

### Ⅲ. 분과별 논제 및 발표자

#### 제 1 분과 A

#### 원자로시스템기술(Reactor System Technology)

- Water and Gas Cooled Reactor System Technology

좌 장 윤철(Churl YOON), 김형태(Hyung Tae KIM)

발표장소 제이드

일 정 | 10. 25(목)

- 09:00 A Study on Integrity Assessment Methodology for Graphite Structure of the Very High Temperature Reactor**  
Chansuh Lee and Moosung Jae(HYU)
- 09:20 A Study on the Feasibility of CFD Analysis in VHTR Gas Mixing Analysis**  
Hyeon-Kyeong Choi, Jin-Su Kim, and Jong-Woon Park(DU)
- 09:40 Simulation Study of Water Effect for the Two Phase Separation in Bunsen Section of SI Thermochemical Cycle to Produce Hydrogen Utilizing Nuclear Heat**  
Satpute Satchidanand R, Revankar Shripad T, Park Jun Kyu, and Jae Sung Lee(POSTECH)
- 10:00 Determination of the Size of a Scale-down CANDU Moderator Test Facility**  
Bo Wook Rhee, Hyoung Tae Kim, Jae Eun Cha, and Hwa-Lim Choi(KAERI)
- 10:20 Unsteady Two-dimensional Multiphysical Simulation on the Radiating Calandria Tube Under the Subcooling Boundary Condition**  
Se-Myong Chang(KNU)  
Hyoung Tae Kim(KAERI)
- 10:40 Coffee Break**
- 11:00 Preliminary Analysis for U-Tube Degradation in CANDU Steam Generator Using CATHENA**  
So Eun Shin, Jeong Hun Lee, Tong Kyu Park, and Su Hyun Hwang(FNC Tech.)  
Jong Yeob Jung(KAERI)
- 11:20 Conceptual Design of Supercritical CO<sub>2</sub> Brayton Cycle Turbomachinery for SMART Application**  
Jekyoung Lee, Jeong Ik Lee, Yoonhan Ahn, and Seong Gu Kim(KAIST)  
Jae Eun Cha(KAERI)
- 11:40 An Analysis of Rotordynamic Characteristics of a SMART Reactor Coolant Pump**  
S. J. Yang, D. M. Kim, Y. S. Choi, and D. W. Lee(STX)  
B. O. Kim(KIMM)  
J. S. Park(KAERI)
- 12:00 Operating Heat Transfer Regime of Single Phase Water System with an Implication of Water Cooled Small Modular Reactor**  
Andhika Feri Wibisono, Yoonhan Ahn, and Jeong Ik Lee(KAIST)
- 12:20 Preliminary Design of the Primary Coolant Pump in the Research Reactor**  
Hyun-Gi Yoon, Kyoung-Woo Seo, Dae-Young Chi, and Juhyeon Yoon(KAERI)

## 제 1 분과 B

# 원자로시스템기술(Reactor System Technology) - Poster

- Research Reactor Development Technology

좌 장 류정수(Jeong-Soo Ryu), 서용석(Yong Suk Suh)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P01B01 Compensation by RGMS for Misreading Reactor Power in Case of D20 Dilution**  
Sang Hoon Bae, Jae Yoon Park, Young San Choi, and Young Ki Kim(KAERI)
- P01B02 Preliminary Design of Siphon Breakers in Research Reactors**  
Kwon-Yeong Lee, Kyoungwoo Seo, Dae Young Chi, Seong Hoon Kim, and Juhyeon Yoon(KAERI)
- P01B03 Efficient Response Spectrum Analysis of a Reactor Using Model Order Reduction**  
Jinho Oh, Jinbok Choi, and Jeong Soo Ryu(KAERI)
- P01B04 Operation of Control Rod Driving Mechanism Controller at HANARO**  
Doo Seung Gyu, Lee Min Woo, Choe Yeong San, and Kim Hyung Kyoo(KAERI)
- P01B05 Structural Integrity Analysis of Pool Cover**  
Jong Min Lee, Jin Ho Oh, Shin Young Kwag, and Jeong Soo Ryu(KAERI)
- P01B06 Monte Carlo Simulation of a Perturbed Subcritical Core**  
Mustafa K. Jaradat(UST)  
Chang Je Park(KAERI)
- P01B07 Two Group Homogenized Burnup Dependent Cross-Sections for the Plate Type Fuel Assembly with SCALE6 Code**  
Luay M. Alawneh(UST)  
Chang Je Park(KAERI)
- P01B08 Preliminary Evaluation of the Human-Induced Hazard for Site Selection of the KIJANG Research Reactor**  
Tae-Hyun Kwon, Sangik Wu, In-Cheol Lim, and Un-Soo Chung(KAERI)
- P01B09 Review of the Status of Low-power Research Reactors and Considerations for its Development**  
In-Cheol LIM, Sang-Ik WU, Byungchul LEE, and Jaejoo HA(KAERI)
- P01B10 Study on Operation of a Research Reactor during One PCS Pump Failure Accident**  
Kyoungwoo Seo, Hyungi Yoon, Seonghoon Kim, Dae-Young Chi, and Juhyeon Yoon(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 1 분과 C

#### 원자로시스템기술(Reactor System Technology)-Poster

- Water and Gas Cooled Reactor System Design and Experiments

좌 장 박수기(Suki Park), 홍성덕(SungDeok Hong)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

**P01C01 Thermo-hydraulic Design of 12 by 12 FCM Fuel Assembly on Transition Core of OPR-1000**

Hyuk Kwon, S. J. Kim, K. W. Seo, D. H. Hwang, and W. J. Lee(KAERI)

**P01C02 Pressure Drop and Blower Performance Tests in Very High Temperature Helium Experimental Loop (HELP)**

Chan Soo Kim, Sung-Deok Hong, and YongWan Kim(KAERI)

**P01C03 Analyses of Anticipated Transient without Scram Events in SMART**

Hyungrae Kim, Ji-Han Chun, Soo Hyoung Kim, Soo Hyung Yang, Kyoo Hwan Bae, Suh Choi, and Young Jong Chung(KAERI)

**P01C04 Preliminary Study of CANDU Moderator Thermal Hydraulics Using the CUPID Code**

Sang Gi Park and Jae Jun Jeong(PNU)  
Jae Ryong Lee and Hyoung Tae Kim(KAERI)

**P01C05 Change in Electrical Resistivity of Nuclear Graphite during Compression Test**

Eung-Seon Kim, Ji-Seon Song, Sung-Deok Hong, and Yong-Wan Kim(KAERI)

**P01C06 Validation of a Tritium Behavior Analysis Code for a VHTR**

Churl Yoon, Jun Soo Yoo, and Hong Sik Lim(KAERI)

**P01C07 CFD Analysis of a Supercritical Carbon Dioxide Compressor**

Seong Gu Kim, Jeong Ik Lee, Yoonhan Ahn, and Jekyoung Lee(KAIST)  
Jae Eun Cha(KAERI)  
Yacine Addad(KUSTAR)

**P01C08 Design of Dedicated Nuclear Desalination System - Low Pressure Inherent Heat Sink Nuclear Desalination Plant : LIND**

Ho Sik Kim, Hee Cheon NO, Yu Gwon Jo, Jinyoung Choi, Jeong Ik Lee, Yong Hoon Jeong, and Nam Zin Cho(KAIST)

**P01C09 Evaluation of the Radial Effective Conductivity for VHTR Standard Fuel Block**

Bong Hyun Cho and Jae Man Noh(KAERI)

일 정 | 10. 25(목) 13:00-15:00

- P01D01 Identification of Licensing Issues for SFR Nuclear Safety**  
Moo-Hoon BAE, Yong Won CHOI, Andong SHIN, and Namduk SUH(KINS)
- P01D02 Dynamic Analysis of Rotating Primary Pump Shaft in Sodium Fast Reactor**  
Sung-Kyun Kim, Seok-Hoon Kim, Jae-Han Lee, Gyeong-Hoi Koo, and Yeong-Il Kim(KAERI)
- P01D03 A Study on Effects of Heat Transfer Correlation and Sodium Properties of TRACE Code for Liquid Metal Coolant**  
Yong Won Choi, Andong SHIN, Moo-Hoon BAE, Namduk SUH, and Kwang Won SEUL(KINS)
- P01D04 Investigation of Axial Blockage Position Effect in the SFR Flow Blockage Analysis**  
Won-Pyo Chang, Kwi-Lim Lee, Seok-Hun Kang, Chi-Woong Choi, and Hae-Yong Jeong(KAERI)
- P01D05 Hydraulic Experimental Study of Wire-wrapped Rod Bundle for Sodium-cooled Fast Reactor**  
Jewhan LEE, Jonggan HONG, Jae-Hyuk EOH, and Hyeong-Yeon LEE(KAERI)
- P01D06 Modal Analyses of a Cylindrical Structure Partially Submerged in a Liquid Sodium Environment**  
Chang-Gyu Park, Young-Sang Joo, and Jong-Bum Kim(KAERI)
- P01D07 Safety Functions and Objective Provision Tree Application to Sodium-cooled Fast Reactor**  
Huichang Yang(TUV Rheinland Korea)  
Namduk Suh(KINS)
- P01D08 Thermal Conductivity Measurement of Flowing Liquid Samples Based on a Thermal Wave Technique**  
Jonggan Hong, Jewhan Lee, Jae-Hyuk Eoh, and Hyeong-Yeon Lee(KAERI)
- P01D09 Conceptual Design Study on Passive Shutdown Rod Drive Mechanism of a SFR**  
Lee, Jae-Han and Koo, Gyeong-Hoi(KAERI)
- P01D10 Sensor for Hydrogen Concentration Monitoring in Cover Gas**  
Tae-Joon Kim, Ji-Young Jeong, Jong-Man Kim, In-Koo Hwang, Jae-Hyuk Eoh, and Yong-Bum Lee(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 1 분과 E

#### 원자로시스템기술(Reactor System Technology)-Poster - SFR System and Component Design Studies

좌 장 정해용(Hae-Yong JEONG), 장진욱(Jinwook Chang)

발표장소 다이아몬드

일 정 10. 25(목) 13:00-15:00

- P01E01 Helical Coiled Steam Generator for 150Mwe Prototype Sodium Cooled Fast Reactor**  
Eui Kwang Kim, Ji-Woong Han, Do-Hee Hahn, and Tae-Ho Lee(KAERI)
- P01E02 Preliminary Assessment of Existing Sodium-cooled Experimental Data for Validation of the SLTHEN Code**  
Sun Rock Choi, Sang-Ji Kim, and Hyeong-Yeon Lee(KAERI)
- P01E03 Progress in the Study of PCHE Performance with Various Stacking Methods; PCHEs and Test Facility**  
Jieun Kim, Eunho Kim, Sungho Yoon, Gunyeop Park, and Moo Hwan Kim(POSTECH)
- P01E04 Pre-evaluation for Heat Balance of Prototype Sodium-cooled Fast Reactor**  
Ji-Woong Han, Dehee Kim, Jung Yoon, Eui-Kwang Kim, and Tae-Ho Lee(KAERI)
- P01E05 Structure of Fuel Performance Audit Code for SFR Metal Fuel**  
Yong Sik Yang and Hyo Chan Kim(KAERI)  
Hyedong Jeong, Andong Shin, and Namduk SUH(KINS)
- P01E06 Design Characteristics of Pantograph Type In-Vessel Fuel Handling System in SFR**  
S. H. Kim and G. H. Koo(KAERI)
- P01E07 Preliminary Evaluation on Metallic Fuel Source Term of Sodium-cooled Fast Reactor**  
Namduk SUH, Moocheon BAE, Andong SHIN, and Changwook HUH(KINS)
- P01E08 Literature Review on Metallic Fuel Source Term for Sodium-cooled Fast Reactor**  
Namduk SUH, Moocheon BAE, Andong SHIN, and Changwook HUH(KINS)

일 정 | 10. 26(금)

- 09:00**     **Development of a Combined Heat Exchanger Design Concept for an SFR Decay Heat Removal System**  
Jae-Hyuk EOH, Jehwan LEE, Seok Hun KANG, and Chang-Gyu PARK(KAERI)
- 09:20**     **Perspective on the Audit Calculation for SFR Using TRACE Code**  
Andong SHIN, Yong-won CHOI, Youngsuk BANG, Moohoon BAE, Byunggil HUH, and Kwangone SEOL(KINS)
- 09:40**     **Thermal-hydraulic Analyses of a Single-phase Natural Convection Loop for Liquid Gallium with Computational Fluid Dynamics and MARS-LMR Code**  
Sarah Kang and In Cheol Bang(UNIST)  
Kwi Seok Ha(KAERI)
- 10:00**     **A Conceptual Design of a Double Wall Tube Steam Generator in a Prototype Fast Reactor**  
Seok-Ki Choi and Tae-Ho Lee(KAERI)
- 10:20**     **On the Strength Evaluation of the Lab-scale PHE Prototypes**  
Keenam Song and S-D Hong(KAERI)  
H-Y Park(AD solution)
- 10:40**     **Coffee Break**
- 11:00**     **Discussion on Safety Analysis Approach for Sodium Fast Reactors**  
Soon Joon HONG and Yeon Joon CHOO(FNC Tech.)  
Namduk SUH, Ahndong SHIN, and Moo Hoon BAE(KINS)
- 11:20**     **Design of Supercritical Carbon Dioxide Integral Experiment Loop**  
Ahn Yoonhan, Lee Jekyoung, Kim Seong Gu, and Lee Jeong Ik(KAIST)  
Cha Jae Eun(KAERI)
- 11:40**     **Coupled Analysis of Core Thermal-hydraulics and Fuel Performance to Evaluate a Thermally-induced Fuel Failure in a SFR Subassembly**  
Sun Rock Choi, Doo Soo Chang, and Sang-Ji Kim(KAERI)
- 12:00**     **Design of Fuzzy-PID Controller for High Temperature Pebble Bed Reactor**  
Kushal D. Badgujar, Satchidanand R. Satpute, Shripad T. Revankar, John C. Lee, and Moo Hwan Kim(POSTECH)

### Ⅲ. 분과별 논제 및 발표자

#### 제 2분과 A

#### 핵자료, 원자로 물리 및 계산과학 - 방법론 및 검증 (Nuclear Data, Reactor Physics and Computational Science - Methods and Benchmarks)

좌 장 흥인섭(In Seob Hong), 홍서기(Ser Gi HONG)

발표장소 메이플

일 정 | 10. 25(목)

- 09:00 Monte Carlo Few Group Constants Generation Considering the Free-Monatomic-Gas Models**  
Ho Jin Park(KAERI)  
Hyung Jin Shim(SNU)
- 09:20 History-based Batch Method Preserving Tally Means**  
Hyung Jin Shim and Sung Hoon Choi(SNU)
- 09:40 A Preliminary Study of Monte Carlo Code Development for Pebble Bed Reactor : A New Approach on Judgment of Fission Source Convergence**  
Song Hyun KIM, Ji Sun SEO, Chang Ho SHIN, and Jong Kyung KIM(HYU)  
Jae Man NOH(KAERI)
- 10:00 The Partial Current-based CMFD (p-CMFD) Method Revisited**  
Nam Zin Cho(KAIST)
- 10:20 Overlapping Local/Global Iteration for Whole-core Transport Problems**  
Seungsu Yuk and Nam Zin Cho(KAIST)
- 10:40 Coffee Break**
- 11:00 Development of a GUI-Wrapper MPX for Reactor Physics Design and Verification**  
In Seob Hong and Sweng Woong Woo(KINS)
- 11:20 Application of the Gaussian Quadrature to the Azimuthal Angle Discretization in MOC**  
Hyun Chul Lee, Jin Young Cho, and Jae Man Noh(KAERI)
- 11:40 Analyses of Sub-cell Balance Methods with Linear Discontinuous Expansion for Three-dimensional Discrete Ordinates Transport Equation**  
Ser Gi Hong(KHU)  
Jong Woon Kim(KAERI)
- 12:00 MUST Code Verification on the Large Scale Benchmark Problem**  
Jong Woon Kim and Young-Ouk Lee(KAERI)  
Ser Gi Hong(KHU)

