

# KOREAN NUCLEAR SOCIETY

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|일 시| 2013. 10. 23(수) - 10. 25(금) |장 소| 호텔현대 경주

## 2013 추계학술발표회



사단법인 한국원자력학회  
KOREAN NUCLEAR SOCIETY

## 2013 추계학술발표회

• 일정 : 2013. 10. 23(수)~10. 25(금) • 장소 : 호텔현대 경주

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❖ 전체 행사일정표

▶ 등록 및 접수 : 지하1층 로비

• 10.23(수) 12:30~17:30

• 10.24(목) 08:30~17:30

• 10.25(금) 08:30~12:00

회의장명		10. 23(수)		10. 24(목)		10. 25(금)	
컨벤션A	B1	(F) 가동원전 PSA 수행현황 및 방향 (G) 후쿠시마사고 이후의 원전 안전성향상 및 안전연구 방향	09:00~12:00 13:30~18:30	• (5A)원자력열수력 및 안전 구두발표 • 제46회 정기총회 및 특별강연 • 참가자 만찬(컨벤션A+B+C)	09:00~12:40 15:00~18:00 18:00~19:30	• (5D)원자력열수력 및 안전 구두발표	09:00~12:20
컨벤션B	B1	(D) 원전해체 정책·기술 동향 및 전망	13:00~18:00	• (5B)원자력열수력 및 안전 구두발표 • 원자력열수력 및 안전 연구부회 모임 • 참가자 만찬(컨벤션A+B+C)	09:00~12:40 13:30~14:30 18:00~19:30	• (5E)원자력열수력 및 안전 구두발표	09:00~12:40
컨벤션C	B1	(H) 원전 면진기술 개발현황 및 전망	13:00~18:00	• (5C)원자력열수력 및 안전 구두발표 • 원자력정책, 인력 및 협력 연구부회 모임 • 참가자 만찬(컨벤션A+B+C)	09:00~12:40 13:30~14:30 18:00~19:30	• (5F)원자력열수력 및 안전 구두발표	09:00~12:40
다이아몬드	B1	(E) Japan-Korea Joint Workshop on Materials Ageing in Nuclear Power Systems	13:00~18:00	• 포스터 발표장(1분과~10분과)	13:00~15:00	• (1B)원자로시스템기술 구두발표	09:00~12:00
토파즈	B1	(K) 원전 전주기 안전문화 모니터링 시스템 및 관리방안	13:30~18:00	• 제67차 평의원회	11:00~13:00	• (10C)원자력계측제어 및 자동원격 구두발표	09:00~11:40
금강	B1	(A) 원자로계통설계 강의 (B) 제 4차 원자력수소 Workshop, 수소시장과 초고온 가스로 전망	08:45~12:00 13:00~18:00	• (10A)원자력계측제어 및 자동원격 구두발표 • 원자력계측제어 및 자동원격 연구부회 모임	09:00~12:20 13:30~14:30	• (1C)원자로시스템기술 구두발표	09:00~12:20
에메랄드	2F	(J) 지속적인 원자력 인력양성 체계 및 역량강화 방안	13:00~17:30	• (6A)방사선이용 및 방호 구두발표 • 방사선이용 및 방호 연구부회 모임	09:00~12:16 13:30~14:30	• (3A)방사성폐기물관리 구두발표	09:00~12:00
루비	2F	(L) 교사워크숍 (초·중·고 교사초청 원자력 교육 토론회)	16:00~18:30	• (7A)양자공학 및 핵융합기술 구두발표 • 양자공학 및 핵융합기술 연구부회 모임	09:00~12:20 13:30~14:30	• (9A)원자력정책, 인력 및 협력 구두발표	09:00~12:20
오팔	2F	(M) 원로초청 워크숍 (원자력이용기술과 규제기술의 선진화를 위해서는...)	17:00~18:30	• (1A)원자로시스템기술 구두발표 • 원자로시스템기술 연구부회 모임	09:00~11:40 13:30~14:30	• (5G)원자력열수력 및 안전 구두발표	09:00~12:40
메이플	2F	-	-	• (4A)핵연료 및 원자력재료 구두발표 • 핵연료 및 원자력재료 연구부회 모임	09:00~13:00 13:30~14:30	• (4C)핵연료 및 원자력재료 구두발표	09:00~13:00
마호가니	2F	-	-	• (4B)핵연료 및 원자력재료 구두발표 • 방사성폐기물관리 연구부회 모임	09:00~12:40 13:30~14:30	• (4D)핵연료 및 원자력재료 구두발표	09:00~13:00
사파이어	2F	-	-	• (8A)원전건설 및 운영기술 구두발표 • 원전건설 및 운영기술 연구부회 모임	09:00~12:20 13:30~14:30	• (8C)원전건설 및 운영기술 구두발표	09:00~12:00
다이너스티	B2	(C) 핵자료, 원자로물리 및 계산과학 연구현황	13:00~17:10	• (2A)핵자료, 원자로물리 및 계산과학 구두발표 • 원자로물리 및 계산과학 연구부회 모임	09:00~12:40 13:30~14:30	• (2B)핵자료, 원자로물리 및 계산과학 구두발표	09:00~12:40
펠리스	B2	(I) 원자력의 창조경제 구현을 위한 법제화 과제	15:00~17:00	• 참가자 중식장소	12:00~13:30	• 학생/청년 Competition Session	09:00~12:40
보문	2F	-	-	• 참가자 중식장소	12:00~13:30	• 참가자 중식장소	12:00~13:30
크리스탈	1F	-	-	• 참가자 중식장소	12:00~13:30	• 참가자 중식장소	12:00~13:30

# I. 행사일정 안내

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## ❖ 연구부회 워크숍 [10월 23일(수)]

- |   |   |
|---|---|
| <p>A. 원자로계통설계 강의<br/>B. 제 4차 원자력수소 Workshop, 수소시장과 초고온<br/>가스로 전망<br/>C. 핵자료, 원자로물리 및 계산과학 연구 현황<br/>D. 원전해체 정책·기술 동향 및 전망<br/>E. Japan-Korea Joint Workshop on Materials<br/>Ageing in Nuclear Power Systems<br/>F. 가동원전 PSA 수행현황 및 방향</p> | <p>G. 후쿠시마사고 이후의 원전 안전성향상 및 안전<br/>연구 방향<br/>H. 원전 면진기술 개발현황 및 전망<br/>I. 원자력의 창조경제 구현을 위한 법제화 과제<br/>J. 지속적인 원자력 인력양성 체계 및 역량강화 방안<br/>K. 원전 전주기 안전문화 모니터링 시스템 및 관리방안<br/>L. 초·중·고 교사초청 원자력 교육 토론회<br/>M. 원로초청 워크숍<br/>(원자력이용기술과 규제기술의 선진화를 위해서는..)</p> |
|---|---|

