

1A  
10.27 (목)

## 소듐냉각고속로(Sodium-Cooled Fast Reactor)

| 좌장 정해용(HaeYong Jeong), 이제환(Jewhan Lee)

| 발표장소 201 (2층)

## 초청발표

- 09:00 **Research Activities on Development of Piping Design Methodology of High Temperature Reactors**  
Nam-Su Huh(SEOULTECH), Min-Gu Won(SKKU), Young-Jin Oh(KEPCO E&C),  
Hyeong-Yeon Lee and Woo-Gon Kim(KAERI)
- 09:30 **Overview of Key Computer Codes for the PGSFR Safety Analysis**  
Won-Pyo Chang, Kwi-Lim Lee, and Jaewoon Yoo(KAERI)
- 10:00 **Evaluation of Core Modeling Effect on Transients for Multi-Flow Zone Design of SFR**  
Andong Shin and Yong Won Choi(KINS)
- 10:20 **Anticipated Transient without Scram Assessment at EOC of SM-SFR Using SAS4A/SASSYS-1**  
Taewoo Tak, Jinsu Park, Jiwon Choe, and Deokjung Lee(UNIST),  
Thomas. H. Fanning, Tyler Sumner, Guanheng Zhang, and T. K. Kim(ANL)
- 10:40 **Coffee Break**
- 11:00 **A Comparison of In-Vessel Behaviors between SFR and PWR under Severe Accident**  
Sanggil Park and Cheonhwy Cho(ACT Co., Ltd.), Sang Ji Kim(KAERI)
- 11:20 **Transient Analysis of STELLA-2 Using MARS-LMR**  
Jewhan Lee, Hyungmo Kim, Yong-Bum Lee, Jung Yoon, Jaehyuk Eoh, and Ji-Young Jeong(KAERI)
- 11:40 **Uncertainty Analysis for PGSFR Under ULOF Transient**  
Jaeseok Heo, Sarah Kang, and Sung Won Bae(KAERI)
- 12:00 **Control Rod Withdrawal Events Analyses for the Prototype Gen-IV SFR**  
Chiwoong Choi, Kwiseok Ha, Taekyeong Jeong, Jaeho Jeong, Wonpyo Chang, Seungwon Lee, Sangjun An,  
and Kwilim Lee(KAERI)

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10.28 (금)

## 경수로/중소형로/연구로(Light Water Reactor/Small-Medium Size Reactor/Research Reactor)

| 좌장 구본승(Bon-Seung Koo), 김경호(Gyeong Ho Kim)

| 발표장소 201 (2층)

## 초청발표

- 09:00 **Conceptual Design of Innovative Safe PWR**  
Hangon Kim and Sun Heo(KHNP CRI)
- 09:30 **A Conceptual Study of Using an Isothermal Compressor on a Supercritical CO<sub>2</sub> Brayton Cycle for SMART Application**  
Jin Young Heo and Jeong Ik Lee(KAIST), Yoonhan Ahn(KAERI)
- 09:50 **Preliminary Study of Printed Circuit Heat Exchanger (PCHE) for Various Power Conversion System for SMART**  
Jinsu Kwon, Seungjoon Baik, and Jeong Ik Lee(KAIST)
- 10:10 **Application of S-CO<sub>2</sub> Cycle for Small Modular Reactor Coupled with Desalination System**  
Won Woong Lee, Seong Jun Bae, and Jeong Ik Lee(KAIST)
- 10:30 **Coffee Break**

- 10:50 **Irradiation Swelling Analysis of Beryllium Reflectors in KJRR**  
Yeon-Seok Choo, Gyeongho Kim, Jong-Oh Sun, and Yeon-Sik Yoo(KAERI)
- 11:10 **Overview of Prevention for Water Hammer by Check Valve Action in Nuclear Reactor**  
Dayong Kim, Hyungi Yoon, Kyoungwoo Seo, and Seonhoon Kim(KAERI)
- 11:30 **On the Development of Spring Supports for Rectangular Tubes**  
Gyeongho Kim, Jong-Oh Sun, Yeonseok Choo, and Yeon-Sik Yoo(KAERI)

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### 고온가스로(High Temperature Gas Cooled Reactor)

| 좌장 탁남일(Mam-Il Tak), 이성남(Sung Nam Lee)

| 발표장소 201 (2층)

- 13:30 **Coupled Neutronics and Thermo-Fluid Simulation of Full-Core Prismatic Gas-Cooled Reactor Using DeCART/CORONA Code System**  
Nam-il Tak, Tae Young Han, and Hyun Chul Lee(KAERI)
- 13:50 **Heat Performance Tests and COMSOL Analysis of 800HT Printed Circuit Heat Exchanger in HELP**  
Chan Soo Kim, Byung Ha Park, and Eung Seon Kim(KAERI), Jae Sool Shim(Yeungnam Univ.)
- 14:10 **MHTGR-350 Coupled Steady-State Results Using MCS and GAMMA+**  
Matthieu Lemaire, Hyunsuk Lee, and Deokjung Lee(UNIST), Nam-il Tak(KAERI), Hyun Chul Lee(PNU)
- 14:30 **LBLOCA and SBLOCA Analyses of S-CO<sub>2</sub> Cooled KAIST Micro Modular Reactor with GAMMA+ Code**  
Bong Seong Oh, Seong Gu Kim, Hwanyoul Yu, Jangsik Moon, and Jeong Ik Lee(KAIST)
- 14:50 **1D Mean Streamline Design Code Development for S-CO<sub>2</sub> Radial Inflow Turbine**  
Seong Kuk Cho, Jekyoung Lee, and Jeong Ik Lee(KAIST), Jae Eun Cha(KAERI)
- 15:10 **Coffee Break**
- 15:30 **Design Parameter Assessment on the Tritium Release in the VHTR**  
Sung Nam Lee and Nam-il Tak(KAERI)
- 15:50 **Comparison of Creep Rupture Properties in Air and Helium Environments at 800°C of Alloy 617**  
Woo-Gon Kim, Jae-Young Park, Eung-Seon Kim, and Min-Hwan Kim(KAERI),  
IMW Ekaputra and Seon-Jin Kim(PKNU)
- 16:10 **Low Cycle Fatigue Behavior of Alloy 617 at 950°C for VHTR Applications**  
Seon Jin Kim, Rando T. Dewa, Jeong Jun Hwang, Tae Su Kim, and Jeong Hun Park(PKNU),  
Woo Gon Kim and Eung Seon Kim(KAERI)

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### 경수로/중소형로/중수로/고온가스로/연구로(Light Water Reactor/Small-Medium Size Reactor/Heavy Water Reactor/High Temperature Gas Cooled Reactor/Research Reactor) – POSTER

| 좌장 허선(Sun Heo), 홍성덕(Sung-Deok Hong)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

P01D01

**A Study on Temperature Distribution in the Hot Leg Pipes Considering the Variation of Flow Rate in RCS**  
Hyuksu Cho, Kunwoo Yi, Yoonjae Choe, Hocheol Jang, Seokjeong Yune, and Seongchan Park(KEPCO E&C)

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- P01D02**     **Air Flow Distribution Analysis for APR1400 Integrated Head Assembly**  
Seonggi Jeong, Kunwoo Yi, Byung Ryul Jung, Seok Jeong Yune, and Seong Chan Park(KEPCO E&C)
- P01D03**     **A Study on Heat Transfer Phenomena of Reactor Vessel with Structural Heat Source**  
Sungje Hong, Kunwoo Yi, and Seongchan Park(KEPCO E&C)
- P01D04**     **Systems Engineering Approach of Developing Micro Steam Turbine-Generator System (MSTGS) to Supply On-Site Generated Power to the APR1400 in Case of Station Black-Out (SBO) Accident**  
Shiran Taher(KINGS)
- P01D05**     **Overview on Site Characteristics for the APR1400 NRC Design Certification**  
Sun-Guk Kwon and Yun-Ho Kim(KHNP CRI)
- P01D06**     **Advisory Committee on Reactor Safetyguards Meeting for Chapter 5 of the APR1400 Design Certification**  
Jeong-kwan Suh and Yun-ho Kim(KHNP CRI)
- P01D07**     **Effects of Relative SG Tube Pitches on the Performance Characteristics of a Small Modular Reactor Driven by Natural Circulation**  
Youngjin Kim, Kunwoo Yi, and Byungjin Lee(KEPCO E&C)
- P01D08**     **Rotation Impact of Reed Switch**  
Yun Bum Park, Jae Seon Lee, and Jong Wook Kim(KAERI), Eun Sil Han(Taesung S&E Inc.), Hee June Park(Woojin Inc.)
- P01D09**     **Root-Cause Investigation for No Setback Initiation at Liquid Zone Control Unit Perturbation in CANDU6 Reactor**  
Donghwan Park, Youngae Kim, and Sungmin Kim(KHNP CRI)
- P01D10**     **The Results of the Fourth NACEF Test for the RCCS Verification**  
Jong-Hwan Kim, Yoon-Yeong Bae, Chan-Soo Kim, Seong-Deok Hong, and Eung-Seon Kim(KAERI)
- P01D11**     **Overview of the Modified SI Cycle to Produce Nuclear Hydrogen Coupled to VHTR**  
Youngjoon Shin, Taehoon Lee, Kiyoung Lee, and Minhwan Kim(KAERI)
- P01D12**     **Design Procedure of Graphite Components by ASME HTR Codes**  
Ji-Ho Kang and Chang Keun Jo(KAERI)
- P01D13**     **Development of the System Dynamics Code Using Homogeneous Equilibrium Model for S-CO<sub>2</sub> Brayton Cycle Transient Analyses**  
Seong Jun Bae, Won Woong Lee, Bongseong Oh, and Jeong Ik Lee(KAIST)
- P01D14**     **Heat Transfer Characteristics in a Pebble Bed Reactor Core**  
Leisheng Chen and Jaeyoung Lee(HGU)
- P01D15**     **RANS Simulation of a Radial Compressor for Supercritical CO<sub>2</sub> Brayton Cycle**  
Seong Gu Kim, Seong Kuk Cho, Jekyoung Lee, and Jeong Ik Lee(KAIST), Jae Eun Cha(KAERI), Si Woo Lee(Jinsolturbo Machinery Co., Ltd.)
- P01D16**     **Uncertainty of Thermal Parameter for the Pre-Designed VHTR Core Based on CORONA**  
Jun Kyu Song, Bong Hyun Cho, Nam-il Tak, and Chang Keun Jo(KAERI)
- P01D17**     **Pump Coastdown with the Submerged Flywheel**  
Hyun-Gi Yoon, KyoungWoo Seo, and Seong Hoon Kim(KAERI)
- P01D18**     **Numerical Research on Hybrid Fuel Locking Device for Upward Flow Core-Research Reactor**  
Hyung Huh, Yeong-Garp Cho, Yeon-Sik Yoo, and Jeong-Soo Ryu(KAERI)
- P01D19**     **A Development of Technical Specification of a Research Reactor with Plate Fuels Cooled by Upward Flow**  
Sujin Park, Jeongeun Kim, and Hyeonil Kim(KAERI)
- P01D20**     **Seismic Analysis for Decay Tank of Research Reactor**  
Jinsung Kwak, Jinho Oh, Sangjin Lee, and Jongmin Lee(KAERI)
- P01D21**     **Study on the License Requirements for the SRO/RO of the Kijang Research Reactor**  
Subeom Kim and Taemyung Shin(KNUT), H. T. Chae and G. H. Ahn(KAERI), S. J. Kim and S. C. Gam(KINS)
- P01D22**     **Development of Stepping Endurance Test Plan on CRDM of a Research Reactor**  
DongHyun Kim, Hyeonil Kim, and Suki Park(KAERI)
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## 소듐냉각고속로(Sodium-Cooled Fast Reactor) – POSTER

I 좌장 임재웅 (Jae-Yong Lim), 이귀림(Kwi Lim Lee)

I 발표장소 2층, 3층 로비

I 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

I 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P01E01 **Evaluation Plan on In-Vessel Source Term in PGSFR**  
Seung Won Lee, Kwi-Seok Ha, Sang June Ahn, Kwi Lim Lee, and Taekyeong Jeong(KAERI)
- P01E02 **Sensitivity Analysis of Uncertainty Parameter Based on MARS-LMR Code on SHRT-45R of EBR II**  
Seok-Ju Kang, Doo-Hyuk Kang, and Jae-Seung Seo(SenTech), Sung-Won Bae(KAERI), Hae-Yong Jeong (Sejong Univ.)
- P01E03 **Safety Evaluation for IHTS Integrity Due to the Steam Generator Sodium-Water Reaction Event in the PGSFR**  
Sang-Jun Ahn, Kwi Lim Lee, Kwi-Seok Ha, Seung Won Lee, and Taekyeong Jeong(KAERI)
- P01E04 **Comparison of Design Concepts for SFR under Development**  
Namduk Suh, Yongwon Choi, Moohoon Bae, and Andong Shin(KINS)
- P01E05 **X447 EBR-II Experiment Benchmark for Verification of Audit Code of SFR Metal Fuel**  
Yong Won Choi, Moo-Hoon Bae, Andong Shin, and Namduk Suh(KINS)
- P01E06 **Preparation of MARS-LMR Best-Estimate Input for Evaluating the Applicability of Safety Analysis Methodology Based on BEPU Technique**  
Doo-hyuk Kang, Seok-ju Kang, and Jae-seung Suh(SenTech), Sung-won Bae(KAERI)
- P01E07 **Preliminary Development of SFR Nuclear Code System for Regulatory Evaluation**  
Moo-Hoon Bae, Yongwon Choi, Andong Shin, and Namduk Suh(KINS)
- P01E08 **Design and Performance Verification of Fuel Assembly Simulators for PGSFR Reactor Core Flow Distribution Evaluation Tests**  
In-Cheol Chu, Woo Shik Kim, Hae Seob Choi, Dae Won Cho, and Dong Jin Euh(KAERI)
- P01E09 **Conceptual Design of Liquid Sodium Charging and Draining System of STELLA-2**  
Chungho Cho, Ho-Yun Nam, Jong-Man Kim, Yung Joo Ko, Byeongyeon Kim, Youngil Cho, Jaehyuk Eoh, Jung Yoon, Hyungmo Kim, Hyeong-Yeon Lee, Yong Bum Lee, Ji-Young Jeong, and Jong-Bum Kim(KAERI)
- P01E10 **Preliminary Study of Friction Disk Type Turbine for S-CO<sub>2</sub> Cycle Application**  
Seungjoon Baik, Jin Young Heo, Jinsu Kwon, and Jeong Ik Lee(KAIST)
- P01E11 **Simplified Model of the Upper Internal Structure in PGSFR**  
Seok-Hoon Kim(KAERI)
- P01E12 **Sensitivity Analysis for ULOF of PGSFR Using PAPIRUS**  
Sarah Kang, Jaeseok Heo, and Sung Won Bae(KAERI)
- P01E13 **Thermal-Hydraulic Analysis of High-Temperature Cover Gas Region in STELLA-2**  
Youngchul Jo, SeokKwon Son, Jung Yoon, Jaehyuk Eoh, and Jiyoung Jung(KAERI)
- P01E14 **Identification of Initiating Events for PGSFR**  
Jintae Kim and Moosung Jae(HYU)
- P01E15 **Development of a Program for Predicting Flow Instability in a Once-through Sodium-Heated Steam Generator (III)**  
Eui Kwang Kim, Jung Yoon, Jong Bum Kim, and Jiyoung Jeong(KAERI)
- P01E16 **Shielding Analysis for the Lower Reflector Block of a PGSFR Fuel Assembly**  
Jae-Yong Lim and Donny Hartanto(KAERI)
- P01E17 **Stability Analysis of the EBR-I Mark-II Core Meltdown Accident**  
Jae-Yong Lim and Chang Mu Kang(KAERI)
- P01E18 **Operation Test of the Supercritical CO<sub>2</sub> Compressor Supported with Active Magnetic Bearing**  
Jae Eun Cha(KAERI)

## 제2분과

## 원자로물리 및 계산과학 (Reactor Physics and Computational Science)

**2A**  
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### 노심 특성인자 측정 및 산정 (Measurement and Assessment of Core Characteristics Parameters)

| 좌장 이현철(Hyun Chul Lee), 박호진(Ho Jin Park)

| 발표장소 101 (1층)

#### 초청발표

- 09:00 A Systematic Review of Neutron Detection, Flux Mapping and Power Distribution Synthesis in Power Reactors  
Moon-Ghu Park(Sejong Univ.)
- 09:30 Nuclear Analysis for Application of Boron Burnable Absorber in the HANARO Fuel Assembly  
Chul Gyo Seo, Wonwoo Choi, and Hee-Taek Chae(KAERI), Keun Ho Seo(SNU)
- 09:50 An Alternative Approach for Pin Wise Composition Tracing in the Used Nuclear Fuel Assemblies  
Zafar Iqbal Zafar and Myung Hyun KIM(KHU)
- 10:10 Feasibility of Cold Nuclear Startup In Autonomous Soluble-Boron-Free SMR  
Ahmed Amin E. Abdelhameed, Mohd-Syukri Yahya, and Yonghee Kim(KAIST)
- 10:30 Coffee Break
- 10:50 Improved Retrieval Technique of Pin-Wise Composition for Spent Fuel Recycling  
Yun Seo Park and Myung Hyun Kim(KHU)
- 11:10 VERA Pin and Fuel Assembly Depletion Benchmark Calculations by McCARD and DeCART  
Ho Jin Park and Jin Young Cho(KAERI)
- 11:30 Comparative Analysis of VERA Depletion Problems  
Jinsu Park, Wonkyeong Kim, Sooyoung Choi, Hyunsuk Lee, and Deokjung Lee(UNIST)
- 11:50 Prediction of the Sodium Void Reactivity in the Metal-fueled SFR Using the ENDF/B-VII.0 Library  
Sunghwan Yun and Jae-Yong Lim(KAERI)

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### 가동원전해석 (Analyses of Operating Reactors)

| 좌장 박상원(Sang Weon Park), 박창제(Chang Je Park)

| 발표장소 101 (1층)

#### 초청발표

- 09:00 Regulatory Audit Activities on Nuclear Design of Reactor Cores  
Chae-Yong Yang(KINS)
- 09:30 Impact of  $UO_2$  Enrichment of Fuel Zoning Rods in Long Cycle Operation of PWR  
Ho Cheol Shin(KHNP CRI), Eun Jeong, Jiwon Choe, and Deokjung Lee(UNIST)
- 09:50 Analysis of the In-core Quadrant Power Tilt affected by Burned Fuel Shuffles of WEC type NPPs in Republic of Korea  
Seung-beom Son, Jeong-pyo Jeon, Han-seung Song, Ki-bong Seong, and Chae-joon Lim(KEPCO NF)
- 10:10 Simplified Load Follow Schemes to Simulate Long Term Daily Load Follow Operation  
Okaeng Patrick Rakereng and Chang Joo Hah(KINGS)
- 10:30 Coffee Break
- 10:50 Preliminary Solution of BEAVRS Hot Full Power at BOC by Monte Carlo Code  
Hyunsuk Lee, Deokjung Lee, Peng Zhang, and Azamat Khassenov(UNIST)

- 11:10 **Improvement of Axial Reflector Cross Section Generation Model for PWR Core Analysis**  
Cheon Bo Shim, Kyung Hoon Lee, and Jin Young Cho(KAERI)
- 11:30 **A 3D Two-node and One-node HCMFD Algorithm for Pin-wise Reactor Analysis**  
Jaeha Kim and Yonghee Kim(KAIST)
- 11:50 **Sensitivity and Uncertainty Analysis for Coolant Void Reactivity in a CANDU Fuel Lattice Cell Model**  
Seungyeol Yoo and Hyungjin Shim(SNU)

## 2C 10.28 (금)

### 혁신 원자로 설계 (Innovative Reactor Design)

| 좌장 조창근(Chang Keun Jo), 홍서기(Ser Gi Hong)

| 발표장소 102 (1층)