## 제 2분과 B

# 핵자료, 원자로 물리 및 계산과학 - Poster (Nuclear Data, Reactor Physics and Computational Science)

좌 장 이정찬(Chungchan Lee), 구본승(Bon-Seung Koo)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P02B01 A Comparative Analysis of Neutron and Gamma Coupled Transport Calculations Using DANTSYS, MUST and MCNP**  
Hyo Jong Yoo, Han Bit So, and Ser Gi Hong(KHU)
- P02B02 Generation of Transport Lattice Code KARMA Library with Doppler-broadening Rejection Correction Method**  
Ho Jin Park, Jin Young Cho, and Sang Yoon Park(KAERI)  
Ser Gi Hong(KHU)  
Kang-Seog Kim(ORNL)
- P02B03 Comparative Analysis for the Measured and the Predicted Relative Sensitivity of Rhodium In-core Detector**  
Sang-Rae Moon, Kyoon-Ho Cha, and Seong-Man Bae(KHNP CRI)
- P02B04 Quasistatic Reactivity Balance Equation to Meet Inherent Safety Requirements**  
Mosab Banisalman(KAIST)  
Sweng-Woong Woo(KINS)
- P02B05 Two-dimensional Optimal Power Map Generation through Minimum Variance Estimation Technique**  
Je Heon Bang and John C. Lee(POSTECH)  
Ho Chul Shin and Sun Kwan Hong(KHNP CRI)
- P02B06 Verification of the Procedure to Generate the Homogenized Multi-group Cross Section for VHTR Fuel Block Using McCARD**  
Tae Young Han, Hyun Chul Lee, Ho Jin Park, Chang Keun Jo, and Jae Man Noh(KAERI)
- P02B07 Monte Carlo Simulation for Radioisotope Production Yields Calculation and Radiation Shielding for Rh, RbCl, ZnO, and Ga Target**  
Se-Jin Ra, Myung-Hwan Jung, and Kye-Ryung Kim(KAERI)
- P02B08 Preliminary Evaluation of Nuclear Heating for KJRR Reference Core**  
Bon-Seung Koo, Chul-Gyo Seo, and Hee-Taek Chae(KAERI)
- P02B09 A Study on the Boron Depletion in 16x16 Boron Mixed Fuel Rods**  
Chungchan Lee, KyungHoon Lee, JinYoung Cho, SangYoon Park, and YongSik Yang(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 2분과 C

#### 핵자료, 원자로 물리 및 계산과학 - 산업 응용 (Nuclear Data, Reactor Physics and Computational Science - Industrial Applications)

좌 장 심형진(Hyung Jin Shim), 이덕중(Deokjung Lee)

발표장소 메이플

일 정 | 10. 26(금)

- 09:00 Comparison of 2D and 3D Neutron Transport Analyses on Yonggwang Unit 3 Reactor**  
YoungJae MAENG, ByoungChul KIM, MiJoung LIM, KyungSik KIM, and YoungKyou JEON(KRIST)  
ChoonSung YOO(KAERI)
- 09:20 Ex-vessel Neutron Dosimetry Analysis of Korea Standard Nuclear Plants**  
MiJoung LIM, ByoungChul KIM, KyungSik KIM, YoungKyou JEON, and YoungJae MAENG(KRIST)  
ChoonSung YOO(KAERI)
- 09:40 Application of SHAFÉ Code to the CANDU Reactor through Initial Core Calculation**  
Eun Hyun Ryu, Yong Mann Song, and Joo Hwan Park(KAERI)
- 10:00 MCNP5 Benchmarking Calculations of HI-STAR 100 Cask Criticality Safety**  
Chanwoo Kim, John C. Lee, Minho Park, Eunho Kim, and Moohwan Kim(POSTECH)
- 10:20 Comparative Evaluation of Fuel Temperature Coefficient of Standard and CANFLEX Fuels in CANDU 6**  
Woosong Kim, Donny Hartanto, and Yonghee Kim(KAIST)
- 10:40 Coffee Break**
- 11:00 Application of Load Follow Operation to Equilibrium Cycle of OPR1000**  
Kyeongju Lee, Jiwon Choe, and Deokjung Lee(UNIST)
- 11:20 Monte Carlo Few Group Constant Generation For CANDU Reactor Core Analysis**  
Seung Yeol Yoo and Hyung Jin Shim(SNU)
- 11:40 Measurements of the Isothermal Temperature Reactivity Coefficient of KUCA C-core with a D<sub>2</sub>O Tank**  
Cheol Ho Pyeon(Kyoto Univ.)  
Hyung Jin Shim, Sung Hoon Choi, and Byoung Kyu Jeon(SNU)  
Eun Hyun Ryu(KAERI)

## 제 2분과 D

# 핵자료, 원자로 물리 및 계산과학 - 신형로 및 미래 시스템 (Nuclear Data, Reactor Physics and Computational Science - Advanced Reactors and Future Systems)

좌 장 김상지(Sang Ji Kim), 김용희(Yonghee Kim)

발표장소 금강

일 정 | 10. 26(금)

- 09:00 TRU Transmutation Using ThO<sub>2</sub>-UO<sub>2</sub> and Fully Ceramic Micro-encapsulated Fuels in LWR Fuel Assemblies**  
Gonghoon Bae and Ser Gi Hong(KHU)
- 09:20 Development of an Isotope-wise Reactivity Module in the Perturbation Code PERT-K**  
Pham Nhu Viet HA, Jaewoon YOO, Min-Ho BAEK, Le Sy TAL, and Sang-Ji KIM(KAERI)
- 09:40 Monte Carlo Simulation on the Preliminary Conceptual Design for a Prototype Experimental Sodium-cooled Fast Reactor**  
Jung-Hyun Na and Myung-Hyun Kim(KHU)
- 10:00 Optimization of Sodium Cooled Fast Reactor on Different Power Level**  
Min-HO Baek, Jae-Yong Lim, and Sang-Ji Kim(KAERI)
- 10:20 A Study for Verifying Dynamic Characteristics of UCFR-1000 by Testing a Fuel Assembly**  
Taewoo Tak and Deokjung Lee(UNIST)
- 10:40 Coffee Break**
- 11:00 A Preliminary Study on Criticality Bias Caused by Uncertainty Factors of Fuel Particles for MHTGR-350 Reactor**  
Ji Sun SEO, Song Hyun KIM, and Jong Kyung KIM(HYU)  
Jae Man NOH(KAERI)
- 11:20 Characterization of a Metallic-fuelled B&BR with Non-uniform Smear Density**  
Donny Hartanto and Yonghee Kim(KAIST)
- 11:40 A Study on Monte Carlo Depletion Options for a Hybrid Reactor Design**  
M. Tariq Siddique and Myung-Hyun Kim(KHU)

### Ⅲ. 분과별 논제 및 발표자

#### 제 3분과 A

#### 방사성폐기물관리 (Radioactive Waste Management)

좌 장 연제원(Jei-Won Yeon), 문제권(Jeikwon Moon)

발표장소 오팔

일 정 | 10. 25(목)

- 09:00      The Probabilistic Approach to Hydrogen Content Acquisition for the Spent Fuel Integrity Evaluation**  
Soyoung Kim, Seongki Lee, Kisung Choi, and Chaejoon Lim(KEPCO NF)  
Seongho Park(SNU)  
Yunhee Lee(CNU)
- 09:20      Effects of Hoop Stress on the Hydride Reorientation in Spent Nuclear Fuel Cladding**  
Youngjun Kim, Juseong Kim, Donghak Kook, and Yongsoo Kim(HYU)
- 09:40      Technological Factors Influencing Selection of Strategies for Decommissioning of Nuclear Facilities**  
KwanSeong Jeong, Jeikwon Moon, ByungSeon Choi, Dongjun Hyun, and GeunHo Kim(KAERI)
- 10:00      Radiological Assessment of Dose Distribution Around the RPV for Decommissioning of Nuclear Power Plant**  
TaeHyoung Kim, Geun-Ho Kim, Kwan-Seong Jeong, Dongjun Hyun, Jeikwon Moon, and Byung-Seon Choi(KAERI)
- 10:20      TRLFS Studies on Luminescence Enhancement of U(VI) Using Oxidants for Quencher Species in Samples**  
Wansik Cha, Euo Chang Jung, and Hye-Ryun Cho(KAERI)
- 10:40      Coffee Break**
- 11:00      Effect of Solution pH on Electrochemical Oxidation of Iodide Ion at Platinum Electrode in Sodium Perchlorate Solution**  
Sang-Hyuk Jung, Jei-Won Yeon, Wansik Cha, and Kyuseok Song(KAERI)
- 11:20      Development of FEPs and Scenario for Post-closure Safety Assessment of Geological Disposal of HLW in Pakistan**  
Javed Iqbal(KAIST)  
Eunjin Seo(KINS)
- 11:40      Quantity of Non-condensing Gases(Such as Hydrogen and Oxygen) Produced from the Irradiation of Boric Acid Solutions in a Research Reactor**  
Hee-Jung Im, Ke Chon Choi, Jei-Won Yeon, Hung-Woo Kim, Man-Soon Cho, Kyung-Duk Jang, UI Jae Park, Sung Tack Hong, Jaesam Han, Sang-Jun Park, Hoan-Sung Jung, and Kyuseok Song(KAERI)

## 제 3 분과 B

## 방사성폐기물관리 - Poster (Radioactive Waste Management)

좌 장 김규태(Gyu Tae KIM), 정중헌(Chong-Hun Jung)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P03B01 Removal of Cesium From the Radioactive Waste Solution by Sorbent or Precipitant**  
Hye-Min Park, Gye-Nam Kim, Seung-Soo Kim, Wan-Suk Kim, Uk-Ryang Park, and Jai-Kwon Moon(KAERI)
- P03B02 Assessment of Durability Soundness Domestic 48Y Type UF<sub>6</sub> Cylinder**  
Yun D Choi, Woon H Cho, Kyu I Lee, Seung K Park, and Jei K Moon(KAERI)
- P03B03 The Study on the Development of Unified Spent Fuel Attribute Tester**  
Byung Marn KOH, Ki Hyun KIM, Jae Bum PARK, and Seung Ho AHN(KINAC)
- P03B04 Influence of the Ammonium Hydroxide Concentration in Morphological Control of Mesoporous Silica Particles**  
Suk Bon Yoon, Chong-Hun Jung, In-Ho Yoon, Chang-Ki Kim, Wang-Kyu Choi, and Jei-Kwon Moon(KAERI)
- P03B05 Study of Hydride Re-orientation and Mechanical Property to Evaluate Spent Fuel Integrity During Interim Dry Storage**  
Myeong-Su Kim, Su-Jung Min, Ju-Jin Won, and Kyu-Tae Kim(DU)  
Hyun-Gil Kim and Jeong-Yong Park(KAERI)
- P03B06 A Comparative Study on the Dissolution of Magnetite**  
Hui-Jun Won, Jung-Soon Park, Chong-Hun Jung, Wang-Kyu Choi, and Jei-Kwon Moon(KAERI)
- P03B07 Characterization Methodology for Difficult-To-Measure Nuclides in the Type B Radwaste from the ITER**  
Young-Yong Ji, Kwonpyo Hong, Wan-Ho Oh, and Mun-Ja Kang(KAERI)  
Byung-Chan Na(ITER)
- P03B08 Decontamination of Radioactive Uranium by Chemical Gels**  
Chong Hun Jung, J. K. Moon, B. S. Choi, H. J. Won, W. K. Choi, and C. K. Kim(KAERI)
- P03B09 In Situ Gamma Spectrometric for Depth Distributions Cs-137 in Soil**  
Sang Bum Hong, Young Yong Ji, Bum Kyoung Seo, and Jei Kwon Moon(KAERI)
- P03B10 Production and Characteristics for Concrete Waste Forms to Stabilize Concrete Waste Produced during Decommissioning Procedure**  
Y. J. Lee, D. S. Hwang, K. W. Lee, and J. K. Moon(KAERI)
- P03B11 Decommissioning of TRIGA Mark-II Type Reactor**  
Doo-Seong Hwang, Gyeong-Hwan Jeong, and Jei-Kwon Moon(KAERI)
- P03B12 MCNP5 Benchmarking Calculations of HI-STAR100 Cask Radiation Shielding**  
Minho park, John C. Lee, Chanwoo Kim, Eunho Kim, and Moo Hwan Kim(POSTECH)

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**P03B13 Preparation of Oxide Layer on Inconel-600 for a Decontamination Performance Test**

Sang Yoon Park, Jun Young Jung, Hui-Jun Won, Wang-Kyu Choi, and Jei-Kwon Moon(KAERI)

**P03B14 The Removal of Cs-137 from Soil Using Washing-electrokinetic Decontamination Equipment**

Gye-Nam Kim, Seung-Soo Kim, Geun-Ho Kim, Hye-Min Park, Wan-Suk Kim, Uk-Ryang Park, Hyeok-Ju kwon, Oh-Ha Ryu, and Jei-Kwon Moon(KAERI)

## 제 4 분과 A

# 핵연료 및 원자력재료 (Nuclear Fuel and Materials)

좌 장 김동진(Dong Jin Kim), 김용덕(Yong Deog Kim)

발표장소 금강

일 정 | 10. 25(목)

- 09:00 PWSCC Issues and Material Aging Management for Nuclear Power Plants in Korea**  
Seong Sik Hwang, Yun Soo Lim, Dong Jin Kim, Sung Woo Kim, and Hong Pyo Kim(KAERI)
- 09:20 Formation of Nano-sized ODS Clusters in Mechanically Alloyed NiAl-(Y,Ti,O) Alloys**  
Kim Yong Deog and Bae Seong Man(KHNP CRI)  
Brian D. Wirth(UC Berkeley)
- 09:40 Neutron Irradiation Effects on Mechanical Properties in SA508 Gr4N High Strength Low Alloy Steel**  
Min-Chul Kim, Ki-Hyoung Lee, Sang-Gyu Park, Kwon-Jae Choi, and Bong-Sang Lee(KAERI)
- 10:00 Analyzing the Effects of Geometrical Discontinuity on Dynamic Strain Aging Behavior of Ferritic Steels**  
Sa Yong Lee and Jin Weon Kim(CSU)
- 10:20 Characterization of Ceramic Coatings of Melting Crucible for Metal Fuel**  
Jong-Hwan Kim, Hyung-Tae Kim, Young-Mo Ko, Yoon-Myung Woo, Ki-Hwan Kim, and Chan-Bock Lee(KAERI)
- 10:40 Coffee Break**
- 11:00 Effects of Zr and Al Additions on the Mechanical Properties of High Cr ODS Steels**  
Sanghoon Noh, Jaewon Shim, Chang-Hee Han, Byoung-Kwon Choi, and Tae Kyu Kim(KAERI)
- 11:20 Statistical Analysis and Life Prediction on IASCC of Core Internals in a PWR**  
Sung-Woo Kim and Seong-Sik Hwang(KAERI)
- 11:40 Compressive Loading-unloading Behavior of Nuclear Graphite Grades of Different Forming Method and Raw Cokes**  
Se-Hwan Chi, Seong-Deok Hong, and Yong-Wan Kim(KAERI)
- 12:00 Fracture Mechanics Parameters Benchmark Analysis for Elastic K, Evaluation of Nuclear Pipes under Mechanical Loading**  
Jong-Min Kim, Seong-In Moon, and Bong-Sang Lee(KAERI)
- 12:20 Analysis of RIS at Grain Boundary in Austenitic Stainless Steel Irradiated at Different Temperature**  
Hyung-Ha Jin, Sangchul Kwon, and Junhyun Kwon(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과 B

#### 핵연료 및 원자력재료 (Nuclear Fuel and Materials)

좌 장 양재호(Jae Ho Yang), 류호진(Ho Jin Ryu)

발표장소 사파이어

일 정 | 10. 26(금)

**09:00 Study of Gap Conductance Model for Thermo-mechanical Fully Coupled Finite Element Model**

Hyo Chan Kim, Yong Sik Yang, Dae Ho Kim, Je Geon Bang, Sun Ki Kim, and Yang Hyun Koo(KAERI)

**09:20 Evaluation of Gap Conductance Uncertainty for Safety Analysis**

Joosuk Lee, Young-Seok Bang, and Swengwoong Woo(KINS)

**09:40 Grain Growth Behavior of Cr Dispersed UO<sub>2</sub> Pellets according to Change of Oxygen Potential during the Isothermal Sintering**

Jang soo Oh, Jae Ho Yang, Dong-Joo Kim, Jong Hun Kim, Ik Hui Nam, Young Woo Rhee, and Keon Sik Kim(KAERI)

**10:00 Synthesis of Uranium Nitride Powders Using Metal Uranium Powders**

Jae Ho Yang, Dong-Joo Kim, Jang Soo Oh, Young Woo Rhee, Jong Hun Kim, and Keon Sik Kim(KAERI)

**10:20 Fabrication of Particulate Metal Fuel for Fast Burner Reactors**

Ho Jin Ryu, Sun Yong Lee, Jong Hwan Kim, Yoon Myung Woo, Young Mo Ko, Ki Hwan Kim, Jong Man Park, and Chan Bok Lee(KAERI)