## ❖ 제46회 정기총회 및 학술발표회

10월 24일(목)	10월 25일(금)
08:30 등록 및 접수	09:00 분과별 학술발표
09:00 분과별 학술발표	10:40 Coffee Break
10:40 Coffee Break	11:00 분과별 학술발표
11:00 분과별 학술발표/평의원회	12:00 중식
12:00 중 식	
13:00 분과별 포스터발표	
13:30 연구부회 모임	
15:00 제46회 정기총회 • 국민의례 • 개회사 : 김종경 학회장 • 제46회 정기총회 • 공로패 및 감사패 증정 • 학술상, 기술상, 학회지발전기여상, 학회지/학술발표회 우수논문상, 두산원자력기술상, HANA기술상 시상	
16:30 특별강연(Ⅰ)	
17:10 특별강연(Ⅱ)	
18:00 만찬	

## ❖ 등록비

구분	사전등록(마감 : '13.10.11)	현장등록
학생	50,000원	50,000원
정/평생회원	100,000원	120,000원
비회원	120,000원	140,000원
원로회원	면제	면제

## ❖ 특별강연

- [Ⅰ] 원자력안전 및 현안 ..... 이은철 (원자력안전위원회 위원장)  
[Ⅱ] 사용후핵연료 논의 속도를 내야 ..... 한갑수 (21세기 에너지연구회 회장)

## II. 워크숍 안내

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### A 원자로계통설계 강의

- 일 시 : 2013년 10월 23일(수) 08:45~12:00
- 장 소 : 호텔현대 경주, 지하1층 금강
- 주 최 : 한국원자력학회 원자로시스템기술 연구부회

#### • 일 정

일 정		내 용	발 표 자
원자로 계통설계 강의	08:45~9:00	오전 세션 등록	윤주현박사 (KAERI)
	09:00~12:00	<ul style="list-style-type: none"> <li>■ 사용자요건, 규제요건, 규격 및 기준                             <ul style="list-style-type: none"> <li>• 사용자요건 소개</li> <li>• 한국, 미국, IAEA의 규제요건 소개</li> </ul> </li> <li>■ 원자로 안전계통개념 개발 방법                             <ul style="list-style-type: none"> <li>• 규제 및 설계 접근방법</li> <li>• 안전계통 설계를 위한 원칙들</li> <li>• 안전계통 개념개발 절차</li> <li>• Engineered Safety Features (ESF)</li> </ul> </li> <li>■ 구조물 계통 및 기기의 등급분류 방법                             <ul style="list-style-type: none"> <li>• 한국, 미국, 유럽, IAEA 등급분류 방법 소개</li> </ul> </li> <li>■ 원자로계통설계 절차 및 문서체계</li> </ul>	

#### • 기타사항

등록비 : 무료(책자제본 수를 가늠하기 위해 사전등록 요망)

문의처 : 윤주현 / 한국원자력연구원 / 042-868-8319 / yoonj@kaeri.re.kr

## II. 워크숍 안내

### **B** 제 4차 원자력수소 Workshop, 수소시장과 초고온가스로 전망 (Perspective of Hydrogen Market and VHTR)

- 일 시 : 2013년 10월 23일(수) 13:00~18:00
- 장 소 : 호텔현대 경주, 지하1층 금강
- 주 최 : 한국원자력학회 원자로시스템기술 연구부회
- 후 원 : 미래창조과학부

#### • 일 정

일 정	내 용
13:00~13:10	등 록
13:10~13:20	인사말, 박군철 (국제원자력대학원 총장)
13:20~13:30	축 사, 강건기 (미래창조과학부 원자력진흥정책과장)
13:30~14:00	원자력수소 기술개발 현황, 김용완 (한국원자력연구원)
14:00~14:30	수소를 이용한 청정제철 기술개발 현황, 최윤희 (포스코)
14:30~15:00	수소자동차 기술개발 현황, 황인철 (현대자동차)
15:00~15:30	세계최대수소타운 현황, 우향수 (울산테크노파크)
15:30~16:00	초고온가스로 사업의 건설타당성 및 경제성, 구재삼 (코네스코퍼레이션)
16:00~16:30	휴 식
16:30~17:00	The Progress of R&D on Nuclear Hydrogen Production in, China, Zhang Ping (INET, China)
17:00~17:30	Status of Nuclear Hydrogen Development in Japan and OECD/NEA HTTR project, Inagaki Yoshiyuki (JAEA, Japan)
17:30~18:00	Overview of NGNP Safety and Licensing Issues, David Alberstein (TechSource, US)
18:00~20:00	폐회 및 저녁만찬

#### • 기타사항

등록비 : 7만원 (저녁식사 제공)

문의처 : 이기영 / 한국원자력연구원 / 042-868-2807 / kylee@kaeri.re.kr

이태훈 / 한국원자력연구원 / 042-868-4677 / leeth@kaeri.re.kr

## ㉔ 핵자료, 원자로물리 및 계산과학 연구 현황

- 일 시 : 2013년 10월 23일 (수) 13:00 ~ 17:10
- 장 소 : 호텔현대 경주, 지하2층 다이너스티
- 주 최 : 한국원자력학회 원자로물리 및 계산과학 연구부회

### • 일 정

일 정	내 용
13:00~13:30	등 록
13:30~14:10	3-D Whole-Core Transport based Nuclear Analysis System, DeCART/CHORUS/MASTER – 조진영(KAERI)
14:10~14:50	Space Nuclear Applications – 김용희(KAIST)
14:50~15:30	Evaluated Covariance Data Files and Their Application to Sensitivity and Uncertainty Analysis of $k_{\text{eff}}$ – 김도현(KAERI)
15:30~15:50	휴 식
15:50~16:30	On the Eigenvalue Problems in Nuclear Engineering – 이덕중(UNIST)
16:30~17:10	A New Monte Carlo Reactor Calculation Algorithm of Treating Neutron Multiplicative Reactions – 김창효(SNU)

### • 기타사항

등록비 : 무료 (저녁식사 제공)

문의처 : 노재만 / KAERI / 010-2872-9697 / jmnoh@kaeri.re.kr



## Ⅱ. 워크숍 안내

### ㉔ 원전해체 정책·기술 동향 및 전망

- 일 시 : 2013년 10월 23일(수) 13:00~18:00
- 장 소 : 호텔현대 경주, 지하1층 컨벤션B
- 주 최 : 한국원자력학회 방사성폐기물관리 연구부회
- 후 원 : 한국수력원자력(주)

