



Contents

Original article

Special Theme (4th Conference on Nuclear Analytical Techniques, 6th Symposium on Radiation in Medicine, Space, and Power (NAT2020 & RMSP-VI))

High sensitivity determination of iridium contents in ultra-basic rocks by INAA with coincidence gamma-ray detection Mitsuru Ebihara, Naoki Shirai, Jin Kuwayama, and Yosuke Toh	423
Thermally assisted IRSL and VSL measurements of display glass from mobile phones for retrospective dosimetry Michael Discher, Hyoungtaek Kim, and Jungil Lee	429
Development of neutron time-of-flight measurement system for 1.7-MV tandem proton accelerator with lithium target Soobin Lim, Donghwan Kim, Jin-Goo Kang, Jeong-Jeung Dang, Pilsoo Lee, Geehyun Kim, Kyoung-Jae Chung, and Y.S. Hwang	437
Evaluation of dose received by workers while repairing a failed spent resin mixture treatment device Woo Nyun Choi, Jaehoon Byun, and Hee Reyoung Kim	442
Analysis of radiation safety management status of medical linear accelerator facilities in Korea Na Hye Kwon, Dong Oh Shin, So Hyun Ann, Jin Sung Kim, Sang Hyoun Choi, and Dong Wook Kim	449
Application of radiotracer technique in remediation of Zn(II) from aqueous solutions by dry cowdung powder Sabrina Afzal Shaikh and Hemlata Kapil Bagla	456
Evaluation of peak-fitting software for magnesium quantification through k_0 -instrumental neutron activation analysis Kishore B. Dasari, Hana Cho, Radojko Jaćimović, Byung-Gun Park, and Gwang-Min Sun	462
Tritium extraction in aluminum metal by heating method without melting Ki Joon Kang, Jaehoon Byun, and Hee Reyoung Kim	469
Measurement uncertainty analysis of radiophotoluminescent glass dosimeter reader system based on GD-352M for estimation of protection quantity Jae Seok Kim, Byeong Ryong Park, Jaeryong Yoo, Wi-Ho Ha, Seongjae Jang, Won Il Jang, Gyu Seok Cho, Hyun Kim, Insu Chang, and Yong Kyun Kim	479
Removal of NO_x using electron beam process with NaOH spraying Jae Kyeong Shin, Sang-Hee Jo, Tae-Hun Kim, Yong-Hwan Oh, Seungho Yu, Youn-Suk Son, and Tak-Hyun Kim	486
Derivation of site-specific derived concentration guideline levels at Korea Research Reactor-1&2 sites Geun-Ho Kim, Tae Gwan Do, Jae Kwon, Gangwoo Ryu, and Kwang Pyo Kim	493
Turn-off time improvement by fast neutron irradiation on pnp Si Bipolar Junction Transistor Sung Ho Ahn, Gwang Min Sun, and Hani Baek	501
Current status of disposal and measurement analysis of radioactive components in linear accelerators in Korea Na Hye Kwon, Dong Oh Shin, Jinsung Kim, Jaeryong Yoo, Min Seok Park, Kum Bae Kim, Dong Wook Kim, and Sang Hyoun Choi	507
Comparison of X-ray computed tomography and magnetic resonance imaging to detect pest-infested fruits: A pilot study Taeyun Kim, Jaegi Lee, Gwang-Min Sun, Byung-Gun Park, Hae-Jun Park, Deuk-Soo Choi, and Sung-Joon Ye	514



Contents

Reactor Physics

- Sensitivity and uncertainty quantification of neutronic integral data in the TRIGA Mark II research reactor
M. Makhloul, H. Boukhal, E. Chakir, T. El Bardouni, M. Lahdour, M. Kaddour, Abdulaziz Ahmed, A. Arectout, and H. El Yaakoubi..... 523
- Convergence analysis of fixed-point iteration with Anderson Acceleration on a simplified neutronics/thermal-hydraulics system
Jaemin Lee and Han Gyu Joo 532

Thermal Hydraulics

- Flow regime transition criteria for vertical downward two-phase flow in rectangular channel
Vikrant Siddharudh Chalgeri and Ji Hwan Jeong..... 546
- Experimental investigation and validation of TASS/SMR-S code for single-phase and two-phase natural circulation tests with SMART-ITL facility
Hwang Bae, Ji-Han Chun, Eunkoo Yun, Young-Jong Chung, Sung-Won Lim, and Hyun-Sik Park 554
- Robust technique using magnetohydrodynamics for safety improvement in sodium-cooled fast reactor
Jong Hui Lee and Il Seouk Park..... 565