**10:40 Coffee Break**

**11:00 Fabrication of U-Zr-RE Fuel Slugs for SFR**

Hoon Song, Jong-Hwan Kim, Hyung-Tae Kim, Young-Mo Ko, Yoon-Myung Woo, Seok-Jin Oh, Ki-Hwan Kim, and Chan-Bock Lee(KAERI)

**11:20 Effects of Hydride Precipitation on the Mechanical Property Degradation of Zircaloy-4 and Zirlo**

Hoon Lee, Ju Seong Kim, Young Jun Kim, and Yong Soo Kim(HYU)

**11:40 A Study on the Reaction Kinetics of Zircaloy-4 with H<sub>2</sub>/H<sub>2</sub>O Mixture**

Ji Min Lee, Ju Seong Kim, and Yong Soo Kim(HYU)

**12:00 Parametric Analysis of Protective Grid Flow-induced Vibration**

Joo-Young Ryu, Kyong-Bo Eom, Sang-Youn Jeon, and Jung-Min Suh(KEPCO NF)

일 정 | 10. 26(금)

- 09:00**     **Influence of Tempering on Mechanical Properties of Ferritic-martensitic Steels**  
Y. B. Chun, C. H. Han, B. K. Choi, T. K. Kim, Y. H. Jeong, and D. W. Lee(KAERI)  
S. Cho(NFRI)
- 09:20**     **Fabrication of Nano-sized Ceramic Dispersed Carbon Steel by Liquid Metal Casting Process**  
Jin-Ju Park, Sung-Mo Hong, Eun-Kwang Park, Kyoung-Youl Kim, Min-Ku Lee, and Chang-Kyu Rhee(KAERI)
- 09:40**     **Corrosion and Mechanical Property at High Temperature of Nickel-based Alloy for VHTR**  
Dong-Jin Kim, Gyeong Geun Lee, Su Jin Jung, and Byung Hak Moon(KAERI)
- 10:00**     **Effects of Oxygen Concentration on the Characteristics of Oxide Particles in ODS Steels**  
Tae Kyu Kim, Chang Hee Han, Byoung-Kwon Choi, Ki-Baik Kim, Young-Bum Chun, Sanghoon Noh,  
Suk Hoon Kang, Jinsung Jang, and Yong-Hwan Jeong(KAERI)
- 10:20**     **Microstructure Characterization of Alloy 182 Weld Metal and Stress Corrosion Cracking in PWR Primary Water Environment**  
Yun Soo Lim, Seong Sik Hwang, and Hong Pyo Kim(KAERI)
- 10:40**     **Coffee Break**
- 11:00**     **Evaluation of Mechanical Properties of Oxide Dispersion Strengthened Steel Using Micron-sized Specimens**  
Sangyeop Lim, Chansun Shin, Hyung-ha Jin, and Junhyun Kwon(KAERI)
- 11:20**     **Post-extrusion Heat Treatment Effects on Microstructure and Mechanical Properties of 9Cr Nanostructured Ferritic Alloy**  
Ji-Hyun Yoon, Suk-Hoon Kang, and Yongbok Lee(KAERI)  
Thak S. Byun and David T. Hoelzer(ORNL)
- 11:40**     **Friction Stir Joining of Dissimilar Ferritic ODS Steels**  
Suk Hoon Kang, Jinsung Jang, Sanghoon Noh, and Tae Kyu Kim(KAERI)
- 12:00**     **Effect of Thermal Aging to Microstructure of the Interface of Low Alloy Steel and Ni-based Alloy Filler Metal of Dissimilar Weld Metal**  
Kyoung Joon Choi, Sang Hoon Shin, Jong Jin Kim, Sang Il Choi, and Ji Hyun Kim(UNIST)

### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과 D

#### 핵연료 및 원자료재료 - Poster (Nuclear Fuel and Materials)

좌 장 전태현(Tae Hyun JEON), 전상윤(Sang Youn Jeon)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P04D01 On the Impact Analysis of a PWR Spacer Grid**  
Keenam Song and S-H Lee(KAERI)
- P04D02 Effect of Top Ligament Blanking on Reducing Flow Induced Vibration of Protective Grid**  
Kyong-Bo Eom, Joo-Young Ryu, Oh-Joon Kwon, Joon-Kyoo Park, Sang-Youn Jeon, and Jung-Min Suh(KEPCO NF)
- P04D03 Estimation of Thermal Hydraulics Parameters of a Dual-cooled Annular Fuel with 18-month Cycle**  
ChangHwan Shin, ChiYoung Lee, DongSeok Oh, TaeHyun Chun, and Wang Kee In(KAERI)
- P04D04 Deformation Behavior of Cell Spring of an Irradiated Spacer Grid**  
Y. G. Jin, S. J. Baek, W. S. Ryu, G. S. Kim, B. O. Yoo, D. S. Kim, S. B. Ahn, Y. B. Chun, and Y. S. Choo(KAERI)
- P04D05 The Effect of the Fuel Rod Friction Force to the Fuel Assembly Lateral Mechanical Characteristics**  
Dong-Geun Ha, Sang-Youn Jeon, and Jung-Min Suh(KEPCO NF)
- P04D06 The Performance of PLUS7 for Grid-To-Rod Fretting**  
Roh Kyung-Ho, and Bae Seong-Man(KHNP CRI)  
Kim Yong- Hwan(KEPCO NF)
- P04D07 Predicting the Pressure Loss on a Spacer Grid Using One Cell Model**  
Oh-Joon Kwon, Kyoung Bo Eom, Joon-Kyoo Park, Joo Young Ryu, Sang-Youn Jeon, and Jung-Min Suh(KEPCO NF)
- P04D08 A Study on the Mechanical Characteristics of Top Nozzle Holddown Spring**  
Seong-Soo Kim, Joon-Kyoo Park, Sang-Youn Jeon, and Jung-Min Suh(KEPCO NF)
- P04D09 Mechanical Integrity Evaluation of X2-Gen Bottom Nozzle**  
Jin-Sun Kim, Joon-Kyoo Park, Sang-Youn Jeon, and Jung-Min Suh(KEPCO NF)
- P04D10 A Study of Mechanical Sealing Methods Using Graphite Powder for High Pressure Vessel**  
H. Y. Jeong, J. T. Hong, S. H. Ahn, and C. Y. Joung(KAERI)
- P04D11 Evaluation of Fuel Rod Retention Force by Louver on Debris Filtering Bottom Grid**  
Joon-Kyoo Park, Kyoung-Bo Eom, Sang-Youn Jeon, and Jung-Min Suh(KEPCO NF)
- P04D12 Investigation of Optimum Geometry of Bottom End Cap Welding Using Nd:YAG Laser (I)**  
Soo-Sung Kim, Yoon-Myeng Woo, Hoon Song, and Ki-Hwan Kim(KAERI)  
Jae-Poong Yoo(LN Co., Ltd)

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**P04D13    Fundamental Study of Electron Beam Welding of AA6061-T6 Aluminum Alloy for Nuclear Fuel Plate Assembly (I)**

Soo-Sung Kim, Hae-In Lee, Don-Bae Lee, Yoon-Sang Lee, and Jong-Man Park(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과 E

#### 핵연료 및 원자료재료 - Poster (Nuclear Fuel and Materials)

좌 장 박정용(Jeong-Yong Park), 목용균(Yong Kyoon Mok)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P04E01 Surface Modification Technology on Zirconium Alloy for High-temperature Application**  
Hyun-Gil Kim, Il-Hyun Kim, Yang-Il Jung, Dong-Jun Park, Jeong-Yong Park, and Yang-Hyun Koo(KAERI)
- P04E02 The Difference in Oxidation Kinetics of Zr-alloy Claddings in Air, Oxygen and Steam**  
Kyung Tae Kim, Kwangheon Park, and Seonho Noh(KHU)
- P04E03 The Air Oxidation Kinetics of Zr-alloys Claddings Immersed in Seawater**  
YunMock Jung and Kwangheon Park(KHU)
- P04E04 The Effect of Dissolved Hydrogen on the High Pressure Steam Oxidation of Zircaloy-4**  
Seonggi Jeong and Kwangheon Park(KHU)
- P04E05 Manufacturing Process for the Metal-ceramic Hybrid Fuel Cladding Tube**  
Yang-Il Jung, Sun-Han Kim, and Jeong-Yong Park(KAERI)
- P04E06 The Prediction of Cladding Performance in Ultra-long Cycle Fast Reactors**  
Seunghyun Kim, Ju Ang Jung, Sang Hun Shin, Jong Jin Kim, and Ji Hyun Kim(UNIST)
- P04E07 Impregnation of Si-C-O Preceramic Polymer into SiC Woven Fabric**  
Sun-Han Kim, Yang-Il Jung, and Jeong-Yong Park(KAERI)  
Sun-Ig Hong(CNU)
- P04E08 Vanadium as Barrier to Prevent Inter-diffusion between Metallic Fuel and Clad Material**  
Kang-Soo Lee, Seok-Hee Lee, Deep Jyoti Kalita, Sung-Pil Woo, and Young-Soo Yoon(Yonsei Univ.)  
Jun-Hwan Kim and Jong-Hyuk Baek(KAERI)
- P04E09 The Fuel Cladding Oxide Measurement at Ulchin Unit 1 Cycle 17**  
Son Jin-Won, Kim Ki-Young, and Bae Seong-Man(KHNP CRI)
- P04E10 Understanding of Neutron Irradiation Effect on Zirconium Alloys in Nuclear Systems**  
Sang-Il Choi, Sang Hun Shin, and Ji Hyun Kim(UNIST)
- P04E11 Microstructural Characteristics of HANA-6 Tube Shell Manufacturing**  
Min-Young Choi, Choong-Yong Lee, Yong-Kyoon Mok, Seung-Jae Lee, Jung-Min Suh(KEPCO NF)
- P04E12 High Burnup Effects on the Burst Behavior of Zr-based Alloy Claddings under LOCA Conditions**  
Dong Jun Park, Do Wan Lim, and Jeong Yong Park(KAERI)

일 정 | 10. 25(목) 13:00-15:00

- P04F01 Microstructural Evolutions of Friction Stir Welded F82H Steel for Fusion Applications**  
Sanghoon Noh, Jaewon Shim, and Tae Kyu Kim(KAERI)  
Hiroyasu Tanigawa(JAEA)  
Hidetoshi Fujii(Osaka Univ.)  
Akihiko Kimura(Kyoto Univ.)
- P04F02 Evaluation of Through Thickness Microstructure and Mechanical Properties in a Thick Forged 9Cr-1Mo-1V Steel and Its Welds**  
Min-Chul Kim, Sang Gyu Park, Ki-Hyoung Lee, and Bong Sang Lee(KAERI)
- P04F03 Evolution of Matrix Density and Open Porosity of Graphite Matrix for HTGR Fuel Element**  
Young-Woo Lee, Joo Hyoung Kim, Bong Gu Kim, and Moon-Sung Cho(KAERI)
- P04F04 Dispersion Characteristics of PAA(Polyacrylic Acid) for Tube Fouling Control of Secondary System in Nuclear Power Plant**  
H. C. Kwon, K. B. Sung, and H. Y. Yang(KHNP CRI)  
W. Y. Maeng(KAERI)
- P04F05 Nonlinear Ultrasonic Image of Fatigue Cracks by Using Laser Doppler Vibrometry**  
Yong-Moo Cheong, Ha-Nam Kim, and Duck-Hyun Lee(KAERI)
- P04F06 AE Characteristics of Stress Corrosion Crack in Type 304 Stainless Steel Pipe**  
Hyunmin Lim, Youngkwan Woo, Jaesung Kim, and Boyoung Lee(KAU)  
Sungsik Kang(KINS)
- P04F07 The Release Rate of Wigner (stored) Energy for Irradiated Graphite Reflector**  
J. Taewon and Dong-Seong SOHN(UNIST)
- P04F08 Comparison of Rate Theory Based Modeling Calculations with the Surveillance Test Results of Korean Light Water Reactors**  
Gyeong-Geun Lee, Yong-Bok Lee, Min-Chul Kim, and Junhyun Kwon(KAERI)
- P04F09 Effect of Water Chemistry on Flow Accelerated Corrosion of Carbon Steel**  
T. J. Park, E. H. Lee, K. M. Kim, and H. P. Kim(KAERI)
- P04F10 Effect of Ta Content on the Mechanical Properties of 9Cr-WVC Steels**  
Y. R. Kim, Y. B. Chun, D. W. Lee, S. Cho, T. K. Kim, and Y. H. Jeong(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과 G

#### 핵연료 및 원자료재료 - Poster (Nuclear Fuel and Materials)

좌 장 김대호(Dae Ho Kim), 이병호(Byung Ho Lee)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P04G01 Shielded EPMA from CAMECA to JEOL Preliminary Performance Comparison**  
Y. H. Jung, B. O. Yoo, G. S. Kim, S. B. Ahn, and Y. S. Joo(KAERI)
- P04G02 Design and Fabrication of Irradiation Testing Capsule for Research Reactor Materials**  
Seong Woo Yang, Bong Goo Kim, Seung Jae Park, Man Soon Cho, Kee Nam Choo, Jong Myeong Oh, Myeong Hwan Choi, Byung Chul Lee, Suk Hoon Kang, Dae Jong Kim, Young Bum Chun, and Tae Kyu Kim(KAERI)
- P04G03 Measurement of Cell Size of Fuel Assembly Grids in IMEF**  
Woo-Seog Ryu, Gil-Soo Kim, Yong-Sun Choo, Yong-Bum Chun, and Sang-Bok Ahn(KAERI)
- P04G04 Optimization of a Drilling Machine for the Instrumentation in a Fuel Rod**  
Jintae Hong, Sung-Ho Ahn, Chang-Young Joung, Hwang-Young Jeong, and Ka-Hye Kim(KAERI)
- P04G05 Sensitivity Analysis for the Dominant Cost Drivers of Pyro-SFR Nuclear Fuel Cycle**  
S. K. Kim and W. I. Ko(KAERI)
- P04G06 The Moisture-proof Connection of Signal Cables on Test Rig Instrumentation**  
Chang-Young Joung, Sung-Ho Ahn, Jin-Tae Hong, and Hwang-Young Jeong(KAERI)
- P04G07 Irradiation Test of High-density Si Material**  
Man Soon Cho, Kee Nam Choo, Chul Yong Lee, Seong Woo Yang, Kyue Taek Shim, and Sang Jun Park(KAERI)
- P04G08 Preparation of Irradiation Device for Irradiation Testing of Coated Particle Fuel at HANARO**  
Bong Goo Kim, Sung Jae Park, Seong Woo Yang, Dae Ho Kim, and Moon Sung Cho(KAERI)
- P04G09 Study on the Pride Salt Transport System for Molten Salt**  
S. H. Lee, H. S. Lee, and J. G. Kim(KAERI)
- P04G10 Technical Measurement of Small Fission Gas Inventory in Fuel Rod with Laser Puncturing System**  
Heemoon Kim, Sung Ryul Kim, Byoung-Oon Lee, Yong-Sik Yang, Sang Ryul Baek, and Ung-Sup Song(KAERI)

일 정 | 10. 25(목) 13:00-15:00

- P04H01 Technical Issues in the Development of High Burnup and Long Cycle Fuel Pellets**  
Dong-Joo Kim, Jae Ho Yang, Jang Soo Oh, Keon Sik Kim, Young Woo Rhee, Jong Hun Kim, and Ik-Hui Nam(KAERI)
- P04H02 Carbon Black Selection from Simulated Broth Solution for ADU Gel Spheres**  
Jeong Kyung Chai, Eom Sung Ho, Kim Yeon Ku, and Cho Moon Seoung(KAERI)
- P04H03 XRD and Neutron Diffraction Analyses of Heat Treated U-Mo/Al Dispersion Fuel**  
Ji Min Nam, Woo Jeong Kim, Ho Jin Ryu, Kyu Hong Lee, and Jong Man Park(KAERI)
- P04H04 First-principle Study of Physical/Chemical Properties of Uranium Oxides**  
Bo-Gyu Jang, Seung Ill Hyun, Moo Hwan Kim, Massoud Kaviany, and Ji Hoon Shim(POSTECH)
- P04H05 Evaluation of the In-pile Performance of Boron Containing Fuel Pellets**  
Gwan Yoon Jeong and Dong-Seong Sohn(UNIST)
- P04H06 Thermochemical Equilibrium in a Kernel of a UN -TRISO Coated Fuel Particle**  
Young Min Kim, C. K. Jo, H. S. Lim, M. S. Cho, and W. J. Lee(KAERI)
- P04H07 Evaluation of Fuel Performance for Fresh and Aged CANDU Reactor**  
Jong Yeob Jung, Jun Ho Bae, and Joo Hwan Park(KAERI)
- P04H08 CANDU PHTS Ageing Effect on the Fission Product Inventory**  
Jong Yeob Jung, Jun Ho Bae, and Joo Hwan Park(KAERI)
- P04H09 Analyses of Interaction Phases of U -Mo Dispersion Fuel by Synchrotron X-ray Diffraction**  
Woo Jeong Kim, Ji Min Nam, Ho Jin Ryu, and Jong Man Park(KAERI)  
Palancher Herve, Francois Charollais, and Patrick Lemoine(CEA)  
Anne Bonnin and Veijo Honkimaki(ESRF)
- P04H10 Fabrication of Atomized Uranium Dispersion Targets for Fission Mo Production**  
Moonsoo Sim, Ho Jin Ryu, Jong Man Park, Chang Kyu Kim, and Jong Hyeon Lee(KAERI)
- P04H11 Effect of BN Content on the Sintered Density of Boron-containing Burnable Absorber Fuel Pellet**  
Ik Hui Nam, Young Woo Rhee, Keon-Sik Kim, Dong Joo Kim, Jong Hun Kim, Jang Soo Oh, and Jae Ho Yang(KAERI)
- P04H12 A Study on Defect Energy in UN Lattice Using Ab Initio DFT**  
Sungryul Kim and Yonguhn Kim(CBNU)  
Heemoon Kim, Chang-je Park, Ungsup Song, Sangryul Baek, and Sangbok Ahn(KAERI)  
Younsuk Yun(PSI)

