES-GBS (PI: J. Gan @ INL), Office of Sciences, DOE 10/1/16-9/30/19

The Role of Anisotropy on the Self-Organization of Gas Bubble Superlattice

Total cost: \$1,500,000

Role: Co-investigator (technical lead on advanced microstructural characterization of bubble superlattice in metals)

LDRD 14-098 (PI: J. Gan @ INL), Idaho National Laboratory 10/1/13-9/30/16

Irradiation Effects of Uranium Dioxide

Total cost: \$1,185,000

Role: Co-investigator (microstructural studies of radiation effects on UO₂)

Nuclear Science User Facility (NSUF) Access Awards (49 total; Value of \$50,000 per Award)

1. NSUF FY2024 RTE 1st call # 4892 (PI: Rashed Almasri), Office of Nuclear Energy, DOE

In-situ irradiation of ZrC and ZrN above 800 °C

Role: Co-PI (mentor on in situ characterization of irradiation induced defects in ZrC and ZrN)

2. NSUF FY2023 RTE 3rd call # 4771 (PI: Lingfeng He), Office of Nuclear Energy, DOE

In Situ Irradiation of Spent Nuclear Fuels

Role: team lead on in situ TEM characterization of ion irradiated spent UO₂ fuels.

3. NSUF FY2023 RTE 2nd call # 4721 (PI: Lingfeng He), Office of Nuclear Energy, DOE

In Situ Irradiation of Uranium Carbide

Role: team lead on in situ TEM characterization of ion irradiated uranium carbide.

4. NSUF FY2022 RTE 1st call # 4461 (PI: Lingfeng He), Office of Nuclear Energy, DOE
In Situ Irradiation of Fission Nanoprecipitates
Role: team lead on in situ TEM characterization of ion irradiated spent nuclear fuel.
5. NSUF FY2022 RTE 1st call # 4459 (PI: Adrien Couet), Office of Nuclear Energy, DOE
Atom Probe and Transmission Electron Microscopy Studies on Neutron Irradiated FeCrMnNi
Compositionally Complex Alloy
Role: Co-PI, technical lead on TEM characterization of neutron irradiated FeCrMnNi.
6. NSUF FY2022 RTE 1st call # 4442 (PI: Marat Khafizov), Office of Nuclear Energy, DOE
Dislocation Loop and Bubble Evolution in Helium Irradiated ThO₂ and UO₂ Single Crystals
Role: Co-PI, technical lead on TEM characterization of ion irradiated ThO₂ and UO₂.
7. NSUF FY2021 RTE 1st call # 4320 (PI: Francis Garner), Office of Nuclear Energy, DOE
The Effects of Stress on Void Superlattice Formation during Cr+ Self-Ion-Irradiation of Chromium
Role: Co-PI, technical lead on TEM characterization of ion irradiated chromium.
8. NSUF FY 2020 RTE 2nd Call # 4095 (PI: Calvin Parkin), Office of Nuclear Energy, DOE
ChemiSTEM Characterization of Bulk Heavy Ion Irradiated Complex Concentrated Alloys
Role: Co-PI, technical lead on TEM characterization of ion irradiated HEAs
9. NSUF FY 2020 RTE 2nd Call # 3084 (PI: Haiyan Zhao), Office of Nuclear Energy, DOE
UCl₄/UCl₃ Speciation
Role: Co-PI, technical lead on EELS characterization of uranium chloride salts
10. NSUF FY 2020 RTE 1st Call # 3028 (PI: Weiyue Zhou), Office of Nuclear Energy, DOE
In-situ Micro-tensile Testing for Measuring Grain Boundary Strength of NiCr Alloys under Simultaneous
Irradiation and Corrosion Environments
Role: Co-PI, technical lead on micro-mechanical testing of corroded/irradiated NiCr alloys
11. NSUF FY 2020 RTE 1st Call # 3018 (PI: Joshua Jones), Office of Nuclear Energy, DOE
Microstructure Characterization of 6Li(n,a)3H Reaction Damage Sapphire Claddings
Role: Co-PI, technical lead on TEM characterization of neutron irradiated sapphire
12. NSUF FY 2020 RTE 1st Call # 3004 (PI: Kaustubh Bawane), Office of Nuclear Energy, DOE
Ion Irradiation and TEM Characterization of Polymer Derived C-SiC- SiOC Nanocomposites
Role: Co-PI, technical lead on TEM characterization of ion irradiated C-SiC- SiOC Nanocomposites
13. NSUF FY 2019 RTE 3rd Call #2899 (PI: X. Liu @ INL), Office of Nuclear Energy, DOE
Investigation of Fission Gas Bubble Distribution, Phase Transformations, and Bubble Growth Kinetics in a
FFTF-Irradiated U-10Zr Fuel
Role: Co-PI (technical lead on TEM characterization of gas bubbles in neutron irradiated U-10Zr fuel)
14. NSUF FY 2019 RTE 3rd Call #2893 (PI: Y. Yang @ UF), Office of Nuclear Energy, DOE
Understand the Fission Products Behavior in UCO Fuel Kernels of Safety Tested AGR2 TRISO Fuel
Particles by Using Titan Themis 200 with ChemiSTEM Capability
Role: Co-PI (technical lead on ChemiSTEM characterization of TRISO fuel particles)
15. NSUF FY 2019 RTE 3rd Call #2860 (PI: Z. Yu @ U of Wisconsin), Office of Nuclear Energy, DOE
High Resolution (S)TEM/EDS Characterization of Neutron Irradiated Commercial Zr-Nb Alloys
Role: Co-PI (technical lead on ChemiSTEM characterization of neutron irradiated ZIRLO[®] and X2[®] alloys)
16. NSUF FY 2019 RTE 3rd Call #2858 (PI: A. Hoffman @ Missouri S&T), Office of Nuclear Energy, DOE
Advanced Microstructural Characterization of Irradiation-Induced Phase Transformation in 304 Steel