- 09:30 **A New Approach for a High-Performance Soluble-Boron-Free SMR Core**  
Mohd-Syukri Yahya and Yonghee Kim(KAIST), ChangKyu Chung(KEPCO E&C)
- 09:50 **A Small Modular Reactor Core Design using FCM Fuel and BISO BP Particles**  
Jae Yeon Choi, Dae Hee Hwang, Ho Seong Yoo, and Ser Gi Hong(KHU)
- 10:10 **Efficiency of an LBE Spallation Target in an Accelerator-Driven Molten Salt Subcritical Reactor**  
Sang-In Bak and Seung-Woo Hong(SKKU), Yacine Kadi(CERN)
- 10:30 **Coffee Break**
- 10:50 **Neutronic Study on Sodium-cooled Fast Burner Cores having Proliferation-Resistance Thorium and Depleted-Uranium based Blankets**  
WuSeung You and Ser Gi Hong(KHU)
- 11:10 **Accident-Tolerant Control Drums Applied to Nuclear Thermal Propulsion**  
Paolo Venneri and Yonghee Kim(KAIST), Michael Eades(USNC)
- 11:30 **Conceptual Design of Low Fusion Power Hybrid System for Waste Transmutation**  
SeongHee Hong and MyungHyun Kim(KHU)
- 11:50 **Photo-transmutation of  $^{100}\text{Mo}$  to  $^{99}\text{Mo}$  with Laser-Compton Scattering Gamma-ray**  
Jiyoung Lee, Haseeb ur Rehman, and Yonghee Kim(KAIST)

## 2D 10.28 (금)

### 노심해석방법론 (Reactor Analysis Methods)

| 좌장 하창주(Chang Joo Hah), 이덕중(Deok Jung Lee)

| 발표장소 101 (1층)

#### 초청발표

- 13:30 **Incorporation of Collision Probability Method in STREAM to Consider Non-uniform Material Composition in Fuel Subregions**  
Sooyoung Choi, Jiwon Choe, and Deokjung Lee(UNIST)
- 14:00 **Validation of R-Matrix Limited Based Reconstruction Capability for RXSP Code**  
Jiankai YU, Peng ZHANG, and Deokjung Lee(UNIST), Kan WANG(THU)
- 14:20 **Extension of NPMM for Higher Mode Solutions**  
Peng ZHANG, Hyunsuk LEE, and Deokjung LEE(UNIST)
- 14:40 **New Three-Dimensional Neutron Transport Calculation Capability in STREAM Code**  
Youqi Zheng, Sooyoung Choi, and Deokjung Lee(UNIST)
- 15:00 **Coffee Break**
- 15:20 **Shifting and Two-Level Iterative Techniques to Speedup p-CMFD Acceleration in Transport Calculation**  
Seungsu Yuk and Nam Zin Cho(KAIST)

- 15:40 **Albedo-corrected Parameterized Equivalence Constants for Cross-section Update in Nodal Calculation**  
Woosong Kim and Yonghee Kim(KAIST)
- 16:00 **Development of Visual CINDER Code with Visual C#.NET**  
Oyeon Kum(USWA)

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- 28 (금)

### 원자로 물리 및 계산과학 (Reactor Physics and Computational Methods) – POSTER

| 좌장 박문규(Moon Ghu Park), 조진영(Jin Young Cho)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P02E01 **Uncertainty Analysis with Considering Resonance Self-Shielding Effect**  
Tae Young Han(KAERI)
- P02E02 **Analysis of HTTR Core with Different Hexagonal Discontinuity Factors**  
Chang Joon Jeong, Hyun Chul Lee, and Chang Keun Jo(KAERI)
- P02E03 **Thorium based Lattice Analysis Through Enhanced Epithermal Neutron Spectrum**  
Choi Hong yeop and Park Chang Je(Sejong Univ.)
- P02E04 **Accuracy Improvement of Axial Power Shape Reconstruction Using GMDH Algorithm**  
Seongpil Yum, Jaemin Kim, Minyong Park, Jiwon Choe, Peng Zhang, and Deokjung Lee(UNIST),  
Ho Cheol Shin(KHNP CRI)
- P02E05 **Verification of MC<sup>2</sup>-3 Doppler Sample Models in ZPPR-15D Experiments**  
Min Jae Lee, Donny Hartanto, and Sang Ji Kim(KAERI)
- P02E06 **Feasibility Study of 24-Month Cycle Using Enriched Gadolinium as Burnable Poison for OPR1000**  
Sang Rae Moon and Ho Cheol Shin(KHNP CRI)
- P02E07 **Feasibility Study for Cobalt Bundle Loading to CANDU Reactor Core**  
Donghwan Park, Youngae Kim, and Sungmin Kim(KHNP CRI)
- P02E08 **The Design Features of the Double-Banked AMBIDEXTER Utilizing DUPIC FUEL**  
Tae Kyu Ham(KHNP CRI), Myung Hwan Seo(KORAD), Young Joon Lee and Sung Taek Hon(KAERI),  
Tae An Kwon(KHNP), and Se Kee Oh(KINGS)
- P02E09 **Simulation of the Long period Core Design for WH type of KHNP**  
Ji-Eun Jung and Sang-Rae Moon(KHNP CRI)
- P02E10 **The Status that the Program to Relieve Set-Point for the Number of Operable ICIs is Applied to OPR1000**  
Kyung-ho Roh and Sang-rae Moon(KHNP CRI)
- P02E11 **The Performance of CSAM SAM when Cycle Length is Extended**  
Kyung-ho Roh and Sang-rae Moon(KHNP CRI)
- P02E12 **Evaluation on Required <sup>10</sup>B Enrichment of Neutron Absorber Panels Depending on Discharged Burnup**  
Seo-Jeong Lee(KHNP CRI)
- P02E13 **Deterministic and Probabilistic Analysis Against Anticipated Transient Without Scram**  
Sun Mi Choi and Ji Hwan Kim(KHNP CRI), Ho Seok(KEPCO E&C)
- P02E14 **Development Status of Diffusion Code RAST-K 2.0 at UNIST**  
Minyong Park, Deokjung Lee, Jiwon Choe, and Peng Zhang(UNIST), Hocheol Shin and Eunki Lee(KHNP CRI),  
Youqi Zheng(XJTU)
- P02E15 **Impact of Erbia in Long Cycle Operation of PWR**  
Eun Jeong, Jiwon Choe, and Deokjung Lee(UNIST), Ho Cheol Shin(KHNP CRI)



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10. 28 (금)

**방사성폐기물관리 I (Radioactive Waste Management I)**

I 좌장 정종태(Jongtae Jeong), 손동성(Dong-Seong SOHN)

I 발표장소 204 (2층)

- 09:00 **Electrochemical Dissolution of  $U_{1-y}Gd_yO_{2\pm x}$ : Effect of Gd Doping on Various Oxidation State of  $UO_{2\pm x}$  Matrix**  
 Nazhen Liu and David W. Shoesmith(Western University, Canada)  
 Jandee Kim, Jeongmook Lee, Young-Sang Youn, Jong-Goo Kim, Yeong-Keong Ha, Sang-Eun Bae,  
 and Jong-Yun Kim(KAERI)
- 09:20 **Immobilization of Technetium Waste from Pyro-Processing Using Tellurite Glasses**  
 Jong Heo, Jae-Young Pyo, and Cheong-Won Lee(POSTECH), Jae-Hwan Yang and Hwan-Seo Park(KAERI)
- 09:40 **Mobile Iodine Mineralization Based on Malachite Transformation**  
 Seung Yeop Lee and Min Hoon Baik(KAERI)
- 10:00 **Vitrification of the  $^{129}I$  Generated from Reprocessing Using Silver Tellurite Glass**  
 Cheong-won Lee, Jae-young Pyo, and Jong Heo(POSTECH), Hwan-seo Park and Jae-hwan Yang(KAERI)
- 10:20 **Preliminary Evaluation on Characteristics of Waste from Pyro-Processing (FS v5.1)**  
 In-Young Kim and Heui-Joo Choi(KAERI)
- 10:40 **Coffee Break**
- 11:00 **Estimation of The Radionuclide Inventory in Spent Fuels of VVER-1200 Using TRITON**  
 Seyda Karadag(KAIST/KINS) and Yong Ho Ryu(KINS)
- 11:20 **Enhanced Thermal Management System for Spent Nuclear Fuel Dry Storage Canister with Hybrid Heat Pipes**  
 Yeong Shin Jeong and In Cheol Bang(UNIST)
- 11:40 **A TRLFS Study on the Interactions of Am(III) at the Interface between Water and Silica Nanoparticles**  
 Hee-Kyung Kim, Euo Chang Jung, Hye-Ryun Cho, and Wansik Cha(KAERI)

**3B**

10. 28 (금)

**방사성폐기물관리 II (Radioactive Waste Management II)**

I 좌장 윤종일(Jong-Il Yun), 박진백(Jin Beak PARK)

I 발표장소 S207 (2층)

- 13:30 **Lab-Scale Electrodeposition Behaviors of Pr(III) and Ce(III) with Use of Quartz Cell in Molten LiCl-KCl Eutectic**  
 Young Taek Jee and Jong-Il Yun(KAIST)
- 13:50 **Review on the Current Status of Molten Chloride Reactor and Its Future Prospect**  
 Seok Bin Seo, Yukyung Shin, and In Cheol Bang(UNIST)
- 14:10 **Raman Spectroscopic Study of the Oxidation State of Eu in Molten LiCl-KCl**  
 Seung Park and Jong-Il Yun(KAIST)
- 14:30 **A Preliminary Study on the Criticality Control Ability Evaluation of Potential Neutron Absorption Materials to Develop the New Neutron Absorber**  
 Jae Hyun Kim, Do Hyun Kim, and Chang Ho Shin(HYU)
- 14:50 **Training Course of Experimental Chemistry in the Nuclear Fuel Cycle: Solid State and Solution Chemistry**  
 Ju Hyeong Lee and Kwangheon Park(KHU)
- 15:10 **Coffee Break**
- 15:30 **Temporary Management of Spent Nuclear Fuel during Decommissioning of an NPP**  
 Nthato Jay-Aar Raboshaga, Akhona Tshangela, Michael Atogo, David Kessel, and Chang-Lak Kim(KINGS)



15:50

**A Design of a Flexible Framework for Cutting Process Simulation of a Nuclear Facility**

Ikjune Kim, ByungSeon Choi, Dongjun Hyun, JeiKwon Moon, Jonghwan Lee, KwanSeong Jeong, and Shinyoung Kang(KAERI)

**3C**

**10. 27 (목)  
- 28 (금)**

**방사성폐기물관리 (Radioactive Waste Management) – POSTER**

| 좌장 차완식(Wansik Cha), 홍대석(Dae Seok Hong)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P03C01 Development of Core Sampling Technique for ITER Type B Radwaste**  
Sunggeun Kim, Kwonpyo Hong, Wanho Oh, Myungchul Park, Sanghee Jung, and Sangbok Ahn(KAERI)
- P03C02 Washing Water Treatment Process for UF<sub>6</sub> Cylinder by Adjusting Evaporation Technology in a Low Temperature and Low Pressure**  
Kitae Kim, Young-jong Ju, Nam-chan Cho, Yun-kwan Kim, and Chang-suk Jin(KEPCO NF)
- P03C03 Natural Scientific Strategy for Nuclear Wastes: Philosophy of Dr. Rodney C. Ewing at Stanford**  
T.H. WOO(Yonsei Univ.)
- P03C04 A Study on Thermal Desorption of Deuterium in D-loaded SS316LN for ITER Tritium Removal System**  
Myungchul Park, Heemoon Kim, and Sangbok Ahn(KAERI), Jaeyong Kim, Sanghwa Lee, and Nguyen Thi LanAhn(HYU)
- P03C05 Feasibility Assessment of Cesium Removal Using Microaglae**  
Ilgoon Kim, Byung-Gon Ryu, Bum-Kyoung Seo, Jei Kwon Moon, and Jong-Won Choi(KAERI)
- P03C06 Fabrication of Graphene-Ag Nanocomposite as Sorbents for I-129 Capture**  
Hyunae Park(HYU), Minsoek Lee, Jaeyung Oh, and Ho Jin Ryu(KAIST)
- P03C07 Proposal of a SiC Disposal Canister for Very Deep Borehole Disposal**  
Heui-Joo Choi, Minsoo Lee, Jong-Youl Lee, and Kyungsu Kim(KAERI)
- P03C08 Developing Safety Regulatory Framework for Radioactive Waste Management in Kenya**  
Sarah Ruth Wairimu Thandi(KAIST), Kyung-woo Choi(KINS)
- P03C09 Least Square Fitted Scaling Factor for Radioactive Waste Storage Drum**  
Chang Je Park, Hyuk Han, and Seunguk Yoo(Sejong Univ.), Junhyeuk Kim and Hong Ju Ahn(KAERI)
- P03C10 Current Status of the Regulatory Infrastructure for Uranium Mining and Milling Activities in Malawi**  
Chimwemwe Gamulani(KAIST), Jaekook Lee(KINS)
- P03C11 Novel Emplacement Device for a Very Deep Borehole Disposal**  
Min Soo Lee, Heui-joo Choi, and Jong Yul Lee(KAERI)
- P03C12 A Review on Sabotage Against Transportation of Spent Nuclear Fuel**  
Jihwan Lim and Sungyeol Choi(UNIST)
- P03C13 Deep Borehole Disposal as an Alternative Concept to Deep Geological Disposal**  
Jongyul Lee, Minsoo Lee, Heui-Joo Choi, and Kyungsu Kim(KAERI)
- P03C14 An Evaluation of Depletion Bias and Bias Uncertainty of the GBC Cask with PLUS7 Fuels**  
Hyungju Yun, Kwangheon Park, and Ser Gi Hong(KHU)
- P03C15 Thermal Analysis of Concrete Storage Cask with Bird Screen Meshes**  
Ju-Chan Lee, K.S. Bang, S.H. Yu, S.S. Cho, and W.S. Choi(KAERI)
- P03C16 Basic Considerations for Dry Storage of Spent Nuclear Fuels and Revisited CFD Thermal Analysis on the Concrete Cask**  
Jae Soo Noh(ACT Co., Ltd.), Younwon Park(BEES, Inc), Hyeun Min Kim(KAIST), and Sub Lee Song(BEES, Inc)
- P03C17 Thermal Evaluation of Storage Rack with an Advanced Neutron Absorber during Normal Operation**  
Hee-Jae Lee, Mi Jin Kim, and Dong-Seong Sohn(UNIST)

- P03C18 **Simulated PUREX Solvent Extraction Experiments Using  $^{238}\text{U}$ ,  $^{239}\text{Np}$  and  $^{85}\text{Sr}$  Solution**  
Ju Hyeong Lee and Kwangheon Park(KHU)
- P03C19 **Surface Characterization and Electrochemical Oxidation of Metal Doped Uranium Dioxide**  
Jeongmook Lee, Jandee Kim, Young-Sang Youn, Jong-Goo Kim, Yeong-Keong Ha, and Jong-Yun Kim(KAERI)
- P03C20 **Experiments of Oxidation and Reduction of Uranium Oxide and Solid Solution of  $\text{UO}_2\text{-ZrO}_2$  in Tohoku University**  
Tae Hoon Kim and Kwang Heon Park(KHU)
- P03C21 **A Preliminary Study for Development of Amidoxime-Functionalized Silica Adsorbents for Uranium(IV) Extraction from Seawater**  
Minseok Lee and Ho Jin Ryu(KAIST)
- P03C22 **Pore-Filled Scintillating Membranes For Simultaneous Alpha-Emitting Radionuclides Preconcentration And Detection**  
Vivek Chavan, Seung-Woo Hong, and Sang-In Bak(SKKU), Chhavi Agarwal and A. K. Pandey(BARC)
- P03C23 **Radiation Dose for Self-Disposal Due to the Quantity of Radioactive Waste**  
Daeseo Koo, Hyun-Hee Sung, Seung-Soo Kim, Gye-Nam Kim, and Jong-Won Choi(KAERI)

## 3D

10. 27 (목)  
- 28 (금)

### 제염 해체 (Decontamination and Decommission) – POSTER

| 좌장 최병선(Byung-Seon Choi), 박창제(Chang Je Park)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P03D01 **Influence of Temperature and Hydraulic Conductivity of Soil on Electrokinetic Decontamination**  
Gye-Nam Kim, Seung-Soo Kim, Jung-Whan Jeong, and Jong-Won Choi (KAERI)
- P03D02 **Experience Practices on Decontamination Activity in NPP Decommissioning**  
Suk Bon Yoon, Jeongju Kim, and Wook Sohn(KHNP CRI)
- P03D03 **The Impact of Below Detectoin Limit Samples in (NPP) Decommissioning Residual Risk Assessment**  
Jung Hwan Kim and Man Sung Yim(KAIST)
- P03D04 **Oxidation of Ce(III) in Foam Decontaminant by Ozone**  
Chong Hun Jung, In Ho Yoon, Wang Kyu Choi, Jei Kwon Moon, and Han Beom Yang(KAERI),  
Jae Sang Lee(Gachon Univ.)
- P03D05 **Radiological Impacts Assessment on Human Beings during Normal Decommissioning Operation for EU-APR**  
Do Hyun Hwang and Keun Sung Lee(KHNP CRI), ChongHui Lee(KEPCO E&C)
- P03D06 **Development of Soil Derived Concentration Guidance Levels for Decommissioning at Overseas Nuclear Power Plants**  
Wook Sohn, Suk Bon Yoon, and Jeongju Kim(KHNP CRI)
- P03D07 **Guidelines of Decommissioning Schedule Establishment**  
Jae Yong Oh, Taesik Yun, Younggook Kim, and Hee-Geun Kim(KHNP CRI)
- P03D08 **Establishment and Evaluation of Decommissioning Plant Inventory DB and Waste Quantity**  
Jae Yong Oh, Sang-Rae Moon, Taesik Yun, and Hee-Geun Kim(KHNP CRI),  
Nak-Hoon Sung and Seung Hyuk Jung(KONES)
- P03D09 **Guideline to Estimate Decommissioning Costs**  
Taesik Yun, Younggook Kim, and Jae Young Oh(KHNP CRI)
- P03D10 **Review of Impact Factors on Decommissioning Strategies**  
Taesik Yun, Hyejin Jung, and Younggook Kim(KHNP CRI)
- P03D11 **Estimation of Waste Quantities Using DeCAT-Pro**  
Taesik Yun, Hyejin Jung, Jaeyoung Oh, and Younggook Kim(KHNP CRI)

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- P03D12**    **Case Study to Apply Work Difficulty Factors to Decommissioning Cost Estimates**  
Taesik Yun, Hyejin Jung, Jaeyoung Oh, and Younggook Kim(KHNP CRI)
- P03D13**    **A Study on the Influence of the Regulatory Requirements of a Nuclear Facility during Decommissioning Activities**  
Hee Seong Park, Seung Kook Park, Kook Nam Park, Yun Jeong Hong, Jang Jin Park, and Jong Won Choi(KAERI)
- P03D14**    **A Study on the Prediction of Radioactive Source-Term from the Decommissioning of Domestic NPPs by Using CRUDTRAN Code**  
Jong Soon Song, Sang Heon Lee, and Hoon Jo Cho(CSU)
- P03D15**    **Application of CERREX Software for KRR-1 Decommissioning Cost Estimation**  
Yunjeong Hong and Seungkook Park(KAERI)
- P03D16**    **An Approach to Evaluate the Cutting Time for the Nuclear Dismantling Simulation**  
Jonghwan Lee, Dongjun Hyun, Sinyoung Kang, Ikjune Kim, Kwan-Seong Jeong, Byung-Seon Choi, and Jeikwon Moon(KAERI)
- P03D17**    **Decontamination System Development of Radioactive Activated Carbon Using Micro-Bubbles**  
Jong seon Jeon and Wi soo Kim(NESS), Byoung sub Han(Enesys)
- P03D18**    **Correlation Study of Magnetite Dissolution in HyBRID Decontamination Process**  
Seon-Byeong Kim, Hui-Jun Won, Jung-Sun Park, Sang-Yoon Park, Jei-Kwon Moon, and Wang-Kyu Choi(KAERI)
- P03D19**    **Site-Specific Probabilistic Analysis of DCGLs Using RESRAD Code**  
Jeongju Kim, Suk Bon Yoon, and Wook Sohn(KHNP CRI)

## 제4분과

## 핵연료 및 원자력재료 (Nuclear Fuel and Materials)

### 4A

10. 27 (목)

### 핵연료(Nuclear Fuel)

| 좌장 정양일(Yang Il Jung), 박남규(Nam Gyu Park)

| 발표장소 203 (2층)