### Ⅲ. 분과별 논제 및 발표자

#### 제5분과A

#### 원자력열수력 및 안전(Thermal Hydraulics and Safety)

- 열수력실험 (A) (Thermal-Hydraulic Experiment (A))

좌 장 백세진(Se Jin BAEK), 이상중(Sang Jong LEE)

발표장소 컨벤션A

일 정 | 10. 25(목)

- 09:00 Critical Heat Flux Enhancement Mechanism on Nanoparticle-coated Surfaces**  
Dong Eok Kim and Sang Ki Moon(KAERI)  
Moo Hwan Kim(POSTECH)
- 09:20 Natural Convection Heat Transfer Experiments of Horizontal Plates with Fin Arrays**  
Je-Young Moon and Bum-Jin Chung(JNU)
- 09:40 Experimental Study of Coating Effect on CHF during Pool Boiling for Nanofluid**  
Seong Dae Park, Sung Bo Moon, and In Cheol Bang(UNIST)
- 10:00 The Cooling Performance of SiC/water Nanofluid during Reflood Heat Transfer in a Long Vertical Tube**  
Seong Man Kim, Seung Won Lee, and In Cheol Bang(UNIST)
- 10:20 A Preliminary Study on the Mixed Convection Heat Transfer in a Horizontal Pipe**  
Myeong-Seon Chae and Bum-Jin Chung(JNU)
- 10:40 Coffee Break**
- 11:00 Preliminary Experiments on Natural Convection Heat Transfer of the Vertical Plate with Fin Arrays**  
Seung-Sin Kim and Bum-Jin Chung(JNU)
- 11:20 Measuring Velocity Profile in Scaled CANDU6 Moderator Tank Using Particle Image Velocimetry**  
Han Seo and In Cheol Bang(UNIST)  
Hyoung Tae Kim and Jae Eun Cha(KAERI)
- 11:40 Preparatory Research for Development of a Capacitance Sensor Monitoring the Liquid Fraction in an Inclined Pipe**  
Min Seok Ko, Sin Kim, and Bo An Lee(JNU)  
Byong Jo Yun(PNU)
- 12:00 Improvement of Dropwise Condensation Heat Transfer Using Hydrophobic Nano-porous Surfaces**  
Sangeun Kim and Hyungdae Kim(KHU)
- 12:20 Air-water Two-phase Vertical Upward Flow Regime Identification with Cross-sectional Phase Distribution**  
Yeong Jun Jang, Min Seok Ko, Bo An Lee, and Sin Kim(JNU)

## 제 5 분과 B

# 원자력열수력 및 안전(Thermal Hydraulics and Safety)

- 열수력해석 (A) (Thermal-Hydraulic Analyses (A))

좌 장 설광원(Kwang-won, SEUL), 김경두(Kyung Doo KIM)

발표장소 컨벤션B

일 정 | 10. 25(목)

- 09:00 Influential Input Parameters for Reflood Model of MARS Code**  
Deog Yeon Oh and Young Seok Bang(KINS)
- 09:20 Sensitivity Study of Reflood Model for MARS-KS1.3 3D Vessel Module Using FEBA Test Data**  
Tran Thanh Tram(UST)  
Bub Dong Chung(KAERI)
- 09:40 Review of Higher Order Wilks' Method to Identify Code-based Maximum Parameter Value**  
In Seob Hong and Sweng Woong Woo(KINS)
- 10:00 Validation of the SPACE Code for Experiments of LOCA**  
Myung Taek Oh, Chan Eok Park, and Jong Joo Sohn(KEPCO E&C)
- 10:20 Evaluation for Effect of Upper Head Nodalization in OPR1000 Plant**  
Byung Gil Huh, Dong-Gu Kang, Seung Hun Yoo, Young Seok Bang, and Chae-Yong Yang(KINS)
- 10:40 Coffee Break**
- 11:00 Analysis of the Downcomer Wall Cooling Effect Using MARS Code on Electrical 4 Trains during LBLOCA**  
Yusun Park, Hyun-Sik Park, and Ki-Yong Choi(KAERI)
- 11:20 Assessment of SPACE on DVI Line Break Test with SNUF**  
Jin-Hwa Yang and Eung-Soo Kim(SNU)  
Goon-Cherl Park(KINGS)
- 11:40 On the Time-space Averaged Momentum Equation for Dispersed Flow**  
Byoung Jae Kim and Kyung Doo Kim(KAERI)
- 12:00 Differences in LBLOCA Thermal-hydraulic Response Between 1D and 3D Calculations**  
Young Seok Bang, Ae-Ju Cheong, Deog-Yeon Oh, Gong Hee Lee, Sweng-Woong Woo, and Kwang Won Seul(KINS)
- 12:20 Evaluation of the PASCAL Experiment for Quasi-steady State and Decrease of PCCT Water Level Using RELAP5**  
Kyung Jin Lee, Soon Joon Hong, and Jeong Tae Kim(FNC Tech.)

### Ⅲ. 분과별 논제 및 발표자

#### 제5분과 C

#### 원자력열수력 및 안전(Thermal Hydraulics and Safety)

- 중대사고 (A) - 실험 및 해석(Severe Accident (A) - Experiment and Analyses)

좌 장 김한철(Han-Chul KIM), 홍성완(Seong-Wan HONG)

발표장소 컨벤션C

일 정 | 10. 25(목)

- 09:00**      **Development and Test Results of the Realtime Severe Accident Model 5 (RSAM5) Based on the MAAP5 For the Kori-1 Simulator**  
JinHyuk Hong and MyeongSoo Lee(KHNP CRI)
- 09:20**      **Cold Crucible Technique for Interaction Test of Molten Corium with Structure**  
Kwang Soon Ha, Sang Mo An, Beong Tae Min, and Hwan Yeol Kim(KAERI)
- 09:40**      **Two-dimensional CFD Analysis of Shock Wave Propagation for Developing Mitigation Measures of Severe Accident Explosive Loads**  
Jin-Su Kim and Jong-Woon Park(DU)
- 10:00**      **Natural Circulation Flow in the Adiabatic Model of Design of Core Cather Cooling System**  
K. W. Song, S. F. Huang, and S. T. Revankar(POSTECH)  
B. W. Rhee, R. J. Park, K. S. Ha, and J. H. Song(KAERI)
- 10:20**      **A Single-sphere Film-boiling Model for Triggerability and Explosion Potential**  
Ik Kyu Park, Jong Hwan Kim, Seong Ho Hong, and Seong Wan Hong(KAERI)
- 10:40**      **Coffee Break**
- 11:00**      **Conceptual Design of Additional Injection Tank for Heat Load Reduction on Reactor Vessel Lower Head during Severe Accident**  
Ji Young Hu, Hae Min Park, and Yong Hoon Jeong(KAIST)
- 11:20**      **Re-criticality Assessment Following Reactor Core Damage in Fukushima Unit 2**  
Hae Sun Jeong, Jin Ho Song, Chang Je Park, Kwang Soon Ha, Yong Mann Song, and Eun Hyun Ryu(KAERI)
- 11:40**      **A Study on the Hydrogen Distributions in a Containment for Nuclear Plant Severe Accidents**  
Kweon-Ha Park, Ju-Youn Kim, and Kyung-Hyo Bae(KMU)
- 12:00**      **Ex-vessel Steam Explosion Loads in Pressurized Water Reactors**  
Kwang-Hyun Bang and Hyoung-Tak Kim(KMU)
- 12:20**      **SBO Simulations for Integrated Passive Safety System (IPSS) Using MARS**  
Sang Ho Kim, Sung Yeop Joung, and Soon Heung Chang(KAIST)

## 제 5 분과 D

### 원자력열수력 및 안전(Thermal Hydraulics and Safety) - Poster - 열수력 실험(Thermal-Hydraulic Experiment)

좌 장 최기용(Ki Yong CHOI), 문상기(Sang Ki MOON)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P05D01 Influence of Diameter and Cross-section of a Chimney on the Heat Transfer : Simplified Balance Equation Approach**  
Chul-Kyu Lim and Bum-Jin Chung(JNU)
- P05D02 Experimental Facility Design for a Gap Heat Transfer in a Double Wall Tube**  
Ho-Yun Nam, Jonggan Hong, Jong-Man Kim, Jong-Bum Kim, and Ji-Young Jeong(KAERI)
- P05D03 Assessment of Pool Boiling CHF Enhancement Using Magnetite and Alumina Water Nanofluids at Higher Pressure**  
Jong Hyuk Lee, Taeseung Lee, and Yong Hoon Jeong(KAIST)
- P05D04 Effect of Oxidation on the Wettability Change with Metal Surfaces**  
Gwang Hyeok Seo, Seongnyeon Lee, Gyoodong Jeun, and Sung Joong Kim(HYU)
- P05D05 Measurement of the Minimum Film Boiling Temperature Using a Hot-patch Technique**  
Sang-Ki Moon, Byoung Jae Kim, Jong-Kuk Park, and Kyung Doo Kim(KAERI)
- P05D06 Contribution of the VISTA-ITL Program for the Standard Design Approval of the SMART Design**  
Hyun-Sik Park, Young-Jong Chung, Hyung-Kook Joo, Won-Jae Lee, Hark-Rho Kim, Chul-Hwa Song, and Sung-Jae Yi(KAERI)
- P05D07 Convective Heat Transfer Enhancement by Spacer Grids in Single-phase Steam Flow**  
Sang-Ki Moon, Byoung-Jae Kim, Seok Cho, Jong-Kuk Park, and Young-Jung Youn(KAERI)
- P05D08 A Comparative Study on the Characteristics of Carbon Nanotubes and Graphene Nanofluids for Efficiency Enhancement of Nuclear Power Plant Heat Exchanger**  
Sung Seek Park, Eoung Jin An, and Nam Jin Kim(JNU)
- P05D09 Cross Flow Tests of APR+ Core Simulator**  
Kihwan Kim, In-Cheol Chu, Hae-Seob Choi, Dong-Jin Euh, and Tae-Soon Kwon(KAERI)
- P05D10 Calibration Tests of Fuel Assembly Simulators of APR+ Reactor**  
Kihwan Kim, In-Cheol Chu, Dong-Jin Euh, and Tae-Soon Kwon(KAERI)
- P05D11 Problems of Mixed Convection Flow Regime Map in a Vertical Cylinder**  
Gyeong-Uk Kang and Bum-Jin Chung(JNU)
- P05D12 Effects of Outflow Area on Saturated Pool Boiling in Vertical Annulus with Closed Bottoms**  
Myeong-Gie Kang(ANU)

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- P05D13 Local Pool Boiling Heat Transfer on a 3-degree Inclined Tube Surface**  
Myeong-Gie Kang(ANU)
- P05D14 Integral Effect Test on Operational Performance of PAFS for a SLB Accident**  
Seok Kim, Byoung-Uhn Bae, Yusun Park, and Kyoung-Ho Kang(KAERI)
- P05D15 Behavior of Instantaneous Lateral Velocity and Flow Pulsation in Duct Flow with Cylindrical Rod**  
Chi Young Lee, Chang Hwan Shin, Ju Yong Park, Dong Seok Oh, Tae Hyun Chun, and Wang Kee In(KAERI)
- P05D16 Flow Boiling Critical Heat Flux Enhancement with Tri-Sodium Phosphate and Boric Acid Solution in the Tube**  
Hae Min Park and Yong Hoon Jeong(KAIST)
- P05D17 Integral Effect Test on Operational Performance of the PAFS (Passive Auxiliary Feedwater System) for a FLB (Feedwater Line Break) Accident**  
Byoung-Uhn Bae, Seok Kim, Yu-Sun Park, Bok-Deuk Kim, and Kyouug Ho Kang(KAERI)
- P05D18 Quenching Experiment on Vertical Tube Using Carbon Nano Tube (CNT) Nanofluids**  
Ai Melani and Soon Heung Chang(KAIST)
- P05D19 The Study of EMF Calibration in the Sodium Loop**  
Choon-Ho CHO, Jong-Hyun CHOI, Jong-Man KIM, Young-Il CHO, Jong-Gan HONG, and Yong-Bum LEE(KAERI)
- P05D20 Performance Evaluation of  $\text{HfO}_2/\text{xGnP}$  Composites for Improved Thermal Conductivity of Nuclear Fuel**  
Seung Won Lee, In Kook Kim, and In Cheol Bang(UNIST)

## 제 5 분과 E

### 원자력열수력 및 안전(Thermal Hydraulics and Safety) - Poster - 열수력 해석(Thermal-Hydraulic Analyses)

좌 장 정재준(Jae Jun JEONG), 윤병조(Byong-Jo Yun)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P05E01 Numerical Simulation of Condensation Phase Change Flow in an Inclined Tube with  $\cap$  - Bend**  
Jong Chull Jo, Byung Soo Shin, and Kyu Sik Do(KINS)  
Yong Kap Lee(Anflux Co..)
- P05E02 A Numerical Study on the Validity of Slab Models**  
Tae-Soon Kwon, Kihwan Kim, In-Cheol Chu, and Dong-Jin Euh(KAERI)
- P05E03 Computational Analysis of Distorted Velocity and Temperature Profiles of Sodium Flow in the Vicinity of Local Velocity Probe**  
Uiju Jeong, Yoon Ho Kim, and Sung Joong Kim(HYU)
- P05E04 A Simulation of the Coolant Mixing Using the Coupled MARS-CUPID**  
Ik Kyu Park, Jae Ryong Lee, Seung-Wook Lee, and Han Young Yoon(KAERI)
- P05E05 Investigation of the Heat Exchanger Bundle Effect for the Passive Condensate Cooling Tank Using the CUPID Code**  
Hyoung Kyu Cho, Seung-Jun Lee, and Han Young Yoon(KAERI)
- P05E06 Numerical Simulation of Turbulent Cross-flow Over an In-line Tube Bundle**  
Youngmin Bae, Han-Ok Kang, and Young-In Kim(KAERI)
- P05E07 Safety Assessment for  $(n,\gamma)^{98}\text{Mo}$  Form Irradiation Test in HANARO**  
Gee-Yang Han, Jun-Sig Lee, Guk-Hoon Ahn, and Hoan-Sung Jung(KAERI)
- P05E08 Performance Comparison of the Commercial CFD Software for the Prediction of Turbulent Flow through Tube Bundles**  
Gong Hee Lee, Young Seok Bang, and Sweng Woong Woo(KINS)
- P05E09 Preliminary Assessment of MARS-KS for the OECD-PKL G7.1 Test**  
Seung Wook Lee, Bub Dong Chung, and Kyung Doo Kim(KAERI)
- P05E10 Development of PCS Simulation Engine for HANARO Simulator by Using MARS 3.1**  
Seung Wook Lee, Sung Won Bae, Kyung Doo Kim, and Kee-Choon Kwon(KAERI)  
Jae-Seung Suh(SenTech)
- P05E11 MARS-KS Simulation for Calculating the Cooling Capacity of Spent Fuel Pool**  
Jin-Hyuck Kim, Dong-Hyeog Yoon, and Kwang-Won Seul(KINS)
- P05E12 Assessment of a Potential Rapid Condensation-induced Waterhammer in a Passive Auxiliary Feedwater System**  
Jong Chull Jo, Byung Soo Shin, and Kyu Sik Do(KINS)  
Frederick J. Moody(GE Retired)

