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- 134  $UO_2$  High-Burnup Behavior and Transient Fission Gas Release Modeling—*P.-C.A. Simon (INL), L.K. Aagesen (INL), D. Andersson (LANL), S. Biswas (INL), N. Capps (ORNL), M.W.D. Cooper (LANL), W. Jiang (INL), S. Novascone (INL)*
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- 145 Examinations of Xenon Bubbles in High-Burnup  $UO_2$  Fuel Before and After LOCA Testing—*L.K. Reyes (Univ. Tennessee, Knoxville), C.M. Parish (ORNL), C.S. McKinney (ORNL), J.M. Harp (ORNL), N.A. Capps (ORNL), B.D. Wirth (Univ. Tennessee, Knoxville)*
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- 158 In-situ TEM Studies of Microstructural and Phase Evolution in Metallic Fuel Alloys—*Fidelma G. Di Lemma (INL), S. Vajayan (Michigan Tech Univ.), D. Salvato (INL), K.D. Wright (INL), L.R. Hawkins (INL), K.K. Bawane (INL), L. Capriotti (INL), T. Yao (INL)*
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- 170 Assessment of Uranium Nitride Fuel Safety Limits Using Existing Experimental Data—*A. Levinsky (LANL), Z. Miller (LANL), V.K. Mehta (LANL), M. Fratoni (Univ. California, Berkeley)*
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- 175 Modeling of Fission Gas Behavior in Uranium Nitride Fuel—*J. Rizk (LANL), C. Matthews (LANL), M. Cooper (LANL), A. Schneider (LANL), A.D. Andersson (LANL)*
- 176 Thermal Shock Testing of Cermet Fuel UN+Mo/W—*A. Broussard (Rensselaer Polytechnic Institute), D. Zhao (Rensselaer Polytechnic Institute), E. Kardoulak (LANL), J. Lian (Rensselaer Polytechnic Institute)*
- 177 Corrosion Behavior of Doped High-Density Fuels—*S. Widgeon Paisner (LANL), B. Gong (Rensselaer Polytechnic Institute), J. Lian (Rensselaer Polytechnic Institute), J.T. White (LANL)*
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- 188 Accelerated Fuel Qualification Using in situ Neutron Diffraction—*E.G. Obbard (Univ. New South Wales), J.H. Stansby (Univ. New South Wales), V.K. Peterson (Australian Nuclear Science and Technology Organisation), D. Adorno Lopes (KTH Royal Institute of Technology), P.A. Burr (Univ. New South Wales), J. Bevitt (Australian Nuclear Science and Technology Organisation), A. Paradowska (Australian Nuclear Science and Technology Organisation), E.S. Sooby (Univ. Texas, San Antonio), J.T. White (LANL), P. Olsson (KTH Royal Institute of Technology)*
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- 254 Kinetics and Stability of Nano-Scale Precipitates in Fe-Based Alloys During Ion Irradiations—*Yajie Zhao (ORNL), Pengcheng Zhu (Univ. Tennessee, Knoxville), Jonathan Poplawsky (ORNL), Arunodaya Bhattacharya (U.K. Atomic Energy Authority), Steven Zinkle (Univ. Tennessee, Knoxville)*
- 255 Impact of Micro-Alloying and Precipitation in Ion-Irradiated Nickel: From the Inhibition of Point-Defect Cluster Diffusion by Thermal Segregation to the Change of Dislocation Loop Nature—*M. Loyer-Prost (CEA), K. Ma (CEA), B. Décamps (Univ. Paris-Saclay), L. Huang (CEA), M. Nastar (CEA), R.E. Schäublin (ETH Zurich), J.F. Löffler (ETH Zurich), A. Fraczkiewicz (CNRS), M.A. Belghoul (CEA), P. Vermaut (CNRS), F. Prima (CNRS)*