#### 초청발표

- 09:00 **HIPER16™ Fuel Development and In-Reactor Verification**  
Sang Youn Jeon, Young-Ki Jang, Nam-Gyu Park, Jong-Sung Yoo, and Yong-Hwan Kim(KEPCO NF)
- 09:30 **Performance Modelling of U-Mo Research Reactor Fuel**  
Dong-Seong Sohn(UNIST)
- 10:00 **Fluid Damping Variation of a Slender Rod in Axial Flow Field**  
Nam-Gyu Park, Jong-Sung Yoo, and Yil-Sup Jung(KEPCO NF)
- 10:20 **Validation of Fuel Performance Uncertainty for RIA Safety Analysis**  
Joosuk Lee and Young Seok Bang(KINS)
- 10:40 **Coffee Break**
- 11:00 **Formation of Lamellar Structured Oxide Dispersion Strengthening Layers in Zircaloy-4**  
Yang-Il Jung, Jung-Hwan Park, Dong-Jun Park, Hyun-Gil Kim, Jae-Ho Yang, and Yang-Hyun Koo(KAERI),  
Yoon-Soo Lim(Hanbat Nat'l Univ)
- 11:20 **Results and Observations of the Integral Loss-of-Coolant Accident Test with Surface Modified Claddings**  
Dong Jun Park, Yang Il Jung, Jung Hwan Park, Hyun Gil Kim, Jae Ho Yang, and Yang Hyun Koo(KAERI)
- 11:40 **Operating Temperature Evaluation of U-Mo/Al Dispersion Fuel and the Effect of Uncertainties**  
Faris B. Sweidan and Ho Jin Ryu(KAIST), Young-wook Tahk and Jeong-Sik Yim(KAERI)
- 12:00 **Thermal Property Simulation and Modelling for Irradiated U-Mo Dispersion Fuel: To Predict Thermal Conductivity of Interaction Layer**  
Jun Teak Hwang(Pennsylvania State Univ.), Qusai Mistarihi and Ho Jin Ryu(KAIST)

### 4B

10. 28 (금)

### 재료열화&개발 (Materials Degradation and Development)

| 좌장 장창희(Changheui Jang), 황성식(SeongSik Hwang)

| 발표장소 203 (2층)

#### 초청발표

- 09:00 **Recent Methodologies for Creep Deformation Analysis and Its Life Prediction**  
Woo-Gon Kim, Jae-Young Park, and Jinsung Jang(KAERI)
- 09:30 **Research and Development Status on Materials Aging and SCC in PWRs**  
Ji Hyun Kim
- 10:00 **Effect of Dissolved Hydrogen Concentration on IASCC Initiation Susceptibility of Type 316 Stainless Steels**  
Min-Jae Choi, Sung Woo Kim, and Seong Sik Hwang(KAERI)
- 10:20 **Analysis of the Local Dislocation Densities in Cold-Rolled Alloy 690 by Using Transmission Electron Microscopy**  
Tae-Young Ahn, Sung-Woo Kim, and Seong Sik Hwang(KAERI)
- 10:40 **Coffee Break**
- 11:00 **Irradiation Creep Analysis Base on Rate Theory in Iron Based Cladding Materials**  
Sang Il Choi and Ji Hyun Kim(UNIST), Gyeong-Geun Lee and Jun Hyun Kwon(KAERI)
- 11:20 **Evaluation of Threshold Displacement Energy in Tungsten using Molecular Dynamics Simulation**  
Mosab Jaser Baniselman and Takuji Oda(SNU)

- 11:40 **Changes in Mechanical Properties of SA508 Gr.4N Model Alloys with Neutron Irradiation**  
Min-Chul Kim and Bong-Sang Lee(KAERI)
- 12:00 **Development and Manufacturing Technology of Prototype Monoblock Low Pressure Rotor Shaft by 650ton Large Ingot**  
Duk-Yong Song, Dong-Soo Kim, Jungyeup Kim, Jongwook Lee, and Seokhee Ko(DOOSAN)
- 12:20 **Fabrication and Characterization of SiC and ZrC Composite Coating on TRISO Coated Particle**  
Hyeon-Geun Lee, Seung Ho Lee, Daejong Kim, Ji Yeon Park, and Weon-Ju Kim(KAERI)

## 4C 10. 28 (금)

### 핵연료&재료 (Nuclear Fuel and Structural Materials)

| 좌장 김현길(Hyun Gil Kim), 반치범(Chi Bum Bahn)

| 발표장소 203 (2층)

- 13:30 **Development Status of Accident Tolerant Fuel Cladding for LWRs**  
Hyun-Gil Kim, Il-Hyun Kim, Yang-Il Jung, Dong-Jun Park, Jung-Hwan Park, Jae-Ho Yang, and Yang-Hyun Koo(KAERI)
- 13:50 **Effect of Proton Irradiation on the Corrosion Behaviors of Ferritic/Martensitic Steel in Liquid Metal Environment**  
Jeonghyeon Lee, Tae Yong Kim, and Ji Hyun Kim(UNIST)
- 14:10 **Thermal Aging Effect on Corrosion Resistance in Fusion Boundary of A533 Gr. B and Alloy 152**  
Kyoung Joon Choi, Seung Chang Yoo, Taeho Kim, Junhyuk Ham, and Ji Hyun Kim(UNIST)
- 14:30 **Effects of Hydride Rim on Ductility of Zircaloy-4 using Ring Compression Test**  
So-Young Kang, Ho-A Kim, Yong-Soo Kim, and Ji-Min Lee(HYU)
- 14:50 **Deformation Behavior at High Temperature of Feeder Pipe Material in CANDU**  
SungSoo Kim, Yoon Sang Lee, and Young Suk Kim(KAERI)
- 15:10 **Coffee Break**
- 15:30 **Investigation of Zirconium Oxide Films in Different Dissolved Hydrogen Concentration**  
Taeho Kim, Kyoung Joon Choi, Seung Chang Yoo, and Ji Hyun Kim(UNIST)
- 15:50 **Analysis of W Reinforced High Entropy Alloy-based Composites Developed by Spark Plasma Sintering**  
Owais Ahmed Waseem and Ho Jin Ryu(KAIST)
- 16:10 **Expedited Experimental Simulation of High Burnup Microstructure of Advanced Ferritic/Martensitic Steel Claddings for Sodium-cooled Fast Reactor**  
Myeongkyu Lee, Geon Kim, Jongsu Ahn, and Sangjoon Ahn(UNIST)

## 4D 10. 27 (목) - 28 (금)

### 핵연료 (Nuclear Fuel) – POSTER

| 좌장 이규홍(Kyu Hong Lee), 김효찬(Hyo Chan Kim)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P04D01 **Preparation of Cesium (Cs) Release Test for Verifying Diffusion Coefficient in the IG-110 Graphite Matrix**  
Je-Kyun Baek and Ho Jin Ryu(KAIST), Sunghwan Yeo, Young Woo Lee, and Jeongmook Lee(KAERI)
- P04D02 **Fabrication of Neutron Absorber Containing Ceramic Composite Pellets by Using Microwave Sintering**  
Qusai Mistarihi and Ho Jin Ryu(KAIST)
- P04D03 **Gas Tungsten Arc Welding for Fabrication of SFR Fuel Rodlet**  
Jung Won Lee, Yoon Myeng Woo, Bong Goo Kim, Jeong Yong Park, and Sung Ho Kim(KAERI)
- P04D04 **Application of Ceramic Bond Coating for Reusable Melting Crucible of Metallic Fuel Slugs**  
Ki-Hwan Kim, Ki-Won Hong, Hoon Song, Young-Mo Ko, Jeong-Yong Park, and Chan-Bock Lee(KAERI)

- P04D05** Preliminary Study of the Onset of Nucleate Boiling (ONB) for the Thermal-hydraulic Design of HANARO Irradiation Non-Instrumented Capsule during the Natural Convection  
Kyungho Nam(KAERI)
- P04D06** Intermediate Compound Preparation Using Modified External Gelation Method and Thermal Treatment Equipment Development for UCO Kernel  
Kyungchai Jeong, Sungho Eom, Yeonku Kim, Seounghwan Yeo, Youngmin Kim, and Moonsung Cho(KAERI)
- P04D07** A Comparison of Oxide Thickness Predictability from the Perspective of Codes  
Joo-Young park, Hye-In Shin, Kyung-Tae Kim, Hee-Tak Han, Hong-Jin Kim, and Yong-Hwan Kim(KEPCO NF)
- P04D08** Benchmark Tests to Develop Analytical Time-Temperature Limit for HANA-6 Cladding for Compliance with New LOCA Criteria  
Sung Yong Lee, Hun Jang, Jea Young Lim, Dae Il Kim, Yoon Ho Kim, and Yong Kyoong Mok(KEPCO NF)
- P04D09** Experimental Approach for Adhesion Strength of ATF Cladding  
Donghyun Kim and Haksung Kim(HYU), Hyochan Kim, Yongsik Yang, and Wangki In(KAERI)
- P04D10** A Statistical Analysis on the Coating Layer Thicknesses of a TRISO of 350 MWth Block-type HTR  
Young Min Kim, Chang Keun Jo, and Moon-Sung Cho(KAERI)
- P04D11** Preliminary Modeling of Corrosion/Oxidation Properties of CrAl Alloy-Coated Cladding  
Jong-Dae Hong, Hyo Chan Kim, Chang Hwan Shin, Yong Sik Yang, and Wang Kee In(KAERI)
- P04D12** Fluid-Structure Interaction Analysis on the Nuclear Test Rig with Coolant  
Tae-Ho Yang, Jintae Hong, Sung-Ho Ahn, Chang-Young Joung, and Seo-Yun Janga(KAERI),  
Kon-Whi Yeon(CNU)
- P04D13** Analyses of the Collapse Behavior of a Spacer Grid  
Myung-Geun Jang, Geum Ju Na, Yeon-Hui Jang, Hee Cheol Kim, and Jong-Bong Kim(SEOULTECH),  
Jaeyong Kim(KAERI)
- P04D14** Out Pile Test of Disassembly Tool for the Intermediate Examination of Nuclear Fuel Rods  
Jintae Hong, Chang-Young Joung, Sung-Ho Ahn, Tae-Ho Yang, Seo-Yoon Jang, and Seung-Jae Park(KAERI)
- P04D15** Experimental Setup for Reflood Quench of Accident Tolerant Fuel Claddings  
Chan Lee and Wang Kee In(KAERI), Kwan Geun Lee(UST)
- P04D16** Simulation of Spacer Grid Spring to Identify Load-Deflection Characteristics  
Chaeyoung Nam, Jooyoung Ryu, Namgyu Park, and Jongseong Yoo(KEPCO NF)
- P04D17** On the Thermal Conductivity Change of Matrix Graphite Materials after Neutron Irradiation  
Young-Woo Lee, Seunghwan Yeo, Eung-Seon Kim, Injin Sah, Daegy Park, Youngjun Kim, and Moon Sung Cho(KAERI)
- P04D18** Plan for Structural Analysis of Fuel Assembly for Seismic and Loss of Coolant Accident Loading Considering End-Of-Life Condition for APR1400 NRC Design Certification  
Dong-Hak Kim(KHNP CRI)
- P04D19** Characterization of Oxide Layer with Precipitates of HANA-6 Exposed in Simulated PWR Primary Water Environment  
Hun Jang, Jea Young Lim, Sung Yong Lee, Yoon Ho Kim, and Yong Kyoong Mok(KEPCO NF)
- P04D20** PIE Results of Irradiated TRISO-Coated Particle Fuel at HANARO  
B.G. Kim, S.H. Yeo, K.C. Jeong, Y.K. Kim, Y.W. Lee, and M.S. Cho(KAERI)

## 4E

10. 27 (목)  
- 28 (금)

### 재료열화 (Materials Degradation) – POSTER

| 좌장 김지현(Ji Hyun Kim), 권준현(Junhyun Kwon)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P04E01** A Study on Mechanical Behavior of Tensile Specimen Fabricated by Laser Cutting  
Y. G. Jin, G. S. Kim, S. J. Baik, and S. Y. Baek(KAERI)

- P04E02**    **Experimental Facility to Study Transient Thermo-Mechanical Behavior of the Clad Tube Under High Temperature Conditions**  
Ashwini Kumar Yadav, Chang-Hwan Shin, Wang-Ki In, and Dong-Hak Kook(KAERI)
- P04E03**    **Monitoring of Defects in a Pipe Weld by a Comparison of Magnetostrictive Guided Wave Signals**  
Yong-Moo Cheong, Se-Beom Oh, and Duck-Hyun Lee(KAERI)
- P04E04**    **Hardness and Modulus of 410 Martensitic Steel after High Temperature Proton Irradiation**  
Owais Ahmed Waseem, Byong-Guk Park, and Ho Jin Ryu(KAIST), Jong-Ryul Jeong(CNU),  
Cheol-Soo Maeng and Myoung-Goo Lee(KEPCO E&C)
- P04E05**    **Evaluation of Failure Probability of BWR Vessel Under Cool-down and LTOP Transient Conditions Using PROFAS-RV PFM Code**  
Jongmin Kim and Bong Sang Lee(KAERI)
- P04E06**    **Trend on Nuclear Corrosion Mitigation Research Paper Publication**  
Ki Woung Sung(KISTI)
- P04E07**    **J-R Fracture Resistance of SA533 Gr.B-Cl.1 Steel for Reactor Pressure Vessel**  
Ji-Hyun Yoon, Seokmin Hong, and Bong-Sang Lee(KAERI)
- P04E08**    **Comparison of Fatigue Crack Growth Rate of Type 347 Stainless Steel with ASME and JSME Models**  
Seokmin Hong, Ki-Deuk Min, Soon-Hyeok Jeon, and Bong-Sang Lee(KAERI)
- P04E09**    **Effect of Residual Strain on PWSCC Initiation of Alloy 690 in Primary Water of PWR**  
Eun-Hee Lee, Sung-Woo Kim, Ki-Hyeon Eom, and Seong-Sik Hwang(KAERI)
- P04E10**    **Investigation of Effect of Flow Rate on Zircaloy-4 Oxidation Kinetics and Breakaway Phenomenon in Air at 850 °C**  
Yun Hwan Maeng and Jae Young Lee(HGU), Sanggil Park(ACT Co., Ltd.)

## 4F

10. 27 (목)  
- 28 (금)

### 소재개발 (Nuclear Materials Development) – POSTER

| 좌장 김진원(Jin Weon Kim), 김태규(Tae Kyu Kim)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P04F01**    **Synthesis of the Novel MAX Phases for the Future Nuclear Fuel Cladding and Structural Materials**  
Seung Hyeok Chung(KHU), Taehee Kim, Taegyu Lee, and H. J. Ryu(KAIST)
- P04F02**    **Activation Volume of Martensitic ODS Steel**  
D.W. Kim, S. Noh, and T.K. Kim(KAERI)
- P04F03**    **Sludge Deposition Models on Secondary Side Tubes of Steam Generators**  
Hansang Kim(KHNP CRI)
- P04F04**    **Microstructure and Mechanical Property of ODS Ferritic Steels Using Commercial Alloy Powders for High Temperature Service Applications**  
Sanghoon Noh, Byoung-Kwon Choi, Suk Hoon Kang, and Tae Kyu Kim(KAERI)
- P04F05**    **Thermophysical Properties of Liquid UO<sub>2</sub>, ZrO<sub>2</sub> and Corium by Molecular Dynamics and Predictive Models**  
Woong Kee Kim and Ji Hoon Shim(POSTECH), Massoud Kaviany(U.Michigan)
- P04F06**    **Development of Refractory High Entropy Alloy by Using Artificial Neural Network**  
JaeJoon Kim and Ho Jin Ryu(KAIST)
- P04F07**    **Combinatorial Alloy Design for Refractory High Entropy SuperAlloys (RHEA)**  
Ulanbek Auyeskhon and Ho Jin Ryu(KAIST)
- P04F08**    **Cerium Titanate Nano Dispersoids in Ni-base ODS Alloy**  
Suk Hoon Kang, Young-Bum Chun, Chang-Kyu Rhee, and Jinsung Jang(KAERI), Hee-Suk Chung(KBSI)
- P04F09**    **The Synthesis and Characterization of W- 1wt. % TiC Alloy Using a Chemical Method**  
Taehee Kim and Ho Jin Ryu(KAIST)



## 5A

10. 27 (목)

## 원자력 열수력 실험 I (Thermal-Hydraulics Experiment)

I 좌장 황대현(Dae Hyun Hwang), 조형규(Hyoung Kyu Cho)

I 발표장소 104 (1층)

- 09:00 A Study on the Upward and Downward Facing Pool Boiling Heat Transfer Characteristics of Graphene-Modified Surface  
Ji Hoon Kim and Ho Seon Ahn(INU), Ji Min Kim(POSTECH)
- 09:20 Experimental Study on Boiling Crisis in Pool Boiling  
Satbyoul Jung and Hyungdae Kim(KHU)
- 09:40 Simulation of CHF Condition using an Electroplating System  
Seung-Min OHK, Hae-Kyun PARK, and Bum-Jin CHUNG(KHU)
- 10:00 Experimental Investigation on Effects of Liquid Subcooling on Droplet Collision Heat Transfer Above Leidenfrost Temperature  
Junseok Park and Hyungdae Kim(KHU)
- 10:20 Forced Convection Heat Transfer in Packed bed  
Dong-Young Lee and Bum-Jin Chung(KHU)
- 10:40 Coffee Break
- 11:00 Using Crossflow for Flow Measurements and Flow Analysis  
A. Gurevich, L. Chudnovsky, and A. Lopez(AMAG), M.H. Park(SNE)

## 5B

10. 28 (금)

## 원자력 열수력 실험 II (Reactor Safety Experiment)

I 좌장 김한곤(Han Gon Kim), 최기용(Ki Yong Choi)

I 발표장소 104 (1층)

- 09:00 A Study of the Reflood Characteristics Under Small and Medium LOCA Using A 3x3 Heater Bundle  
Jongrok Kim, Jong-Kuk Park, Seok Cho, Young-Jung Youn, Hae Seob Choi, SeungHyun Hong, and Sang-Ki Moon(KAERI)
- 09:20 Comparative Investigation on 0.4 inch SBLOCA Scenario with Single and Dual Train Passive Safety Injection Systems using SMART-ITL  
Hyun-Sik Park, Hwang Bae, Sung-Uk Ryu, Byong-Guk Jeon, Jin-Hwa Yang, Eun-Koo Yun, Nam-Hyun Choi, Koung-Ho Min, Yong-Cheol Shin, Yoon-Gon Bang, Myoung-Jun Kim, Chan-Jong Seo, and Sung-Jae Yi(KAERI)
- 09:40 Effect of Downward Inclination on Two-Phase Flow Structure During Condensation of Steam Inside in a Tube  
Andree Pusey and Hyungdae Kim(KHU), Hyun-Sik Park and Tae-Soon Kwon(KAERI)
- 10:00 In-situ Monitoring of Sub-cooled Nucleate Boiling on Fuel Cladding Surface in Water at 1 bar and 130 Bars using Acoustic Emission Method  
Seung Heon Baek, Do Haeng Hur, Kaige Wu, Hee-Sang Shim, and Deok Hyun Lee(KAERI)
- 10:20 Pressure Control Mechanism and Heat Transfer Characteristics of Hybrid Control Rod for Passive IN-core Cooling System in SMR  
Kyung Mo Kim and In Cheol Bang(UNIST)
- 10:40 Coffee Break
- 11:00 Simulation of Natural Convection in the Oxide Layer of Three-Layer Corium Pool in an IVR  
Su-Hyeon Kim, Hae-Kyun Park, and Bum-Jin Chung(KHU)

**5C**  
10. 27 (목)

## 열수력해석 I (TH Analysis I, Multi-Dimensional and Multi-Physics Analysis)

| 좌장 박찬익(Chan Eok Park), 이정익(Jeong Ik Lee)

| 발표장소 105 (1층)