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- P05E13 Augmented Heat Transport of Mono-sized Sphere-packed Pipe for Force Free Helical Reactor**  
Mohammad Naziffard and Kune Y. Suh(SNU)  
M.R. Nematollahi(Shiraz Univ.)
- P05E14 Numerical Study of Two Equation Turbulence Models for Subchannel Thermal Hydraulics**  
Mohammad Naziffard and Kune Y. Suh(SNU)
- P05E15 CFD Evaluation of SFP Cooling Capacity during Normal Operating Conditions**  
Dong-Hyeog Yoon, Jin-Hyuck Kim, and Kwang-Won Seul(KINS)
- P05E16 Simulation of PKL-III G3.1(MSLB) Experiment for Verification of SPACE Code**  
Chang-Keun Yang, Yo-han Kim, and Sang-Jun Ha(KHNP CRI)
- P05E17 RELAP5/MOD3.3 Code Calculation for Preoperational Tests of Safety Injection Tanks in SKN unit 3**  
Sang-Gyu Lim(KHNP CRI)
- P05E18 MARS Code Simulation of the SB-HL-18 Test Performed at the ROSA-2/LSTF**  
XinGuo Yu, Seung-Wook Lee, and Ki-Yong Choi(KAERI)
- P05E19 Simulation of LOFT LP-02-6 Test Using SPACE Code**  
Kwi-Seok Ha and Kyung-Doo Kim(KAERI)
- P05E20 SPACE Code Simulation of ATLAS DVI Line Break Accident Test (SB-DVI-08 Test)**  
Sang-Gyu Lim(KHNP CRI)
- P05E21 Feedwater Line Break Accident Analysis for SMART in the View Point of Minimum Departure from Nucleate Boiling Ratio**  
Soo Hyoung Kim, Kyoo Hwan Bae, Young-Jong Chung, and Keung Koo Kim(KAERI)
- P05E22 Curvature Effects on Pressure Perturbation of the DVI+ Duct**  
Tae-Soon Kwon(KAERI)  
SeungTae Lee(UST)
- P05E23 Thermalhydraulic Characteristics for Fuel Channels Using Burnable Poison in the CANDU Reactor**  
Jun Ho Bae, Gyu Hong Roh, and Yong Mann Song(KAERI)
- P05E24 A Review on the CIRCÉ Methodology to Quantify the Uncertainty of the Physical Models of a Code**  
Seong Su JEON and Soon Joon HONG(FNC Tech.)  
Young Seok Bang(KINS)
- P05E25 Evaluation of Fatigue Damage Induced by Thermal Striping in a T-junction Using the Three- dimensional Coupling Method and Frequency Response Method**  
Sun-Hye Kim and Jin-Ho Lee(KINS)  
Jae-Boong Choi and Moon-Ki Kim(SKKU)  
Nam-Su Huh(SNU)
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- P05E26**    **Evaluation of SPACE Code for Simulation of Reactor Scram due to Unplanned Loss of RCP Power in OPR 1000**  
Seyun Kim, Dong-Hyuk Lee, Yo-Han Kim, and Sang-Jun Ha(KHNP CRI)
- P05E27**    **Containment Behavior in MSLB with FIV Malfunction**  
Hoon Choi, Dong Soo Song, and Hwang Yong Jun(KHNP CRI)
- P05E28**    **Simulation of ATLAS SGTR-HL-04 Experiment Using SPACE Code**  
Dong-Hyuk Lee, Sang-Jun Ha, and Seyun Kim(KHNP CRI)
- P05E29**    **Flow Characteristics in Hot Pool of Sodium-cooled Fast Reactor**  
Jung Yoon, Seong-O Kim, and Tae-Ho Lee(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 5 분과 F

#### 원자력열수력 및 안전(Thermal Hydraulics and Safety) - Poster - 중대사고(Severe Accident)

좌 장 박래준(Rae-Joon PARK), 이영승(Young Seung LEE)

발표장소 다이아몬드

일 정 10. 25(목) 13:00-15:00

- P05F01 Code-to-code Comparison of ISAAC on SBO Sequences at CANDU6 Reference Plant**  
Dong-Ha Kim, Yong-Mann Song, and Joo-Hwan Park(KAERI)
- P05F02 CHF Enhancement by Graphene-oxide Nanofluid for External Reactor Vessel Cooling Strategy**  
Seong Dae Park, Seung Won Lee, Sarah Kang, Seong Man Kim, Han Seo, and In Cheol Bang(UNIST)
- P05F03 Analysis of Severe Accident Conditions for Survivability of Equipment in Wolsong #1**  
Young Seung Lee, Hyeong Taek Kim, and Chan Kook Moon(KHNP CRI)
- P05F04 Evaluation of Two Phase Natural Circulation Mass Flow Rate in the Reactor Cavity under IVR-ERVC Condition for Different Thermal Power**  
Rae-Joon Park, Kwang-Soon Ha, and Hwan-Yeol Kim(KAERI)
- P05F05 Containment Performance Analysis for EU-APR1400**  
DoHyun Hwang and JangHwan Na(KHNP CRI)
- P05F06 Experimental Critical Heat Flux for APR1400 Low Head during a Severe Accident**  
Sang W. Noh and Kune Y. Suh(SNU)
- P05F07 The Simulation of Fukushima Unit-2 Accident with MELCOR Based on the Boundary Conditions from TEPCO**  
Jong-Hwa Park, Seong-Wan Hong, and Jin-Ho Song(KAERI)
- P05F08 Objective Provision Tree Application to the Effectiveness Evaluation of Accident Management Guidelines**  
Huichang Yang(TUV Rheinland Korea)  
Han-Chul Kim and Sung-Han Lee(KINS)
- P05F09 MELCOR Simulation of Postulated Severe Accidents in OPR1000**  
Seongnyeon Lee and Sung Joong Kim(HYU)  
Hwan-Yeol Kim and Jong-Hwa Park(KAERI)
- P05F10 Development of the APR1400 Model for Countercurrent Natural Circulation in Hot Leg and Steam Generator Under Station Blackout**  
Sang Gil Park and Han-Chul Kim(KINS)
- P05F11 Analysis of the ULOF Event for the KALIMER-150 by Using SAS4A/SASSYS-1**  
Seok Hun Kang, Hae Yong Jeong, Kwi Seok Ha, Chiwoong Choi, Won Pyo Chang, Kwi Lim Lee, and Jae-Hyuk Eoh(KAERI)

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- P05F12    A Comparative Study of the RAIM and Alternative Iodine Adsorption Models**  
Hyung-Ju Lim and Han-Chul Kim(KINS)
- P05F13    Analysis of the Test Facility for a Core Catcher by Using the CUPID Code**  
Dong Hun Lee and Jae Jun Jeong(PNU)  
Ik Kyu Park, Han Young Yoon, and Kwang Soon Ha(KAERI)
- P05F14    Determination of PARs Capacity for HMS in EU-APR1400**  
DoHyun Hwang(KHNP CRI)
- P05F15    An Integrity Assessment for Reactor Lower Head Under In-vessel Vapor Explosion Loads**  
JongRea Cho, KwangHyun Bang, JiHoon Bae, and JongWon Jeon(KMU)

### Ⅲ. 분과별 논제 및 발표자

#### 제 5분과 G

#### 원자력열수력 및 안전(Thermal Hydraulics and Safety) - Poster - 확률론적 안전성 평가 및 응용(PSA)

좌 장 이창주(Chang Ju LEE), 안광일(Kwang Il AHN)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P05G01 MELCOR Code Source Term Characteristics for Fast SBO Scenario of OPR1000 Plant**  
Seok-Jung HAN, Tae-Woon KIM, Sunhee PARK, and Kwang-Il AHN(KAERI)
- P05G02 Integrated Framework for Dynamic Safety Analysis**  
Taewan Kim(KINGS)  
Durga R. Karanki(PSI)
- P05G03 PSA Effect Analysis of a Design Modification of the Auxiliary Feedwater System for a Westinghouse Type Plant**  
Yeon Kyoung Bae and Eun Chan Lee(KHNP CRI)
- P05G04 Development of Web-based Offsite Consequence Analysis Program and Periodic Risk Assessments for ILRT Extension**  
Seok-Won Hwang, Ho-Jun Jeon, and Moon-Gu Chi(KHNP CRI)
- P05G05 An Establishment of MELCOR Code to Generate Source Terms for Off-site Consequence Analysis**  
S. H. Park, S. Han, and K. I. Ahn(KAERI)
- P05G06 Evaluation of Seismic Induced CDF &  $\Delta$ CDF with Considering the Uncertainty Reduction Research Results**  
Daegi Hahm and In-Kil Choi(KAERI)

**일 정** | 10. 25(목) 13:00-15:00**P05H01 Determination of Void Fraction in Pipes of Emergency Core Cooling System Using Ultrasonic Test**

Seung-Chan Lee, Duk-Joo Yoon, and Hwang-Yong Jun(KHNP CRI)

**P05H02 The Impact of Fuel Temperature Reactivity Coefficient on Loss of Reactivity Control Accident**

J. H. Park, E. H. Ryu, Y.M. Song, and J. Y. Jung(KAERI)

**P05H03 Status and Future Prospects of Extensive Damage Mitigation Guidelines in Korea**

Sung-Han Lee, Han-Chul Kim, Tae-Hyeong Kim, and Kwang-Won Seul(KINS)

**P05H04 Development of Safety Evaluation Methodology for Beyond Design Basis Accident**

Dong-Gu Kang, Byung Gil Huh, Seung-Hoon Ryu, Chae-Yong Yang, and Seung-Hoon Ahn(KINS)

**P05H05 Study of Kinematic Shock in Inverted U type Pipe of Emergency Core Cooling System**

Seung-Chan Lee, Duk-Joo Yoon, and Hwang-Yong Jun(KHNP CRI)

**P05H06 Review of Safety Criteria for Nuclear Steam Supply System in Pressurized Water Reactor**

Mohammad Abul Hashem Bhuiyan(KAIST)

Jong-Seuk PARK(KINS)

### Ⅲ. 분과별 논제 및 발표자

#### 제 5 분과 I

#### 원자력열수력 및 안전(Thermal Hydraulics and Safety)

- 열수력실험 (B) (Thermal-Hydraulic Experiment (B))

좌 장 김한곤(Han-Gon KIM), 방인철(In Cheol BANG)

발표장소 컨벤션A

일 정 | 10. 26(금)

- 09:00 Experimental Program for Validation of Cooling and Operational Performance of the APR+ Passive Auxiliary Feedwater System**  
Kyoung-Ho Kang, Seok Kim, Byoung-Uhn Bae, Yun-Je Cho, and Yu-Sun Park(KAERI)
- 09:20 In-core Downstream Effect for CANDU**  
In-Hwan Kim, Hwang-Yong Jun, and Je-Joong Sung(KHNP CRI)
- 09:40 CFD Benchmark Calculation for the 1/5-Scale ACOP Core Flow Test**  
Tae-Soon Kwon, Kihwan Kim, In-Cheol Chu, and Dong-Jin Euh(KAERI)
- 10:00 An Integral Effect Test Facility of the SMART, SMART-ITL**  
Hyun-Sik Park, Sang-Ki Moon, Yeon-Sik Kim, Seok Cho, Ki-Yong Choi, Hwang Bae, Dong-Eok Kim, Nam-Hyun Choi, Kyoung-Ho Min, Yung-Joo Ko, Yong-Cheol Shin, Rae-Joon Park, Won-Jae Lee, Chul-Hwa Song, and Sung-Jae Yi(KAERI)
- 10:20 A Single Hydraulic Test for APR+ Reactor Flow Distribution Under a Uniform Pump Flow Condition**  
D. J. Euh, K. H. Kim, H. S. Choi, Y. J. Youn, J. T. Kim, I. C. Chu, and T. S. Kwon(KAERI)
- 10:40 Coffee Break**
- 11:00 Experimental Study on Augmentation of Nucleate Boiling Heat Transfer on Nano-porous Surfaces**  
Youngjae Park and Hyungdae Kim(KHU)
- 11:20 Core Inlet Blockage Test Facility for the APR1400**  
Jeong Kwan Suh, Jae Yong Lee, and Moon Ghu Park(KHNP CRI)
- 11:40 An Experimental Study on Onset of Flow Instability for Downward Flow within Narrow Rectangular Channels**  
Juhyung Lee, Song Jung-hyun, and Soon Heung Chang(KAIST)
- 12:00 The Research of Effect of 2-phase Loss Multiplier on Density Wave Instability Phenomena in Natural Circulation Loop**  
Ki Hoon Yang, Young Jun Choi, Young Sang Kim, and Tae Jung Park(DOOSAN)  
Joohan Bae(KAIST)
- 12:20 Application of an Area Overlap Similarity Measure to Estimate Code Prediction Accuracy**  
Ki-Yong Choi and Jongrok Kim(KAERI)

## 제 5 분과 J

# 원자력열수력 및 안전(Thermal Hydraulics and Safety)

- 열수력해석 (B) (Thermal-Hydraulic Analyses (B))

좌 장 윤한영(Han Young YOON), 정지환(Ji Hwan JEONG)

발표장소 컨벤션B

일 정 | 10. 26(금)

**09:00 Simulation of DEBORA Experiments for Subcooled Boiling Flow by the EAGLE Code with One-group Interfacial Area Transport Equation**

V. T. Nguyen(UST)

C.-H. Song, B. U. Bae, I.-C. Chu, and D. J. Euh(KAERI)

**09:20 On the Horizontal Counter Current Model for Multi-fluid Flow**

Sang Yong Lee, Chan Eok Park, and Jong Joo Sohn(KEPCO E&C)

V. H. Ransom(Purdue Univ.)

**09:40 CAP V&V for Containment Experiments**

Soon Joon HONG, Yeon Joon CHOO, and Su Hyun HWANG(FNC Tech.)

Sang Joon HA and Hoon CHOI(KHNP CRI)

**10:00 LBLOCA Analysis on SGTP Asymmetry Condition**

Dong Kyu Lee, Jae Hoon Lee, and Geol Woo Lee(KEPCO NF)

**10:20 Analysis of Inherent Boron Dilution after SBLOCA in PWR**

Kae Yeol Lew, Seoung-eun Chun, Sang Min Jung, and Geol Woo Lee(KEPCO NF)

**10:40 Coffee Break**

**11:00 Validation of the CUPID Code for the Natural Circulation in a Small Scale Pool**

Seung-Jun Lee, Hyoung Kyu Cho, Han Young Yoon, and Seok Kim(KAERI)

**11:20 Subcompartment Pressurization Analysis for Auxiliary Building of APR1400DC**

Moon-Oh Kim and Hee-Do Lee(ACT Co., Ltd.)

**11:40 SAPCE-CAP Linkage Methodology and Preliminary Results**

Yeon Joon Choo, Soon Joon Hong, and Byung Chul Lee(FNC Tech.)