#### • 일 정

일 정	내 용
13:00~14:00	등 록
14:00~14:05	개회 및 소개 (사회)
14:05~14:10	인사말씀 (김창락, 연구부회장)
14:10~14:20	축사 (장문희, 수석부회장)
14:20~14:40	원전해체 규제제도 개선방안 및 전망 (안상면, KINS)
14:40~15:00	원자력시설 핵심 기반기술 개발 계획 및 추진 현황 (문제권, KAERI)
15:00~15:20	원자력클러스터 조성을 위한 제염해체 추진 계획 (경상북도 에너지산업과)
15:20~15:40	원전해체 산업환경과 사업자의 준비 계획 (서대권, KHNP)
15:40~16:00	Break Time
16:00~16:20	원전해체를 위한 지식관리 기법 (박문규, 세종대)
16:20~16:40	대형폐기물 처리시설 설계개발 계획 및 추진 현황 (이선호, 두산중공업)
16:40~17:00	원전해체 선원향 평가 기술개발 계획 및 추진 현황 (송종순, 조선대)
17:00~17:20	원전해체 표준설계 개발 계획 및 전략 (변충섭, KHNP)
17:20~17:40	원전해체 비용평가 방법론 및 해외 주요 사례 (이병식, KEPCO-ENC)
17:40~	종합 및 폐회

#### • 기타사항

등록비 : 무료 [만찬 : 18:00~ (장소는 행사장 공지)]

문의처 : 변성철 / 한수원(주) / 02-3456-2591 / bschul@khnp.co.kr

## **E** Japan–Korea Joint Workshop on Materials Ageing in Nuclear Power Systems

- 일 시 : 2013년 10월 23일(수) 13:00~18:00
- 장 소 : 호텔현대 경주, 지하1층 다이아몬드
- 주 최 : 한국원자력학회 핵연료 및 원자력재료 연구부회
- 후 원 : PRIMA-NET

### • 일 정

일 정	내 용
13:00~13:30	등 록
13:30~13:40	환영사
13:40~14:10	IASCC of reactor internals of PWRs – 황성식 (KAERI)
14:10~14:40	Irradiation effect on materials – Prof. Yokomine (Kyoto U., Japan)
14:40~15:10	Feasibility of thermal annealing of embrittled RPV – 양준석 (KHNP/CRI)
15:10~15:40	휴 식
15:40~16:00	ODSCC of HTMA Alloy 600 pulled from U-4 – 김홍표 (KAERI)
16:00~16:30	Prediction of FAC – Dr. Hidetoshi Okada (IEA, Japan)
16:30~17:00	Experience with PWSCC and Management Strategy – 이재곤 (KHNP/CRI)
17:00~17:30	Recovery of Thermal ageing of CASS and SS weld – 장창희 (KAIST)
17:30~18:00	Discussion & Wrap-up
18:00~	Dinner

### • 기타사항

등록비 : 3만원 (발표집 및 저녁식사 제공)

문의처 : 홍종대 / KAIST / 042-350-3864 / jongd7878@kaist.ac.kr

장창희 / KAIST / 042-350-3824 / chjang@kaist.ac.kr

## II. 워크숍 안내

### F 가동원전 PSA 수행현황 및 방향

- 일 시 : 2013년 10월 23일(수) 09:00~12:00
- 장 소 : 호텔현대 경주, 지하1층 컨벤션A
- 주 최 : 한국원자력학회 원자력열수력 및 안전 연구부회, 한국수력원자력 중앙연구원
- 일 정

일 정	내 용
좌장 : 정동욱 (중앙대학교), 이창주 (한국원자력안전기술원)	
08:30~09:00	등 록
09:00~09:05	개회사 (양준언 - 한국원자력연구원)
09:05~09:10	환영사 (나장환 - 한수원 중앙연구원)
09:10~09:30	가동원전 PSA 초기사건 분석 현황 (이용석 - (주)미래와 도전)
09:30~09:50	가동원전 PSA 모델 표준화 방안 (전호준 - 한수원 중앙연구원)
09:50~10:10	원전 신뢰도 DB 시스템 개정 및 개발방향 (황석원 - 한수원 중앙연구원)
10:10~10:30	Break
10:30~10:50	가동원전 HRA 분석 표준화 방안 (김재환 - 한국원자력연구원)
10:50~11:10	공통원인고장 모델링 표준화 방안 (박성규 - (주)ACT)
11:10~11:30	사용후연료저장조 PSA 분석 방법 (김효원 - 한국전력기술)
11:30~12:00	종합 토의

#### • 기타사항

등록비 : 무료

문의처 : 황석원 / 한수원중앙연구원 / 042-870-5642 / swhwang@khnp.co.kr

박진희 / 한국원자력연구원 / 042-868-8997 / jhpark6@kaeri.re.kr

**G 후쿠시마사고 이후의 원전 안전성향상 및 안전연구 방향**  
(NPP Safety Enhancement and Safety R&D in the Post-Fukushima Era)

- 일 시 : 2013년 10월 23일(수) 13:30~18:30
- 장 소 : 호텔현대 경주, 지하1층 컨벤션A
- 주 최 : 한국원자력학회 원자력 열수력 및 안전 연구부회
- 일 정

일 정	내 용
13:00~13:30	등 록
13:30~13:40	개회식 (개회사, 환영사) (사회 : 권태순 분과장)
13:40~14:10	후쿠시마 사고의 원인과 교훈 (양준언, KAERI 종합안전평가부장)
14:10~14:35	후쿠시마 사고 교훈을 반영한 원전 안전성 향상 방향 (정대욱, KINS 가동원자력규제단 부단장)
14:35~15:00	국내 원전의 안전성 향상 조치 현황 및 계획 (박영섭, 한수원 중앙연구원 그룹장)
15:00~15:20	Coffee Break
15:20~15:45	KAERI 원자력안전연구 방향 (송철화, KAERI 열수력안전연구부장)
15:45~16:10	원자력안전규제연구 방향 (정명조, KINS 연구총괄실장)
16:10~16:35	획기적 안전성 향상을 위한 신형경수로 기술 개발 (김한곤, KHNP 중앙연구원 그룹장)
16:35~17:00	대학 안전연구현황 및 산·학·연 연구협력 미래전략 (정용훈(KAIST 교수)/방인철(UNIST 교수))
17:00~17:20	Coffee Break
17:20~18:30	패널토론 (사회 : 류용호 학회 부회장)
18:40~	만 찬

• 기타사항

등록비 : 3만원 (석식 제공)

문의처 : 권태순 / 열수력실험전문분과장 / 010-2528-8717 / tskwon@kaeri.re.kr

## II. 워크숍 안내

### H 원전 면진기술 개발현황 및 전망

- 일 시 : 2013년 10월 23일(수) 13:00~18:00
- 장 소 : 호텔현대 경주, 지하1층 컨벤션C
- 주 최 : 한국원자력학회 원전건설 및 운영기술 연구부회, 한수원 중앙연구원
- 후 원 : 한국원자력연구원, 한국전력기술
- 일 정