Role: Co-PI (technical lead on ChemiSTEM characterization of ion irradiated 304 steel)

17. NSUF FY 2019 RTE 3rd Call #2833 (PI: A. Morell-Pacheco @ TAMU), Office of Nuclear Energy, DOE
The Influence of Proton Irradiation Damage on the Corrosion of Hastelloy N Exposed to FLiNaK Molten Salt

Role: Co-PI (technical lead on ChemiSTEM of corrosion treated and ion irradiated Hastelloy N)

18. NSUF FY 2019 RTE 2nd Call #1814 (PI: Y. Wang @ RPI), Office of Nuclear Energy, DOE
TEM Characterization of Neutron Irradiated Nd₂Zr₂O₇ and Its Thermal Recovery Behavior

Role: Co-PI (technical lead on TEM characterization of neutron irradiated Nd₂Zr₂O₇)

19. NSUF FY 2019 RTE 2nd Call #1796 (PI: S. Finkeldi @ UCI), Office of Nuclear Energy, DOE
EPMA and TEM Characterization of a UO₂ Fuel Pellet and Cladding Interaction Layer

Role: Co-PI (technical lead on TEM characterization of North Anna fuel)

20. NSUF FY 2019 RTE 2nd Call #1785 (PI: G. Zheng @ MIT), Office of Nuclear Energy, DOE
Microstructural Characterization of In-Core Molten Salt Irradiated TRISO Particles

Role: Co-PI (technical lead on TEM characterization of corrosion treated and neutron irradiated TRISO)

21. NSUF FY 2019 RTE 2nd Call #1784 (PI: T. Yao @ INL), Office of Nuclear Energy, DOE
Irradiation and TEM Characterization of Induced Defects in α -U and δ -UZr_{2+x} Crystals

Role: Co-PI (technical lead on TEM characterization of ion irradiated α -U and δ -UZr_{2+x})

22. NSUF FY 2019 RTE 2nd Call 1782 (PI: Cinbiz, Mahmut @ORNL), Office of Nuclear Energy, DOE
Scanning/Transmission Electron Microscopy Characterization of Irradiated Zr-1Nb-O During Thermal Treatments

Role: Co-PI (technical lead on ChemiSTEM characterization neutron irradiated Zr-1Nb-O alloy)

23. NSUF FY 2019 RTE 2nd Call #1779 (PI: Z. Fu @ UF), Office of Nuclear Energy, DOE
Understand the Atomic Positions of the Metallic Fission Products in UCO Fuel Kernels and Determine the Exact Stoichiometry of UC, UO Phase of Irradiated TRISO Fuels Particles by Using Titan Themis 200 with EELS Characterization Capability

Role: Co-PI (technical lead on ChemiSTEM characterization of TRISO fuels)