### 초청발표

- 09:00 Numerical Predictions of Transient Hydraulic Response of PWR Steam Generator Secondary Side to a Feedwater Pipe Break Using Flashing Flow Model  
Jong Chull Jo(KINS)
- 09:30 Numerical Investigation of Turbulent Stably Stratified Layers based on GEMIX Experiments  
Jungwoo Kim(SEOULTECH)
- 09:50 Simulation of ROCOM Experiment using CUPID Code  
Yun-Je Cho, Jae-Ryong Lee, and Han-Young Yoon(KAERI)
- 10:10 CFD Analysis of the Inclination Effects on Pool Heat Exchanger  
Muritala Amidu and Hyundgae Kim(KHU)
- 10:30 Coffee Break
- 10:50 Safety Injection Tank Performance Analysis Using CFD  
Jai Oan Cho, Jeong Ik Lee, and Yohanes Setiawan Nietiadi(KAIST), Young Seok Bang and Seung Hun Yoo(KINS), Yacine Addad(KUSTAR)
- 11:10 Development of Multi-Dimensional RELAP5 with Conservative Momentum Flux  
Sang Yong Lee and Hyung Wook Jang(KINGS)
- 11:30 Assessment of the Effects on PCT Evaluation of Enhanced Fuel Model Facilitated by Coupling the MARS Code with the FRAPTRAN Code  
Hyong Chol Kim, Young Jin Lee, and Sam Hee Han(NSE)
- 11:50 Two-Fluid Equations for a Nuclear System with Arbitrary Motions  
Byoung Jae Kim(Chungnam Univ.), Kyung Doo Kim(KAERI)

**5D**  
10. 28 (금)

## 열수력해석 II (TH Analysis II, Multi-Dimensional Thermal Hydraulic Analysis)

| 좌장 김한곤(Han Gon Kim), 최동수(Tong Soo Choi)

| 발표장소 105 (1층)

### 초청발표

- 09:00 Development of Evaluation Method Applying the RIA New Acceptance Criteria  
Jae-Don Choi, Jae-Il Lee, Sang-Jeong Park, Kyung-Min Yoon, and Song-Kee Sung(KEPCO NF)
- 09:30 Transient Analysis of Station Blackout While Shutdown for OPR1000 Nuclear Power Plant  
Su Hyun Hwang and Min Hwa Kim(FNC Tech.), Duk Joo Yoon and Seung Chan Lee(KHNP CRI)
- 09:50 MARS Simulation of Air Cooling Heat Exchanger Connected with PAFS  
Seong-Su Jeon and Soon-Joon Hong(FNC Tech.), Sung-Won Bae and Tae-Soon Kwon(KAERI)
- 10:10 Prediction Capability of SPACE Code about the Loop Seal Clearing on ATLAS SBLOCA  
Sung-won Bae, Jong Hyuk Lee, Bub Dong Chung, and Kung Doo Kim(KAERI)
- 10:30 Coffee Break
- 10:50 One-Dimensional Simulation of Heat Structure Melting and Evaporation Under High Heat Flux Condition Using MARS  
Geon-Woo Kim, Jeong-Hun Lee, Hyoung-Kyu Cho, and Goon-Cherl Park(SNU), Kihak Im(NFRI)
- 11:10 Containment PT Analysis in Case of Installation of PCCS using CAP Code  
Yeon Jun Choo and Soon Jun Hong(FNC Tech.), Han Gon Kim and Jong Cheon(KHNP CRI)
- 11:30 Validation for Space Code Program in Application to Pipe Flow Experiments- Horizontal Stratified Flow Models  
Joshua Kim Schimpf and kyung doo Kim(KAERI)

11:50 Capability of MARS-KS on Predicting Wall Condensation in the Presence of Non-Condensable Gases  
Erol Bicer, Yeon-Joon Choo, and Soon-Joon Hong(FNC Tech.)

**5E**  
10. 28 (금)

**열수력해석 Ⅲ (TH Analysis Ⅲ, Thermal Hydraulic Analysis Method)**

| 좌장 홍순준(Soon-Joon Hong), 조윤제(Yun-Je Cho)

| 발표장소 105 (1층)

**초청발표**

13:30 Introduction to Safety Analysis Approach for Research Reactors  
Suki Park(KAERI)

14:00 Discussion on the Heat and Mass Transfer Model on the Pool Surface  
Soon-Joon HONG and Yeon-Jun CHOO(FNC Tech.), Sang-Jun HA(KHNP CRI)

14:20 A Study on Development of Variable High Pressurizer Pressure Trip Function to Mitigate System Peak Pressure during Transients for Pressurized Water Reactors  
Ung Soo Kim, Min Soo Park, Jae Young Huh, and Gyu Cheon Lee(KEPCO E&C)

14:40 Regulatory Considerations for the Long Term Cooling Safe Shutdown Requirements of the Passive Residual Heat Removal Systems in Advanced Reactors  
Suk-ku Sim, Sung hwan Bae, Youn shil Kim, and Min jeong Hwang(en2t), Young seok Bang and Taesuk Hwang(KINS)

15:00 Coffee Break

15:20 R134a Flow Boiling Analysis with Modified Thermodynamic Property File of MARS Code  
Gyu Min Son and In Cheol Bang(UNIST)

15:40 Conceptual Design of Condenser using PCM as PCCS for APR1400  
Hwa-Young Jung, A-Reum Ko, and Jeong Ik Lee(KAIST), Ho Joon Yoon(KUSTAR)

16:00 The Numerical Study on the Influence of Prandtl Number and Height of the Enclosure  
Je-young Moon and Bum-jin Chung(KHU)

16:20 Inherent Safety Feature of Hybrid Low Power Research Reactor during Reactivity Induced Accident  
DongHyun Kim, Soo Been Yum, Sung Teak Hong, and In-Cheol Lim(KAERI)

**5F**  
10. 27 (목)

**중대사고 I (Severe Accident I, Ex-Vessel)**

| 좌장 김종태(Jong Tae Kim), 이정재(Jungjae Lee)

| 발표장소 106 (1층)

**초청발표**

09:00 Numerical Methods for an Analysis of Hydrogen Behaviors Coupled with Thermal Hydraulics in a NPP Containment  
Jongtae Kim, Rae-Joon Park, and Seong-Wan Hong(KAERI), Gun-Hong Kim(KWEC)

09:30 Development of Severe Accident Containment Analysis Package  
Chang-Hwan Park, Dong-Min Kim, Jea-Uk Seo, Dea-Young Lee, Soon-Ho Park, Jae-Gwon Lee, Jin-Yong Lee, and Byung-Chul Lee(FNC Tech.)

10:00 Coupling Computer Codes for The Analysis of Severe Accident Using A Pseudo Shared Memory Based on MPI  
Young Chul Cho, Chang Hwan Park, and Dong Min Kim(FNC Tech.)

10:20 Experimental Analysis of Ex-Vessel Core Catcher Cooling System Performance for EU-APR1400 During Severe Accident  
Kiwon Song, Hyun Sun Park, and Shripad T. Revankar(POSTECH), Hwan Yeol Kim(KAERI)

10:40 Coffee Break

- 11:00 Hydrogen Behaviors Coupled with Thermal Hydraulics in APR1400 Containment during an SBLOCA  
Jongtae Kim and Seong-Wan Hong(KAERI)
- 11:20 Current State of the Construction of SPARC Test Facility for Observing Hydrogen's Behavior  
Young Su Na, Seong-Ho Hong, Ki Han Park, and Seong-Wan Hong(KAERI)
- 11:40 Comparison MAAP5.03 with MAAP5.04 from Recombination of CO Point of View  
ChulSoo Kim, HyoungKi Kim, InChul Ryu, and YoungTae Moon(KEPCO E&C)
- 12:00 Sensitivity Analysis on the Zirconium Ignition in a Postulated SFP loss of Coolant Accident  
Sanggil Park(ACT Co., Ltd.), Sun-ki Kim, Tae-hyun Chun, and Je-geon Bang(KAERI), Jaeyoung Lee(HGU)

**5G**  
10.28 (금)

## 중대사고 II (Severe Accident II , In-Vessel)

| 좌장 방인철(In Cheol Bang), 배준호(Jun Ho Bae)

| 발표장소 106 (1층)

### 초청발표

- 09:00 COMPASS Simulation for PHEBUS FPT3 Experiment  
Jun Ho Bae, Jongtae Kim, Donggun Son, Rae-Jun Park, and Dong Ha Kim(KAERI)
- 09:30 Review of IVR-ERVC and Using Flooding Concept for Application to High Power Reactor  
Minho Lee, Hyo Heo, and In Cheol Bang(UNIST)
- 10:00 Corium Configuration and Penetration Tube Failure for Fukushima Daiichi Nuclear Power Plant  
Sang Mo An, Jae Bong Lee, Hwan Yeol Kim, and Jin Ho Song(KAERI)
- 10:20 Refinement of RAIM via Implementation of Implicit Euler Method  
Yoonhee Lee and Han-Chul Kim(KINS)
- 10:40 Coffee Break
- 11:00 Simulation of In-Vessel Corium Retention Through External Reactor Vessel Cooling for SMART using SIMPLE  
Jin-Sung Jang, Donggun Son, and Rae-Jun Park(KAERI)
- 11:20 Multiphysical Simulation of PT-CT Contact with Outer Boundary Condition  
Se-Myong Chang(KSNU), Hyoung Tae Kim(KAERI)
- 11:40 Effect of Multi-Layered Corium Formations to Steel Components under Steam Explosion Condition  
Seung Hyun Kim, Tae Hyun Kim, and Yoon-Suk Chang(KHU), Yong-Jin Cho(KINS)
- 12:00 Improvement of Diagnostic Flow Chart in Severe Accident Management Guidance for Nuclear Power Plants in Korea  
Sowon Jang and Suwon Lee(FNC Tech.), HAECHEOL OH(KHNP CRI)

**5H**  
10.28 (금)

## 중대사고 III (Severe Accident III , Fission Product)

| 좌장 하광순(Kwang Soon Ha), 김성중(Sung Joong Kim)

| 발표장소 106 (1층)

### 초청발표

- 13:30 Research and Activities of OECD/NEA Benchmark Study of the Accident at the Fukushima Daiichi Nuclear Power Station (BSAF) Project  
Sung Il Kim, Kwang Soon Ha, and JinHo Song(KAERI)
- 14:00 Aerosol Scrubbing Performance Test for Self-Priming Scrubbing Nozzle Submerged in Water Pool  
Doo Yong Lee, Woo Young Jung, Hyun Chul Lee, Jong Chan Lee, Gyu Tae Kim, and Yong Jae Song(FNC Tech.)
- 14:20 Effect of Suction Parameters in Vortex-like Air-Curtain Based Approach for Radioactivity Dispersion Prevention Following Containment Breach at a Nuclear Power Plant  
Sana Ullah and Man Sung Yim(KAIST)

- 14:40 Development of a Chemical Equilibrium Model for a Molten Core-Concrete Interaction Analysis Module  
JaeUk Seo, Dae Young Lee, and Chang Hwan Park(FNC Tech.)
- 15:00 Coffee Break
- 15:20 Sensitivity Analyses of Gaseous Iodine Retention in Pool Scrubber  
Nguyen Thi Thanh Thuy(UST), Kwang Soon Ha and Jinho Song(KAERI)
- 15:40 CFD Analyses of Re-Evolved Iodine from an In-containment Water Pool  
Tae Hyeon Kim(KHNP CRI), Woo Sung Yoon and Ji Hwan Jung(PNU)
- 16:00 Introduction of ARIEL Test facility for Evaluating the Performance of Containment Filtered Venting System  
Jaehoon Jung, Kwang Soon Ha, Jae Bong Lee, Sung Il Kim, and Hwan Yeol Kim(KAERI)
- 16:20 Application of the COMPASS-FP Beta Version to the Reactor Vessel in the APR1400 for Predicting Aerosol Behavior under a Severe Accident  
Hyung Seok Kang, Bo Wook Rhee, and Dong Ha Kim(KAERI)

## 5I 10.27 (목)

### 확률론적안전성평가 I (PSA I , Risk Assessment & Insights)

| 좌장 허균영(Gyunyoung Heo), 장승철(Seung-Cheol JANG)

| 발표장소 103 (1층)

- 09:00 Extracting HEPs from Event Reports of Domestic Nuclear Power Plants-Case Study  
Jinkyun Park, Yochan Kim, and Wondea Jung(KAERI)
- 09:20 Improved Monte Carlo Method for PSA Uncertainty Analysis  
Jongsoo Choi(KINS)
- 09:40 Review of Risk Reduction Methods using Probabilistic Safety Assessment Insights and Improved Technology  
Eunchan Lee and Byung-Pil Choi(KHNP CRI)
- 10:00 Example Plant Model for an International Benchmark Study on DI&CPSA  
Sung Min Shin, Jaehyun Cho, and Won Dea Jung(KAERI), Hyun Gook Kang(RPI)
- 10:20 The Contribution to Site Core Damage Frequency from Independent Occurrences of Initiators in Two or More Units: How Low is It?  
Dong-San Kim, Jin Hee Park, and Ho-Gon Lim(KAERI)
- 10:40 Coffee Break
- 11:00 Safety R&D Needs in Multi-Unit PSA from a Regulatory Viewpoint  
Gyunyoung Heo and Ji Woong Yoon(KHU), Man Cheol Kim(CAU)
- 11:20 Sensitivity Analysis of Evacuation Speed in Hypothetical NPP Accident by Earthquake  
Sung-yeop Kim and Ho-Gon Lim(KAERI)

## 5J 10.28 (금)

### 확률론적안전성평가 II (PSA II , Fire PSA & Protection)

| 좌장 강대일(Dae Il Kang), 박성규(Seong Kyu Park)

| 발표장소 104 (1층)

- 13:30 Introduction of Developing a List of MSO Generic Scenarios for PHWR  
Jae Wan Park, Jun Hyun Park, and Hui Soo Bae(STDTE)
- 13:50 Sensitivity Studies on the Approaches for Addressing Multiple Initiating Events in Fire Events PSA  
Dae Il Kang and Hogon Lim(KAERI)
- 14:10 Regulations and Strategy for a Loss of Large Area  
Heok-soon Lim(KHNP CRI)
- 14:30 A Study on Site Selecting for National Project including High Level Radioactive Waste Disposal  
Kilyoo Kim(KAERI)

**5K**  
10.27 (목)

## 안전현안 1 (Safety Issues 1, Safety Assessment)

| 좌장 김용수(Yong Soo Kim), 오덕연 (Deog Yeon Oh)

| 발표장소 102 (1층)

- 09:00 Review of EU-APR Design for Selected Safety Issues of WENRA RHWG 2013  
Yong Soo Kim and Ji Hwan Kim(KHNP CRI)
- 09:20 Assessment on Event Classification of One Steam Generator Tube Rupture in EU-APR  
Ji Hwan Kim and Yong Soo Kim(KHNP CRI)
- 09:40 Development of Abnormal Operating Strategies for Loss of Ultimate Heat Sink (LOUHS) at Shutdown Mode in Westinghouse Type Nuclear Power Plant  
Duk-Joo Yoon, Seung-Chan Lee, Je-Joong Sung, and Sang-Jun Ha(KHNP CRI), Su-Hyun Hwang(FNC Tech.)
- 10:00 Assessment of Coping Capability of KORI Unit 1 under Extended Loss AC Power and Loss of Ultimate Heat Sink Initiated by Beyond Design Natural Disaster  
Chang Hyun Kim and Sang Jun Ha(KHNP CRI), Kee Soo Han(NESS), Chan Eok Park(KEPCO E&C)
- 10:20 Development of Abnormal Operating Strategies for Station Blackout in Shutdown Operating Mode in Pressurized Water Reactor  
Duk-Joo Yoon, Seung-Chan Lee, Je-Joong Sung, and Sang-Jun Ha(KHNP CRI), Su-Hyun Hwang(FNC Tech.)
- 10:40 Coffee Break
- 11:00 Hydrodynamics of Safety Injection Tank with Fluidic Device in Recent Regulation  
Young Seok Bang(KINS) and Seung Hun Yoo(KINS)
- 11:20 Cladding Deformation and Rupture Estimation during SBLOCA with SCDAP/RELAP5  
Tae-Hyun Chun, Chang-Hwan Shin, Yong-Sik Yang, and Wang-Ki In(KAERI)

**5L**  
10.28 (금)

## 안전현안 2 (Safety Issues 2, TH Analysis )

| 좌장 김태완(Taewan Kim), 이정익(Jeong Ik Lee)

| 발표장소 103 (1층)

- 09:00 Effect of In-core Blockage by Debris during Post-LOCA Long Term Core Cooling Phase of Kori-2  
Taewan Kim(INU), Chang-yong JIN and Young Seok Bang(KINS)
- 09:20 Long-Term Cooling Analysis Considering In-Vessel Downstream Effect for APR-1400 using MARS-KS a Thermal Hydraulic Code  
Asad Ullah Amin Shah(KAIST), Young Seok Bang(KINS)
- 09:40 Investigation of Loop Seal Clearing Phenomena for the ATLAS SBLOCA Long Term Cooling Test using TRACE and MARS-KS  
Minjeong Hwang, Myoung Hwan Park, Ralph Marigomen, Suk-ku Sim(En2T)
- 10:00 Numerical Investigation of APR1400 Loop Seal Reformation and Clearing Phenomena during Post-LOCA Long-term Cooling Period using RELAP5  
Sang Ik Lee, Jae Hoon Jeong, Ju-Hyun Park, Haejung Sung, Jae-Il Lee, and Tong-Soo Choi(KEPCO NF)
- 10:20 Analysis of ATLAS LTC-04R Test for Loop Seal Reformation Phenomena using RELAP5  
Sang-Gyu Lim, Dae-Hun Kim, and Han-Gon Kim(KHNP CRI)
- 10:40 Coffee Break
- 11:00 Analysis of the ATLAS Cold Leg Top Slot-Break Experiment Using the MARS Code  
Taewook Ha and Jaehun jeong(PNU)
- 11:20 ATLAS Cold Leg Top Slot Break Analysis using RELAP5  
Haejung Sung, Sang Ik Lee, Ju-hyun Park, and Tong-Soo Choi(KEPCO NF)
- 11:40 Simulation of IFA-650.10 Test Using a Modified Version of RELAP5/MOD3.1  
Won Ho Kim, Hyung Gun Sung, Ok Joo Kim, Hye Jin Kim, and Tong Soo Choi(KEPCO NF)

## 5M

10. 27 (목)  
– 28 (금)

### 원자력 열수력 및 안전 실험(Thermal-Hydraulics and Safety Experiment) – POSTER

| 좌장 강경호(Kyong Ho Kang), 김형대(Hyung Dae Kim)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P05M01 **Effects of Tube Pitch on Pool Boiling Heat Transfer of Horizontal Tube Bundle**  
Myeong-Gie Kang(ANU)
- P05M02 **Effects of Angle of Rotation on Pool Boiling Heat Transfer of V-shape Tube Bundle**  
Myeong-Gie Kang(ANU)
- P05M03 **Droplet Entrainment on a Direct Vessel Injection System for APR 1400**  
Han Sol Kim(HGU), Jae Young Lee(HGU), Jong Rok Kim(KAERI), and Dong Jin Euh(KAERI)
- P05M04 **Estimation of Uncertainty in Aerosol Concentration Measured by Aerosol Sampling System**  
Jong Chan Lee, Yong Jae Song, Woo Young Jung, Hyun Chul Lee Gyu Tae Kim, and Doo Yong Lee(FNC Tech.)
- P05M05 **Development of Gaseous Iodine Generation and Sampling Systems Operated under High Pressure and Temperature Conditions for CFVS Performance Test**  
Hyun-Chul Lee, Woo-Young Jung, Jong-Chan Lee, Gyu-Tae Kim, and Doo-Yong Lee(FNC Tech.)
- P05M06 **Average Natural Convective Heat Transfer of Air-cooled Condensing Heat Exchanger of Emergency Cooldown Tank – Effect of Tube Banks**  
Seon Jeong Huh and Hee Joon Lee(KMU), Myoung Jun Kim, Joo Hyung Moon, Youngmin Bae, and Young-In Kim(KAERI)
- P05M07 **Safety Assessment of the SMART Design During SBLOCA Tests Using the High Pressure Safety Injection Pump of the SMART-ITL Facility**  
Hwang Bae, Sung Uk Ryu, Byong-Guk Jeon, Jin-Hwa Yang, Eun-Koo Yoon, Yong-Cheol Shin, Kyoung-Ho Min, Jong-Kuk Park, Nam-Hyun Choi, Yun-Gon Bang, Chan-Jong Seo, Sung-Jae Yi, and Hyun-Sik Park(KAERI)
- P05M08 **Test Facility Construction for Flow Visualization on Mixing Flow inside Subchannels of PWR Rod Bundle**  
Seok Kim, Byong-Guk n Jeon, Young-Jung Youn, Hae-Seob Choi, and Dong-Jin Euh(KAERI)
- P05M09 **Steady-state and Transient Analysis for Design Validation of SMART-ITL Secondary System**  
Eunkoo Yun, Hwang Bae, Sung-Jae Yi, Hyun-Sik Park, Sung Uk Ryu, Byong-Guk Jeon, and Jin-Hwa Yang(KAERI)
- P05M10 **Analysis of Turbine Load Rejection for APR1400 using SPACE**  
SangJin Kim, Chan Eok Park, Jong Ho Choi, and Gyu Cheon Lee(KEPCO E&C)
- P05M11 **A Study on Condensation Heat Transfer at the Exterior Surface of S.A.M. Coated Titanium Tube Using in Steam Condensers**  
Sung-Gu Im, Sang-Hyup Lee, Dae-Yun Ji, Hyun-Gyu Park, and Kwon-Yeong Lee(HGU)
- P05M12 **Validation Plan of Turbulence Models for Internal Gas Flow Analysis in a Heated Rectangular Riser Duct**  
Sin-Yeob Kim, Dong-Ho Shin, Goon-Cherl Park, and Hyoung Kyu Cho(SNU), Chan-Soo Kim(KAERI)
- P05M13 **Condensation Experiment for a Desalination System Using the Waste Heat of Nuclear Power Plants and Solar Energy Systems**  
Khalid Khasawneh and Yong Hoon Jeong(KAIST)
- P05M14 **Modal Analysis of a U-tube Model for the Steam Generator with Experiment and Computation**  
Hao Zhang, Se-Myong Chang, and Sin Young Lee(KSNU), Gangwon Jang(SJU)