일 정	내 용
13:00~13:30	등 록
사회 : 한수원 중앙연구원 주광호 부장	
13:30~13:35	개회사 (건설/운영 연구부회장 이상돈)
13:35~13:40	환영사 (한수원 안전기술본부장 조병옥)
<b>Session 1 원전과 면진</b> <b>(좌장 : 한수원 중앙연구원 조명석 부장)</b>	
13:40~14:00	원전 면진적용을 위한 국내외 연구동향 (전영선, 한국원자력연구원)
14:00~14:20	원전 적용 면진시스템 필요성 (이상훈, 한국전력기술)
14:20~14:40	원전 면진시스템 적용 사례 (노상훈, 한수원 중앙연구원)
14:40~15:00	원전 면진시스템 규제요건 개발추진 현황 (이세현, 한국원자력안전기술원)
15:00~15:30	휴 식
<b>Session 2 면진기술 개발 현황 및 전망</b> <b>(좌장 : 한국원자력안전기술원 현창현 박사)</b>	
15:30~15:50	면진과제 연구추진 현황 (최철순, 한국전력기술)
15:50~16:10	원전 면진장치 개발현황 (이홍표, 한수원 중앙연구원)
16:10~16:30	면진적용에 따른 원전 배관 영향 평가 (안은우, 한국전력기술)
16:30~16:50	면진적용에 따른 원전의 지진안전성 영향 (최인길, 한국원자력연구원)
16:50~18:00	종합토론 (사회 : 한수원 중앙연구원 플랜트건설기술연구소장 정대율)

#### • 기타사항

등록비 : 5만원 (발표자료집 및 저녁식사 제공)

문의처 : 이홍표 / 한수원 중앙연구원 / 010-9670-9919 / hplee@khnp.co.kr

김선용 / 한수원 중앙연구원 / 017-230-2734 / sunyongkim@khnp.co.kr

## ❶ 원자력의 창조경제 구현을 위한 법제화 과제

- 일 시 : 2013년 10월 23일(수) 15:00~17:00
- 장 소 : 호텔현대 경주, 지하2층 팰리스홀
- 주 최 : 한국원자력학회 원자력정책, 인력 및 협력 연구부회, 한국원자력연구원, 기초전력연구원
- 일 정

일 정	내 용
14:30~15:00	등 록
15:00~15:30	원자력 법제 효율화 방안(김창우 소장/국가나노기술정책센터/KISTI)
15:30~16:00	원자력 분야 입법 동향 및 향후 입법정책(함철훈/기초전력연구원)
16:00~16:10	Coffee Break
16:10~16:50	패널토론
16:50~17:00	종합정리

### • 기타사항

등록비 : 3만원 (식사 제공 없음)

문의처 : 정환삼 / 한국원자력연구원 정책연구부 / 042-868-2146 / wschung@kaeri.re.kr

## II. 워크숍 안내

### J 지속적인 원자력 인력양성 체계 및 역량강화 방안

- 일 시 : 2013년 10월 23일(수) 13:00~17:30
- 장 소 : 호텔현대 경주, 2층 에메랄드
- 주 최 : 한국원자력학회 원자력 정책, 인력 및 협력 연구부회
- 주 관 : 원자력교육협력협의회
- 일 정

일 정	내 용
13:00~13:10	개회사 - 일정안내 및 참가자 소개
13:10~13:40	원자력 인력양성 계획 수립을 위한 정책 제언 (김상준 소장, 김상준 전략연구소)
13:40~14:10	‘에너지 인력 양성 사업 “현장중심 원전운영기술 기초트랙” 운영현황’ (나만균 교수, 조선대학교)
14:10~14:40	IAEA SAT 기법을 활용한 신입 규제요원 교육 (문찬기 박사, 한국원자력안전기술원)
14:40~15:10	원자력 인력양성 분야에 있어 산학협력 활성화 방안 -KINGS 사례를 중심으로 (김태룡 산학협력단장, 한전 국제원자력대학원대학교)
15:10~15:30	Coffee Break
15:30~16:00	원자력 품질경영 현황 및 인적역량강화 방안 (한국수력원자력(주))
16:00~16:30	원자력 품질경영 현황 및 인적역량강화 방안 (한전 KPS(주))
16:30~17:00	연구개발 품질현황 및 인적역량강화 방안 (박찬국 부장, 한국원자력연구원)
17:00~17:30	원자력 품질경영 선진화에 있어 대학의 역할 (장윤석 교수, 경희대학교)

#### • 기타사항

등록비 : 무료

문의처 : 김영준 대리 / 한국원자력협력재단 / 042-867-0183 / yjkim@konicof.or.kr

## K 원전 전주기 안전문화 모니터링 시스템 및 관리방안

- 일 시 : 2013년 10월 23일(수) 오후 13:30~18:00
- 장 소 : 호텔현대 경주, 지하 1층 토파즈
- 주 최 : 한국원자력학회 원자력계측제어 및 자동원격 연구부회
- 일 정

일 정	내 용
13:00~13:30	등 록
	사회 1 (이용희 실장, 한국원자력연구원)
13:30~13:35	연구부회장 인사 (김국현 전무, 두산중공업)
13:35~14:00	한기(주)의 원자력안전문화 추진현황 (최용섭 팀장, 한국전력기술)
14:00~14:25	건설 원전의 안전문화 현안 : 인적 요소 및 인간공학 규제 관점에서 (이동훈 박사, 한국원자력안전기술원)
14:25~14:50	한수원 안전문화 평가결과 및 증진현황 (허남용 부장, 한수원 중앙연구원)
14:50~15:20	Coffee Break
	사회 2 (이성진 부장, 두산중공업)
15:20~15:45	국내 원자력 작업장의 안전문화 실태 (이승우 연구위원, 사회공공연구소)
15:45~16:10	환경단체 입장에서 바라본 원자력 안전문화 개선 방안 (이현석 대표, 에너지정의행동)
16:10~16:35	디지털 I&C, 발전소 안전, 그리고 안전문화 (이용희 실장, 한국원자력연구원)
16:35~16:45	Coffee Break
16:45~18:00	패널토론 (패널리스트: 이동훈, 이승우, 이현석, 최용섭, 허남용 (가나다 순) / 사회: 이용희)
18:00~20:00	저녁식사

### • 기타사항

등록비 : 3만원(저녁식사 제공)

문의처 : 김사길 / 한국원자력연구원 / 010-3264-3470 / sakilkim@kaeri.re.kr



## Ⅱ. 워크숍 안내

### ● 초·중·고 교사초청 원자력 교육 토론회

- 일 시 : 2013년 10월 23일(수) 16:00~18:30
- 장 소 : 호텔현대 경주, 2층 루비
- 주 최 : 한국원자력학회, 경희대 원자로센터, 경주교육지원청, 울진교육지원청
- 일 정