- 256 Beryllium Carbide Tolerance to Radiation Damage for Advanced Reactor Moderators—*Diego A. Muzquiz (Univ. Michigan), Stephen S. Raiman (Univ. Michigan)*
- 257 Temperature Dependent Evolution of Microstructure in Fe10Cr Alloy Under Proton Irradiation—*Siwei Chen (Univ. Tennessee, Knoxville), Yajie Zhao (ORNL), Yao Li (Univ. Tennessee, Knoxville), Qinyun Chen (Univ. Tennessee, Knoxville), Steven J. Zinkle (Univ. Tennessee, Knoxville)*
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- 262 Irradiation Resistant Refractory High Entropy Alloys for Applications in Extreme Environments—*Osman El Atwani (PNNL), Matheus Tunes (LANL), Enrique Martinez (Clemson Univ.)*
- 263 Current Challenges and Opportunities for Neutron Irradiation Testing of Fast Spectrum Reactor Specimens—*N. Woolstenhulme (INL), J. Brookman (INL), C. Downey (INL), C. Jesse (INL), M. Worrall (INL)*
- 264 Target Rod Capsules in the Removable Beryllium Position in HFIR—*A.M. Schrell (ORNL), J.W. Geringer (ORNL), R.H. Howard (ORNL), R. Matthews (Canadian Nuclear Laboratories)*
- 265 Design of a SiC Irradiation Creep Experiment in HFIR—*J.R. Chappell (ORNL), P.A. Champlin (ORNL), C.M. Petrie (ORNL), T. Koyanagi (ORNL)*
- 267 Integrated Phenomena in Reactor Materials II**
- 268 Thermal Stability and Environmentally-Assisted Cracking of Ferritic-Martensitic Steels in Sodium Reactor Coolant Environments—*Julie D. Tucker (Oregon State), Benjamin Adam (Oregon State), Samuel A. Briggs (Oregon State), Caitlin Huotilainen (TerraPower), Adam Koziol (Oregon State), Dustin Mangus (Oregon State), Guillaume Mignot (Oregon State), David J. Sprouster (Stony Brook Univ.)*

- 269 Long-Term Thermal Ageing Effects in HT9 and Structure-Property Characterization—*D. Sprouster (Stony Brook Univ.), B. Adam (Oregon State), A. Koziol (Oregon State), L. Rolly (Oregon State), C. Huotilainen (TerraPower), J.D. Tucker (Oregon State)*
- 270 The Effect of Variable Strain Rate on Environmentally Assisted Cracking of 316L in Molten FLiNaK—*Xavier Quintana (Oregon State), Jake Quincey (Oregon State), Julie D. Tucker (Oregon State), Samuel Briggs (Oregon State)*
- 271 Study on Eutectic Melting and Relocation Behavior of B4C Powder and Stainless Steel Through Radiative Heating—*Zeeshan Ahmed (Univ. Tokyo), Marco Pellegrini (Univ. Tokyo), Yamano Hidemasa (Japan Atomic Energy Agency), Avadhesh K. Sharma (Univ. Tokyo), Koji Okamoto (Univ. Tokyo)*
- 273 Integrated Phenomena in Reactor Materials III**
- 274 Rationalizing the Effects of Corrosion, Irradiation and Stresses on the Mechanical Performance of Structural Alloys Used Molten Salt Reactors—*Laurent Capolungo (LANL), Xueyang Wu (LANL), Nathan Bieberdorf (Univ. California, Berkeley), Mark Asta (Univ. California, Berkeley), A. Rovinelli (LANL), M. Zecevic (LANL), R. Lebensohn (LANL)*
- 275 4D-STEM Strain Mapping of Internal and External Strain-Induced Phase Transformations in Ni-based Alloy 625—*Caleb Clement (Westinghouse Electric Co.), Yongwen Song (Penn State), Jim Ciston (LBNL), Colin Ophus (LBNL), Yang Yang (Penn State), Janelle Wharry (Purdue)*
- 276 Effects of Porosity on Buffer Layer Fracture Mode—*A.M. Masri (Univ. Wisconsin, Madison), Y. Zhang (Univ. Wisconsin, Madison), A. Rezwand (Sandia), C. Griesbach (Univ. Wisconsin, Madison), R. Thevamaran (Univ. Wisconsin, Madison), T. Gerczak (ORNL), W. Jiang (INL)*