## 5N

10. 27 (목)  
- 28 (금)

### 열수력해석 (TH Analysis) – POSTER

| 좌장 권혁(Hyuk Kwon), 조형규(Hyoung Kyu Cho)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P05N01 **OPR1000 RCP Flow Coastdown Analysis using SPACE Code**  
Dong-Hyuk Lee and Seyun Kim(KHNP CRI)
- P05N02 **Code Assessment of SPACE 2.19 using LSTF Steam Generator Tube Rupture Test**  
Minhee Kim and Seyun Kim(KHNP CRI)
- P05N03 **Sensitivity Study of Long-Term Core Cooling Associated with Debris Effects Using a LOCADM**  
Jeong-kwan Suh and Sun-guk Kwon(KHNP CRI)
- P05N04 **Adjoint-based Mesh Optimization Method: The Development and Application for Nuclear Fuel Analysis**  
Seongmin Son, Jeong Ik Lee, and Jinsu Kwon(KAIST)
- P05N05 **Behavior and Response Capability of CANDU 6 NPP during Extended Loss of All AC Power**  
Kyung Jin Lee(FNC Tech.)
- P05N06 **Analysis of Air Temperature around Reactor Vessel in EU-APR**  
Won Seok Yang, Keun Sung Lee, and Do Hyun Hwang(KHNP CRI)
- P05N07 **RELAP5/Mod3.3 and SPACE 2.17 Simulation of a Narrow Rectangular Channel Experiment**  
Dongwook Jang, Byeonghee Lee, and Suki Park(KAERI)
- P05N08 **Large Break LOCA Analysis with New Down Comer Nodalizaion and Multi-Dimensional Model and Effect of Cross Flow Option in MARS Code**  
Hyung Wook Jang, Sang Yong Lee, Seung Jong Oh, and Woong Bae Kim(KINGS)
- P05N09 **The evaluation of the RCS Injection Strategy by an Active Safety Injection Pump during SBLOCA**  
Sang Hee Kang and Han Gon Kim(KHNP CRI)
- P05N10 **Simulation of the KAERI PASCAL Test with MARS-KS and TRACE Codes**  
Kyung Won Lee, Aeju Cheong, Andong Shin, and Min Ki Cho(KINS)
- P05N11 **Study on the Operability of Passive Containment Cooling System**  
Dae Hun Kim, Sang Gyu Lim, Suk Ho Lee, Sang Won Lee, and Han Gon Kim(KHNP CRI)
- P05N12 **Effect of Applying New PDO Correlations to CANDU 6 SBLOCA**  
Dongwook Kho(KHNP CRI)
- P05N13 **CFD Simulation on Condensation Inside a Hybrid SIT**  
Byong Guk Jeon, Sung-Uk Ryu, Seok Kim, and Dong Jin Euh(KAERI)
- P05N14 **Numerical Study on the Design Concept of an Air-Cooled Condensation Heat Exchanger Design in a Long-term Passive Cooling System**  
Myoung Jun Kim, Joo Hyung Moon, Young Min Bae, Young In Kim, Hyun Sik Park, and Hee Joon Lee(KAERI)
- P05N15 **Preliminary Analysis for Flow Blockage of Plate Fuel Using a Commercial CFD Code**  
Jong-Pil Park and Suki Park(KAERI)
- P05N16 **VOF Simulation on a Large Bubble in a Linear Shear Flow**  
Woo-Ram Lee and Jae-Young Lee(HGU)
- P05N17 **Transient Model of a 10MW Supercritical CO2 Brayton Cycle for Light Water Reactors by using MARS Code**  
Joo-Hyun Park, Hyun Sun Park, and Moo Hwan Kim(POSTECH), Sung Won Bae and Jae-Eun Cha(KAERI)
- P05N18 **Thermal Analysis of Fission Moly Target Solid Waste Storage**  
Hyung Min Son and Jonghark Park(KAERI)
- P05N19 **OPR1000 CEA Withdrawal at Power Accident Analysis using the SPACE Code**  
Chang-Keun YANG, Dong-Hyuk LEE, and Sang-Jun HA(KHNP CRI)

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P05N20	<b>Assessment of the Effect of Nitrogen Gas on Passive Containment Cooling System Performance</b> Huiun Ha and Jungsoo Suh(KHNP CRI)
P05N21	<b>Code Assessment of SPACe 2.19 using LSTF 10% Main Steam-Line-Break Test</b> Minhee Kim and Seyun Kim(KHNP CRI)
P05N22	<b>Assessment of the Thermal Hydraulic Models in THALES</b> Byeong Il Jang, Hong Ju Kim, Beomjun Jang, and Hae-Seuk Woo(KEPCO NF)
P05N23	<b>Implementation of Boundary Condition to THALES Code</b> Beomjun Jang, Chong Kuk Chun, Ho Young Park, and Hae-seuk Woo(KEPCO NF)
P05N24	<b>Analysis of Total Loss of Feedwater for APR1400 using SPACE</b> Seong Min Hong, Seok Jeong Park, Chan Eok Park, Jong Ho Choi, and Gyu Cheon Lee(KEPCO E&C)
P05N25	<b>Uncertainty Evaluation with Multi-Dimensional Model of LBLOCA in OPR1000 Plant</b> Jieun Kim, Deog Yeon Oh, Kwang-Won Seul, and Jin Ho Lee(KINS)
P05N26	<b>Transient Analysis of Loss of All AC Power While on Shutdown Cooling for WH 2 Loop Nuclear Power Plant</b> Da Hee Park, Kyung Jin Lee, Su Hyun Hwang, Duck Joo Yoon, and Seung Chan Lee(KHNP CRI)
P05N27	<b>Evaluation of Required Water Sources during Extended Loss of All AC Power for CANDU NPPs</b> Woo Jae Jeon, Kyung Jin Lee, Min Ki Kim, Keon Yeop Kim, Da Hee Park, and Seo Bin Oh(FNC Tech.), Young Jin Chang and Choong Seop Byun(KHNP)
P05N28	<b>Study on CO<sub>2</sub> Recovery System Design in Supercritical CO<sub>2</sub> Cycle for SFR Application</b> Min Seok Kim, Hwa-Young Jung, and Jeong Ik Lee(KAIST)
P05N29	<b>Mitigation Strategy of Very High Temperature Reactor Air-ingress Accident</b> Tae Kyu Ham(KHNP CRI), David J. Arcilesi, In Hun Kim, Xiaodong Sun, and Richard N. Christensen(OSU), Changk H. Oh and Eung s. Kim(INL)
P05N30	<b>Assessment of SPACE Code for Multiple Failure Accident: 1% Cold Leg Break LOCA with HPSI Failure at ATLAS Test Facility</b> Jong Hyuk LEE, Seung Wook LEE, and Kyung-Doo Kim(KAERI)
P05N31	<b>Evaluation of Conceptual Heat Exchanger Design for Passive Containment Cooling System of SMART</b> Min-Ki Kim and Soon Joon Hong(FNC Tech.), Young In Kim and Seok Kim(KAERI)
P05N32	<b>Development of Platform to Compare Different Wall Heat Transfer Packages for System Analysis Codes</b> Min-Gil Kim, Won Woong Lee, and Jeong Ik Lee(KAIST), Sung Gil Shin(HYU)
P05N33	<b>Sensitivity Analysis by Variation of Thermal-Hydraulic Parameters for Wolsong Unit 2 Reactor</b> SungChang You(KHNP CRI)
P05N34	<b>Sensitivity Analysis by Variation of Thermal-Hydraulic Parameters of Wolsong-3, 4</b> SungChang You(KHNP CRI)
P05N35	<b>Transient Analysis for Total Loss of Feed Water Scenario Due to Postulated Feed Line Breaks in Both Steam Generators</b> Seyun Kim and Minhee Kim(KHNP CRI)
P05N36	<b>Sensitivity Studies on Semiscale Natural Circulation Phenomena in Degraded Steam Generator Heat Transfer Area with SPACE Code</b> Seyun Kim and Minhee Kim(KHNP CRI)
P05N37	<b>The Sensitivity Analysis of Axial Pressure Tube Creep Profile for Dryout Power in PHWR</b> Euseung Ryu and Youngae Kim(KHNP CRI)
P05N38	<b>Sensitivity Analysis of Onsite Atmospheric Dispersion Factor in Westinghouse type NPP in KOREA</b> Seung Chan LEE, Duk Joo YOON, and Dong Soo SONG(KHNP CRI)
P05N39	<b>Heat Transfer and Impact Load of Steel and Concrete Double Containment</b> Taesoon kwon and Choeng-Ryul Choi(KAERI)
P05N40	<b>Effects of Core Cavity on a Flow Distribution</b> TaeSoon Kwon and Kihwan Kim(KAERI)
P05N41	<b>Preliminary Study of Steam Generator Water Level Tracking by Three Different Methods Using RELAP5/MOD3</b> Ki Moon Park and Jeong Ik Lee(KAIST)

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10. 27 (목)  
- 28 (금)

## 중대사고 (Severe Accident) – POSTER

| 좌장 박래준(Rae-Joon Park), 박창환(Chang Hwan Park)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P05001 **Parametric Analyses of MCCI for SMART Using MELCOR**  
Sang Ho Kim, Jong Hwa Park, Hwan Yeol Kim, and Rae Joon Park(KAERI)
- P05002 **Assessment of the Negative-Impact Following Implementing the RCS Depressurization Strategy During SBO**  
Myungjoon Kim, Jungmin Shin, and Jaehwan Park(KHNP CRI)
- P05003 **Modeling of Centrifuge Filtration System for Severe Accident Source Term Treatment**  
Shuchang Liu and Mansung Yim(KAIST)
- P05004 **Effect of Operating Pressure on Hydrogen Risk in Filtered Containment Venting System**  
Young Su Na, Song-Won Cho, and Kwang Soon Ha(KAERI)
- P05005 **Accident Analysis of Chinese CPR1000 in Response to Station Blackout**  
Juyoul Kim(FNC Tech.), Anthonie Cilliers(NWU)
- P05006 **Effect for Recovery of the Containment Spray System to the Release of Cesium**  
Mi Ro Seo(KHNP CRI)
- P05007 **Development of Aerosol Decontamination Factor Evaluation Method for Filtered Containment Venting System**  
Jae Bong Lee, Sung il Kim, Jaehoon Jung, Kwang Soon Ha, and Hwan Yeol Kim(KAERI)
- P05008 **Evaluation for In-Vessel Retention Capabilities with In-Vessel Injection and External Reactor Vessel Cooling**  
Jeong Seong Lee, In Chul Ryu, and Young Tae Moon(KEPCO E&C)
- P05009 **Effects of B4C Control Rod Degradation Under Severe Accident**  
Siwon Seo(ACT Co., Ltd.), Sanggil Park(ACT Co., Ltd.), and Sangku Han(ACT Co., Ltd.)
- P05010 **A Study on the Requisite Information for Severe Accident Management**  
Park Sunhee, Ahn Kwang-II, and Kim Jae-Hwan(KAERI)
- P05011 **Three-dimensional Two-way Coupling CFD-DEM Simulation of Particle Sedimentation in Severe Accident**  
Byoungcheol Hwang and Hyun Syun Park(POSTECH)
- P05012 **Systems Engineering (SE) Approach of Developing A Passive Safety Injection System (PSIS) to Cope with APR1400 Extended Station Black-Out (SBO) Accident Using RELAP5**  
Shiran Taher and S. J. Oh(KINGS)
- P05013 **Preliminary Study for Application of the New Safety Goal Related with the Limitation of Cs-137 Release**  
Mi Ro Seo and Tae Young SHIN(KHNP CRI)
- P05014 **Review on behaviors of major fission product species for source term estimation**  
Haeseong Kim(ETHZ), Sanggil Park(ACT Co., Ltd.), Jaeyoung Lee(HGU)
- P05015 **Comparison of Iodine Behavior in a Containment's Sump Water and in a FCVS's Pool**  
Sojin Shim and Jaeyeong Lee(HGU), Sanggil Park(ACT Co., Ltd.)
- P05016 **Introduction to Flow Visualization System in SPARC Test Facility**  
Wooyoung Lee, Youngsu Na, and Seongwan Hong(KAERI), Simon Song(HYU)
- P05017 **Effects of New MCCI Models Implemented in MAAP5 on MCCI in NPP Application**  
Byung Jo Kim, In Chul Ryu, and Young Tae Moon(KEPCO E&C)
- P05018 **Validation of the Thermal-Hydraulic Model in the SACAP Code with the ISP Tests**  
Soon-Ho Park, Dong-Min Kim, and Chang-Hwan Park(FNC Tech.)
- P05019 **Large Scale Experiments to Capture Aerosol Particles Released from NPP in a Severe Accident**  
Ifan Younus, JongWook Go, and ManSung Yim(KAIST)

- P05020 **Extended Station Blackout Analyses of an APR1400 with MARS-KS**  
Woongbae Kim, HyungWook Jang, Seungjong Oh, and Sangyon lee(KINGS)
- P05021 **Preliminary H<sub>2</sub> Combustion Analysis in the Containment of APR1400 for SBLOCA Accident using a Multi-Dimensional H<sub>2</sub> Analysis System**  
Hyung Seok Kang, Jongtae Kim, Sang-Baik Kim, and Seong-Wan Hong(KAERI)
- P05022 **Numerical Simulation of Hydrogen Behavior in the OECD-THAI HM-2 Experiment with Commercial Code**  
Donghyun Cho and Jongkwang Lee(Hanbat Nat'l Univ), Hanbee Na and Jihun Kim(KINS)

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10. 27 (목)  
- 28 (금)

### 확률론적안전성평가 (PSA) – POSTER

I 좌장 김도형(Dohyoung Kim), 방기인(Kiin Bahng)

I 발표장소 2층, 3층 로비

I 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

I 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P05P01 **A Study on Low Power and Shutdown Level 2 PSA for APR1400 DC Project**  
Tae-Jin Kim and Han-Sang Kim(KHNP CRI)
- P05P02 **Quantitative Safety Impact of Severe Accident Management System for EU-APR during Low Power Shutdown Operation**  
Keunsung Lee and Do Hyun Hwang(KHNP CRI), Hyun-bin CHANG(FNC Tech.)
- P05P03 **An Assessment for Emergency Preparedness Plan in Hanul Nuclear Power Plant**  
Sunghyun Park and Moosung Jae(HYU)
- P05P04 **Single Point Vulnerability Analysis of Automatic Seismic Trip System**  
Seo Bin Oh, Soon Il Chung, and Yong Suk Lee(FNC Tech.), Byung Pil Choi(KHNP CRI)
- P05P05 **A Study on Fission Product Model Comparison between MAAP4 and MAAP5**  
Tae-young Shin and Mi Ro Seo(KHNP CRI)
- P05P06 **Comparative Study on Atmospheric Dispersion Module of Level 3 PSA**  
Dahye Kwon, Misuk Jang, Hyun Sik Kang, and Seoung Rae Kim(NESS)
- P05P07 **An Assessment for A Filtered Containment Venting Strategy Using Decision Tree Models**  
Hoyoung Shin and Moosung Jae(HYU)
- P05P08 **Seismic Margin Assessment for Research Reactor using Fragility based Fault Tree Analysis**  
Shinyoung Kwag, Jinho Oh, Jong-Min Lee, and Jeong-Soo Ryu(KAERI)
- P05P09 **Current Research Status of KHNP for Site Risk**  
Kyemin Oh, Ho-Jun Jeon, Ki-In Bahng, and Jang-Hwan Na(KHNP CRI)
- P05P10 **Analysis of Multiple Spurious Operation Scenarios for Decay Heat Removal Function of CANDU Reactors**  
Youngsueng Lee, Yeon-kyoung Bae, and Myungsu Kim(KHNP CRI)
- P05P11 **Numerical Study to Find Mechanisms Behind the Spread of Hot Gases and Smoke in a Multi-room Fire**  
Gong Hee Lee(KINS)
- P05P12 **Review of Fire-Induced Multiple Spurious Operation Scenarios at a Pilot Plant**  
Kwang Hong Kim, Jai Ho Lee, and Do Hwan Lee(KHNP CRI)
- P05P13 **Low Power Shutdown PSA for CANDU Type Plants**  
Yeon Kyoung Bae and Myung Su Kim(KHNP CRI)
- P05P14 **A Study on the Risk Reduction Effect by MLCS(Mid-loop Level Control System) of EU-APR using the Low-Power and Shutdown PSA Result**  
Keunsung Lee and Sunmi Choi(KHNP CRI), Eden Kim(FNC Tech.)

