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EDUCATION AND TRAINING:

Degree	Year	Area/Major	Institution
Ph.D	2010	Nuclear Engineering	North Carolina State University, Raleigh, NC
MS	2007	Nuclear Engineering	North Carolina State University, Raleigh, NC
BS	2005	Nuclear Engineering	Texas A&M University, College Station, TX

RESEARCH AND PROFESSIONAL EXPERIENCES:

Senior Research and Development Staff and Group Leader **October 2020 to present**
Nuclear Fuel Element Performance Group
Research and Development Staff, **June 2019 to September 2020**
Nuclear Fuel Materials Group
Oak Ridge National Laboratory, Oak Ridge, TN
Collect and supervise the collection of postirradiation examination data to better understand nuclear fuel performance, and the design of irradiation tests to better inform fuel performance. Work includes experience with coated particle fuel, nitride fuels, light water reactor fuel and accident tolerant fuel for light water reactors.

Research and Development Engineer, **September 2010 to May 2019**
Advanced Characterization and Post Irradiation Examination
Idaho National Laboratory, Idaho Falls, ID
Collect and supervision of the collection of data from various postirradiation examination campaigns, interpret this data, and report this data through technical reports and peer reviewed journal articles. Provide feedback for irradiation testing, manage project scope and budget, and supervise junior research staff, post-docs, and students.
Research Areas:
Post Irradiation Examination Principle Investigator for DOE's Advanced Fuels Campaign (Fast Reactor Fuels, LWR Accident Tolerant Fuels)
Post Irradiation Examination of TRISO fuel irradiation experiments, specifically non-destructive burn-up analysis with gamma-ray spectrometry.
Fabrication of uranium silicide for LWR applications in cooperation with Westinghouse

SELECTED PUBLICATIONS FROM PEER REVIEWED JOURNALS: SCOPUS H-INDEX 12

J.M. Harp, R.N. Morris, C.M. Petrie, J.R. Burns, K.A. Terrani, Postirradiation examination from separate effects irradiation testing of uranium nitride kernels and coated particles R, J. Nucl. Mater. 544 (2021) 152696. doi:10.1016/j.jnucmat.2020.152696.

Y. Xie, S.C. Vogel, J.M. Harp, M.T. Benson, L. Capriotti, Microstructure Evolution of U–Zr System in A Thermal Cycling Neutron Diffraction Experiment: Extruded U–10Zr (wt. %), J. Nucl. Mater. (2020) 152665. doi:10.1016/j.jnucmat.2020.152665.

T. Yao, L. Capriotti, J.M. Harp, X. Liu, Y. Wang, F. Teng, D.J. Murray, A.J. Winston, J. Gan, M.T. Benson, L. He, α-U and ω-UZr2 in neutron irradiated U-10Zr annular metallic fuel, J. Nucl. Mater. 542 (2020) 152536. doi:10.1016/j.jnucmat.2020.152536.

L. Capriotti, J.M. Harp, Characterization of a minor actinides bearing metallic fuel pin irradiated in EBR-II, J. Nucl. Mater. 539 (2020) 152279. doi:10.1016/j.jnucmat.2020.152279.

J. Thomas, A. Figueroa Bengoa, S.T. Nori, R. Ren, P. Kenesei, J. Almer, J. Hunter, J. Harp, M.A. Okuniewski, The application of synchrotron micro-computed tomography to characterize the three-dimensional microstructure in irradiated nuclear fuel, J. Nucl. Mater. 537 (2020) 152161. doi:10.1016/j.jnucmat.2020.152161.

F. Cappia, K. Tanaka, M. Kato, K. McClellan, J. Harp, Post-irradiation examinations of annular mixed oxide fuels with average burnup 4 and 5% FIMA, J. Nucl. Mater. (2020) 152076. doi:10.1016/J.JNUCMAT.2020.152076.

K.A. Terrani, B.C. Jolly, J.M. Harp, Uranium nitride tristructural-isotropic fuel particle, J. Nucl. Mater. 531 (2020) 152034. doi:10.1016/J.JNUCMAT.2020.152034.

F. Cappia, B.D. Miller, J.A. Aguiar, L. He, D.J. Murray, B.J. Frickey, J.D. Stanek, J.M. Harp, Electron microscopy characterization of fast reactor MOX Joint Oxyde-Gaine (JOG), J. Nucl. Mater. 531 (2020) 151964. doi:10.1016/J.JNUCMAT.2019.151964.

J.M. Harp, L. Capriotti, D.L. Porter, J.I. Cole, U-10Zr and U-5Fs: Fuel/cladding chemical interaction behavior differences, J. Nucl. Mater. 528 (2020) 151840. doi:10.1016/j.jnucmat.2019.151840.

S.C. Vogel, M.A.M. Bourke, A.E. Craft, J.M. Harp, C.T. Kelsey, J. Lin, A.M. Long, A.S. Losko, P. Hosemann, K.J. McClellan, M. Roth, A.S. Tremsin, Advanced Postirradiation Characterization of Nuclear Fuels Using Pulsed Neutrons, JOM. (2019). doi:10.1007/s11837-019-03849-2.

R. Parrish, A. Winston, J. Harp, A. Aitkaliyeva, TEM characterization of high burnup fast-reactor MOX fuel, J. Nucl. Mater. (2019) 151794. doi:10.1016/j.jnucmat.2019.151794.