- 277 Integrated Phenomena in Reactor Materials IV**
- 278 FeCrAl Fuel Clad Chemical Interaction in Light Water Reactor Environments—*Haozheng J. Qu (GE Global Research), Maria Higgins (Penn State), Hamdy Abouelella (GE Global Research), Fabiola Cappia (INL), Jatuporn Burns (INL), Lingfeng He (INL), Caleb Massey (ORNL), Jason Harp (ORNL), Rajnikant V. Umretiya (GE Research Center), Andrew K. Hoffman (GE Research Center), Janelle Wharry (Purdue), Raul B. Rebak (GE Global Research)*
- 279 Integral Irradiation Testing and Post Irradiation Examination Programs for Accident Tolerant Fuel Development at Idaho National Laboratory—*D.W. Kamerman (INL), B.P. Durtschi (INL), N.S. Oldham (INL), N.E. Woolstenhulme (INL), F. Cappia (INL), R.S. Hansen (INL), A.W. Collidewei (INL), P.G. Petersen (INL)*
- 280 Development and Preliminary Testing of an Internal Pressure Fatigue Test Rig for Accident Tolerant Fuel Cladding—*Q. Cheng (Canadian Nuclear Laboratories), H.M. Nordin (Canadian Nuclear Laboratories), C. Zhang (Canadian Nuclear Laboratories), T. Molnar (Canadian Nuclear Laboratories), R. Lungu (Canadian Nuclear Laboratories)*
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- 284 Development of Tapered Specimen Geometries for Accelerated Ion Irradiation Creep Testing of 316 Stainless Steel—*M.M. Warwick (Univ. Michigan), W. Peterson (Univ. Michigan), C.A. Hirst (Univ. Michigan), K.G. Field (Univ. Michigan)*
- 285 Evaluation of Irradiation Creep Effects in HT9 Cladding for FAST Experiments—*A.L. Swearingen (INL), K.M. Paaren (INL), G.L. Beausoleil (INL)*
- 286 Accelerating Ion Irradiation Sample Throughput via Lateral Gas Implantation Gradients—*Charles A. Hirst (Univ. Michigan), Aaron Penders (Univ. Michigan), Alexander Flick (Univ. Michigan), Fabian Naab (Univ. Michigan), Logan N. Clowers (Univ. Michigan), Valentin Pauly (Univ. Michigan), Lauren M. Garrison (Commonwealth Fusion Systems), Cody A. Dennett (Commonwealth Fusion Systems), Michael P. Short (MIT), Gary S. Was (Univ. Michigan)*
- 287 Integral Performance of Advanced Metallic Fuel During Severe Transient Overpower—*C. Jensen (INL), K. Anderson (INL), R. Armstrong (INL), Austin Fleming (INL), M. Mihelish (INL), R. Fielding (INL), N. Woolstenhulme (INL), J. Schulthess (INL), L. Ocampo Giraldo (INL), P. Medvedev (INL), D. Wachs (INL)*
- 288 Investigation of Representative LOCA Scenarios on Transient Fission Gas-Induced Fragmentation in Support of Integral LOCA Experiments to be Performed in TREAT—*R.J. Armstrong (INL), C.B. Jensen (INL), C.P. Folsom (INL)*
- 289 Integrated Phenomena in Reactor Materials VI**
- 290 Impact of Proton Irradiation on Corrosion Behavior of Zircaloy-4 and Zr-1Nb Alloys in Hydrogenated Water: A Post-Irradiation Study—*Peng Wang (Univ. Michigan), Gary S. Was (Univ. Michigan)*

- 291 In-situ Irradiation and Elastic Stress Effects on Molten Fluoride Salt Corrosion of Structural Alloys—*C. Evered (Univ. Wisconsin, Madison), M. Tonks (Univ. Florida), K. Sridharan (Univ. Wisconsin, Madison), A. Couet (Univ. Wisconsin, Madison)*