- P05P15 **Numerical Analysis of Loss of Residual Heat Removal System (RHRS) during Mid-Loop Operation for Hanul NPP Units 1&2**  
Sook Kwan Kim, Senog Gyu Park, and Sang Koo Ha(ACT Co., Ltd.)
- P05P16 **Literature Survey on Technical Issues and Insights of Multi-Unit PSA**  
Sejin Baek, Soyoung Park, and Gyunyoung Heo(KHU)
- P05P17 **Sensitivity Studies on Revised PSA Model of KHNP Nuclear Power Plants**  
Hyun-gyo Lee, Seok-won Hwang, and Tae-young Shin(KHNP CRI)
- P05P18 **An Estimation of Human Error Probability of Filtered Containment Venting System Using Dynamic HRA Method**  
Seunghyun Jang and Moosung Jae(HYU)

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10. 27 (목)  
- 28 (금)

### 안전현안 (Safety Issues, TH Phenomena) – POSTER

| 좌장 윤덕주(Duk-joo Yoon), 윤병조(Byongjo Yun)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P05Q01 **A Three-Dimensional Pin-Wise Analysis for CEA Ejection Accident**  
GuenTae Park, MinHo Park, JinWoo Park, KilSup Um, and TongSoo Choi(KEPCO NF)
- P05Q02 **Analysis of Pressure Transients in Safety Injection(SI) Piping for the Opening Cause of SKN 3 Safety Relief Valves**  
Suk-Ho Lee, Sang-Gyu Lim, and Han-Gon Kim(KHNP CRI)
- P05Q03 **Design of Test Facility to Evaluate Boric Acid Precipitation Following a LOCA**  
Jeong-kwan Suh(KHNP CRI), Yong-jae Song(FNC Tech.)
- P05Q04 **Evaluation of Flood Level under Main Feedwater Line Break Accident using GOTHIC Computer Code and Analytical Calculation by ANSI 56.11.**  
Keon Yeop Kim, Jae Won Park, and Woo Jae Jeon(FNC Tech.)
- P05Q05 **Assessment of Analytic Waterhammer Pressure Model of FAI/08-70**  
Ju Yeop Park, Seung Hun Yoo, and Kwang Won Seul(KINS)
- P05Q06 **Statistical Hot Channel Factor and Safety Limit CHFR/OFIR**  
Byeonghee Lee and Suki Park(KAERI)

## 6A

10. 27 (목)

## 방사선 방호 및 영향 해석 (Radiation Protection and Effect Analysis)

I 좌장 신창호(Chang Ho Shin), 김재천(Jae Cheon Kim)

I 발표장소 204 (2층)

## 초청발표

09:00

An Overview of Level 3 PSA Technology Addressing Domestic Applications  
Seok Jung Han(KAERI)

09:30

Comparison of Radiation Dose Rates with the Flux to Dose Conversion Factors Recommended in ICRP-74 and ICRP-116  
Hae Sun Jeong, A Reum Kil, Jo Eun Lee, Hyo Joon Jeong, Eun Han Kim, Moon Hee Han, and Won Tae Hwang(KAERI)

09:50

A Development of Advanced Rigorous 2 Step System for the High Resolution Residual Dose Evaluation  
Do Hyun Kim, Jong Woo Kim, Jea Hyun Kim, Jae Young Lee, and Chang Ho Shin(HYU),  
Song Hyun Kim(Kyoto University)

10:10

Proton Irradiation Effects on the Properties of Silicon Wafer  
Gihyun Kwon and Chansun Shin(Myongji Univ.), Gwang-Min Sun(KAERI)

10:30

Coffee Break

10:50

Preliminary Study for 3D Radon Distribution Modelling in the Room  
ChoongWie Lee and HeeReyoung Kim(UNIST)

11:10

Analysis of Proton Induced Material Damage Using the DPA Cross-Sections Based on NRT and BCA-MD Models  
Kyung-O Kim, Gyuhong Roh, and Byungchul Lee(KAERI)

11:30

Radiation Hardening and Verification Procedure for Compact Flip-Flop Design  
Inyong Kwon and Seung Hwan Sung(KAERI)

11:50

Study on Neutron Spectrum Unfolding Using Boron and Cadmium Cover to Acquire Additional Activation Reactions  
Che Wook Yim, Do Hyun Kim, and Chang Ho Shin(HYU), Jiseok Kim(KAERI)

## 6B

10. 28 (금)

## 방사선 검출 및 이용 (Radiation Detection and Utilization)

I 좌장 이승욱(Seung Wook Lee), 엄영랑(Young Rang Uhm)

I 발표장소 204 (2층)

## 초청발표

13:30

Linear Analysis of X-ray Imaging  
Ho Kyung Kim(PNU)

14:00

A Simple Method of Spectrum Processing for  $\beta$ -ray Measurement without Pretreatment  
Jun Woo Bae and Hee Reyoung Kim(UNIST)

14:20

Monte Carlo Analysis of Megavoltage X-ray Interaction-Induced Signal and Noise in Detectors for Container Inspection  
Jinwoo Kim, Jiwoong Park, Junwoo Kim, Dong Woon Kim, and Ho Kyung Kim(PNU), Chang Hwy Lim(KRISO)

14:40

A Study on the Response Characteristics of a Fiber-Optic Radiation Sensor Model Based on Cerenkov Principle  
Hwa Jeong Han, Beom Kyu Kim, and Byung Gi Park(SCHU)

15:00

Coffee Break

- 15:20 **Development of Commercial-Scale Fission Mo-99 Production System**  
Seung-Kon Lee, Suseung Lee, Soon-Bog Hong, Kyung-Duk Jang, Ul Jae Park, and Jun Sig Lee(KAERI)
- 15:40 **Preparation of the Electroplated Ni and Co Films for Applying Betavoltaic Battery, and Mossbauer Source**  
Young Rang Uhm, Sang Mu Choi, Jin Joo Kim, Jong Bum Kim, Kwang Jae Son, and Jinte Hong(KAERI)
- 16:00 **Radioactive Particle Tracking Technique with Concentrated <sup>68</sup>Ga Source for Visualization of Water Flows in Digester with Vertical Impeller**  
Jang-Guen Park, Jinho Moon, JaeCheong Lim, and Sung-Hee Jung(KAERI)
- 16:20 **Development of Small-Scale Electroplating System for Ni-63 Electroplating Onto Ni Foil**  
Jin Joo Kim, Sang Mu Choi, Kwang Jae Son, and Jintae Hong(KAERI)

## 6C

10. 27 (목)  
- 28 (금)

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

| 좌장 정효준(Hyojoon Jeong), 박창수(Chang Su Park)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P06C01 **Sensitivity Analysis of the Fuel Shape in the Criticality Analysis**  
Hyunsik Kang, Misuk Jang, and Sungrae Kim(NESS)
- P06C02 **The Periodic Measurement of the Airborne Radioactivity in Controlled Area of KOMAC**  
Jeong-Min Park, Sung-Kyun Park, Yi-Sub Min, and Yong-Sub Cho(KAERI)
- P06C03 **A Self-Assessment of the Effectiveness to Control Radiation Sources in Sierra Leone**  
Umaru Remilekun Bun-Tejan(KAIST), Byung Soo Lee(KINS)
- P06C04 **Identification of Risk Aversion Factor for Radiation Workers in Korea**  
Abdulbagi Fadul(KAIST), Seong Na(KINS)
- P06C05 **Measurement Uncertainty for the Determination of Uranium in Urine by ICP-MS**  
Jichang Ryu, Seunjae Lee, Jeunggun Seol, and Namchan Cho(KEPCO NF)
- P06C06 **Evaluation of Gaseous and Volatile Rare Isotopes from UCx Actinide Target 1mA of RAON ISOL System**  
Jae Cheon Kim and Jin Ho Lee(IFS), Yeon Gyeong Choi(DU)
- P06C07 **Assumptions and Policy Decisions for Vital Area Identification Analysis**  
Myungsu Kim, Yeon-kyoung Bae, and Youngseung Lee(KHNP CRI)
- P06C08 **Radiation Shielding Analyses of A 10 MeV, 15kW LINAC for Electron Beam and X-ray at KACST**  
Won Gu Kang, Seong Hwan Pyo, Bum Soo Han, and Chang Mu Kang(EB Tech), T.S. Alkhurajji(KACST)
- P06C09 **A Preliminary Shielding Study on the Integrated Operation Verification System in the Head-End Hot-Cell of the Pyro-Processing**  
Jinhwan Kim, Gyuseong Cho, and Yewon Kim(KAIST), Sehwan Park and Seongkyu Ahn(KAERI)
- P06C10 **Neutron Shielding Calculation of a Beam Stopper for the Thermal-TAS at HANARO Using MCNP6**  
Byoungil Jeon and Jongsoon Kim(KAERI)
- P06C11 **Radiation Safety Analysis for Low Current Irradiation Facility at KOMAC**  
Yi-Sub Min(KAERI)
- P06C12 **Development of Public Training System for Emergency Exercise Using Virtual Reality Technology Based on Radioactive Release Accident**  
Byung Il Lee, Seong Jun Park, Dewhey Lee, Sub Lee Song, and Younwon Park(BEES, Inc)
- P06C13 **Draft Guidance for Protective Action Strategies Development**  
Sang Hyun Park, Seung Young Jeong, and Wanjo Kim(KINS)



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- P06C14 **Review of Virtual Reality Technology Application in Fire and Medical Exercise for Development of VR Based Radiological Emergency Exercise System**  
Sub Lee Song, Byung Il Lee, Seong Jun Park, Dewhey Lee, and Younwon Park(BEES, Inc)
- P06C15 **Radiological Consequence Analyses Following a Hypothetical Severe Accident in Japan**  
Juyub Kim and Juyoul Kim(FNC Tech.)
- P06C16 **Measurement of Activity Concentrations of  $^{40}\text{K}$ ,  $^{232}\text{Th}$  and  $^{238}\text{U}$  in TSP Aerosols and the Associated Inhalation Annual Effective Radiation Dose to the Public in Gosan Site, Jeju**  
Chung Hun Han, Youn Hyun Park, and Jae Woo Park(JNU)
- P06C17 **Parameter Data on the Radiocesium Transfer to Korean Staple Food Crops Following a Nuclear Accident**  
Yong-Ho Choi, Kwang-Muk Lim, In Jun, Byung-Ho Kim, and Dong-Kwon Keum(KAERI)
- P06C18 **Societal Statistical Data for a Food Chain Modeling of the UAE**  
Maitha Al Fandi Al Shamsi, Sung-yeop Kim, and Ho-Gon Lim(KAERI)
- P06C19 **Contribution of the Exposure Pathways after a Severe Accident**  
Joeun Lee, Wontae Hwang, and Moonhee Han(KAERI), Moosung Jae(HYU)
- P06C20 **The Effect of Dose Rate on Low-Dose Hyper-Radiosensitivity in Vitro**  
GeonMin Kim and EunHee Kim(SNU)
- P06C21 **Implication of Fractionated Dose Exposures in Therapeutic Gain**  
Hye-Jin Kim, Min-Ho Lee, and Eun-Hee Kim(SNU)
- P06C22 **Current Amplification Characteristics of BJT on Fast Neutron Irradiation**  
Sung Ho Ahn, Gwang Min Sun, and Hani Baek(KAERI)
- P06C23 **Simulation of Neutron-Induced Prompt Gamma-ray Spectra Emitted from Fake Tungsten Gold Bar**  
Ki-Man Lee and Gwang-min Sun(KAERI)
- P06C24 **Buckling Analysis for the Shape of the Thin-Tube Support of RTG**  
Jong Han Park, Kwang Jae Son, Jintae Hong, and Jongbum Kim(KAERI)
- P06C25 **Decay Time Measurement for Different Energy Depositions of Plastic Scintillator Fabricated by High Temperature Polymerization Reaction**  
Cheol Ho Lee, Jaebum Son, Sangmin Lee, Tae Hoon Kim, and Yong-Kyun Kim(HYU)
- P06C26 **Performance Test for Neutron Detector and Associated System Using Research Reactor**  
Seongwoo Yang, Sungjae Park, and Mansoon Cho(KAERI), Sehyun Oh(USERS), Hocheol Shin(KHNP CRI)
- P06C27 **A Novel Method for Alpha Dosimetry Using Peeled-Off Gafchromic EBT3 Films**  
Kwang-Ho Lee and Eun-Hee Kim(SNU)
- P06C28 **Measurement of Neutron Energy Spectrum Emitted by Cf-252 Source Using Time-of-Flight Method**  
Cheol Ho Lee, Jaebum Son, Tae Hoon Kim, Sangmin Lee, and Yong-Kyun Kim(HYU)
- P06C29 **Validity and Utilization of the Out-Pile Testing Facilities at HANARO**  
Kee-Nam Choo, Man-Soon Cho, Sung-Woo Yang, Yoon-Taek Shin, Seng-Jae Park, Byung-Hyuk Jun, and Myong-Seop Kim(KAERI)
- P06C30 **Two Dimensional Verification of the Dose Distribution of Gamma Knife Model C Using Monte Carlo Simulation with a Virtual Source**  
Tae-Hoon Kim, Yong-Kyun Kim, Cheol Ho Lee, Jaebum Son, Sangmin Lee, Dong Geon Kim, Joonbum Choi, and Jae Yeong Jang(HYU), Hyun-Tai Chung(SNUH)
- P06C31 **The Calibration Procedure of the Radiation Monitoring System Installed in Radiation Controlled Area of KOMAC**  
Sung-Kyun Park, Yi-Sub Min, Jeong-Min Park, and Yong-Sub Cho(KAERI)
- P06C32 **Production of the Large-Area Plastic Scintillator for Beta-ray Detection Using Epoxy Resin**  
Jong Soo Nam, Yong Seok Choi, Sang Bum Hong, Bum Kyung Seo, Jei Kwon Moon, and Jong Won Choi(KAERI)
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## 7A

10. 27 (목)  
- 28 (금)

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

I 좌장 오병훈(Byung-Hoon Oh), 허성렬 (Sung-Ryul Huh)

I 발표장소 2층, 3층 로비

I 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

I 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P07A01 **RF Phase Scan for Beam Energy Measurement of KOMAC DTL**  
Han-Sung Kim, Hyeok-Jung Kwon, Seong-Gu Kim, Seok-Geun Lee, and Yong-Sub Cho(KAERI)
- P07A02 **Test Bench of the Microwave Ion Source at KOMAC**  
Hyeok-Jung Kwon, Han-Sung Kim, Dae-Il Kim, Seok-Geun Lee, and Yong-Sub Cho(KAERI)
- P07A03 **Experimental Studies of Ar<sup>n+</sup> Ionization Using an Electron Beam Ion Source**  
Seunghyun Lee, Han-Sung Kim, Hyeok-Jung Kwon, and Yong-Sub Cho(KAERI)
- P07A04 **The Pressure and Magnetic Flux Density Analysis of Helical-Type DC Electromagnetic Pump**  
Geun Hyeong Lee and Hee Reyoung Kim(UNIST)
- P07A05 **Improvement of Control System Based on Labview for Beam Emittance Measurement**  
Dae-Il Kim, Jae-Ha Kim, Hyeok-Jung Kwon, Han-Sung Kim, Seok-Geun Lee, and Yong-Sub Cho(KAERI)
- P07A06 **Calculation of the Beam Characteristics Variation Induced by Energy Degradar at Low-Flux Proton Beamline**  
Sang-pil Yoon, Hyeok-jung Kwon, and Han-sung Kim(KAERI)
- P07A07 **Current Status of the Daejeon Ion Accelerator Complex at KAERI**  
Sung-Ryul Huh, Dae-Sik Chang, Churl-Kew Hwang, Seok-Kwan Lee, Jeong-Tae Jin, and Byung-Hoon Oh(KAERI)
- P07A08 **Development of the BPM/BLM DAQ System for KOMAC Beam Line**  
Young-Gi Song, Jae-Ha Kim, Sang-Pil Yun, Hyeok-Jung Kwon, and Yong-Sub Cho(KAERI)
- P07A09 **Implementation of the Save and Restoration Application for KOMAC Operation**  
Jae-Ha Kim, Young-Gi Song, Hyeok-Jung Kwon, and Yong-Sub Cho(KAERI)
- P07A10 **Development of the Raman Lidar System for Remote Hydrogen Gas Detection**  
In Young Choi, Sung Hoon Baik, Seung Kyu Park, Nak Gyu Park, and Young Soo Choi(KAERI)
- P07A11 **High Heat Flux Testing of Tungsten PFCs for the Fusion Reactor Development**  
Suk-Kwon Kim, Seong Dae Park, Hyung Gon Jin, Eo Hwak Lee, Jae-Sung Yoon, and Dong Won Lee(KAERI)
- P07A12 **Corrosion Test with Developed ARAA in the Experimental Loop for a Liquid Breeder**  
Jae Sung Yoon, Yang Il Jung, Suk Kwon Kim, Eo Hwak Lee, Hyung Gon Jin, and Dong Won Lee(KAERI),  
Hyeon Gon Lee(NFRI)
- P07A13 **HCCR TBS Steady State Calculation by Using GAMMA-FR & MELCOR**  
Hyung Gon Jin(KAERI), Mu-Young Ahn(NFRI)
- P07A14 **Preliminary Design Progress of the HCCR TBM for ITER Testing**  
Dong Won Lee, Sung Dae Park, Dong Jun Kim, and Suk Kwon Kim(KAERI), Mu-Young Ahn(NFRI)
- P07A15 **Preparation of 3D Printed Divertor Mock-Up Design and Fabrication**  
Dong Won Lee, Sung Dae Park, Dong Jun Kim, Suk Kwon Kim, and Eo Hwak Lee(KAERI)
- P07A16 **Consideration of the Construction Code for TBM-Body in ASME BPVC**  
Dong-Jun Kim, Suk-Kwon Kim, Seong Dae Park, and Dong Won Lee(KAERI), Yun-Jae Kim(KU)
- P07A17 **Simulation of Neoclassical Tearing Mode Stabilization Via Minimum Seeking Method on ITER**  
Minho Park, Kyungjin Kim, Donghyun Na, Chulsik Byun, and Yongsu Na(SNU), Minhwa Kim(FNC Tech.)

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- P07A18**     **HCCR TBS LOCA & ICE into Small Confined Volume**  
Hyung Gon Jin(KAERI), My-Young Ahn(NFRI)
- P07A19**     **Development Status of the Integrated Tokamak Simulator for K-DEMO**  
Jisung Kang, Jongjin Wang, and Yongseok Hwang(SNU), Laurent Jung(NFRI)
- P07A20**     **Heat Transfer Characteristics of Breeding Zone in TBM of KOREA**  
Seong Dae Park, Dong Won Lee, and Dong Jun Kim(KAERI), Mu-Young Ahn(NFRI)
- P07A21**     **Application of Explosion Area Control Volume in MELCOR Code for Safety Analysis of Hydrogen and Dust Explosion Accident in ITER**  
Soo Min Lim, Sung Bo Moon, and In Cheol Bang(UNIST)
- P07A22**     **Preliminary Analysis of K-DEMO Thermal Hydraulic System Using MELCOR; Parametric Study of Hydrogen Explosion**  
Sung Bo Moon, Soo Min Lim, and In Cheol Bang(UNIST)

## 8A 10.27 (목)

### 정비1 (Maintenance1)

| 좌장 정성규(Sunggyu Jung), 장희승(Hee-Seung Chang)

| 발표장소 202 (2층)

- 09:00 **Reliability Centered Maintenance (RCM) Methodology and Application to the Shutdown Cooling System for APR-1400 Reactors**  
Mohamed Faragalla, Yong-Kwan Lee, Emmanuel Efenji, Ibrahim Alhammadi, and M.Awwal Arigi(KINGS)
- 09:20 **Study on the Operating Strategy of HVAC Systems for Nuclear Decommissioning Plant**  
Sunghwan Kim, Sungheum Han, and Jaegon Lee(KHNP CRI)
- 09:40 **CFD Analysis for Advanced Integrated Head Assembly**  
Won Ho Jo, Tae Kyo Kang, Yeon Ho Cho, and Hyun Min Kim(KEPCO E&C)
- 10:00 **Online Monitoring of Large Centrifugal Pumps in Nuclear Power Plants**  
Emmanuel Efenji, Mohamed Faragalla, Awwal Arigi, and Yong-kwan Lee(KINGS)
- 10:20 **Pilot Implementation of High Band Frequency Vibration Analysis in Nuclear Power Plant**  
Hee-Seung Chang and Yoo-Soo Shin(KHNP)
- 10:40 **Coffee Break**
- 11:00 **Preliminary Study for Development of Welds Integrity Verification Equipment for the Small Bore Piping**  
Geun Suk Choi, Jong Eun Lee, Jung Hoon Ryu, Kyoung Youn Cho, and Myoung Sung Sohn(KEA), Sanghoon LEE(KIMS), Gi Ho SUNG(SI(SIM)), Hong Seok CHO(KEPCO KPS)
- 11:20 **Common Cause Failure: Enhancing Defences against Root Cause and Coupling Factor**  
Poorva Kaushik(KAIST), Sok Chul KIM(KINS)
- 11:40 **Influence of Non-Safety Important Components on Maintenance Rule**  
Tae Young Ju and Wang Bae Kim(KHNP CRI)
- 12:00 **SPV Analysis of CEDMCS in Advanced Power Reactors**  
Awwal Mohammed Arigi, Yong-kwan Lee, Emmanuel Agwanyang Efenji, and Mohamed Mahmoud Faragalla(KINGS)

## 8B 10.28 (금)

### 건설/내진/수화학 (Construction/Seismic/Chemistry)

| 좌장 이홍표(Hong-Pyo Lee), 조성국(Sung Gook Cho)

| 발표장소 202 (2층)

- 09:00 **European Protection Principles Against External Hazards**  
Anna Gallinat(MAEG)
- 09:20 **Comparative Evaluation of In-Cabinet Amplification Factor for Devices Mounted in Electrical Cabinets**  
Sung Gook Cho, Gihwan So, and Min Soo Han(INNOSE TECH), Dookie Kim(Kunsan National University)
- 09:40 **Estimation of Typhoon Wind Hazard Curves for Nuclear Sites**  
Young-Sun Choun and Min-Kyu Kim(KAERI)
- 10:00 **Evaluation of Impact Force of Missile Filled with Fluid**  
Hyuk-Kee Lee(Hyundai), Seung-Eock Kim(Sejong Univ.)
- 10:20 **Optimization Strategy of the APR+ BOP Technical Specifications**  
Yoon Sang Cho, Jae Gon Lee, and Sung Heum Han(KHNP CRI)
- 10:40 **Coffee Break**