F. Cappia, J.M. Harp, Postirradiation examinations of low burnup U3Si2 fuel for light water reactor applications, J. Nucl. Mater. 518 (2019) 62–79. doi:10.1016/J.JNUCMAT.2019.02.047.

F. Cappia, J.M. Harp, K. McCoy, Post-irradiation examinations of UO2 composites as part of the Accident Tolerant Fuels Campaign, J. Nucl. Mater. 517 (2019) 97–105. doi:10.1016/J.JNUCMAT.2019.01.050.

J.M. Harp, L. Capriotti, H.J.M. Chichester, Postirradiation Examination of FUTURIX-FTA metallic alloy experiments, J. Nucl. Mater. 515 (2019) 420–433. doi:10.1016/J.JNUCMAT.2018.12.051.

J.M. Harp, H.J.M. Chichester, L. Capriotti, Postirradiation examination results of several metallic fuel alloys and forms from low burnup AFC irradiations, J. Nucl. Mater. 509 (2018) 377–391. doi:10.1016/j.jnucmat.2018.07.003.

L. He, J.M. Harp, A.R. Wagner, R.E. Hoggan, K.R. Tolman, Hydrothermal synthesis of silicon oxide clad uranium oxide nanowires, J. Am. Ceram. Soc. 101 (2018). doi:10.1111/jace.15295

J.M. Harp, P.A. Demkowicz, J.D. Stempien, Fission product inventory and burnup evaluation of the AGR-2 irradiation by gamma spectrometry, Nucl. Eng. Des. 329 (2018) 134–141. doi:10.1016/j.nucengdes.2017.08.005.

Y. Miao, J. Harp, K. Mo, S. Zhu, T. Yao, J. Lian, A.M. Yacout, Bubble morphology in U3Si2 implanted by high-energy Xe ions at 300 °C, J. Nucl. Mater. 495 (2017) 146–153. doi:10.1016/J.JNUCMAT.2017.07.066.

J.M. Harp, D.L. Porter, B.D. Miller, T.L. Trowbridge, W.J. Carmack, Scanning electron microscopy examination of a Fast Flux Test Facility irradiated U-10Zr fuel cross section clad with HT-9, J. Nucl. Mater. 494 (2017) 227–239. doi:10.1016/j.jnucmat.2017.07.040.

L. He, J.M. Harp, R.E. Hoggan, A.R. Wagner, Microstructure studies of interdiffusion behavior of U 3 Si 2 /Zircaloy-4 at 800 and 1000 °C, J. Nucl. Mater. 486 (2017) 274–282. doi:10.1016/j.jnucmat.2017.01.035.

J.D. Hunn, C.A. Baldwin, T.J. Gerczak, F.C. Montgomery, R.N. Morris, C.M. Silva, P.A. Demkowicz, J.M. Harp, S.A. Ploger, Detection and analysis of particles with failed SiC in AGR-1 fuel compacts, Nucl. Eng. Des. 306 (2016) 36–46. doi:10.1016/j.nucengdes.2015.12.011

P.A. Demkowicz, J.D. Hunn, S.A. Ploger, R.N. Morris, C.A. Baldwin, J.M. Harp, P.L. Winston, T.J. Gerczak, I.J. van Rooyen, F.C. Montgomery, C.M. Silva, Irradiation performance of AGR-1 high temperature reactor fuel, Nucl. Eng. Des. 306 (2016) 2–13. doi:10.1016/J.NUCENGDES.2015.09.011.

J.M. Harp, P.A. Lessing, R.E. Hoggan, Uranium silicide pellet fabrication by powder metallurgy for accident tolerant fuel evaluation and irradiation, J. Nucl. Mater. 466 (2015) 728–738. doi:10.1016/j.jnucmat.2015.06.027

J.M. Harp, P.A. Demkowicz, P.L. Winston, J.W. Sterbentz, An analysis of nuclear fuel burnup in the AGR-1 TRISO fuel experiment using gamma spectrometry, mass spectrometry, and computational simulation techniques, Nucl. Eng. Des. 278 (2014) 395–405. doi:10.1016/j.nucengdes.2014.07.041

D.M. Scates, J. Hartwell, J.B. Walter, M.W. Drigert, J. Harp, Fission product monitoring of TRISO coated fuel for the advanced gas reactor-1 experiment, Nucl. Eng. Des. 240 (2010) 2493–2499. doi:10.1016/j.nucengdes.2009.10.014

J.M. Harp, A.I. Hawari, M.A. Bourham, "Simulation of γ-ray spectrometry of failed TRISO fuel, Nuclear Inst. And Methods in Physics Research A, Vol. 579, 2007, doi:10.1016/j.nima.2007.04.065

SYNERGISTIC ACTIVITIES AND AWARDS:

- 2005 Advanced Fuel Cycle Initiative Fellow
- 2015-present Generation IV International Forum – Advanced Fuel Project, US Department of Energy Representative
- 2015-2019 US-Japan Civilian Nuclear Working Group Fuel Cycle Waste Management Advanced Fuels sub-working group member
- 2016 Best Paper PIE track HTR-2016 for "Fission Product Inventory and Burnup Evaluation of the AGR-2 Irradiation by Gamma Spectrometry,"
- 2016-present OECD-NEA Expert Group on Innovative Fuel - US Department of Energy Representative
- Recognized Reviewer for the following journals: Journal of Nuclear Materials, Nuclear Engineering and Design, Annals of Nuclear Energy, Journal of Physics and Chemistry of Solids, Nuclear Instruments and Methods B