일 정	내 용
	사회 : 김명현 (경희대 교수, 원자로센터장)
16:00~16:10	개회사 및 참석자 소개 (사회자)
16:10~16:15	환영사 (김종경, 한국원자력학회장)
	주제 발표
16:15~16:35	원자력 체험교실의 참가 경험 (권성기, 경주 안강중학교)
	패널 토의 좌장 : 이기복 (한국원자력연구원 홍보협력부장)
16:40~17:00	학교현장에서의 방사선안전교육 사례 (서원호, 수원 수일초등학교)
17:00~17:20	원자력 마이스터고의 교육 경험 (박형래, 울진 평해공고)
17:20~17:40	원전인근학생의 원자력 인식 고찰 (신원호, 영광 백수중학교)
17:40~18:20	질의 응답 및 종합 토론 (좌장)
18:20~18:25	격려사 (교육지원과, 경주교육지원청)
18:25~18:30	폐회 및 안내 (사회자)
18:30~20:00	저녁 만찬

### • 기타사항

문의처 : 이민한/ 경희대 원자로센터/ 031-201-2059/hiqq22@khu.ac.kr

## 제 1 분과 A

### 원자로시스템기술(Reactor System Technology)

- 경중수로 계통 개발 (Water Cooled Reactor System Development)

좌 장 송용만(Yong Mann SONG), 장세명(Se-Myong CHANG)

발표장소 오펜

일 정 | 10. 24(목)

- 09:00 Thermal Stress Investigation of Reactor Coolant System of VVER-1000 Reactor for Normal Operation Condition**  
Nguyen Truong Quang and Ihn Namgung(KINGS)
- 09:20 2-D Simulation on the Contact of Pressure Tube and Calandria Tube in the Severe Accident of PHWR System**  
Se-Myong Chang(KNU)  
Hyoung Tae Kim(KAERI)
- 09:40 An Assessment of  $\nu^2$ -f Model for Water Mixed Convection under SMR Configuration**  
Andhika Feri Wibisono, Yohanes Setiawan Nietiadi, Yacine Addad, and Jeong Ik Lee(KAIST)
- 10:00 Preliminary Design of the Active Residual Heat Removal System and a Circulation Pump in the Research Reactor**  
Hyun-Gi Yoon, Kyoung-Woo Seo, Seong-hoon Kim, and Juhyeon Yoon(KAERI)
- 10:20 Evaluation of Stresses in Shell to Head Transition Region in VVER Reactor Vessels**  
Nguyen Thanh Long and Namgung Ihn(KINGS)
- 10:40 Coffee Break**
- 11:00 Comparison of CFD Simulations of Moderator Circulation Phenomena for a CANDU-6 Reactor and MCT Facility**  
Hyoung Tae Kim, Jae Eun Cha, and Han Seo(KAERI)
- 11:20 Evaluation of Passive Containment Cooling System Design of SMART Built in GBS for Ocean Environment Under the Fukushima Accident Condition**  
Min-Gil Kim, Seong Gu Kim, Jeong Ik Lee, Kang-Heon Lee, and Phil-Seung Lee(KAIST)

### Ⅲ. 분과별 논제 및 발표자

#### 제 1 분과 B

#### 원자로시스템기술(Reactor System Technology)

- 소듐냉각고속로 및 고온가스로 계통개발 (Sodium Cooled Fast Reactor and High Temperature Gas Cooled Reactor System Development)

좌 장 신안동(Andong SHIN), 최석기(Seok-Ki CHOI)

발표장소 다이아몬드

일 정 | 10. 25(금)

- 09:00 Large Eddy Simulation of Thermal Striping in a Triple Jet**  
Seok-Ki Choi, Seong-O Kim, and Tae-Ho Lee(KAERI)
- 09:20 A Preliminary PIRT Development Related to SWR Accidents from an SG Tube Failure**  
Dongsup So, Ji-Young Jeong, and Yong-Bum Lee(KAERI)
- 09:40 Reduction of Chemical Activity of Liquid Sodium by Ti Nanoparticles**  
Gunyeop Park, Soo Jae Kim, and Moo Hwan Kim(POSTECH)
- 10:00 Performance Analysis of 400MWe Sodium Cooled Fast Reactor Cores Using Thick Duct Assembly for TRU Burning**  
Do-Yeon Kim, Hae Lee Hyun, WuSeung You, and Ser Gi Hong(KHU)
- 10:20 A Study on Licensing Requirement for Severe Accident of PGSFR in Korea**  
Kilyoo Kim, SangHoon Han, and K. S. Ha(KAERI)
- 10:40 Coffee Break**
- 11:00 One-Dimensional Flow Network Model for Thermo-Fluid Analysis of Prismatic Gas-Cooled Reactor Core**  
Nam-il Tak, Sung Nam Lee, Min-Hwan Kim, and Hong Sik Lim(KAERI)
- 11:20 Thermo-Fluid Verification of Fuel Column with Crossflow Gap**  
Sung Nam Lee, Nam-il Tak, Min-Hwan Kim, and Jae Man Noh(KAERI)
- 11:40 Preliminary Studies of Two-Phase Reactive Process of Sodium-CO<sub>2</sub> in S-CO<sub>2</sub> Power Conversion Cycle Coupled to SFR System**  
Hwa-Young Jung, Yoonhan Ahn, You-ho Lee, and Jeong Ik Lee(KAIST)

## 제 1 분과 C

### 원자로시스템기술(Reactor System Technology)

- 고온가스로 계통기술(High Temperature Gas Cooled Reactor System Technology)

좌 장 김민환(Min Hwan KIM), 홍성덕(Sung-Deok HONG)

발표장소 금강

일 정 | 10. 25(금)

- 09:00      Unsteady Reynolds Averaged Navier-Stokes and Large Eddy Simulations of Flows Across Staggered Tube Bundle for a VHTR Lower Plenum Design**  
Hyeon-Kyeong Choi and Jong-Woon Park(DU)
- 09:20      Thermal-Hydraulic Sensitivity of Intermediate Loop Parameters for Nuclear Hydrogen System**  
Heung N. Lee, Jea Ho Park, and Jae Yong Oh(KONES Co.)  
Won Jae Lee(KAERI)
- 09:40      An Innovative VHTR Waste Heat Integration with Forward Osmosis Desalination Process**  
Min Young Park and Eung Soo Kim(SNU)
- 10:00      Feasibility Study of Mixture Gas Coolant Based HTGR Concept Using Conventional Gas Turbine Power Conversion Systems**  
Serin Shin, Min-Young Park, and Eung Soo Kim(SNU)  
Sung-Joong Kim(HYU)  
Jeong-Ik Lee(KAIST)
- 10:20      A Comparative Study of the He and CO<sub>2</sub> Cycle for a Small Modular Gas-Cooled Reactor**  
Seong Jun Bae, Yoon han Ahn, and Jeong Ik Lee(KAIST)
- 10:40      Coffee Break**
- 11:00      Experimental Study on Stainless Steel 316L Printed Circuit Heat Exchanger in High Temperature and High Pressure Gas Environments**  
C. S. Kim, S. D. Hong, and M. H. Kim(KAERI)
- 11:20      Experiment on Density Gradient Driven Flow in Small Break Air Ingress Accident of VHTRs**  
Jae Soon Kim, Jin-Seok Hwang, and Eung Soo Kim(SNU)
- 11:40      Improvement and Validation of an Aerosol Deposition Model in the GAMMA-FP, a Fission Product Analysis Module for VHTRs**  
Churl Yoon and Hong Sik Lim(KAERI)
- 12:00      Oxidation Effects on Thermal Emissivity of Selected Nuclear Graphite**  
Se-Hwan Chi and Min-Hwan Kim(KAERI)  
Seung-Kuk Seo and Jae-Seung Roh(KNIT)