Nuclear Safety

- Assessment of the severe accident code MIDAC based on FROMA, QUENCH-06&16 experiments
Shihao Wu, Yapei Zhang, Dong Wang, Wenxi Tian, Suizheng Qiu, and G.H. Su..... 579
- Knowledge from recent investigations on sloshing motion in a liquid pool with solid particles for severe accident analyses of sodium-cooled fast reactor
Ruicong Xu, Songbai Cheng, Shuo Li, and Hui Cheng..... 589
- Design and characterization of a Muon tomography system for spent nuclear fuel monitoring
Chanwoo Park, Min Kyu Baek, In-soo Kang, Seongyeon Lee, Heejun Chung, and Yong Hyun Chung 601

Nuclear I&C

- Power peaking factor prediction using ANFIS method
Nur Syazwani Mohd Ali, Khaidzir Hamzah, Faridah Idris, Nor Afifah Basri, Muhammad Syahir Sarkawi, Muhammad Arif Sazali, Hairie Rabir, Mohamad Sabri Minhat, and Jasman Zainal 608
- Artificial neural network reconstructs core power distribution
Wenhui Li, Peng Ding, Wenqing Xia, Shu Chen, Fengwan Yu, Chengjie Duan, Dawei Cui, and Chen Chen ... 617

Nuclear Fuel Cycle and Radioactive Waste Management

- The effect of UV-C irradiation and EDTA on the uptake of Co^{2+} by antimony oxide in the presence and absence of competing cations Ca^{2+} and Ni^{2+}
Leena Malinen, Eveliina Repo, Risto Harjula, and Nina Huittinen..... 627
- Sensitivity simulation on isotopic fissile measurement using neutron resonances
YongDeok Lee, Seong-Kyu Ahn, and Woo-Seok Choi..... 637
- Investigation of neural network-based cathode potential monitoring to support nuclear safeguards of electrorefining in pyroprocessing
Young-Eun Jung, Seong-Kyu Ahn, and Man-Sung Yim..... 644
- Interaction between UN and CdCl_2 in molten LiCl-KCl eutectic. II. Experiment at 1023 K
Alexander Zhitkov, Alexei Potapov, Kirill Karimov, Anna Kholkina, Vladimir Shishkin, Alexander Dedyukhin, and Yuri Zaykov 653



Contents

Radiation Application

- Experimental investigation on the degradation of SiGe LNAs under different bias conditions induced by 3 MeV proton irradiation
Zhuoqi Li, Shuhuan Liu, Xiaotang Ren, Mathew Adefusika Adekoya, Jun Zhang, and Shuangying Liu 661
- Numerical optimization of transmission bremsstrahlung target for intense pulsed electron beam
Xiao Yu, Jie Shen, Shijian Zhang, Jie Zhang, Nan Zhang, Ivan Sergeevich Egorov, Sha Yan, Chang Tan, Gennady Efimovich Remnev, and Xiaoyun Le 666

Radiation Protection

- On the use of flyash-lime-gypsum (FaLG) bricks in the storage facilities for low level nuclear waste
Baltej Singh Sidhu, A.S. Dhaliwal, K.S. Kahlon, and Sukpal Singh 674
- Organ dose conversion coefficients in CT scans for Korean adult males and females
Choonsik Lee, Tristan Won, Yeon Soo Yeom, Keith Griffin, Choonik Lee, and Kwang Pyo Kim 681
- Iodine-131 S values for use in organ dose estimation of Korean patients in radioiodine therapy
Yeon Soo Yeom, Bangho Shin, Chansoo Choi, Haegin Han, and Chan Hyeong Kim 689
- Investigation of gamma radiation shielding properties of polyethylene glycol in the energy range from 8.67 to 23.19 keV
H. Akhdar, M.W. Marashdeh, and M. AlAqeel 701

Nuclear Structural Analysis and Plant Management & Maintenance

- A comprehensive study of the effects of long-term thermal aging on the fracture resistance of cast austenitic stainless steels
David A. Collins, Emily L. Carter, Timothy G. Lach, and Thak Sang Byun 709
- Efficient elastic stress analysis method for piping system with wall-thinning and reinforcement
Ji-Su Kim, Je-Hoon Jang, and Yun-Jae Kim 732

Nuclear Policy, Economics and Human Resource Development

- Study on the policy literacy of the Republic of Korea regarding nuclear and new-renewable energy
Eunok Im, Ju Kyong Kim, and Seung Min Woo 741
- Human resource development and needs analysis for nuclear power plant deployment in Nigeria
Jafaru M. Egieya, Ronke M. Ayo-Imoru, Daniel R.E. Ewim, and Ebisomu C. Agedah 749

Technical Note

Reactor Physics

- Static and transient analyses of Advanced Power Reactor 1400 (APR1400) initial core using open-source nodal core simulator KOMODO
Jwahr Alnaqbi, Donny Hartanto, Reem Alnuaimi, Muhammad Imron, and Victor Gillette 764

Radiation Protection

- Radiological Alert Network of Extremadura (RAREx) at 2021:30 years of development and current performance of real-time monitoring
María Ángeles Ontalba, José Ángel Corbacho, Antonio Baeza, José Vasco, José Manuel Caballero, David Valencia, and Juan Antonio Baeza 770

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