Sang Jun Ha and Hoon Choi(KHNP CRI)

Tae Beom Lee(KEPCO NF)

**12:00 Analysis of a Potential Two-phase Flow Instability in a PWR Passive Auxiliary Feedwater System**

Jong Chull Jo, Byung Soo Shin, and Kyu Sik Do(KINS)

Frederick J. Moody(GE Retired)

**12:20 Numerical Study on the Natural Convection of Two Staggered Cylinders Varying the Vertical and Horizontal Pitches and Prandtl Numbers**

Jeong-Hwan Heo and Bum-Jin Chung(JNU)

### Ⅲ. 분과별 논제 및 발표자

#### 제 5분과K

#### 원자력열수력 및 안전(Thermal Hydraulics and Safety)

- 중대사고 (B) MELCOR 특별 세션 (Severe Accident (B))

- Special Session for the MELCOR Code)

좌 장 김동하(Dong-Ha KIM), 허균영(Gyunyoung HEO)

발표장소 컨벤션C

일 정 | 10. 26(금)

- 09:00      Status of the MELCOR Code Development**  
Seong-Wan HONG(KAERI)
- 09:25      Important Models of the MELCOR Code**  
Jong-Hwa PARK(KAERI)
- 09:50      Utilization of the MELCOR Code for Nuclear Safety Research at KAERI**  
Dong-Ha KIM(KAERI)
- 10:15      Coffee Break**
- 10:40      Utilization of the MELCOR Code for Research and Regulation Activites at KINS**  
Han-Chul KIM(KINS)
- 11:05      Discussion on Domestic Cooperation**

## 제 5 분과 L

### 원자력열수력 및 안전(Thermal Hydraulics and Safety)

- 확률론적 안전성 평가 및 응용 (A) (PSA (A) - Methodologies, Tools and Applications)

좌 장 장승철(Seung-Cheol JANG), 황태석(Taesuk HWANG)

발표장소 다이아몬드

일 정 | 10. 26(금)

- 09:00**      **Development of Strategy Assessment Emergency Preparedness Plans Using Level 3 PSA**  
Joomyung Lee and Moosung Jae(HYU)
- 09:20**      **Scaling Structure Loads for SMA**  
Lee Dong-won, Song Jeong-guk, Jeon Sang-ho, Lim Hak-kyu, and Lee, Kwang-nam(KEPCO E&C)
- 09:40**      **Effects of Source Term Characteristics on Off-site Consequence**  
Seok-Jung HAN and Kwang-II AHN(KAERI)
- 10:00**      **Modeling of Human Error Probability Dependent on Seismic Intensity**  
Jung Han Kim and In-Kil Choi(KAERI)
- 10:20**      **Risk-informed Analysis of Training Effectiveness for Mitigating Accidents of Nuclear Power Plants**  
Chang-Ju Lee(KINS)
- 10:40**      **Coffee Break**
- 11:00**      **Occurrence Process of Unsafe Act and Recovery in Conducting EOP under a Simulated Emergency**  
Sun Young Choi and Wondea Jung(KAERI)
- 11:20**      **Development of Risk Monitoring Models for New Optimized Power Reactors**  
Ho-Jun Jeon(KHNP CRI)
- 11:40**      **Kori 1 SBO and Maintenance Rule in Korea**  
Kilyoo Kim and Daell Kang(KAERI)
- 12:00**      **Generation of Risk Importance Information from Severe Accident PSA Model**  
Mi Ro Seo, Hyeong Taek Kim, and Chan Kook Moon(KHNP CRI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 5 분과 M

#### 원자력열수력 및 안전(Thermal Hydraulics and Safety)

- 원자력 안전 현안 분야 (Current Safety Issues)

좌 장 심석구(Suk Ku Sim), 김형택(Hyeong Taek KIM)

발표장소 토포즈

일 정 | 10. 26(금)

**09:00 Experimental Investigation on Aluminum Precipitates by Chemical Effects in ECCS Sump Fluids under Post-LOCA Conditions**

Chang Hyun Kim and Je Joong Sung(KHNP CRI)  
Young Wook Jung(FNC Tech.)

**09:20 A Modified Method to Predict Failure Pressure of Steam Generator Tubes with Through-wall Cracks**

Han-Sang Lee, Nak-Hyun Kim and Yun-Jae Kim(KU)  
Jong-Sung Kim(SCNU)  
Jin-Won Kim(CSU)

**09:40 Development of Regulatory Evaluation Methods for ECCS Gas Accumulation**

S. K Sim, M. J. Hwang, and S. D. Suk(E&ET)  
Byung Gil Huh, Young Seok Bang, and Chae Yong Yang(KINS)

**10:00 Sensitivity Research on Design Parameter of Reactor Power Cutback System in Westinghouse Type Plant**

Duk-Joo Yoon and Seung-Chan Lee(KHNP CRI)

**10:20 Study on Methodology for Establishment of the Minimum Allowable Fuel Channel Flow Rate in Steady State for CANDU Reactors Considering Aging Effect**

In Young Kim(KAERI)  
Un Chul Lee(SNU)  
Yong Won Choi and Kap Kim(KINS)

**10:40 Coffee Break**

## 제 5 분과 N

### 원자력열수력 및 안전(Thermal Hydraulics and Safety)

- 확률론적 안전성 평가 및 응용 (B) (PSA (B) - New Technologies)

좌 장 정원대(Wondea JUNG), 한진규(Jin Kyu HAN)

발표장소 토파즈

일 정 | 10. 26(금)

- 11:00**      **Monitoring Method Development for Safety Component on Standby State**  
Sung Min Shin, Bo Gyung Kim, and Hyun Gook Kang(KAIST)
- 11:20**      **Development of Vital Area Identification Method for Korean Nuclear Power Plant Design**  
Woo Sik Jung(KAERI)
- 11:40**      **An Approach to Evaluate the Network Communication Reliability**  
Hee Eun Kim, Bo Gyung Kim, and Hyun Gook Kang(KAIST)
- 12:00**      **Reliability Assurance Program for the APR1400 DC**  
Kim Myung-Ki and Jeong Hae-In(KHNP CRI)  
Lim Hak Kyu(KEPCO E&C)  
In Yong-Ho(Maracor Technical Service, Inc.)

### Ⅲ. 분과별 논제 및 발표자

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#### 제 6분과 A

#### 방사선 이용 및 방호 (Radiation Utilization and Protection)

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좌 장 김인규(In Gyu KIM), 김봉환(Bong Hwan KIM)

발표장소 사파이어

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일 정 | 10.25(목)

- 09:00**      **Flood/Typhoon Vulnerability Indicators of Nuclear Power Plant in South Korea Considering Climate Change Impacts**  
Gyu-Min Lee and Kyung-Soo Jun(SKU)  
Eun-Sung Chung(SNU)  
Byung-Il Min and Kyung-Suk Suh(KAERI)
- 09:20**      **Electron Beam Broadening Effect of Neutron Generation in the Lead Slowing Down Time Spectrometer (LSDTS) Target**  
Chang Je Park and Yongdeok Lee(KAERI)
- 09:40**      **Improvement of Neutron Counting Method of the BF<sub>3</sub> Detector in Low Intense Neutron Field**  
N. S. Jung, J. H. Kim, and H. D. Choi(SNU)  
S. H. Byun(McMaster Univ.)
- 10:00**      **The Effect of Current Density and Saccharin Addition on the Grain Size of Nickel Coatings**  
Young Rang Uhm, Keun Yung Park, Kwang Jae Son, Young Ho Shim, and Sun Ju Choi(KAERI)

## 제 6 분과 B

### 방사선 이용 및 방호(Radiation Utilization and Protection) - Poster

- 방사선 방호/차폐/안전/환경 연구(Radiation Protection/Shielding/Safety/Environment)

좌 장 김종운(Jong Woon Kim), 서경석(Kyung Suk SUH)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P06B01 Monte Carlo Simulation of the Eye Lens on the NIST X-Ray Beam and Cs-137 with Geant4 Simulation Toolkit**  
B. L. Lee, J. I. Kim, S. K. Kang, and J. S. Moon(KHNP RHRI)
- P06B02 Simulation of dose to the Eye Lens from Co-58 and Co-60 in Overhaul of a PWR Nuclear Power Plant**  
Jinsoo Moon, Jungin Kim, Taejin Kim, Seo Kon Kang, and Byungil Lee(KHNP RHRI)
- P06B03 Study for Applying Microwave Power Saturation Technique on Fingernail/EPR Dosimetry**  
Park Byeong Ryong, Choi Hoon, Hyun III Nam, and Lee Byung III(KHNP RHRI)
- P06B04 Preliminary Study for Dosimetry of Toenail using Optically Stimulated Luminescence (OSL)**  
Hyun II Nam, Choi Hoon, Park Byeong Ryong, and Lee Byung III(KHNP RHRI)
- P06B05 Preliminary Study on the Analysis of Alpha Emitters at Working Places in Nuclear Power Plants**  
Hanna Kim, Jeong-In Kim, and Byoungil Lee(KHNP RHRI)  
Suk-Won Yoon(KIRAMS)
- P06B06 Calculation of Total Number of Disintegrations after Intake of Radioactive Nuclides Using the Pseudoinverse Matrix**  
Siwan Noh, Jeong Sol, and Jai-Ki Lee(HYU)  
Jong II Lee and Jang Lyul Kim(KAERI)
- P06B07 Design of the Remote Handling System for Highly Activated Samples by Proton Beam Irradiation**  
Kye-Ryung Kim, Se-Jin Ra, and Myung-Hwan Jung(KAERI)
- P06B08 Design of Radiation Shielding Structure for Low-Background Gamma Spectrometry**  
S. G. Shin, E. A. Kim, J. H. Bang, Valery Shvetsov, and M. H. Cho(POSTECH)  
W. Namkung(PAL)  
G. N. Kim(KPNU)  
M. W. Lee(DIRAMS)
- P06B09 A Preliminary Study on the Activation Analysis for a Conceptual K-DEMO Fusion Reactor**  
Ji Sung Park, Byung Hee Won, Chang-ho Shin, and Jong Kyung Kim(HYU)  
Young-Seok Lee(NFRI)

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**P06B10 SKN 3&4 SBO Simulation with PCTAN APR1400**

Juyub Kim and Juyoul Kim(FNC Tech)

Seungyoung Jeong and Sang-Hyun Park(KINS)

## 제 6분과 C

### 방사선 이용 및 방호(Radiation Utilization and Protection) - Poster - 방사선 생명의학/중성자 · RI 이용/방사선기기/가공 (Radiation BioMedical/Neutron · RI Application/Instrumentation/Radiation-Processing)

좌 장 김영수(Young Soo KIM), 엄영랑(Young Rang UHM)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P06C01 Quantitative Estimation of Model Parameters for Post-irradiation Recovery of Cells**  
Jin Kyu Kim, Changhyun Roh, and Tae Ho Ryu(KAERI)  
Ludmila N.Komarova and Vladislav G. Petin(MRRC)
- P06C02 Performance Evaluation of Monte Carlo Neutron Transport Codes in NDP Simulation**  
Hoang Sy Minh Tuan, Byung Gun Park, and Gwang Min Sun(KAERI)
- P06C03 Comparative Measurement of Inorganic Elements in Korean Space Foods using Instrumental Neutron Activation Analysis**  
Yong Sam Chung, Sun Ha Kim, Sung Ryel Baek, Gwang Min Sun, Jong Hwa Moon, Jong Il Choi, and Joo Eun Lee(KAERI)
- P06C04 Modified Effective Solid Angle Code for the Efficiency Calculation of Volume Sample**  
KANG Minyoung and SUN Gwang-Min(KAERI)
- P06C05 Modeling of Detector Response Function in Neutron Depth Profiling**  
B. G. Park and G. M. Sun(KAERI)  
H. D. Choi(SNU)
- P06C06 Experimental Performance Evaluation of a Compton Suppression System by an Analysis of Geological Reference Materials**  
J. H. Moon, G. M. Sun, S. H. Kim, and Y. S. Chung(KAERI)
- P06C07 Electroplating Condition for Ni Nanocrystalline on Metal (Ni and Cu) Plates**  
Keun Yung Park, Young Rang Uhm, Kwang Jae Son, Young Ho Shim, and Sun Ju Choi(KAERI)
- P06C08 Improvement of Data Processing of the Tritium Monitor Installed at the HANARO Stack**  
Myong-Seop Kim, Chang-Woo Seol, Hyung-Sub Lee, Choong-Sung Lee, Sang-Jun Park, and Kwong-Pyo Hong(KAERI)
- P06C09 Performance Test of the Compton Suppression System (CSS)**  
Hana SEO and Gil Hoon AHN(KINAC)
- P06C10 Design of the Ridge-Filter Type Modulator for TR103 of PEFP**  
Myung-Hwan Jung, Se-Jin Ra, and Kye-Ryung Kim(KAERI)
- P06C11 Effect of Dye for Dye-sensitized Solar Cell from Gamma-irradiation**  
Hwa-Jung Kim, Ju-Woon Lee, and Hae-Jun Park(KAERI)

### Ⅲ. 분과별 논제 및 발표자

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#### 제 7 분과 A

#### 양자공학 및 핵융합기술 (Quantum Engineering and Nuclear Fusion)

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좌 장 김한성(Han-Sung Kim), 이동원(Dong Won Lee)

발표장소 사파이어

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일 정 | 10. 25(목)

- 10:20**      **Characteristics of LAR Tokamak Transmutation Reactor**  
B. G. Hong(JBNU)
- 10:40**      **Feasibility of Accelerator-Driven System**  
Tae-Yeon Lee and Hee Seok Lee(POSTECH)
- 11:00**      **Improvement of Visualization Efficiency for the Nondestructive Inspection Image of Internal Defects in Plate-Type Nuclear Fuel**  
Seung-Kyu Park, Nak-Kyu Park, Sung-Hoon Baik, Yoon-Sang Lee, and Yong-Moo Cheong(KAERI)  
Young-June Kang(JBNU)
- 11:20**      **Klystron Protection System for the PEFP 100MeV Linac**  
Kyung-Tae Seol, Hyeok-Jung Kwon, Dae-il Kim, Han-Sung Kim, and Yong-Sub Cho(KAERI)
- 11:40**      **The Construction of Beam Loss Monitoring System for the PEFP 100MeV Proton Accelerator**  
Sang-Pil Yun, Hyeok-Jung Kwon, Kyung-Tae Seol, Bum-Sik Park, Young-Gi Song, Han-Sung Kim, and Yong-Sub Cho(KAERI)

일 정 | 10. 25(목) 13:00-15:00

**P07B01 Fire Analysis for Compartment of ITER Tritium SDS**Woo-seok Choi and Kyoung-sik Bang(KAERI)  
Seungyon Cho and Sei-hun Yun(NFRI)**P07B02 Progress of KO HCCR TBM Design and Performance Analysis for ITER**D. W. Lee, K. I. Shin, H. G. Jin, E. H. Lee, J. S. Yoon, S. K. Kim, C. W. Lee, and Y. O. Lee(KAERI)  
S. Cho(NFRI)**P07B03 Simulation Results of High Heat Flux Test Conditions for ITER Neutral Beam Duct Liner Mockup**D. W. Lee, S. K. Kim, E. H. Lee, J. S. Yoon, H. G. Jin, and K. I. Shin(KAERI)  
C. K. Park and J. W. Sa(NFRI)**P07B04 Structural Design and Evaluation of KO HCCR TBM First Wall for ITER**K. I. Shin, D. W. Lee, H. G. Jin, E. H. Lee, J. S. Yoon, and S. K. Kim(KAERI)  
S. Cho(NFRI)**P07B05 Fabrication and High Heat Flux Test Preparation of a Half-scale Sub-module Mock-up for the TBM First Wall**

Jae Sung Yoon, Suk Kwon Kim, Eo Hwak Lee, and Dong Won Lee(KAERI)

**P07B06 Nondestructive Imaging Inspection of Defects for a Nuclear Fuel Plate by Using an Active Laser Interferometer**Nak-Kyu Park, Seung-Kyu Park, Sung-Hoon Baik, Yoon-Sang Lee, and Yong-Moo Cheong(KAERI)  
Young-June Kang(JBNU)**P07B07 Preliminary Test and Evaluation of High Heat Flux Test Facility for ITER Blanket System**Suk-Kwon Kim, Hyung Gon Jin, Kyu In Shin, Bo Guen Choi, Eo Hwak Lee, Jae-Sung Yoon, and Dong Won Lee(KAERI)  
Seungyon Cho(NFRI)**P07B08 A Preliminary Design and Structural Analysis on the Central Column for Supporting the Full 40° Sectors at Tokamak In-pit**Nam Kyounggo, Park Hyunki, and Kim Dongjin(NFRI)  
Jaehwan Moon and Kim Byungseok(SEC)  
Emma Watson and Robert Shaw(ITER)**P07B09 Penetration Sealing System of Proton Accelerator Research Center**