24. NSUF FY 2019 RTE 2nd Call #1742 (PI: W. Zhou @ MIT), Office of Nuclear Energy, DOE
Investigation of the Mechanism behind Irradiation-Decelerated Corrosion of Ni-20Cr in Molten Fluoride Salt

Role: Co-PI (technical lead on ChemiSTEM characterization of Ni-20Cr)

25. NSUF FY 2019 RTE 1st Call #1691 (PI: T. Yao @ INL), Office of Nuclear Energy, DOE
Thermal Driven Grain Growth and Fission Gas Bubble Coarsening in Nano-Grain Sized U₃Si₂

Role: Co-PI (technical lead on in situ heating TEM studies of U₃Si₂)

26. NSUF FY 2019 RTE 1st Call #1666 (PI: M. Okuniewski @ Purdue), Office of Nuclear Energy, DOE
Nanoindentation of Phases in Irradiated and Control U-10Zr Fuels

Role: Co-PI (technical lead on S/TEM studies of U-10Zr fuels)

27. NSUF FY 2019 RTE 1st Call #1663 (PI: M. Khafizov @ The OSU), Office of Nuclear Energy, DOE
Ion Irradiation of ThO₂ and UO₂ Single Crystals

Role: Co-PI (technical lead on TEM study of proton irradiated ThO₂ and UO₂)

28. NSUF FY 2019 RTE 1st Call #1621 (PI: F. Di Lemma @ INL), Office of Nuclear Energy, DOE
In-Situ Separate Effect Studies of Thermal and Radiation Effects on Xe Diffusion in Alpha-U and U-10Zr

Role: Co-PI (technical lead on TEM characterization of Xe irradiated U and U-10Zr)

29. NSUF FY 2018 RTE 3rd Call #1561 (PI: T. Wiss @ JRC-Karlsruhe), Office of Nuclear Energy, DOE
Grain Size Effects on He and Xe Behavior in UO₂ and ThO₂
Role: Co-PI (technical lead on in situ TEM study of He and Xe irradiated UO₂ and ThO₂)
30. NSUF FY 2018 RTE 3rd Call #1545 (PI: D. Carpenter @ MIT), Office of Nuclear Energy, DOE
Microstructural Characterization of Grain Boundaries in Hastelloy N Corroded in Molten FLiBe Salt under Neutron Irradiation
Role: Co-PI (technical lead on TEM study of corrosion treated and neutron irradiated Hastelloy N)
31. NSUF FY 2018 RTE 3rd Call #1538 (PI: F. Cappia @ INL), Office of Nuclear Energy, DOE
Electron Microscopy Characterization of Fast Reactor MOX Joint Oxyde-Gaine (JOG)
Role: Co-PI (technical lead on TEM characterization of MOX fuels)
32. NSUF FY 2018 RTE 2nd Call #1428, Office of Nuclear Energy, DOE
Microstructural Characterization of Transmutation Nitride Fuels for Fast Reactors
Role: PI (team lead on microstructural studies of transmutation nitride fuels)
33. NSUF FY 2018 RTE 2nd Call #1392 (PI: Z. Yu @Wisconsin), Office of Nuclear Energy, DOE
TEM/EDS Study of Nb Redistribution in ZrNb Alloys Following Proton Irradiation
Role: Co-PI (technical lead on TEM/EDS characterization of proton irradiated ZrNb alloys)
34. NSUF FY 2018 RTE 2nd Call #1380 (PI: M. Moorehead @Wisconsin), Office of Nuclear Energy, DOE
TEM and APT Characterization of Ion-Irradiated High-Entropy Alloys for Sodium-Cooled Fast Reactors
Role: Co-PI (technical lead on TEM characterization of ion irradiated high-entropy alloys)
35. NSUF FY 2018 RTE 2nd Call #1374 (PI: M. Cinbiz @ ORNL), Office of Nuclear Energy, DOE
Characterization of Neutron-Irradiated Zr-1Nb-O using Scanning Transmission Electron Microscopy
Role: Co-PI (technical lead on ChemiSTEM characterization of neutron irradiated Zr-1Nb-O alloy)
36. NSUF FY 2018 RTE 1st Call #1257 (PI: Y. Yang @ UF), Office of Nuclear Energy, DOE
Understand the Fission Products Behavior and Irradiation Effects in UCO Fuel Kernels of Irradiated AGR-1 and AGR-2 TRISO Fuel Particles using Titan Themis 200 with ChemiSTEM Capability
Role: Co-PI (technical lead on ChemiSTEM characterization of TRISO fuel particles)
37. NSUF FY 2018 RTE 1st Call #1254, Office of Nuclear Energy, DOE
Characterization of Grain Boundaries of Alloy X-750 Irradiated in EBR-II
Role: PI (team lead on microstructural studies of neutron irradiated X-750 alloy)
38. NSUF FY 2018 RTE 1st Call #1253 (PI: M. Bachhav @ INL), Office of Nuclear Energy, DOE
Understanding the Role of Grain Boundary Character in Segregation Behavior of Solute Elements in Neutron Irradiated 304 SS Using Atom Probe Tomography
Role: Co-PI (technical lead on FIB/EBSD characterization of neutron irradiated 304 SS)
39. NSUF FY 2018 RTE 1st Call #1213 (PI: J. Gan @ INL), Office of Nuclear Energy, DOE
Investigation of Gas Bubble Behavior in Metals using In-Situ Ne, Ar, and Kr Ion Irradiation
Role: Co-PI (technical lead on TEM characterization of Fe, Mo and W irradiated with Ne, Ar, and Kr ions)
40. NSUF FY 2018 RTE 1st Call #1151 (PI: S. Meher @ INL), Office of Nuclear Energy, DOE
Electron Tomography for Three-Dimensional Characterization of Intragranular Fission Product Transport in Neutron-Irradiated Silicon Carbide in TRISO Fuel
Role: Co-PI (technical lead on electron tomography characterization of fission products in TRISO fuel)
41. NSUF FY 2017 RTE 3rd Call #1001 (PI: A. Couet @ U of Wisconsin), Office of Nuclear Energy, DOE