- 292 Molten Chloride Salt Corrosion of Ultra-High Temperature Ceramics—*Brian Carpman (Univ. Michigan), James Kelly (Univ. Michigan), Stephen S. Raiman (Univ. Michigan)*
- 293 Microstructure and Mechanical Properties of Novel Nickel-Base Alloys for Molten Salt Reactor Applications—*Ryan Thier (Univ. Tennessee, Knoxville), Jaimie Tiley (ORNL), Bruce Pint (ORNL), Ryan Gordon (Univ. Wisconsin, Madison), Kumar Sridharan (Univ. Wisconsin, Madison), Soumya Nag (ORNL), Steven Zinkle (Univ. Tennessee, Knoxville)*
- 294 Design of Functionally-Graded Cermet Coatings for Molten Salt Reactors by High Throughput Finite Element Modeling—*K. Yan (Rensselaer Polytechnic Institute), D. Zhao (Rensselaer Polytechnic Institute), S. Sarkar (Rensselaer Polytechnic Institute), R.Rahul (Rensselaer Polytechnic Institute), J. Lian (Rensselaer Polytechnic Institute)*
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- 297 Nuclear Fuel Cycles I**
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- 300 Modeling Ionic Exchange in Faujasite Zeolite for Nuclear Waste Treatment—*An T. Ta (Univ. Florida), R. Seaton Ullberg (Univ. Florida), Ayoub Daouli (Univ. Lorraine), Vanessa Proust (CEA), Michael Badawi (Univ. Lorraine), Agnes Grandjean (CEA), Simon R. Phillpot (Univ. Florida)*
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- 304 Opportunities of Advanced Reactor Systems to Support Nuclear Fuel Cycle Development Options—*Patricia Paviot (PNNL)*
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- 306 Thermodynamic Assessment of Fourteen Pseudo-Ternary Reciprocal Salt Systems Relevant to Molten Salt Reactors—*Clara Dixon (Univ. South Carolina), Mina Aziziha (Univ. South Carolina), Juliano Schorne-Pinto (Univ. South Carolina), Jorge Paz Soldan Palma (Univ. South Carolina), Theodore Besmann (Univ. South Carolina)*
- 307 Turing Instability in the Solid State: Void Lattices in Irradiated Metals—*M.W. Noble (Oxford Univ.), M.R. Tonks (Univ. Florida), S.P. Fitzgerald (Univ. Leeds)*
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- 311 Determination of Hydrogen and Oxygen Impurities in Chloride Salts via Combustion Analysis—*Adam Burak (Univ. Michigan), Brian Carpman (Univ. Michigan), Mohammad Umar Farooq Khan (Univ. Michigan), Vyomini Vakil (Univ. Michigan), Stephen Raiman (Univ. Michigan)*
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- 315 Nuclear Fuel Cycles IV**
- 316 High Temperature Structures, Oxidation, and Thermodynamics of Uranium Nitride and Uranium Carbide—*Xiaofeng Guo (Washington State), Vitaliy Goncharov (Washington State), Juejing Liu (Washington State), Arjen van Veelen (LANL), Emma Carlsen (Washington State), Sam Karcher (Washington State), John McCloy (Washington State), Hongwu Xu (LANL), Joshua White (LANL)*
- 317 Irradiation-Enhanced Diffusion in Advanced Ceramic Nuclear Fuels—*M.W.D. Cooper (LANL), A. Schneider (LANL), C. Matthews (LANL), V. Kocovski (LANL), J. Rizk (LANL), D.A. Andersson (LANL)*

- 318 Contact Angle of Molten Fluoride Salts on Graphite: A Parametric Study—*L. Vergari (Univ. California, Berkeley), Z. Falkowski (Univ. California, Berkeley), M. Denis (Univ. California, Berkeley), R. O. Scarlet (Univ. California, Berkeley)*