### Ⅲ. 분과별 논제 및 발표자

#### 제 1 분과 D

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

- 연구로 및 경중수로 기술(Research Reactor and Water Cooled Reactor Technology)

좌 장 박수기|(Suki PARK), 서용석(Yong Seok SEO)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P01D01 Development of the Diverse Means for Reactor Shutdown Function of EU-APR1400**  
Hyeong Do Kweon, Keun Sung Lee, and Kwang Hong Kim(KHNP CRI)
- P01D02 Economic Evaluation of Seawater Desalination by Using SMART in the MENA**  
Hyo-Sung Lee and Myung-Sub Roh(KINGS)
- P01D03 Preliminary Design Concept for a Reactor-internal CRDM**  
Jae-Seon Lee, Jong-Wook Kim, Tae-Wan Kim, Suhn Choi, and Keung-Koo Kim(KAERI)
- P01D04 Assessment of SMART Capability for Multiple Applications**  
Han-Ok Kang, Young-In Kim, Keung Koo Kim, and Sung-Kyun Zee(KAERI)
- P01D05 Comparative Study for Modeling Reactor Internal Geometry in CFD Simulation of PHWR Internal Flow**  
Gong Hee Lee, Sweng Woong Woo, and Ae Ju Cheong(KINS)
- P01D06 Grid Sensitivity Test for STERN Experiment by Using the CUPID Code**  
Sang Gi Park and Jae Jun Jeong(PNU)  
Jae Ryong Lee and Han Young Yoon(KAERI)
- P01D07 Preliminary Hydrogen Production Cost Estimation based on the HEEP**  
Tae-Hoon Lee and Ki-Young Lee(KAERI)
- P01D08 Depletion Calculations for MTR Core Using MCNPX and Multi-Group Nodal Diffusion Methods**  
Mustafa K. Jaradat, Chang Je Park, and Byungchul Lee(KAERI)
- P01D09 Estimating Burnup for UMo Plate Type Fuel with Least Square Fitting**  
Luay M. Alawneh, Mustafa K. Jaradat, Chang Je Park, and Byungchul Lee(KAERI)
- P01D10 A New Monte Carlo Photon Transport Code for Research Reactor Hotcell Shielding Calculation Using Splitting And Russian Roulette Methods**  
Alaaddin Alnajjar, Chang Je Park, and Byunchul Lee(KAERI)
- P01D11 Comparison of Channel Behavior for Initial and Aged CANDU Core**  
Jong Yeob Jung, Jun Ho Bae, Joo Hwan Park, and Yong Mann Song(KAERI)

## 제 1 분과 E

### 원자로시스템기술(Reactor System Technology) - Poster - 경중수로 및 고온가스냉각로 기술 (Water Cooled and High Temperature Gas Cooled Reactor System Technology)

좌 장 김영인(Young In KIM), 윤 철(Churl YOON)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P01E01 Sensitivity Analysis for Aging Degradation of SG Tubes in CANDU NPPs**  
So Eun Shin, Jeong Hun Lee, and Tong Kyu Park(FNC Tech)  
Jong Yeob Jung(KAERI)
- P01E02 Preliminary Design of S-CO<sub>2</sub> Brayton Cycle for KAIST Micro Modular Reactor**  
Seong Gu Kim, Min Gil Kim, Seong Jun Bae, and Jeong Ik Lee(KAIST)
- P01E03 Cooling of Fuel Plates in an Accidental Drop of a Fuel Assembly**  
Suki Park, Hyeonil Kim, Cheol Park, and Y. J. Chung(KAERI)
- P01E04 Numerical Analysis of the Pressure Drop on a Flow Channel Filled with Catalysts for Nuclear Hydrogen Production System**  
Sung-Deok Hong, C. S. Kim, M. H. Kim, and Y. W. Kim(KAERI)  
D. U. Seo and G. C. Park(SNU)
- P01E05 Thermogravimetric and Differential Scanning Calorimetric Behavior of Ball-Milled Nuclear Graphite**  
Eung-Seon Kim, Min-Hwan Kim, and Yong-Wan Kim(KAERI)  
Yi-Hyun Park and Seung-Yon Cho(NFRI)
- P01E06 Conceptual Design on Primary Control Rod Drive Mechanism of a Prototype Gen-IV SFR**  
Lee, Jae-Han and Koo, Gyeong-Hoi(KAERI)
- P01E07 Simplified Model of Safety Determination Process for a Country with Its First Operating Nuclear Power Plants**  
Saud BinKhadim(KAIST)  
Dae Wook Chung(KINS)
- P01E08 Numerical Simulation for Validating Scaling Laws of RCCS Model Test**  
Bong Hyun Cho, Yoon Yeong Bae, and Jae Man Noh(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 1 분과 F