APT and TEM Study of Redistribution of Alloying Elements in ZrNb Alloys Following Proton Irradiation: Effects on In-Reactor Corrosion Kinetics

Role: Co-PI (technical lead on ChemiSTEM characterization of proton irradiated ZrNb alloys)

42. NSUF FY 2017 RTE 2nd Call #957 (PI: J. Lian @ RPI), Office of Nuclear Energy, DOE
Fission Gas Behavior and Fuel Swelling of Accident Tolerant U₃Si₂ Fuels by Ion Beam Irradiation

Role: Co-PI (technical lead on TEM characterization of ion irradiated U₃Si₂)

43. NSUF FY 2017 RTE 2nd Call #912, Office of Nuclear Energy, DOE
Investigation of Gas Bubble Behavior under Ion Irradiation

Role: PI (team lead on in situ microstructural studies of He and Xe bubbles in Fe, Mo and W metals)

44. NSUF FY 2017 RTE 1st Call #846, Office of Nuclear Energy, DOE
The Window of Gas-Bubble Superlattice Formation in bcc Metals

Role: co-PI (technical lead on TEM studies of He/Xe implanted Mo and W metals)

45. NSUF FY 2017 RTE 1st Call #835 (PI: J. Lian @ RPI), Office of Nuclear Energy, DOE
Radiation Response and Microstructure of Accident Tolerant U₃Si₂ Fuels by Ion Beam Irradiation

Role: Co-PI (technical lead on TEM characterization of ion irradiated U₃Si₂)

46. NSUF FY 2016 RTE 2nd Call #657, Office of Nuclear Energy, DOE
In Situ Observation of Lunar Crater Features in Xe Irradiated UO₂ at High Dose

Role: PI (team lead on in situ characterization of Xe irradiated UO₂ at IVEM facility)

47. NSUF FY 2014 RTE 2nd Call #483, Office of Nuclear Energy, DOE
Transmission Electron Microscopy Study of the Microstructure Evolution in Kr Irradiated UO₂

Role: PI (team lead on microstructural characterization of Kr irradiated UO₂)

48. NSUF FY 2013 RTE Solicitation #431, Office of Nuclear Energy, DOE
Study of the Microstructure of Kr and Xe Irradiated UO₂ by Advanced Microscopy Techniques

Role: PI (team lead on microstructural characterization of Kr and Xe irradiated UO₂)

49. NSUF FY 2011 RTE Solicitation #327, Office of Nuclear Energy, DOE
Study of the Microstructure of Irradiated CeO₂ by Advanced Microscopy Techniques

Role: PI (team lead on microstructural characterization of ion irradiated CeO₂)