- 11:00 **Stundy on the Performance Diagram of Multi-Lead Core Rubber Bearing for NPPs**  
Hong-Pyo Lee and Myung-Sug Cho(KHNP CRI), Kwang-Seok Jang(UNISON-E TECH.)
- 11:20 **Seismic Load Resistance of Reinforcing Steels**  
Joerg Moersch(MAEG)
- 11:40 **Effect of Surface Oxidation of ZIRLO Fuel Cladding Tube on Crud Deposition**  
Moon Sic Park, Seung Heon Baek, Hee-Sang Shim and Do Haeng Hur(KAERI), Jung Gu Kim(SKKU)

## 8C 10. 28 (금)

### 정비2/설계 (Maintenance2/Design)

| 좌장 김성민(Sungmin Kim), 원세열(Seyoul Won)

| 발표장소 202 (2층)

- 13:30 **Optimization of Maintenance for the Turbine Lube Oil System in NPP**  
Emmanuel Efenji, Hoon Lee, Hassan Mostafa, Anh Le, Jun Choi, and Yong-kwan Lee(KINGS)
- 13:50 **A Study on Degree of Conservatism of PZR Inventory during Event Analysis**  
Sang Seob Lee, Min Soo Park, Jae Yong Huh, and Gyu Cheon Lee(KEPCO E&C)
- 14:10 **Application of Reliability Centered Maintenance (RCM) for CVCS- Charging System**  
Mohamed Faragalla, Osama Rezk, Victor Ouma, Hilda Mpakany, Jun-ki Baik, Mohammad Gomaa, Vaysidin Saidov, and Yong-Kwan Lee(KINGS)
- 14:30 **The Safety Analysis to Increase for the Water Temperature of the HPECC in WSNPP-1**  
Sungmin Kim, Euseung Ryu, and Sungchang You(KHNP CRI), Dongsik Jin(ACT Co., Ltd.)=
- 14:50 **A Study on the Flow Characterization in the Reactor Cavity**  
Ho Jung Lee, Kwang Jeok Ko, Sung Hwan Kim, Min Gyu Kim, Yeon Ho Cho, and Hyun Min Kim(KEPCO E&C)
- 15:10 **Coffee Break**
- 15:30 **Evaluation of the Planned Outage Durations in EU-APR**  
Byung Joon Jung and Keun Sung Lee(KHNP CRI)
- 15:50 **Improvement of Engineering Work Efficiency through System Integration**  
Sangdae LEE, Sunghan JO, and Jinwoo HYUN(KHNP CRI)

## 8D 10. 27 (목) - 28 (금)

### 건설,정비,설계&내진(Construction,Maintenance,Design&Seismic) – POSTER

| 좌장 원세열(Seyoul Won), 주광호(Kwangho Joo)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P08D01 **Characteristic Assessments of the Phased Array UT System Developed by KHNP**  
Chan-Hee Cho, Dong-Hyun Jee, Tae-Hun Lee, and Hyun-Ju Yoo(KHNP CRI)
- P08D02 **Evaluation of Effective Diaphragm Area for Pneumatic Actuator**  
Hogeun Ryu, Bongsub Han, and Juhyoung Seon(SSI)
- P08D03 **Control Performance Enhancements of Control Valves In Nuclear Power Plants**  
Hogeun Ryu, Bongsub Han, and Juhyoung Seon(SSI)
- P08D04 **APR1400 Electrical Power System Conformance to SECY-91-078**  
Che-wung Ha and Yun-ho Kim(KHNP CRI)

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- P08D05     **Search and Retrieval of Foreign Objects for the Steam Generator of Wolsung NPP Unit 1**  
Woo-tae Jeong and Kyung-ho Lee(KHNP CRI)
- P08D06     **Evaluation of the Use of Ultra Low Sulfur Diesel Oil for an Emergency Diesel Generator**  
Youngchul Yun and Woogeun Chung(KHNP CRI)
- P08D07     **A Study on the Configuration of the Electric Power System in the Defueled Condition**  
Hee Taek Lim and Eui Jong Lee(KHNP CRI)
- P08D08     **Vibration Analysis for Steam Dryer of APR1400 Steam Generator**  
Sung Heum Han and Doyoung Ko(KHNP CRI), Minki Cho(DOOSAN)
- P08D09     **Fatigue Life of Stainless Steel in PWR Environments with Strain Holding**  
Taesoon Kim and Kyuhyung Kim(KHNP CRI), Myeonggyu Seo and Changheui Jang(KAIST)
- P08D10     **The Development of a Snubber Management System for Welds in Nuclear Power Plants**  
Hyun Ju Yoo, Yong-Bae Cho, and Yoo Sung Kim(KHNP CRI)
- P08D11     **Correlation between Fuel Rack Sticking and Unintentional Re-Starting of EDG**  
Young Cheol kim, Woo geun Chung, Seung Hee Kang, and Myeong hoon Kim(KHNP CRI)
- P08D12     **Parametric Study for MOV Performacne Improvement Using PPM Program**  
Seungho Lee(SOOSAN INDUSTRIES)
- P08D13     **Evaluation of Design Basis Pipe Break Loads of RCS Components in APR1400**  
In Yong Kim, Jung Yong Kim, Byung Chun Hwang, Jang Hwan Jheon, Ki Kwang Sung, and Hyun Min Kim(KEPCO E&C)
- P08D14     **Characteristic Testing of Eddy Current Array Coil for Steam Generator Tubes of the Nuclear Power Plant**  
Donghyun Jee, Chanhee Cho, and Taehun Lee(KHNP CRI)
- P08D15     **EU-APR Design in Compliance with EUR Grid Requirement**  
Dong-Hwan Kim and Keun-Sung Lee(KHNP CRI)
- P08D16     **Application of Standardized ITAAC to the APR1400 Design Certification**  
Deogji Kang and Yunho Kim(KHNP CRI)
- P08D17     **Method to Classify the Safety Class of Structure, System and Components in a Defueled Condition of Nuclear Power Plant**  
Dong-Hak Kim and Dang-Hee Jeon(KHNP CRI)
- P08D18     **A Study on SE Methodology for Design of Big Data Pilot Platform to Improve Nuclear Power Plant Safety**  
Junguk Shin, Jae-Min Cha, Jun-Young Kim, Sung-Ho Park, and Choong-Sub Yeom(IAE)
- P08D19     **A Study on the Cause of Failure and a Method for Improvement of Fuses**  
Yeonghwa Ji, Heemoo Heo, and Hyounggwon Kim(KHNP CRI)
- P08D20     **Highest Possible Reliability for Power Recovery in Nuclear Power Plants with Process Data Reconciliation According to VDI 2048**  
Andy Jansky(BTB Jansky), Si-Won Seo(ACT Co., Ltd.)
- P08D21     **A Study on Flaw Sizing and Location Estimation in Tapered Dissimilar Metal Welds on Nuclear Power Plants**  
Dongjin Lee and Yongsik Kim(KHNP CRI)
- P08D22     **A Method to Establishing Tube Plugging Criterion for Heat Exchangers with Straight Tubes**  
Hyungnam Kim(KHNP)
- P08D23     **A Seismic Analysis for Reflective Metal Insulation**  
Kyuhyung Kim and Taesoon Kim(KHNP CRI)
- P08D24     **Risk Evaluation of Helium Injection Line Operability in CANDU Shutdown System**  
Byung-Pil Choi and Eun-Chan Lee(KHNP CRI)
- P08D25     **The Improvement of PWR(OPR-1000) Local Control Pannel**  
Joo-Youl Lee, Mun-Soo Kim, Kyung-Min Kim, and Jun-Kou Lee(KHNP CRI)
- P08D26     **Modal Analysis of Main Steam Line Piping under High Energy Line Break Condition**  
Tae-Jin Kim, Seung Hyun Kim, Sang-Yun Je, and Yoon-Suk Chang(KHU)
- P08D27     **Effects of Chemistry Parameters of Primary Water Affecting Leakage of Steam Generator Tube Cracks**  
Dong Man Shin, Nam Cheoul Cho, Yong Seok Kang, and Kuk Hee Lee(KHNP CRI)
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- P08D28    **Evaluation Methodology for Void Swelling Susceptibility of APR1400 Reactor Vessel Internals for U.S. NRC Design Certification**  
Hyeong Do Kweon and Do Hwan Lee(KHNP CRI)
- P08D29    **Thermal-Hydraulic Sensitivity Study of Intermediate Loop Parameters for Nuclear Hydrogen Production System**  
Jong Hwa Jeong, Heung Nae Lee, and Jae Ho Park(KONES), Won Jae Lee(KAERI), Sang Il Lee and Yeon Jae Yoo(Hyundai)
- P08D30    **Thermal Analysis Evaluation of Spent Fuel Storage Rack for Research Reactor**  
Sangjin Lee, Jinho Oh, Jinsung Kwak, and Jongmin Lee(KAERI)
- P08D31    **Environmental Assisted Fatigue Evaluation of Direct Vessel Injection Piping Considering Thermal Stratification**  
Taesoon Kim and Dohwan Lee(KHNP CRI)
- P08D32    **Preliminary CFD Analysis for HVAC System Design of a Containment Building**  
Sung Man Son and Chungyeol Choi(ELSOLTEC), Jae Ho Choo, Moonpyo Hong, and Hyungseok Kim(KEPCO E&C)
- P08D33    **Evaluation of Damage Reduction for Piping Material in the Secondary Side of NPPs Using Pt Nanoparticles**  
Min Bum Heo, Jong Uk Kim, Byung Il Kwon, Hee Kwon Ku, and Dong Seok Lim(FNC Tech.)
- P08D34    **Long-Term Stability Evaluation for Foundation Material Using Creep Analysis**  
Oluwatosin Aderinoye Ake(KAIST), Taekmo Shim(KINS), Ik Woo(KNU), Taek gue Kwon(KHNP)
- P08D35    **Development of Air-Tight Leak Chase System for In-Service Inspection of Pool Liner**  
Jongmin Lee, Byungho Kwag, Unsoo Chung, and Jeongsoo Ryu(KAERI)
- P08D36    **Seismic Analysis Evaluation of Pneumatic Transfer System for Research Reactor**  
Sangjin Lee, Jinbok Choi, Jinho Oh, and Jongmin Lee(KAERI)
- P08D37    **Sensitivity Study of Poisson's Ratio Used in Soil Structure Interaction (SSI) Analyses**  
Seung-ju Han(KHNP CRI), Dong-Hyun You(KEPCO E&C), Jung-bum Jang and Kwan-hee Yun(KEPCO RI)
- P08D38    **Structural Integrity Evaluation for Damaged Fuel Canister of a Research Reactor**  
Jinho Oh, Jinsung Kwak, Sangjin Lee, Jongmin Lee, and Jeong-Soo Ryu(KAERI)
- P08D39    **A Probability Analysis of the Generating Cost for APR1000+**  
Gag-Hyeon Ha and Dae-Hun Kim(KHNP CRI)
- P08D40    **Calculation of Added Mass for Submerged Reactor with Complex Shape**  
Jong-Oh Sun, Gyeongho Kim, Yeon-Seok Choo, and Yeon-Sik Yoo(KAERI)
- P08D41    **Engineering Evaluation of Unanticipated Operating Event in ShinKori 1 NPP**  
Sung-Nam Choi and Tae-Hun Lee(KHNP CRI)
- P08D42    **Performance Evaluation for New Design of 37-element Fuels**  
Sungmin Kim and youngae Kim(KHNP CRI)
- P08D43    **Improved Management of Part Safety Classification System for Nuclear Power Plant**  
Jinyoung Park, Younwon Park, Heunggyu Park, and Hyochan Park(BEES, Inc)
- P08D44    **Improving the Reliability of LDP through the Divergence of Power Supply for LDP**  
Bang Sil Lee(KHNP CRI)
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## 제9분과

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

**9A**  
10. 27 (목)

### 원자력정책, 인력 및 협력 1 (Nuclear Policy, Human Resources and Cooperation 1)

| 좌장 한은옥(Eunok Han), 신익현(Ickhyun Shin)

| 발표장소 S207 (2층)

#### 초청발표

- 09:00 Is the Korean Nonproliferation Governance Prepared for Its Nuclear Upgrade to the Nxt Level?  
Jeon Bong gun(KNDA)
- 09:30 The Development of KAERI NHRD Model with Consideration of IAEA Milestone Approach  
Byongchull Noh and Hyunki Kim(KAERI)
- 10:00 Development of Capacity Building Training Programs for Nuclear R&D Personnel  
Eui Jin Lee, Youngmi Nam, Hyeseon Hwang, Eunsook Jang, Eun Ju Song, Yu Rim Jin, and Sang Ki Min(KAERI)
- 10:20 Case Study for Effectiveness Analysis on Nuclear Regulatory Infrastructure Support for Emerging Nuclear Energy Countries  
Y.E LEE, M.J BYEON, J.W YOO, J.M LEE, and J.H LIM(KINS)
- 10:40 Coffee Break
- 11:00 A Feasibility Study on Detection of Insider Threats Based on Human Bio-Signals  
Young A Suh and Man-Sung Yim(KAIST)
- 11:20 A Comparative Study on Safeguards Implementation under Bilateral Nuclear Cooperation Agreements and the IAEA Comprehensive Safeguards Agreement  
Jihye Jeon, Ki-Hyun Kim, and Young Wook Lee(KINAC)
- 11:40 Methodology for Categorization of Nuclear Material in Pyroprocessing Facility  
Chanki Lee and Sungyeol Choi(UNIST), Woo Jin Kim, Min Su Kim, and Yon Hong Jeong(KINAC)

**9B**  
10. 28 (금)

### 원자력정책, 인력 및 협력 2 (Nuclear Policy, Human Resources and Cooperation 2)

| 좌장 김효정(Hyo-Jung Kim), 이영준(Young-Joon, Lee)

| 발표장소 S207 (2층)

#### 초청발표

- 09:00 An Energy Paradigm Shift in the Era of Low Carbon  
Hong Doug Pyo(KHNP)
- 09:30 Suggestion of R&D Strategy on Nuclear Power Plant Industry  
Yeum Hagki(KETEP)
- 10:00 A Study on the Regulation Improvement Through the Analysis of Domestic and International Categorization and Licensing Process for Large Particle Accelerator  
Da-Yeong Gwon, Yeo-Ryeong Jeon, and Yong-Min Kim(Catholic University of Daegu), Nam-Suk Jung and Hee-Seock Lee(PAL)
- 10:20 Value Tree Analysis Approach for Integrated Risk Informed Decision Making: Revision of Allowed Outage Time  
Poorva Kaushik and Sok Chul Kim(KAIST)
- 10:40 Coffee Break
- 11:00 Awareness on Open R&D of the Concerned Parties and Proposal for the Future  
Geun-soon Lee, Chan Park, and Beom-soo Shim(KHNP CRI)

- 11:20 **Nigeria Long Term Energy Plan Using MESSAGE Code for Optimal Energy Utilization**  
Kabiru Abdullahi and Myung-Sub Roh(KINGS)
- 11:40 **The Net Contribution of Nuclear Power to the National Economy in Korea**  
Manki Lee, Seung-Su Kim, Jong Hee Lee, and Soo-eun Kim(KAERI)

**9C**  
**10. 27 (목)**  
**- 28 (금)**

**원자력정책, 인력 및 협력 (Nuclear Policy, Human Resources and Cooperation) – POSTER**

| **좌장** 안승호(Seung Ho Ahn), 김웅기(Woong Ki Kim)

| **발표장소** 2층, 3층 로비

| **게시시간** 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| **저자 발표시간** 10월 27일(목) 13:00 ~ 15:00

- P09C01 **The Enforcement of the E-Learning Activities under the Framework of ANENT(Asian Network for Education in Nuclear Technology): Blended Learning and E-Learning**  
Sipyu Rho, Youngmi Nam, and Hyeseon Hwang(KAERI)
- P09C02 **Role of Domestic Research Reactor to Introduce Nuclear Power in Cambodia: Assessment of Government Official's Perception**  
Sothea TIV(KAIST), Kwang Sik CHOI(KINS)
- P09C03 **Task to Training Matrix for Decommissioning Engineer on the Basis of Systematic Approach to Training Methodology**  
Jeong Keun Kwak(KHNP)
- P09C04 **The Self-Assessment of Selected Specific Infrastructure Issues for First Research Reactor in Mongolia**  
Tsembelmaa Gereltsaikhan(KAIST), Seonjae Kim(KINS)
- P09C05 **International Cooperation in the Area of Nuclear Safety Regulation: Current Status and Way Forward**  
Jeongwon Yoo, Minjeong Byeon, Jongmin Lee, and Jihwan Lim(KINS)
- P09C06 **The Effects of a Demonstration School Program on Nuclear Energy for Elementary School Students in Korea**  
Eunok Han, Seungkoo Lee, and Yoonseok Choi(KANS)
- P09C07 **A Study on the Secondary School Teacher's Perception Change for Nuclear Power through an Experiment Practice Program**  
ByungChae Lee, JuHyun Kim, JungHyun NA, DaYoung Yoo, and WoongKi Kim(KAERI)
- P09C08 **The Status of the Safeguards Implementation under the State-Level Approach at the HANARO**  
Hyunsook Kim, Byungdoo Lee, Inchuel Kim, Hyunjo Kim, Juang Jung, and Sungho Lee(KAERI)
- P09C09 **Investigation of Novel Spent Fuel Verification System for Safeguard Application**  
Haneol Lee and Man-Sung Yim(KAIST)
- P09C10 **Development of the COMPRE-A Program for Evaluating Proliferation Resistance (PR) and Physical Protection (PP) of the Nuclear Facility**  
Sukhoon Kim, Juyub Kim, and Kwangyoung Shin(FNC Tech.), Janghoon Seo, Sungsoon Jang, and Hosik Yoo(KINAC)
- P09C11 **A New Framework to Minimize Insider Threats in Nuclear Power Operations**  
Young A Suh and Man-Sung Yim(KAIST)
- P09C12 **Study on Interface between Nuclear Material Accounting System and National Nuclear Forensic Library**  
Yonhong Jeong, Jae-jun Han, Sunyoung Chang, Hyewon Shim, and Seungho Ahn(KINAC)
- P09C13 **Systems Dynamics (SD) Strategy for Small Modular Reactor (SMR) Marketing - Conquest at the MIT Energy Laboratory (Pres. MIT Energy Initiative)**  
T.H. WOO(Yonsei Univ.)
- P09C14 **Comparative Analysis of Public's Perception of Economic Feasibility and Reality for Selected Energy Sources in Korea**  
Seungkook Roh, Ik Jeong, and Kibog Lee(KAERI), Dongwook Kim(KAIST), Hyunjin Kim(KNEA)

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- P09C15**    **A Regulatory Perspective on the Performance and Reliability of Nuclear Passive Safety Systems**  
Quan Pham Trung(KAIST), Sukho Lee(KINS)
- P09C16**    **Current Status of Periodic Safety Review of HANARO Research Reactor**  
Minjin Kim, Guk-Hoon Ahn, and Choon Sung Lee(KAERI)
- P09C17**    **Review of Sodium and Plutonium Related Technical Standards in Trans-Uranium Fuel Manufacturing Facilities**  
Misuk Jang, Jong Seon Jeon, Hyun Sik Kang, and Seoung Rae Kim(NESS)
- P09C18**    **Social Cost Assessment for Nuclear Fuel Cycle Options in the Republic of Korea**  
Jieun Joo and Man-Sung Yim(KAIST)
- P09C19**    **AR Model to Estimate the Future Uranium Price**  
Sung Ki Kim, Chul Min Kim, Kwang-Rag Kim, Chung-Seok Seo, Ruxing Gao, and Won Il Ko(KAERI)
- P09C20**    **Review of Studies on Systemic Approach to Nuclear Safety**  
Jihan Lim, Myunghyun Yoon, and Young Sung Choi(KINS)
- P09C21**    **Analysis of World Nuclear Market and Strategy of Korean NPP's Competitiveness Improvement for Exportation**  
Jae Young Choi and Yong Hoon Jeong(KAIST), Seungkook Roh(KAERI), Soon Heung Chang(Handong Global Univerity)

## 제10분과

# 원자력계측제어, 인간공학 및 자동원격 (Nuclear I&C, Human Factors and Automatic Remote System)

## 10A 10. 27 (목)

### 원자력 계측제어, 인간공학 및 자동원격 A (Nuclear I&C, Human Factors and Automatic Remote Systems A)

| 좌장 이광대(Kwang-Dae Lee), 이종범(Jong Beom Lee)

| 발표장소 205 (2층)