- 319 Poster Reception**
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- 320 Trends in LOCA Testing and Modeling Needs for High Burnup and Accident Tolerant Fuel—*A. Probert (Univ. Florida), A. Aitkaliyeva (Univ. Florida), J. Watson (Univ. Florida)*
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- 322 Dynamic Mechanical Properties of High Purity Graphite—*B.D. Huddleston (INL), T.A. Mason (INL), C.J. Gibson (INL), N. Rasmussen (INL), C. Angell (INL), J. Coleman (INL)*
- 323 Corrosion Behavior and Microstructural Characterization Study of Alloy 709 in a High-Temperature Lead Environment—*D.J. Park (KAERI), J.H. Moon (KAERI), H.Y. Song (KAERI), T.W. Cho (KAERI), S.H. Kim (KAERI), Y.J. Jeong (KAERI)*
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- 325 CPU-GPU Hybrid Parallelized Solver for Semi-Implicit Cahn-Hilliard Equation—*Ilhyun Cho (Kyung Hee Univ.), Kunok Chang (Kyung Hee Univ.)*
- 326 Helium Effects on Defect Evolution of In-Situ Irradiated Additive-Manufactured Grade 91 Steel—*Sydney Copp (Univ. Tennessee, Knoxville), Yan-Ru Lin (ORNL), Arunodaya Bhattacharya (U.K. Atomic Energy Authority), Wei-Ying Chen (ANL), Steven Zinkle (Univ. Tennessee, Knoxville)*
- 327 Irradiation Hardening Analysis with Elasto-Plastic and Load-Partitioning Behaviors on Fe-Cr-C Alloys Using In-Situ XRD Technique—*Hoon Lee (Univ. Illinois, Urbana-Champaign), Dominic Piedmont (Univ. Illinois, Urbana-Champaign), Xiang Liu (Zhejiang Univ.), Kuan-Che Lan (Nat'l Tsing Hua Univ.), Meimei Li (ANL), Jonathan Almer (ANL), James F. Stubbins (Univ. Illinois, Urbana-Champaign)*
- 328 Exploration of Sintering Phenomena and Grain Growth in Doped CeO<sub>2</sub> and UO<sub>2</sub>—*J. Proctor (Univ. California, Irvine), O. Lori (Univ. California, Irvine), S. Dillon (Univ. California, Irvine), J.T. White (LANL), S.C. Finkeldei (Univ. California, Irvine)*
- 329 Moduli Measurements of Metal Hydride Moderators, Fuels, and Cladding Materials via Resonant Ultrasound Spectroscopy—*T.A. Saleh (LANL), J.R. Torres (ORNL), M.L. Hayne (LANL), C.A. Kohnert (LANL), J.T. White (LANL), S. Widgeon Paisner (LANL), A.J. Terricabras (LANL), A.P. Shivprasad (LANL)*
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- 332 Multiscale Multiphysics Model of Crud Transport and Deposition in Pressurized Water Reactors: Formulation and Preliminary Results Examining the Effect of Surface Potentials—*Sri Saravana Konganapuram Narasimma Bharath (SUNY Polytechnic Institute), Bhavani Sasank Nagothi (SUNY Polytechnic Institute), Eric Wales (SUNY Polytechnic Institute), John Arnason (Naval Nuclear Laboratory), Matthew Armstrong (Naval Nuclear Laboratory), Kathleen Dunn (SUNY Polytechnic Institute)*
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- 336 Inverse Temperature Dependence of Silver Release Rate from Intact TRISO Fuel—*T.J. Gerczak (ORNL), J.D. Hunn (ORNL), D.J. Skitt (ORNL), G.W. Helmreich (ORNL), D. Schappel (ORNL), Z.M. Burns (ORNL)*
- 337 Determining the Spatial Distribution of Primary Radiation Damage in Real Materials—*M.I. Brand (Univ. New South Wales), E.G. Obbard (Univ. New South Wales), P.A. Burr (Univ. New South Wales)*