#### 원자로시스템기술(Reactor System Technology) - Poster - 소듐냉각고속로 설계기술 I (Sodium Cooled Fast Reactor Design Technology I)

좌 장 홍중간(Jonggan HONG), 박창규(Chang-Gyu PARK)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P01F01    Safeguard Value of Recycling Fuel Cycle Including SFR and Pyro-processing**  
Jewhan LEE and Ji-Young JEONG(KAERI)
- P01F02    Comparative Studies of Core Thermal Hydraulic Design Methods for the Prototype Sodium Cooled Fast Reactor**  
Sun Rock Choi, Jae-Yong Lim, and Sang-Ji Kim(KAERI)
- P01F03    Influence of the MWCNT Crystal Structure on the Thermal Conductivity and Viscosity of the MWCNT Suspension**  
Jonggan Hong and Ji-Young Jeong(KAERI)
- P01F04    A Numerical Assessment of the Isokinetic Sampling Technique for a Core Subchannel Flow Test**  
Jonggan Hong, Sun Rock Choi, Seok-Kyu Chang, Dong-Jin Euh, and Hyeong-Yeon Lee(KAERI)  
Jae Wan Ahn(CD-adapco)
- P01F05    The Status of Development of Electromagnetic Pumps for Space Application**  
J. S. Kwak, K. H. Kim, J. S. Jeong, and Hee Reyoung Kim(UNIST)
- P01F06    Perspective on Utilizing SAS4A/SAYYS-1 Code as Severe Accident Analysis Code for Metal Fueled SFR**  
Yong Won Choi, Andong SHIN, Moo-Hoon BAE, and Namduk SUH(KINS)
- P01F07    Implementation of Helical Tube Heat Transfer Correlations in TRACE for Sodium-cooled Fast Reactor Analysis**  
Ji-hun Kim, Yong Won Choi, Andong Shin, and Namduk Suh(KINS)
- P01F08    Preliminary Stress Analysis of an IHX Tube Support Plate in Prototype SFR**  
Sung-Kyun Kim and Gyeong-Hoi Koo(KAERI)
- P01F09    Preliminary Design Study of S-CO<sub>2</sub> Power Conversion System for PG-SFR**  
Yoonhan Ahn, Jekyoung Lee, Seong Gu Kim, Hwa-Yong Jung, and Jeong Ik Lee(KAIST)

## 제 1 분과 G

### 원자로시스템기술(Reactor System Technology) - Poster - 소듐냉각고속로 설계기술 II (Sodium Cooled Fast Reactor Design Technology II)

좌 장 김성균(Sungkyun KIM), 최용원(Yong Won CHOI)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P01G01 Development of Core Heat Removal Objective Provision Trees for Sodium-Cooled Fast Reactor Defense-in-Depth Evaluation**  
Huichang Yang, Bongsuk Kang, and Youngho Lee(TUV Rheinland Korea)  
Namduk Suh(KINS)
- P01G02 Description of Supercritical CO<sub>2</sub> Compressor Experiment Loop**  
Jekyoung Lee, Jeong Ik Lee, Yoonhan Ahn, and Seong Gu Kim(KAIST)  
Je Eun Cha(KAERI)
- P01G03 Conceptual Design of the Pantograph Type In-Vessel Transfer Machine in PGSFR**  
S. H. Kim and G. H. Koo(KAERI)
- P01G04 Installation of the Supercritical CO<sub>2</sub> Brayton Cycle Experiment Loop**  
Jae Eun Cha(KAERI)  
Je Kyoung Lee and Jeong Ik Lee(KAIST)
- P01G05 Licensing Procedures for Sodium Experiment Facility Using Safety Control of Dangerous Substances Act**  
Minhwan Jung, Ji-Young Jeong, and Jewhan LEE(KAERI)
- P01G06 Preliminary Assessment of Transient of Over Power Accident for DSFR-600**  
Andong SHIN, Moohoon BAE, and Namduk SUH(KINS)
- P01G07 Residual Stress Evaluation of a Double Wall Tube for SFR Steam Generator**  
Jong-Bum Kim, Chang-Gyu Park, Hoe-Woong Kim, and Ji-Young Jeong(KAERI)
- P01G08 Test Model for Dynamic Characteristics of a Cantilevered Simple Cylindrical Structure Submerged in a Liquid**  
Chang-Gyu Park, Tae-Sung Kim, Hoe-Woong Kim, and Jong-Bum Kim(KAERI)
- P01G09 Comparison Study on the Deposition of Sodium Impurities in Cold Traps**  
Sang-Min Park, Jewhan Lee, and Ji-Young Jeong(KAERI)
- P01G10 Integrity Evaluation of Main Piping System in a Sodium Test Loop**  
Dong-Won Lee, Ji-Young Jeong, and Hyeong-Yeon Lee(KAERI)



### Ⅲ. 분과별 논제 및 발표자

#### 제 1 분과H

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

- 소듐냉각고속로 및 연구로 설계기술 (Sodium Cooled Fast Reactor and Research Reactor Design Technology)

좌 장 허 형(Hyung HUH), 이보욱(Bo Wook RHEE)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P01H01 A Decay Heat Removal System Design of the Prototype Sodium-cooled Fast Reactor**  
Dehee Kim, Jae-Hyuk Eoh, and Tae-Ho Lee(KAERI)
- P01H02 Dynamic Characteristics of a Cylindrical Structure according to Submergence Conditions**  
Tae-Sung Kim, Chang-Gyu Park, and Jong-Bum Kim(KAERI)
- P01H03 Development of the Reactor Leading Control Mode MMS Model for Prototype SFR Power Control**  
Eui Kwang Kim, Yoon Jung, Hyung Kook Joo, and Tae Ho Lee(KAERI)
- P01H04 Design of Passive Decay Heat Removal System Using Mercury Thermosyphon for SFR**  
Byung-Hyun You and Yong Hoon Jeong(KAIST)
- P01H05 Magnetic Actuation Connector between Extension Shaft and Armature for Bottom Mounted Control Rod Drive Mechanism**  
Hyung Huh, Yeong-Garp Cho, and Jong-In Kim(KAERI)
- P01H06 A New Idea for Long-Term Cooling Safety Facility of Research Reactors**  
Kwon-Yeong Lee, Seong Hoon Kim, and Juhyeon Yoon(KAERI)
- P01H07 Recommendations for CFD Simulation of Reactor Internal Flow**  
Gong Hee Lee, Young Seok Bang, Sweng Woong Woo, and Ae Ju Cheong(KINS)
- P01H08 Performance Evaluation of Core Cooling Systems for New Research Reactor**  
In Sub Jun and Soo Hyung Yang(KAERI)
- P01H09 Sensitivity of Effective Thermal Conductivity Models on Temperature Distribution of Heterogeneous Media of Fully Ceramic Micro-encapsulated Fuel**  
Hyuk Kwon, S. J. Kim, D. H. Hwang, and W. J. Lee(KAERI)
- P01H10 Development of Lateral Loss Coefficient Model on Heterogeneous Gap of Mixed Core**  
Hyuk Kwon, S. J. Kim, D. H. Hwang, and W. J. Lee(KAERI)

## 제 2 분과 A

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

좌 장 심형진(Hyung Jin SHIM), 이덕중(Deokjung LEE)

발표장소 다이너스티

일 정 | 10.24(목)