#### 초청발표

- 09:00 Development of a Desktop Simulator for APR1400 Nuclear Power Plant  
Jong Beom Lee(KHNP CRI)
- 09:30 Development of Final Running Test System for Digital System  
Kwang-Dae Lee, Eui-Jong Lee, Hee-Taek Lim, and Min-Seok Kim(KHNP CRI)
- 10:00 Improvement of the Nuclear Radiation Protection Training for the Simulator and Onsharing Method of the Safety Parameter with the Emergency Organization  
Sungjin Ahn and Daeseung Park(KHNP CRI)
- 10:20 Design Improvement for Reactor Trip Switchgear System for APR1400 Design Certification  
Han Gyu Kim, Woong Seock Choi, and Se Do Sohn(KEPCO E&C)
- 10:40 Coffee Break
- 11:00 Safety Benefit Evaluation of Data Communication between IFPD and ESCM  
Yun Goo Kim and Eungse Oh(KHNP CRI)
- 11:20 A Modified Model Reference Adaptive Control for a Single Motor of Latch Type Control Element Drive Mechanism  
Baejeong Park(DOOSAN)
- 11:40 A Case Study of Harmonic Impact on a Motor-Generator Set System  
Pilbum Joung(KHNP CRI)
- 12:00 System Function Evaluation due to Hardware Failure of NSSS Control Systems in the APR1400  
Juyoung Kim, Myunghoon Ahn, Woogoon Kim, and Hyeongsoon Yim(KEPCO E&C)
- 12:20 Hazard Analysis of Software Requirements Specification for Process Module of FPGA-based Controllers in NPP  
Sejin Jung, Eui-Sub Kim, and Junbeom Yoo(Konkuk), Jong Yong Keum and Jang-Soo Lee(KAERI)

## 10B 10. 27 (목)

### 원자력 계측제어, 인간공학 및 자동원격 B (Nuclear I&C, Human Factors and Automatic Remote Systems B)

| 좌장 김종현(Jonghyun Kim), 김사길(Sa Kil Kim)

| 발표장소 206 (2층)

#### 초청발표

- 09:00 Development of In-Core Protection System  
Joo Hyun Cho, Chang Ho Kim, Ji Hyeon Kim, Soo Hyun Jeong, Se Do Sohn, Seung Min Baek, and Jae Hee Yun(KEPCO E&C)
- 09:30 Nuclear Power Plant Autonomous Surveillance System with Solar Cell  
Hyung G. Kwak, Van X. Thai, and Chun T. Rim(KAIST)

- 10:00 **Analysis and Improvement of Control Algorithm for Operation Mode Transition due to Input Channel Trouble in Control Systems**  
Myunghoon Ahn, Woogoon Kim, and Hyeongsoon Yim(KEPCO E&C)
- 10:20 **Comparison of the Safety Critical Software V&V Requirements for the Research Reactor Instrumentation and Control System**  
Sungmoon Joo, Yong-Suk Suh, and Cheol Park(KAERI)
- 10:40 **Coffee Break**
- 11:00 **Features of Computerized Procedure System of Shin-Kori Unit 5&6**  
Nokyu Seong, Yeonsub Jung, and Chanho Sung(KHNP CRI)
- 11:20 **Design Characteristics of Soft Control for APR+**  
Yongsoo Kim, Chanho Sung, and Yeonsub Jung(KHNP CRI)
- 11:40 **Improvements in Logic Diagram of Computerized Procedure System of APR1400**  
Sungkweon Kang and Nokyu Seong(KHNP CRI)
- 12:00 **A New Human-Machine Interfaces of Computer-Based Procedure System to Reduce the Team Errors in Nuclear Power Plants**  
Sa Kil Kim, Joo Hyun Sim, and Hyun Chul Lee(KAERI)
- 12:20 **The Results of ISV for BNPP Computerized Procedure System**  
Sung Kon Kang, Yong Soo Kim, June Seung Lee, Jae Yeong Sim, and No Kyu Seong(KHNP CRI)

## 10C 10.28 (금)

### 원자력 계측제어, 인간공학 및 자동원격 C (Nuclear I&C, Human Factors and Automatic Remote Systems C)

| 좌장 김진구(Jin Koo Kim), 정재천(JaeCheon Jung)

| 발표장소 205 (2층)

#### 초청발표

- 09:00 **Independence Design Solution for MMI Design in Compliance with ISG-04**  
Jin Ku Kim, Joon Kon Kim, Seung Ha Jung, Jeong Hyeong Lee, Yeong Su Kim, and You-Sung Ro(KEPCO E&C)
- 09:30 **Reactor Coolant Temperature Measurement Using Ultrasonic Technology**  
JaeCheon Jung(KINGS), YongSun Seob and Nicholas Bechu(Krohne Messtechnik GmbH)
- 10:00 **Development of Alarm System link Drawing for Operation Support for APR1400 Digital Main Control Room**  
Ki Hwan Kim(KHNP CRI)
- 10:20 **Integration System Validation of Barakah Nuclear Power Plant in UAE for the Human Factor Engineering**  
Munsoo Kim(KHNP CRI)
- 10:40 **Coffee Break**
- 11:00 **A Framework to Assess Diagnosis Error Probabilities in the Advanced MCR**  
Ar Ryum Kim and Poong Hyun Seong(KAIST), Jong Hyum Kim(CSU), Inseok Jang and Jinkyun Park(KAERI)
- 11:20 **Examples of Unsafe Act Identification from Simulator Training Records for Interfacing System Loss of Coolant Accident**  
Sun Yeong Choi, Yochan Kim, Jinkyun Park, Seunghwan Kim, and Wondea Jung(KAERI)
- 11:40 **Estimating Recovery Failure Probabilities in Off-Normal Situations from Full-Scope Simulator Data**  
Yochan Kim, Jinkyun Park, Seunghwan Kim, Sun Yeong Choi, and Wondea Jung(KAERI)
- 12:00 **Experiments on the Impact of language Problems in the Multi-Cultural Operation of NPPs' Emergency Operation**  
Seongkeun Kang, Taehoon Kim, and Poong Hyun Seong(KAIST), Jun Su Ha(KUSTAR)
- 12:20 **Design Integration of Man-Machine Interface (MMI) Display Drawing and MMI Database**  
Kim, Yong Jun, Seo, Kwang Rak, Song, Jeong Woog, Kim, Dae Ho, and Han, Jung A(KEPCO E&C)

**10D**  
10.28 (금)

**원자력 계측제어, 인간공학 및 자동원격 D  
(Nuclear I&C, Human Factors and Automatic Remote Systems D)**

| 좌장 이영준(Young-Jun Lee), 김만철(Man Cheol Kim)

| 발표장소 206 (2층)

**초청발표**

- 09:00 **A Quantitative Calculation for Software Reliability Evaluation**  
Young-Jun Lee and Jang-Soo Lee(KAERI)
- 09:30 **Safety Justification and Safety Case for Safety-Critical Software in Digital Reactor Protection System**  
Kee-Choon Kwon and Jang-Soo Lee(KAERI), Eunkyong Lee(KAIST)
- 10:00 **Mental Workload and Situational Awareness Evaluation of APR1400 Engineered Safety Features-Component Control Activation Systems Using Augmented Reality**  
Mwongeera Murungi and JaeCheon Jung(KINGS)
- 10:20 **Analysis on the Effect of Injected Faults to the Functioning of a Digital System**  
Man Cheol Kim(CAU)
- 10:40 **Coffee Break**
- 11:00 **Failure Mode and Effect Analysis of the Application Software of the Safety-Critical I&C System in APR1400**  
Koheun Kim, Yong geul Kim, Woong seok Choi, and Se do Sohn(KEPCO E&C)
- 11:20 **Design of a High Power Robotic Manipulator for Emergency Response to the Nuclear Accidents**  
Jongwon Park, Yeong-Geol Bae, Myoung Ho Kim, and Young Soo Choi(KAERI)
- 11:40 **Design Concepts of Emergency Response Robot Platform K-R2D2**  
Sun Young Non and Kyungmin Jeong(KAERI)
- 12:00 **Development of Heavy-Duty and High-Precision Hydraulic Manipulator for Inspection, Maintenance and Decommission of Nuclear Power Plants**  
Sung Uk Lee, Yong-chil Seo, Kyung Min Jung, Chang-hoi Kim, Byung-seon Choi, and Jei-kwon Moon(KAERI)
- 12:20 **Development of Nuclear Power Plant Safety Evaluation Method for the Automation Algorithm Application**  
Seung Geun Kim and Poong Hyun Seong(KAIST)

**10E**  
10.28 (금)

**원자력 계측제어, 인간공학 및 자동원격 E  
(Nuclear I&C, Human Factors and Automatic Remote Systems E)**

| 좌장 최영수(YoungSoo Choi), 허균영(Gyunyoung Heo)

| 발표장소 205 (2층)

**초청발표**

- 13:30 **Unmanned Mobile Monitoring for Nuclear Emergency Response**  
YoungSoo Choi(KAERI)
- 14:00 **Data Quality Enhanced Prediction Model for Massive Plant Data**  
Moon-Ghu Park(Sejong Univ.), Seong-Ki Kang(M&D), Hajin Shin(Saint Paul Preparatory)
- 14:30 **Prediction of the Containment Pressure under Severe Accidents Using CFNN**  
Young Do Koo, Geon Pil Choi, and Man Gyun Na(CSU)
- 14:50 **Prognostics for Steam Generator Tube Rupture Using Markov Chain Model**  
Gibeom Kim and Gyunyoung Heo(KHU), Hyeonmin Kim(KAERI)
- 15:10 **Coffee Break**
- 15:30 **Identification of NPP Accidents Using Support Vector Classification**  
Ju Hyun Back, Kwae Hwan Yoo, and Man Gyun Na(CSU)

- 15:50 Development of a Modified Kernel Regression Model for Robust Signal Reconstruction  
Ibrahim Ahmed and Gyunyoung Heo(KHU)
- 16:10 Study on Nuclear Facility Cyber Security Awareness and Training Programs  
Jung-Woon Lee, Jae-Gu Song, and Cheol-Kwon Lee(KAERI)
- 16:30 Development on Guidance of Cyber Security Exercise for the Nuclear Facilities  
Hyundoo Kim(KINAC)

## 10F 10. 28 (금)

### 원자력 계측제어, 인간공학 및 자동원격 F (Nuclear I&C, Human Factors and Automatic Remote Systems F)

| 좌장 손한성(Han Seong Son), 신익현(Ickhyun Shin)

| 발표장소 206 (2층)

#### 초청발표

- 13:30 Identification of Errors of Commission for the Full Power Operation  
Jaemin Yang and Jonghyun Kim(CSU), Jaecheon Jung(KINGS)
- 14:00 Cyber Security Test Strategy for Non-Safety Display System  
Han Seong Son(JBU), Hee Eun Kim(KAIST)
- 14:30 Application of the Concept of Intrusion Tolerant System for Evaluating Cyber Security Enhancements  
Chanyoung Lee and Poong Hyun Seong(KAIST)
- 14:50 Identification of the Vital Digital Assets Based on PSA Results Analysis  
Moon Kyoung Choi and Poong Hyun Seong(KAIST), Han Seong Son(JBU), Hyundoo Kim(KINAC)
- 15:10 Coffee Break
- 15:30 Comparative Study on Cyber Securities between Power Reactor and Research Reactor with Bayesian Update  
Jinsoo Shin and Gyunyoung Heo(KHU), Hanseong Son(JBU)
- 15:50 A Proposal for a Methodology to Develop a Cyber-Attack Penetration Test Scenario Considering NPPs Safety  
In Hyo Lee(KAIST), Han Seong Son(JBU), Siwon Kim(KINAC), Hyun Gook Kang(RPI)
- 16:10 Research on Methodology to Prioritize Critical Digital Assets Based on Nuclear Risk Assessment  
Won Jik Kim, Kook Heui Kwon, and Hyun Doo Kim(KINAC)
- 16:30 Conceptual Design Approach to Implementing Hardware-Based Security Controls in Data Communication Systems  
Ahmad Salah Ibrahim and Jaecheon Jung(KINGS)

## 10G 10. 27 (목) - 28 (금)

### 원자력 계측제어, 인간공학 및 자동원격 (Nuclear I&C, Human Factors and Automatic Remote Systems) – POSTER

| 좌장 최종균(Jong Gyun Choi), 이승준(Seung Jun Lee)

| 발표장소 2층, 3층 로비

| 게시시간 10월 27일(목) 13:00 ~ 18:00 / 10월 28일(금) 09:00 ~ 17:00

| 저자 발표시간 10월 27일(목) 13:00 ~ 15:00

- P10G01 Development of OSSA(Operation Service Support Agreement) Simulator and Site Acceptance Test  
Dae Seung Park, Sung Jin Ahn, and Jong-Beon Lee(KHNP CRI)
- P10G02 Nuclear Application Programs Development and Integration for a Simulator  
Hyun Joon Park and Tae Woo Lee(KEPCO E&C)
- P10G03 Evaluation on the Effect of Load Follow Controller's Weighting Factor  
Keuk Jong Yu and Jae Gon Lee(KHNP CRI)



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P10G04	<b>Development of Reactor Core Model Based on Optimal Analysis for Shinhanul # 1, 2 Simulator</b> Kyungmin Kim(KHNP)
P10G05	<b>Design Improvement of FPGA and CPU Based Digital Circuit Cards to Solve Timing Issues</b> Dongil Lee, Jaeki Lee, and Kwang-Hyun Lee(KHNP CRI)
P10G06	<b>Acceleration Signal Characteristics for Intuitional Mass Analysis of Metallic Loose Parts</b> Kwang-Hyun Lee and Chang-Gyu Jung(KHNP CRI)
P10G07	<b>Development of Moisture-Proof Connection Technologies Using Cable Connecting Apparatus</b> Chang Young Joung, Jin Tae Hong, Sung Ho Ahn, Tea Ho Yang, and Seo Youn Jang(KAERI)
P10G08	<b>A Test Device Module of the Step Motor Driver for HANARO CAR Operation</b> Yun-TaeK Im, Seung-Gyu Doo, Jin-Won Shin, Ki-Hyun Kim, Young-San Choi, Jung-Hee Lee, Hyung-Kyoo Kim, and Choong-Sung Lee(KAERI)
P10G09	<b>Verification of FPGA-Signal Using the Test Board which is Applied to Safety-Related Controller</b> Younhu Chung, Donghwa Yoon, Kwanwoo Yoo, and Myeongkyun Lee(SOOSANENS)
P10G10	<b>Estimation of Leak Flow Rate during Post-LOCA Using Cascaded Fuzzy Neural Networks</b> Dong Yeong Kim(KAERI), Man Gyun Na(CSU)
P10G11	<b>Lessons Learned from Resolving Massive IPS Database Change for SPADES+</b> Jin-Soo Kim(KEPCO E&C)
P10G12	<b>Process Measurement Deviation Analysis for Flow Rate due to Miscalibration</b> Eunsuk Oh, Byung Rae Kim, Seog Hwan Jeong, Ji Hye Choi, Yong Chul Shin, and Jae Hee Yun(KEPCO E&C)
P10G13	<b>Regulatory Experience of the Embedded Digital Devices for Safety I&amp;C Systems on Nuclear Power Plants</b> Youngmi Kim, Hoongeun Lee, and Hyunshin Park(KINS)
P10G14	<b>Development of Design Information Template for Nuclear Power Plants for Electromagnetic Pulse (EMP) Effect Analysis</b> Minyi Kim, Hosun Ryu, Songhae Ye, and Euijong Lee(KHNP CRI)
P10G15	<b>NuFTA 2.0: New Templates and an Automatic Generator of Fault Tree for NuSCR</b> Junik Son, Yonghyun Kim, Kukbin Jeong, Dong-Ah Lee, and Junbeom Yoo(Konkuk)
P10G16	<b>Implementation of KoHLT-EB DAQ System Using Compact RIO with EPICS</b> Dae-Sik Chang, Suk-Kwon Kim, Dong Won Lee(KAERI), Seungyon Cho(NFRI)
P10G17	<b>A Development of the Calibration Tool Applied on Analog I/O Modules for Safety-Related Controller</b> Jong-Kyun Kim, Dong-Hwa Yun, Myeong-Kyun Lee, and Kwan-Woo Yoo(SOOSANENS)
P10G18	<b>Design of a Loose Part Monitoring System Test-Bed Using CompactRIO</b> Min-Seok Kim(KHNP CRI), Kwang-Dae Lee(KHNP CRI), Eui-Jong Lee(KHNP CRI)
P10G19	<b>Virtual Modular Redundancy of Processor Module in the PLC</b> Kwang-Il Lee, SungJae Hwang, and DongHwa Yoon(SOOSANENS)
P10G20	<b>An Approach for Effect Analysis of Electromagnetic Pulse in Operating NPPs</b> Ho Sun RYU, Song Hae Ye, Minyi Kim, and Euijong Lee(KHNP CRI)
P10G21	<b>Improved RRS Logical Architecture Using Genetic Algorithm</b> Hyo-sub Shim(KINGS), Jae-chun Jung(undefined)
P10G22	<b>Estimation of Computer-Based Display Complexity in Digitalized MCR of NPPs</b> Inseok Jang, Chang Hwoi Kim, and Wondea Jung(KAERI), Hyoung Ju Kim(KEPCO NF)
P10G23	<b>A Method of Building Multi-MCR in One Validation Facility</b> Chanho Sung, Jaesung Kim, Yongsoo Kim, and Nokyu Seong(KHNP CRI)
P10G24	<b>Verification of Gamma-ray Sensitivity for BF3 Neutron Detection System</b> Yu Sun Choi(KHNP CRI), Jin Bok Cho and Seok Jean Lyoo(USERS)
P10G25	<b>The Establishment of Object Selection Criteria for Effect Analysis of Electromagnetic Pulse (EMP) in Operating Nuclear Power Plants</b> Song Hae Ye, Ho Sun Ryu, Min Yi Kim, and Eui Jong Lee(KHNP CRI)

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- P10G26**     **Practicality for Software Hazard Analysis for Nuclear Safety I&C System**  
Yong-ho Kim, Kwon-Ki Moon, Young-Woo Chang, and Soo-hyun Jeong(KEPCO E&C)
- P10G27**     **A Practical Scheme to Quantify Safety Benefits of Disaster Robots**  
Young Choi and Kyungmin Jeong(KAERI), Inn Seock Kim (ISSA Technology, Inc.)
- P10G28**     **Development of Integrated Control and Data Acquisition System for Fuel Channel Inspection in Wolsong PHWR**  
Seung-Ok Yang and Sung-Nam Choi(KHNP CRI)
- P10G29**     **Nonlinear Control of Hydraulic Manipulator for Decommissioning Nuclear Reactor**  
Myoung-Ho Kim, Sung-Uk Lee, Chang-Hoi Kim, Byung-Seon Choi, and Jei-Kwon Moon(KAERI)
- P10G30**     **Classification of Feedwater Heater Performance Degradation Using Residual Sign Matrix**  
Gayeon Ha and Gyunyoung Heo(KHU), Seok Yoon Song(KHNP CRI)
- P10G31**     **Research Status of Prognostics and Health Management in Nuclear Power Plants**  
Hyeonmin Kim, Sup Hur, and Jung-Taek Kim(KAERI)
- P10G32**     **Study on On-Line Monitoring Model for Sensor Integrity in Severe Accident**  
Hyeonmin Kim, Se Woo Cheon, Jae Chang Park, and Sup Hur(KAERI)
- P10G33**     **A Method to Analyze Threats and Vulnerabilities by Using a Cyber Security Test-Bed of an Operating NPP**  
Yong Sik Kim, Choul Woong Son, and Soo Ill Lee(KHNP CRI)
- P10G34**     **A Security Assessment Approach with Graded Importance Score of Security Controls and Asset Consequence for I&C Systems in Operating NPPs**  
Sooill Lee, Yongsik Kim, Insun Moon, and Euijong Lee(KHNP CRI)
- P10G35**     **Study on CDA Identification and Lesson Learned from the Result for the Cyber Security Regulation for Nuclear Facilities**  
Si Won Kim(KINAC)
- P10G36**     **Nuclear Cyber Security Case Study and Analysis**  
Sunae Park(CNU), Kyung Doo Kim(KAERI)