J. M Nam, Y. G Han, G. P Jeon, Y. S Min, S. S Park, J. S Cho, K. J Mun, I. T Song, and J. Y Kim(KAERI)

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- P07B10 Conceptual Design of K-DEMO Containment**  
Kyemin Oh and Gyunyoung Heo(KHU)  
Young-seok Lee and Hyoung-chan Kim(NFRI)  
Young Tae Moon(KEPCO E&C)
- P07B11 Design Change of Tower Cooling Water System for Proton Accelerator Research Center**  
G. P. Jeon, J. Y. Kim, I. T. Song, Y. S. Min, K. J. Mun, J. S. Cho, J. M. Nam, S. S. Park, and Y. G. Han(KAERI)
- P07B12 Licensing and Safety Analysis of the Ion Accelerator for Manufacturing**  
Y. S. Min, J. M. Nam, J. S. Lee, and J. Y. Kim(KAERI)
- P07B13 Commissioning Plan of the Klystron and Modulator System for 100MeV Proton Accelerator**  
Hyeok-Jung Kwon, Kyung-Tae Seol, Daeil Kim, Han-Sung Kim, Young-Gi Song, Ji-Ho Jang, and Yong-Sub Cho(KAERI)
- P07B14 Development of RF Set-point Program for PEFP Linac Commissioning**  
Ji-Ho Jang, Hyeok-Jung Kwon, Han-Sung Kim, Kyung-Tae Seol, Young-Gi Song, and Yong-Sub Cho(KAERI)
- P07B15 Development of a Permeation Sensor Made of Vacuum Flanges to Measure Hydrogen Isotopes in Liquid Metal Breeder**  
Eo Hwak Lee, Bo Guen Choi, Jae Sung Yoon, Suk Kwon Kim, and Dong Won Lee(KAERI)  
Hyun Gon Lee(NFRI)
- P07B16 Emergency Door Installation for the Accelerator and Beam Application Building of Proton Accelerator Research Center**  
Y. G. Han, J. M. Nam, G. P. Jeon, Y. S. Min, S. S. Park, J. S. Cho, K. J. Mun, I. T. Song, and J. Y. Kim(KAERI)
- P07B17 Design Tools and Scheme for ITER TBM and Fusion Reactor in Korea**  
H. G. Jin, D. W. Lee, K. I. Shin, E. H. Lee, J. S. Yoon, and S. K. Kim(KAERI)  
S. Cho(NFRI)
- P07B18 Comparison of the Pumping Powers with Various Coolants of Fusion K-DEMO Blanket**  
Il-Woong Park, Yeon-Gun Lee, Min-Young Park, Eung Soo Kim, and Goon Cherl Park(SNU)
- P07B19 Development of a Hydrogen Permeation Sensor for Liquid Breeder Type TBMs**  
B. G. Choi(UST)  
D. W. Lee, E. H. Lee, J. S. Yoon, S. G. Kim, and K. I. Shin(KAERI)  
H. G. Lee(NFRI)
- P07B20 Vibration Effect on 100-MeV Accelerator Tunnel from the Environment Elements**  
Dae-Il Kim, Hyeok-Jung Kwon, Bum-Sik Park, and Yong-Sub Cho(KAERI)
- P07B21 Lighting Control System of PEFP**  
Hoi-Won Jung, Kyeong-Jun Mun, Yung-Gu Han, Sung-Sik Park, In-Teak Song, and Jun Yeon Kim(KAERI)
- P07B22 Maximum Demand Power Control System Design Status of PEFP**  
Kyeong-Jun Mun, Hoi-Won Jung, Sung-Sik Park, In-Teak Song, and Jun Yeon Kim(KAERI)

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- P07B23 High Power Components Fabrication for 100MeV Proton Accelerator**  
Han-Sung Kim, Hyeok-Jung Kwon, Ji-Ho Jang, and Yong-Sub Cho(KAERI)
- P07B24 Implementation of the Networked Computer-based Control System for PEFP 100MeV Proton Linear Accelerator**  
Young-Gi Song, Hyeok-Jung Kwon, Ji-Ho Jang, and Yong-Sub Cho(KAERI)
- P07B25 Electronics Sensitivity Measurement of Beam Position Monitoring System for PEFP Linac and Beam-line**  
Jin-Yeong Ryu, Hyeok-Jung Kwon, Ji-Ho Jang, Han-Sung Kim, Kyung-Tae Seol, and Yong-Sub Cho(KAERI)
- P07B26 Design Study for Helium Beam Irradiation from RFQ on Circular Targets**  
Yong-Sub Cho, Ji-Ho Jang, and Hyeok-Jung Kwon(KAERI)
- P07B27 Survey and Fiducialization of 100MeV Proton Accelerator**  
Bum-Sik Park, Dae-Il Kim, Hyeok-Jung Kwon, Ji-Ho Jang, and Yong-Sub Cho(KAERI)
- P07B28 Current Status of Construction License of PEFP**  
J. Y. Kim, J. S. Cho, Y. S. Min, J. M. Nam, G. P. Jeon, S. S. Park, J. H. Jo, and I. T. Song(KAERI)
- P07B29 Electrical System Design Status of PEFP**  
In Taek Song, Kyeong-Jun Mun, and Jun Yeon Kim(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 8분과 A

#### 원전 건설 및 운영 기술(Nuclear Power Plant Construction and Operation Technology)

- 원전 건설, 설계, 제작, 내진/구조

(NPP's Construction, Design, Manufacture and Structural Engineering)

좌 장 장정범(Jung Bum Jang), 이정수(Jung Soo, Lee)

발표장소 마호가니

일 정 | 10. 25(목)

- 09:00 Development of Life-cycle Process for Effective Construction Management in Korean Nuclear Power Plant**  
Hyo-Woong Choi, Kyung Soo Min, and Seo Kyung Won(KHNP CRI)
- 09:20 Detection Capability of an Advanced IR Technique for Wall-Thinning Defects in Nuclear Piping Components**  
Jin Weon Kim, Sung Jae Jung, Kyung Won Yun, and Kyeong Suk Kim(CSU)
- 09:40 A Dependency Test of Shear Strain and Compressive Stress of Full-Scale Lead Rubber Bearings for Nuclear Power Plant**  
Hong-Pyo Lee and Myung-Sug Cho(KHNP CRI)  
Jin-Young Park and Kwang-Seok Jang(UNISON e-Tech)
- 10:00 Mechanical Property Test of Natural Rubber Bearing for the Evaluation of Uncertainty Value of Seismic Isolation Devices**  
Min Kyu Kim, Jung Han Kim, and In-Kil Choi(KAERI)
- 10:20 Missile Target Interaction Analysis of B747 Aircraft Using Hydrocode LSDYNA**  
Kyoungsoo Lee and Jung-Wuk Hong(KAIST)
- 10:40 Coffee Break**
- 11:00 A Sensitivity Analysis for Strike, Dip, and Rake of a Fault in a Tsunami Simulation**  
Hyun-Me Rhee, Min-Kyu Kim, Jeong-Moon Seo, and In-Kil Choi(KAERI)  
Dong-Hoon Sheen(Chonnam Univ.)
- 11:20 Element-Size-Dependent Damage Model for Ductile Crack Growth Simulation of Degraded Pipe**  
Jong-Hyun Kim, Nak-Hyun Kim, and Yun-Jae Kim(KU)
- 11:40 Evaluation of Coupling Effects between Primary and Secondary System by Seismic Analysis**  
Bub-Gyu Jeon, Hyoung-Suk Choi, and Nam-Sik Kim(PNU)  
Dae-Gi Hahm(KAERI)
- 12:00 Performance Evaluation of Interface Piping System for Seismically Isolated NPPs**  
Daegi Hahm, Junhee Park, and In-Kil Choi(KAERI)
- 12:20 Seismic Response of Base Isolated Auxiliary Building with Age-related Degradation**  
Junhee Park, Young-Sun Choun, and In-Kil Choi(KAERI)

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**12:40**      **Preliminary Study of Impact Fragility to RC Wall Subjected to Aircraft Impact**  
Shin Sangshup, Daegi Hahm, and In-Kil Choi(KAERI)

**13:00**      **Response of Base Isolation System Excited by Spectrum Compatible Ground Motions**  
Jung Han Kim, Min Kyu Kim, and In-Kil Choi(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 8분과 B

#### 원전 건설 및 운영 기술 - Poster (Nuclear Power Plant Construction and Operation Technology)

좌 장 장희승(Hee Seung Chang), 고우식(Woo Sig, Ko)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P08B01 A Development of Automated Analysis Technique for Bobbin Data to Detect ODS/CC on the OPR1000 SG Tubes**  
In Chul Kim, Min Woo Nam, Wang Bae Kim, Kyung Moon Joo, and Keun Young Cheon(KHNP CRI)
- P08B02 A Development of Techniques Detecting Foreign Objects in the Secondary Side of Steam Generator**  
Kyung Mun Joo, Ki Seok Shin, In Chul Kim, and Wang Bae Kim(KHNP CRI)
- P08B03 Analysis of the Enforcement Discretion System for Operating NPPs in the USA**  
Sang-Kyu Ahn, Sang-Won Kim, Gun-Hyun Chang, Young Gill Yune, Hyung-Joon Ahn, and Seung-Ho Cho(KINS)
- P08B04 Predicted Wear on the Tube Outside Surface due to Foreign Object in the Secondary Side of Steam Generator**  
Hyung Nam Kim and Nam Cheoul Cho(KHNP CRI)
- P08B05 FSI Analysis of Mixing Tee for Thermal Fatigue**  
Myung Jo Jhung and Hanok Ko(KINS)
- P08B06 A Study on the Implementation of an Integrated Environmental Qualification Management System(EQMS) for Nuclear Power Plant**  
Keug-Jin Bhang, Sun-Chul Jeong, and Pil-Sun Kang(KHNP CRI)
- P08B07 Nondestructive Evaluation of the QT on the SG Tubes Affected by Chemical Cleaning**  
Ki Seok Shin, Keun Young Cheon, and Wang Bae Kim(KHNP CRI)  
Kyong Mahn Min(UMI)
- P08B08 Procedure and Method of Equipment Qualification(EQ) for EPA in NPP**  
Sun-chul Jeong, Keug-Jin Bhang, and Pil-sun Kang(KHNP CRI)
- P08B09 EVMS for Nuclear Power Plant Construction : Status and Implementation**  
M. S. Roh, J. K. Kwak, and S. Y. Park(KINGS)
- P08B10 A Study and Implementation of Algorithm for Automatic ECT Result Comparison**  
You Hyun Jang, Min Woo Nam, In Chul Kim, Kyung Mun Joo, and Jong Seog Kim(KHNP)
- P08B11 A Study on the Efficiency Improvement of the Plant Secondary System in NPP**  
Chun-Ho Kim and Jong-Sun Song(CSU)

일 정 | 10. 25(목) 13:00-15:00

- P08C01 Ultimate Pressure Capacity Assessment of R-FRC PCCV Based on the Tension Stiffening Tests**  
Daegi Hahm and Young-Sun Choun(KAERI)
- P08C02 The Effects of Low-pass Filters of Peak Ground Acceleration**  
Park, Dong Hee and Chang, Chun-Joong(KHNP CRI)
- P08C03 Introduction to South Africa's Safety Classification**  
Kyung Jun Kang, Sang Ik Wu, and Juhyeon Yoon(KAERI)
- P08C04 Determination of Degradation Acceptance Criteria for Structures and Passive Components in Nuclear Power Plants**  
Young-Sun Choun, Daegi Hahm, and In-Kil Choi(KAERI)  
Jinsuo R. Nie, Joseph I. Braverman, and Charles H. Hofmayer(BHNL)
- P08C05 Dynamic Responses of Base Isolated NPPs under Seismic Excitations and Aircraft Crashes**  
Sang Hoon Noh, Hyun Uk Kim, and Kwang Ho Joo(KHNP)
- P08C06 Application of the Dispersant for Removal Sludge at the YongGwang Unit 6**  
Hyuk Chul Kwon, Jeong Mi Kim, and Ki Bang Sung(KHNP CRI)
- P08C07 J Estimation Method in R6 and RCC-MR A16 under Combined Primary and Secondary Stresses**  
Jeong Soon Park and Jin Ho Lee(KINS)  
Seyoung Im(KAIST)
- P08C08 Material Characteristics and Construction Methods for a Typical Research Reactor Concrete Containment in Iran**  
Mahsa Ebrahimi and Kune Y. Suh(SNU)  
Rahman Eghbali and Farzaneh Asadi malek Jahan(IKIU)
- P08C09 A Methodology for Calculation of Thermal Stress Based on Green's Function and Artificial Neural Network**  
HanOk Ko and MyungJo Jhung(KINS)  
JaeBoong Choi(SKKU)
- P08C10 Modal Analysis of Pool Door in Water Tank**  
Kang Soo Kim, Kyeong Hoon Jeong, Chan Gook Park, and In Soo Koo(KAERI)

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**P08C11    Some Suggestions for Sloshing Response Analysis in Liquid Storage Tanks Subjected to Earthquake Ground Motions**

Young-Sun Choun(KAERI)

**P08C12    Hysteretic Evaluation of Seismic Performance of Normal- and Fiber-Reinforced Concrete Shear Walls**

Young-Sun Choun and Daegi Hahm(KAERI)

## 제 8 분과 D

### 원전 건설 및 운영 기술(Nuclear Power Plant Construction and Operation Technology) - 원전 운전/정비기술, 설비 경년열화 관리 (NPP's Operating & Maintenance Technology and Equipment Aging Management)

좌 장 최광희(Kwang Hee, Choi), 신선동(Sun Dong, Shin)

발표장소 마호가니

일 정 | 10. 26(금)

- 09:00**      **Development of a Standard Equipment Management Model for Nuclear Power Plants**  
Hee Seung Chang, Tae Young Ju, and Jung Wun Kim(KHNP CRI)
- 09:20**      **Application of the Most Recent Technical Standards to the Safety Analysis of Wolsong Unit 1 Nuclear Power Plant**  
Sung Min Kim(KHNP CRI)
- 09:40**      **Design Characteristics of APR + CCWS Operating Modes**  
Ilyong Yoo, Sung-Hwan Kim, and Heok-Soon Lim(KHNP CRI)
- 10:00**      **A Study on the Influence of Boron Injection Tank Removal on (Post) LOCA Long-term Core Cooling for Yonggwang NPP #1, 2**  
Jeong-Jin Park and Jong-Soon Song(CSU)
- 10:20**      **Analysis Method of Deposit on Steam Generator Tubes using Eddy Current**  
Kyung Mo Kim, Myung Sik Choi, Do Haeng Hur, Jung Ho Han, and Deok Hyun Lee(KAERI)
- 10:40**      **Coffee Break**
- 11:00**      **Signal Characteristics of Guided Wave for Condenser Tube of NPP**  
Lee Dong Min, Choi Sang Hoon, and Yang Tae Yeong(KPS)
- 11:20**      **Study on Vibration Characteristics Affected by Condition of Bearing Support System in Nuclear Steam Turbines**  
H. J. Chung and W. S. Ko(KHNP CRI)
- 11:40**      **Evaluation of Exposure Rate for Operators during the Spent Fuel Handling**  
Sung-Hwan Kim, Sang-Gyoon Chang, Hyeong-Heon Kim, and Taek-Sang Choi(KEPCO E&C)
- 12:00**      **Modeling of the Nuclear Power Plant Life-cycle for "Big Data" Management System : A Systems Engineering Viewpoint**  
Bui Hoang Ha, Tran Quang Diep Khanh, Wan Shakirah Wan Abdul Kahar, and Jae-Cheon Jung(KINGS)
- 12:20**      **Prediction of Creep Crack Growth for Mod. 9CR-1MO AT 600°C**  
N. H. Kim, J. J. Han, and Y. J. Kim(KU)  
W. G. Kim and H. Y. Lee(KAERI)
- 12:40**      **Estimation of Stress Intensity Factors for Circumferential Cracked Pipes under Welding Residual Stress Filed**  
Chang-Young OH and Yun-Jae Kim(KU)  
Young-Jin OH(KEPCO E&C)  
Tae-Kwang Song and Yong-Beum Kim(KINS)
- 13:00**      **Overview of Long-Term Operation and Reactor Pressure Vessel Thermal Annealing**  
PARK Jin-seok, ROH Heui-young, and JUNG Sung-gyu(KEPCO E&C)

### Ⅲ. 분과별 논제 및 발표자

#### 제 9분과 A

#### 원자력 정책, 인력 및 협력 (Nuclear Policy, Human Resources and Cooperation)

좌 장 이태준(Tae Joon LEE), 유동한(Donghan YU)

발표장소 에메랄드

일 정 | 10. 25(목)

- 09:00 Security-by-Design Approach of the KALIMER-600 SFR Plant**  
Dongsup So and Yong Bum Lee(KAERI)
- 09:20 Assessing the Effectiveness of Nuclear Regulatory System in India**  
Sonal Gandhi(KAIST)  
Kwang Sik Choi(KINS)
- 09:40 Modeling of Engineering Management Processes for NPPs**  
Quang, PhamLe, Susanto, Arifin M., Dhuhair, Mohammad, and JC Jung(KINGS)
- 10:00 Analysis on Possible North Korea's Uranium Stock by Using Open-source Information**  
Jung-Hyun Lee(KINAC)
- 10:20 Our Consistent Countermeasure Followuig up with Lesson from Fukushima NPPs Accident**  
Jaerok Kim(KANS)  
Seunggy Ro(Sung-Woo E&T)  
Si-Hwan Kim(UNIST)  
Jang-Soo Nam(KNS)  
Guk-Hee Yoo(NSSC)  
Soong-Pyung Kim(CSU)
- 10:40 Coffee Break**
- 11:00 Reactor Technology Comparison Method using Modeling and Decision Making Technique**  
HyungJun Kim(KINGS)
- 11:20 A Study on the Revision of Nuclear Safety Act to Build the Foundation of Nuclear Export and Import Control System in Korea**  
Seung-hyo Yang and Sun-do Choi(KINAC)

