

Contents

Radiation Application

Invited Article

- Development of Drugs and Technology for Radiation Theragnosis
Hwan-Jeong Jeong, Byung Chul Lee, Byeong-Cheol Ahn, and Keon Wook Kang 597
- Effect of D-(+)-Glucose on the Stability of Polyvinyl Alcohol Fricke Hydrogel Three-Dimensional
Dosimeter for Radiotherapy
*Yuejiao Yang, Jie Chen, Liming Yang, Bin Chen, Zhenmei Sheng, Wenyun Luo, Guoping Sui, Xun Lu, and
Jianxin Chen* 608
- Development of Industrial-Scale Fission ⁹⁹Mo Production Process Using Low Enriched Uranium Target
Seung-Kon Lee, Gerd J. Beyer, and Jun Sig Lee 613

Original Articles

Reactor Physics

- A Criticality Analysis of the GBC-32 Dry Storage Cask with Hanbit Nuclear Power Plant Unit 3 Fuel
Assemblies from the Viewpoint of Burnup Credit
Hyungju Yun, Do-Yeon Kim, Kwangheon Park, and Ser Gi Hong 624
- Domain Decomposition Strategy for Pin-Wise Full-Core Monte Carlo Depletion Calculation with the
Reactor Monte Carlo Code
Jingang Liang, Kan Wang, Yishu Qiu, Xiaoming Chai, and Shenglong Qiang 635
- A Lattice-Based Monte Carlo Evaluation of Canada Deuterium Uranium-6 Safety Parameters
Yonghee Kim, Donny Hartanto, and Woosong Kim 642
- Steady- and Transient-State Analyses of Fully Ceramic Microencapsulated Fuel with Randomly
Dispersed Tristructural Isotropic Particles via Two-Temperature Homogenized Model—I: Theory and
Method
Yoonhee Lee, Bumhee Cho, and Nam Zin Cho 650
- Steady- and Transient-State Analyses of Fully Ceramic Microencapsulated Fuel with Randomly
Dispersed Tristructural Isotropic Particles via Two-Temperature Homogenized Model—II: Applications by
Coupling with COREDAX
Yoonhee Lee, Bumhee Cho, and Nam Zin Cho 660

Thermal Hydraulics

- Analysis of Nigeria Research Reactor-1 Thermal Power Calibration Methods
Sunday Arome Agbo, Yusuf Aminu Ahmed, Ita Okon Bassey Ewa, and Yahaya Jibrin 673

Nuclear Safety

- Implicit Treatment of Technical Specification and Thermal Hydraulic Parameter Uncertainties in
Gaussian Process Model to Estimate Safety Margin
Douglas A. Fynan and Kwang-Il Ahn 684

Nuclear I&C

- Reactor Vessel Water Level Estimation During Severe Accidents Using Cascaded Fuzzy Neural Networks
Dong Yeong Kim, Kwae Hwan Yoo, Geon Pil Choi, Ju Hyun Back, and Man Gyun Na 702

Contents

Nuclear Physics, Fusion, and Laser Technology

- Study of Lower Hybrid Current Drive for the Demonstration Reactor
Ali Asghar Molavi-Choobini, Ahmad Naghidokht, and Zahra Karami..... 711

Nuclear Fuel Cycle and Radioactive Waste Management

- Separative Power of an Optimised Concurrent Gas Centrifuge
Sergey Bogovalov and Vladimir Borman..... 719
- Determination of Plutonium Present in Highly Radioactive Irradiated Fuel Solution by Spectrophotometric Method
Krishnan Dhamodharan and Anitha Pius..... 727
- Advanced Depreciation Cost Analysis for a Commercial Pyroprocess Facility in Korea
Sungki Kim, Wonil Ko, Saerom Youn, Ruxing Gao, Yanghon Chung, and Sungsig Bang 733
- Removal of Uranium from Uranium Plant Wastewater Using Zero-Valent Iron in an Ultrasonic Field
Jing Li, Libo Zhang, Jinhui Peng, Jinming Hu, Lifeng Yang, Aiyuan Ma, Hongying Xia, Wenqian Guo, and Xia Yu 744

Nuclear Fuel and Reactor Materials

- Improving the Neutronic Characteristics of a Boiling Water Reactor by Using Uranium Zirconium Hydride Fuel Instead of Uranium Dioxide Fuel
Ahmed Abdelghafar Galahom 751
- The Studies of Irradiation Hardening of Stainless Steel Reactor Internals under Proton and Xenon Irradiation
Chaoliang Xu, Lu Zhang, Wangjie Qian, Jinna Mei, and Xiangbing Liu 758

Radiation Application

- On-the-Fly Estimation Strategy for Uncertainty Propagation in Two-Step Monte Carlo Calculation for Residual Radiation Analysis
Gi Young Han, Do Hyun Kim, Chang Ho Shin, Song Hyun Kim, Bo Kyun Seo, and Gwang Min Sun 765
- Study of a Betavoltaic Battery Using Electroplated Nickel-63 on Nickel Foil as a Power Source
Young Rang Uhm, Byoung Gun Choi, Jong Bum Kim, Dong-Hyuk Jeong, and Kwang Jae Son 773
- Uranium Enrichment Determination Using a New Analysis Code for the U XK α Region: HyperGam-U
Junhyuck Kim, Hee-Dong Choi, and Jongho Park..... 778

Radiation Protection

- Electron Accelerator Shielding Design of KIPT Neutron Source Facility
Zhaopeng Zhong and Yousry Gohar..... 785
- Determination of Tungsten Target Parameters for Transmission X-Ray Tube: A Simulation Study Using Geant4
Mohammad M. Nasseri 795
- An Intraoral Miniature X-Ray Tube Based on Carbon Nanotubes for Dental Radiography
Hyun Jin Kim, Hyun Nam Kim, Hamid Saeed Raza, Han Beom Park, and Sung Oh Cho 799

Contents

Nuclear Structural Analysis and Plant Management & Maintenance

- Effects of No Stiffness Inside Unbonded Tendon Ducts on the Behavior of Prestressed Concrete Containment Vessels
Sang-Hoon Noh, Hyo-Gyong Kwak, and Raeyoung Jung 805
- Development of Wall-Thinning Evaluation Procedure for Nuclear Power Plant Piping—Part 1: Quantification of Thickness Measurement Deviation
Hun Yun, Seung-Jae Moon, and Young-Jin Oh..... 820
- A Time-Domain Method to Generate Artificial Time History from a Given Reference Response Spectrum
Gangsig Shin and Ohseop Song 831

Technical Note

Nuclear Fuel Cycle and Radioactive Waste Management

- Reduction of Radioactive Waste from Remediation of Uranium-Contaminated Soil
Il-Gook Kim, Seung-Soo Kim, Gye-Nam Kim, Gyu-Seong Han, and Jong-Won Choi 840

This journal was supported by the Korean Federation of Science and Technology Societies Grant funded by the Korean Government (MEST).