

# Nuclear Technology

VOLUME 208 · NUMBER 1 · JANUARY 2022

## Contents

### TECHNICAL PAPERS

- 1** Hybrid System Level and Coarse Grid CFD Tool for Three-Dimensional Natural Circulation, Mixing, and Stratification Modeling  
*R. C. Harvill, J. W. Lane, T. L. George*
  
- 27** Fabrication and Characterization of Zirconium Silicide for Application to Gas-Cooled Fast Reactors  
*George M. Jacobsen, Hangbok Choi, James A. Turso, Amanda M. Johnsen, Andrew J. Bascom, Xialu Wei, Eugene A. Olevsky*
  
- 37** Uncertainty Quantification of the 1-D SFR Thermal Stratification Model via the Latin Hypercube Sampling Monte Carlo Method  
*Cihang Lu, Zeyun Wu*
  
- 49** Verification and Validation of Transient Body Force in GOTHIC for Spent Fuel Pool Response to Seismic Events and Other Applications  
*P. C. Skelton, J. W. Lane, T. L. George, S. W. Claybrook*
  
- 70** Steady-State and Transient Benchmarks of GOTHIC to the Molten Salt Reactor Experiment  
*R. C. Harvill, J. W. Lane, J. M. Link, S. W. Claybrook, T. L. George, T. Kindred*
  
- 100** Steady-State In-Pile Nuclear Thermal Propulsion Experimental Testbed Initial Demonstration at The Ohio State University Research Reactor  
*Tyler R. Steiner, Emily N. Hutchins, Richard H. Howard*
  
- 115** Automated Object Detection for Visual Inspection of Nuclear Reactor Cores  
*Michael G. Devereux, Paul Murray, Graeme West*
  
- 129** An Analysis of Potentially Implementing Standardized Canisters in the U.S. Commercial Waste Management System  
*Robert A. Joseph III, Riley M. Cumberland, Robert L. Howard*
  
- 137** Determination of Airborne Release Fractions from Solid Surrogate Nuclear Waste Fires  
*Joshua A. Hubbard, Timothy J. Boyle, Ethan T. Zepper, Alexander Brown, Taylor Settecerrri, Joshua L. Santarpia, Nelson Bell, Joseph A. Zigmond, Steven S. Storch, Brenda J. Maes, Nicole D. Zayas, Dora K. Wiemann, Marissa Ringgold, Fernando Guerrero, Xavier J. Robinson, Gabriel A. Lucero, Laura J. Lemieux*

## Contents continued

VOLUME 208 · NUMBER 1 · JANUARY 2022

- 154** Development of an Epoxy Solidification Method for Radioactive Spent Resins  
*Seonggon Ryu, Kyoungyong Noh, Misuk Jang, Seoungrae Kim*

### TECHNICAL NOTES

- 160** Initial Exploratory Reactor Physics Assessment of Nonconventional Fuel Concepts for Very Compact Small Modular Reactors Using Hydroxides as Coolants and/or Moderators  
*Blair P. Bromley*
- 192** Carbon Dioxide Contamination of Aqueous Morpholine Solutions and Effects on Secondary Coolant Chemistry Under CANDU Conditions  
*O. Fandiño, J. S. Cox, C. McGregor, J. Conrad, K. Liao, P. R. Tremaine*