## 제 9분과 B

# 원자력 정책, 인력 및 협력 - Poster (Nuclear Policy, Human Resources and Cooperation)

좌 장 정환삼(Whan-Sam CHUNG), 조성경(Seong Kyung Cho)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P09B01 Development of the Wire Seals for the National Safeguards Inspection**  
Seung Sik Park, Ki Hyun Kim, and Seong Youn Jo(KINAC)
- P09B02 Consideration on Containment and Surveillance Measures of Safeguards Approach to Light Water Reactor(LWR) Spent Fuel Dry Storage**  
Jae Kwang Kim(KINAC)
- P09B03 Analysis of Current Status of Acceptance of Nuclear Power Plant and Improvement Plan**  
Han Jang and Kyung Jin Lee(CSU)
- P09B04 The Establishment of the 4<sup>th</sup> 5-year Korean National Nuclear R&D Plan**  
Gye Seok Lee, Hong Jun Park, Seong Beak Kim, Kwang Hong, Jea Bang Lee, Jin Young Jeong, Eun Hee Hwang, and Bum-Jin Chung(NRF)  
Taek Ryeol Jeong, Gyeong Chun Seo, Jeong Ha Kim, Cheol Hee Cho, and Hoon Pyo Hong(MEST)
- P09B05 Comparative Study on NPP Design Requirements between IAEA and Korea**  
Won Joon Chang, Young Gill Yune, Hyung Joon Ahn, and Seung-Ho Cho(KINS)
- P09B06 Assessment on Regulatory Framework for Safety of Radioactive Waste Management as Preparation for Future NPP in Indonesia; a Comparison Study with South Korea**  
Lilis Susanti Setianingsih(BAPETEN)  
Seung-Young Jeong(KINS)
- P09B07 Development of Regulatory Inspection Program for Siting through Commissioning of New Power Plants**  
Fatema ALNuaimi and Seon Ho Song(KAIST)
- P09B08 Practice and Assessment for the Young Generation's Understanding of the Radiation**  
Dong Hun Yoo, Hee Reyoung Kim, Jae Rok Kim, and Seong Kee Noh(UNIST)
- P09B09 Current Status and Future Directions of Development of PR/PP Evaluation Methodology**  
D. Y. Kim, E. H. Kwon, and H. D. Kim(KAERI)
- P09B10 Study on GIF PR/PP Evaluation Methodology**  
B. H. Lee, E. H. Kwon, and H. D. Kim(KAERI)
- P09B11 Proliferation Resistance Assessment of Pyroprocessing**  
E. H. Kwon, W. I. KO, and H. D. Kim(KAERI)
- P09B12 Study on Vital Area Identification for Physical Protection System**  
H. H. Lee, E. H. Kwon, S. Y. Kim, and H. D. Kim(KAERI)

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- P09B13 Evaluation of Effectiveness of Performance-based Physical Protection System**  
S. Y. Kim, H. H. Lee, E. H. Kwon, and H. D. Kim(KAERI)
- P09B14 Preliminary Study on Improving Safety Culture in Malaysian Nuclear Industries**  
Sabariah Kader Ibrahim(KAIST)  
Y. E. Lee(KINS)
- P09B15 Design Considerations to Improve Proliferation Resistance of Pyroprocessing**  
H. L. Chang, W. I. KO, H. S. Shin, and H. D. Kim(KAERI)
- P09B16 The Study on Key Performance Indices in National Nuclear R&D Program**  
Seong-Baek Kim, Nam-Je Park, Hong-Jun Park, and Bum-Jin Chung(MRF)  
Jeong-Ha Kim and Kyung-Chun Seo(MEST)  
Byung-Mok Kim(KISTEP)
- P09B17 NPP Site Selection: A Systems Engineering Approach**  
Henry Pwani, Florah Kamanja, Zulfakar Zolkaffly, and JC Jung(KINGS)
- P09B18 A Study on the Systematization of Commodity Classification**  
JaeWoong Tae and DongHoon Shin(KINAC)
- P09B19 Consideration of Safety Level When a Country Selects Nuclear Power Plant Technology**  
Nguyen Hoang Tu(KAIST)  
Young Sung Choi(KINS)
- P09B20 A Field-focused University Education in NRI : A Case of UST-KAERI**  
Byung-Chul Shin and In-A Hwang(KAERI)
- P09B21 Licensing Method for New Nuclear Power Plant : A Study on Decision Making Modeling**  
N Ramli, EO Ohaga, and JC Jung(KINGS)
- P09B22 The Study on the Analysis and Improvement of SSAC**  
Seung Ho AHN and Ki Hyun KIM(KINAC)

## 제 9분과 C

### 원자력 정책, 인력 및 협력 (Nuclear Policy, Human Resources and Cooperation)

좌 장 김재광(Jae-Kwang KIM), 이영일(Young-eal LEE)

발표장소 에메랄드

일 정 | 10. 26(금)

- 09:00**     **A Study on Improvement of Export Control System for the Nuclear Facility**  
Ok-joo Kim, Dong-hoon Shin, and Seung-hyo Yang(KINAC)
- 09:20**     **The Korean Nuclear ODA Policy Development**  
Seung Hyun Lee, Kim Yoo Min, and Young Il Park(Ehwa Univ.)
- 09:40**     **Consideration on Re-Establishment of the National Physical Protection Regime in Follow-up Measures for the 2012 Seoul Nuclear Security Summit**  
Kookheui Kwon, Moonsung Koh, Myungtak Jung, and Jonguk Lee(KINAC)
- 10:00**     **Accomplishments and Future Suggestions of 2012 Seoul Nuclear Security Summit**  
Jae San, Kim(KINAC)
- 10:20**     **A Study for the Review of Export License through the NSG Denial Notification**  
Sun-do Choi and Seung-hyo Yang(KINAC)
- 10:40**     **Coffee Break**
- 11:00**     **Emerging Framework of Safety Management after Fukushima Accident**  
JooSang Lee(TSK)  
Scott Rawls(EXCEL)

### Ⅲ. 분과별 논제 및 발표자

#### 제 10 분과 A

#### 원자력계측제어 및 자동원격 (Nuclear I&C and Automatic Remote Systems)

좌 장 허균영(Gyunyoung Heo), 최종균(Jong Gyun Choi)

발표장소 루비

일 정 | 10. 25(목)

- 09:00 Model Predictive Load-following Control for APR+ Reactors through Discrete Control Rod Speed Optimization**  
Jae Hwan Kim, Ju Hyun Kim, Sun Ho Park, Kwae Hwan Yoo, Dae Seop Kim, and Man Gyun Na(CSU)
- 09:20 Method of a Daily Load-following Operation for APR+**  
Keuk Jong Yu, Sang Gyu Lim, and Han Gon Kim(KHNP CRI)
- 09:40 Design Improvements of Diverse Protection System Regarding CCF and D3 Issues**  
Yang Gyun Oh, Jin Kwon Jeong, and Hyeong Soon Yim(KEPCO E&C)  
Sang Jeong Lee(CNU)
- 10:00 Preliminary Study on Architecture of Reactor Protection System for Prototype SFR**  
Seung-Hwan SEONG, Dong-Hoon Kim, Kwang-Seop Son, Gwi-Sook Jang, Kwang-Il Jeong, and Jong-Yong Keum(KAERI)
- 10:20 Development of the Kori-1 Simulator for the MCR Modernization.**  
MyeongSoo Lee and JinHyuk Hong(KHNP CRI)
- 10:40 Coffee Break**
- 11:00 Development of Diagnostic Process for Abnormal Conditions of Ulchin Units 1&2**  
Hyunsoo Choi, Jeongkeun Kwak, Junghyun Yun, and Jonghyun Kim(KINGS)
- 11:20 Design Concept of CSRAS(Cyber Risk Analysis and Assessment System) for Digital I&C Systems**  
J. G. Song, J. W. Lee, D. Y. Lee, and C. K. Lee(KAERI)
- 11:40 Comparative Assessment of Instrumentation and Control (I&C) System Architectures for Research Reactors**  
Rahman Khalil ur and Gyunyoung Heo(KHU)  
Hanseong Son(JBU)  
Youngki Kim and Jaekwan Park(KAERI)
- 12:00 Real-Time Neutron Flux Monitoring using Rh Self-Powered Neutron Detector**  
Byung Jin Jun, Byung Chul Lee, Sang Jun Park, and Hoan Sung Jung(KAERI)
- 12:20 Preliminary Concepts for Safety Index Monitoring System during Severe Accidents**  
Rizwan Ahmed, Sukyoung Park, and Gyunyoung Heo(KHU)  
Jung-Taek Kim(KAERI)

## 제 10분과 B

# 원자력계측제어 및 자동원격 - Poster (Nuclear I&C and Automatic Remote Systems)

좌 장 이철권(Cheol-Kwon Lee), 장귀숙(Gwi-Sook Jang)

발표장소 다이아몬드

일 정 | 10. 25(목) 13:00-15:00

- P10B01 Development of the HANARO Research Reactor Simulator for Operator Training**  
Kee-Choon Kwon, Jang-Yeol Kim, Jae-Chang Park, Seung-Wook Lee, In-Ah Hwang, and Dong-Young Lee(KAERI)
- P10B02 The Software Testing of PPS for Shin-Ulchin Nuclear Power Plant Units 1 and 2**  
Dongpa Kang, Cheollak Park, Changhui Choe, Sedo Sohn, and Seungmin Baek(KEPCO E&C)
- P10B03 Design Considerations for Post Accident Monitoring System of a Research Reactor**  
Gwi-sook Jang, Je-yun Park, and Young-Ki Kim(KAERI)
- P10B04 Cyber Security Consideration on I&C System Development Process**  
Jaekwan Park, Jeyun Park, and Youngki Kim(KAERI)
- P10B05 A Strategy to Apply a Graded Approach to a New Research Reactor I&C Design**  
Yong Suk suh, Jae Kwan Park, Taek Kyu Kim, Sang Hoon Bae, Dane Baang, and Young Ki Kim(KAERI)
- P10B06 Schedulability Analysis of the SCOPS on a Platform for Safety I&C Systems of SMART MMIS**  
Jong Yong Keum, Yong Suk Suh, Kwang-Il Jeong, and Je Yun Park(KAERI)  
Yong Jin Seo and Hyeon Soo Kim(CNU)
- P10B07 A Study of PLC System Vulnerability Checklists in Nuclear Power Plants**  
Kijong Cha, Giho Cho, and Jaehyoung Ahn(NSE Ltd.)  
Youngmi Kim and Yongil Kwon(KINS)
- P10B08 Design of Deterministic OS for SPLC**  
Choul-Woong Son, Dong-Hoon Kim, and Gwang-Seop Son(KAERI)
- P10B09 Regulatory Issues on Using Programmable Logic Device in Nuclear Power Plants**  
G. Y. Park, Y. J. Yu, H. T. Kim, Y. I. Kwon, H. S. Park and C. H. Jeong(KINS)
- P10B10 Development of the Safety Programmable Logic Controller (SPLC) used in the Nuclear Safety System**  
Kwang-Seop Son, Dong-Hoon Kim, and Chul-Woong Son(KAERI)
- P10B11 A Newly Developed Technique of Wireless Remote Controlled Visual Inspection System for Neutron Guides of Cold Neutron Research Facilities at HANARO**  
Hyung Huh, Yeong Garp Cho, and Jong In Kim(KAERI)
- P10B12 R&D Strategy on Remote Response Technology for Emergency Situations of Nuclear Facilities in KAERI**  
Kyungmin Jeong, Jaewan Cho, Youngsoo Choi, Heung-seup Eom, Yongchil Seo, Hochul Shin, Sung-uk Lee, Chang-hoi Kim, Seungho Jeong, and Seungho Kim(KAERI)

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- P10B13 Development of a Light-weighted Mobile Robot for SG Tube Inspection in NPP**  
Yongchil Seo, Kyungmin Jeong, Hochul Shin, Jung-ju Gwen, Sung-uk Lee, Seungho Jeong, Youngsoo Choi, and Seungho Kim(KAERI)  
Chun Sup Shin and Ki Tae Park(KPSE)
- P10B14 Underwater Robot System for Reactor Vessel**  
Youngsoo Choi, TaeWon Kim, SungUk Lee, and KyungMin Jeong(KAERI)
- P10B15 Monitoring Index of the Cameras during the High Dose-Rate Gamma Ray Irradiation**  
Jai Wan Cho and Kyung Min Jeong(KAERI)
- P10B16 Estimation of Power Supply Lifetime in NPP's Environment**  
Pil Ju Lee, Sang Yong Lee, Jin Kang Kim, Myoung Yoon Kim, and Tae Wan Kim(PONU Tech)
- P10B17 Development of Test Platform for Digital I&C System Evaluation**  
Young-Mi Kim and Yong-Il Kwon(KINS)
- P10B18 Verification of Hardware for Eddy Current Testing System**  
Sung-Nam Choi, Hee-Jong Lee, and Seung-Ok Yang(KHNP CRI)
- P10B19 Cyber Security Level Assignment for Research Reactor Digital Instrumentation and Control System Architecture using Concept of Defense-in-Depth**  
Jinsoo Shin and Gyunyoung Heo(KHU)  
Hanseong Son(JBU)  
Youngki Kim and Jaekwan Park(KAERI)
- P10B20 Smart Integrated Containment Leakage Rate Test System using Wireless Communication**  
Dong Hwan Lee, Sang Yong Lee, Jung Sun Kim, Gun Soo Kim, Jong Myeong Kim, and Jong Han Ahn(PONU Tech)
- P10B21 Experimental Evaluation of the Wall-thinned Defects using IR Thermography**  
Young Jin Kang, Ju Hyun Kim, Man Gyun Na, Jin Weon Kim, Yun Kyung Won, Kyeong Suk Kim, and Min Ki Kwon(CSU)
- P10B22 Fault Made and Optimization Design of FPGA-based Applications Design for Instrumentation and Control System of NPPs**  
Joon-Ku Lee and Je-Yun Park(KAERI)  
Yang-Mo Kim(CNU)
- P10B23 MARS-DLL Model Development for the JRTR Simulator Application by using the MARS Interactive Controls Capability**  
Sung-Won Bae, Seung-Wook Lee, Kyung-Doo Kim, and Ki-Chun Kwon(KAERI)
- P10B24 A Preliminary Study on the Cultural Differences between Korean and Japanese Organizations in Nuclear Power Plants**  
Yong-Hee Lee and Yonghee Lee(KAERI)  
Ingyu Oh(HSU)  
Giang Do(SolBridge ISB)
- P10B25 A Study on Fatigue Measurement of Operators for Human Error Prevention in NPPs**  
Oh Yeon Ju, Jang Tong Il, Luo Meiling, and Lee Young Hee(KAERI)
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## 제 10분과 C

# 원자력계측제어 및 자동원격 (Nuclear I&C and Automatic Remote Systems)

좌 장 이현철(Hyun-Chul Lee), 김종현(Jonghyun Kim)

발표장소 루비

일 정 | 10. 26(금)

- 09:00**      **The Awareness of Employees in Safety Culture through the Improved Nuclear Safety Culture Evaluation Method**  
Younggab Kim, Chanho Sung, and Yeonsub Jung(KHNP CRI)
- 09:20**      **A Preliminary Study on the Application of System Dynamics Methodology to Organizational Safety in Nuclear Power Plants : Learning from Past Models**  
Giang Doa(SolBridge ISB)  
Sakil Kim, Yonghee Lee, and Yong-Hee Lee(KAERI)
- 09:40**      **Investigations on Human Error Hazards in Recent Unintended Trip Events of Korean Nuclear Power Plants**  
Sa Kil Kim, Tong Il Jang, Yong Hee Lee, and Kwang Hyeon Shin(KAERI)
- 10:00**      **Basic Human Error Probabilities in Advanced MCRs when Using Soft Control**  
Inseok Jang, Poong Hyun Seong, and Hyun Gook Kang(KAIST)  
Seung Jun Lee(KAERI)
- 10:20**      **Task Analysis of Soft Control Operations in Advanced Main Control Rooms**  
Seung Jun Lee and Wondae Jung(KAERI)
- 10:40**      **Coffee Break**
- 11:00**      **Extended Sequence Diagram for Human-System Interaction**  
Jongrok Hwang, Sunwoo Choi, Heeran Ko, and Jonghyun Kim(KINGS)
- 11:20**      **Quantifying the Step Following Level of an Operator in Proceduralized Scenarios**  
Yochan Kim and Wondea Jung(KAERI)
- 11:40**      **Availability Verification of Information for Human-System Interface in Automatic SG Level Control Using Activity Diagram**  
Nuraslinda Anuar, Kim Dongyoung, and Kim Jonghyun(KINGS)
- 12:00**      **A Study on the Operator Performance to the Drastic Change of Illumination of MCR in NPP**  
Shin Kwang Hyeon and Lee Yong Hee(KAERI)
- 12:20**      **Development of an Electronic Human Factor Management Program (e-HFMP)**  
Chanho Sung, Younggab Kim, and Yeonsub Jung(KHNP CRI)