

## Dynamics, Instrumentation and Control of Advanced Nuclear Reactor Systems

### Invited Articles

Dynamics and control of molten-salt breeder reactor <i>Vikram Singh, Matthew R. Lish, Ondřej Chvála, and Belle R. Upadhyaya</i> .....	887
An autonomous control framework for advanced reactors <i>Richard T. Wood, Belle R. Upadhyaya, and Dan C. Floyd</i> .....	896
A Takagi–Sugeno fuzzy power-distribution method for a prototypical advanced reactor considering pump degradation <i>Yue Yuan and Jamie Coble</i> .....	905
Maintenance-based prognostics of nuclear plant equipment for long-term operation <i>Zachary Welz, Jamie Coble, Belle Upadhyaya, and Wes Hines</i> .....	914

### Original Articles

#### Reactor Physics

Dynamic Monte Carlo transient analysis for the Organization for Economic Co-operation and Development Nuclear Energy Agency (OECD/NEA) C5G7-TD benchmark <i>Nadeem Shaukat, Min Ryu, and Hyung Jin Shim</i> .....	920
--	-----

#### Thermal Hydraulics

ROSA/LSTF Test and RELAP5 Analyses on PWR Cold Leg Small-Break LOCA with Accident Management Measure and PKL Counterpart Test <i>Takeshi Takeda and Iwao Ohtsu</i> .....	928
Optimal design of passive containment cooling system for innovative PWR <i>Huiun Ha, Sangwon Lee, and Hangon Kim</i> .....	941
Simulation and transient analyses of a complete passive heat removal system in a downward cooling pool-type material testing reactor against a complete station blackout and long-term natural convection mode using the RELAP5/3.2 code <i>Afshin Hedayat</i> .....	953
Comparison of three small-break loss-of-coolant accident tests with different break locations using the system-integrated modular advanced reactor-integral test loop facility to estimate the safety of the smart design <i>Hwang Bae, Dong Eok Kim, Sung-Uk Ryu, Sung-Jae Yi, and Hyun-Sik Park</i> .....	968

#### Nuclear Safety

Effect of emergency core cooling system flow reduction on channel temperature during recirculation phase of large break loss-of-coolant accident at Wolsong unit 1 <i>Seon Oh Yu, Yong Jin Cho, and Sung Joong Kim</i> .....	979
---	-----

#### Nuclear I&C

Verification of failover effects from distributed control system communication networks in digitalized nuclear power plants <i>Moon-Gi Min, Jae-Ki Lee, Kwang-Hyun Lee, Dongil Lee, and Hee-Taek Lim</i> .....	989
---	-----

# Contents

---

## Nuclear Physics, Fusion, and Laser Technology

- Model-based predictions for nuclear excitation functions of neutron-induced reactions on  $^{64,66-68}\text{Zn}$  targets  
 M. Yiğit and A. Kara ..... 996
- Scattering cross section for various potential systems  
 Myagmarjav Odsuren, Kiyoshi Katō, Gonchigdorj Khuukhenkhuu, and Suren Davaa ..... 1006

## Nuclear Fuel Cycle and Radioactive Waste Management

- Development of integrated waste management options for irradiated graphite  
 Alan Wareing, Liam Abrahamsen-Mills, Linda Fowler, Michael Grave, Richard Jarvis, Martin Metcalfe, Simon Norris, and Anthony William Banford ..... 1010
- An innovative method for determining the diffusion coefficient of product nuclide  
 Chih-Lung Chen and Tsing-Hai Wang ..... 1019

## Nuclear Fuel and Reactor Materials

- Mechanical analysis of surface-coated zircaloy cladding  
 Youho Lee, Jeong Ik Lee, and Hee Cheon NO ..... 1031
- Analysis on the post-irradiation examination of the HANARO miniplate-1 irradiation test for kijang research reactor  
 Jong Man Park, Young Wook Tahk, Yong Jin Jeong, Kyu Hong Lee, Heemoon Kim, Yang Hong Jung, Boun-Ok Yoo, Young Gwan Jin, Chul Gyo Seo, Seong Woo Yang, Hyun Jung Kim, Jeong Sik Yim, Yeon Soo Kim, Bei Ye, and Gerard L. Hofman ..... 1044
- Statistical model for forecasting uranium prices to estimate the nuclear fuel cycle cost  
 Sungki Kim, Wonil Ko, Hyoon Nam, Chulmin Kim, Yanghon Chung, and Sungsig Bang ..... 1063

## Nuclear Structural Analysis and Plant Management & Maintenance

- The mechanical design and fabrication of 162.5 MHz buncher for China accelerator driven sub-critical system injector II  
 Haihua Niu, Youtang Li, Yuan He, Bin Zhang, Shichun Huang, Chenzhang Yuan, Huan Jia, and Shenghu Zhang ..... 1071
- Safety analysis of nuclear containment vessels subjected to strong earthquakes and subsequent tsunamis  
 Feng Lin and Hongzhi Li ..... 1079

## Nuclear Policy, Economics, and Human Resource Development

- Differentiated influences of risk perceptions on nuclear power acceptance according to acceptance targets: Evidence from Korea  
 Seungkook Roh and Jin Won Lee ..... 1090

## Technical Note

### Reactor Physics

- Stabilization effect of fission source in coupled Monte Carlo simulations  
 Børge Olsen and Jan Dufek ..... 1095

# Contents

---

## Thermal Hydraulics

- Modification of the fast fourier transform-based method by signal mirroring for accuracy quantification  
of thermal-hydraulic system code  
*Tae Wook Ha, Jae Jun Jeong, and Ki Yong Choi* .....1100

## Nuclear Fuel and Reactor Materials

- Comparison of applicability of current transition temperature shift models to SA533B-1 reactor pressure  
vessel steel of Korean nuclear reactors  
*Ji-Hyun Yoon and Bong-Sang Lee*.....1109