- 09:00 A Proposal of New Spherical Particle Modeling Method Based on Stochastic Sampling of Particle Locations in Monte Carlo Simulation**  
Song Hyun KIM, Do Hyun KIM, and Jong Kyung KIM(HYU)  
Jae Man NOH(KAERI)
- 09:20 On the Fundamental and Higher-Mode Eigenpairs of Fission Matrix Method and p-CMFD Method in Continuous-Energy Monte Carlo Calculation**  
YuGwon Jo, Seungsu Yuk, and Nam Zin Cho(KAIST)
- 09:40 Adjoint Weighted Kinetics Parameter Estimation in the Monte Carlo Wielandt Calculations**  
Sung Hoon Choi and Hyung Jin Shim(SNU)
- 10:00 Stabilization of Monte Carlo Fission Source Distribution in p-CMFD Acceleration Method**  
YuGwon Jo and Nam Zin Cho(KAIST)
- 10:20 A Preliminary Study on Sensitivity and Uncertainty Analysis with Statistic Method: Uncertainty Analysis with Cross Section Sampling from Lognormal Distribution**  
Myung Sub SONG, Song Hyun KIM, and Jong Kyung KIM(HYU)  
Jae Man NOH(KAERI)
- 10:40 Coffee Break**
- 11:00 Implementation of Generalized Adjoint Equation Solver for DeCART**  
Tae Young Han, Jin Young Cho, Hyun Chul Lee, and Jae Man Noh(KAERI)
- 11:20 Resonance Treatment of  $^{237}\text{Np}$  for Multi-Group Cross Sections by Subgroup Method**  
Oh-Sung Shim, Muhammad Sohail, and Myung-Hyun Kim(KHU)
- 11:40 Comparison of Non-overlapping and Overlapping Local/Global Iteration Schemes for Whole-Core Deterministic Transport Calculation**  
Seungsu Yuk, Bumhee Cho, and Nam Zin Cho(KAIST)
- 12:00 Multi-group Discontinuity Factors of Control Assembly in Sodium-Cooled Fast Reactor Analysis**  
Woong Heo and Yonghee Kim(KAIST)
- 12:20 Status of Deterministic Transport Code Development at UNIST**  
Sooyoung Choi, Hyunsuk Lee, and Deokjung Lee(UNIST)

### Ⅲ. 분과별 논제 및 발표자

#### 제 2 분과 B

#### 핵자료, 원자로물리 및 계산과학 - 미래 시스템 및 산업 응용 (Nuclear Data, Reactor Physics and Computational Science - Future Systems and Industrial Applications)

좌 장 김용희(Yonghee KIM), 홍서기(Ser Gi HONG)

발표장소 다이너스티

일 정 | 10. 25(금)

- 09:00      Reactivity and Power Distribution Management in LEU-loaded Linear B&BR**  
Donny Hartanto and Yonghee Kim(KAIST)
- 09:20      Sodium-cooled Fast Reactor Core Designs for the TRU Burning with Thorium Blanket**  
WuSeung You, Do-Yeon Kim, Hae Lee Hyun, and Ser Gi Hong(KHU)
- 09:40      A Feasibility and Optimization Study on a Small Space Reactor with 20w/o Uranium Fuel**  
Stefan Cerba, Hyun Chul Lee, Hong Sik Lim, and Jae Man Noh(KAERI)
- 10:00      Nuclear Thermal Rocket Design Using LEU Tungsten Fuel**  
Paolo Venneri and Yonghee Kim(KAIST)  
Peter Husemeyer(University of Cambridge)  
Wesley Deason(OSU)  
Gwyn Rosaire(Texas A&M, Univ.)  
Steven Howe(CSNR)
- 10:20      Silicide Fueled Core for the KIJANG Research Reactor**  
Chul Gyo Seo, Hee Taek Chae, Jae Seung Song, and Sang Ick Wu(KAERI)
- 10:40      Coffee Break**
- 11:00      A Small LWR Core Design Using ThO<sub>2</sub>-UO<sub>2</sub> and Fully Ceramic Micro-encapsulated Fuels for TRU Burning**  
Gonghoon Bae and Ser Gi Hang(KHU)  
Kyung Hoon Lee(KAERI)
- 11:20      Neutronic Evaluation of an OPR-1000 Core with Accident Tolerant Fuel and Cladding**  
Kyung-Hoon Lee, Sang-Yoon Park, Chung-Chan Lee, Jin-Young Cho, and Won-Jae Lee(KAERI)
- 11:40      Development of Boron Meter Model with MCNPX**  
Hyunsuk Lee, Sooyoung Choi, and Deokjung Lee(UNIST)  
Si Hwan Kim(HYU)  
Seokjean Lyou(Users Inc.,)
- 12:00      Comparison of Transport Calculation between 2D/1D Synthesis and RAPTOR-M3G at Core Barrel of Korea Standard Nuclear Plant(KSNP), OPR-1000**  
YoungJae MAENG, ByoungChul KIM, MiJoung LIM, KyungSik KIM, and YoungKyou JEON(KRIST)  
ChunSung YOO(KAERI)
- 12:20      Neutronic Analysis on the Fuel Pin Reshuffling Options for PWR In-Core Fuel Management**  
Aung Tharn Daing and Myung-Hyun Kim(KHU)

## 제 2 분과 C

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

좌 장 이정찬(Chungchan LEE), 이현철(Hyun Chul LEE)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P02C01 ATCROSS - Cross Section Adjustment Tool for Fast Reactor Design**  
Branislav Vrbanc, Jakub Lüley, Nam Ki Ean, and Sang Ji Kim(KAERI)
- P02C02 Reflector Performance Study in Ultra-long Cycle Fast Reactor**  
Taewoo Tak, Chidong Kong, Jiwon Choe, and Deokjung Lee(UNIST)
- P02C03 Whole Core Analysis Using OpenMC Monte Carlo Code**  
Kyungkwan Noh and Deokjung Lee(UNIST)
- P02C04 Preliminary Neutronics Results for the OECD MHTGR-350 Benchmark**  
Hyun Chul Lee, Tae Young Han, and Jae Man Noh(KAERI)
- P02C05 Nuclear Characteristics of SPNDs and Preliminary Calculation of Hybrid Fixed Incore Detector with Monte Carlo Code**  
Bon-Seung Koo, Kyung-Hoon Lee, Jae-Seung Song, and Sang-Yoon Park(KAERI)
- P02C06 An Assessment of Counter-current Flow Limitation Phenomena Using MARS Code**  
Phan Thi Huong(KAIST)  
Won Joon Chang and Yong-Jin Cho(KINS)
- P02C07 A Neutronic Feasibility Study of SMART Core Design Fully Loaded with FCM Fuel**  
Chungchan Lee, Kyung-Hoon Lee, Jin Young Cho, Sang-Yoon Park, Sung Quun Zee, and Won-Jae Lee(KAERI)
- P02C08 Preliminary Verification Calculation of DeCART/CAPP System by HTTR Core Analysis**  
Chang Joon Jeong, Tae Young Han, Hyun Chul Lee, and Jae Man Noh(KAERI)
- P02C09 Comparison of RADLST and Geant4 Results for the Estimation of Decay Energy**  
Jounghwa Lee, Choong-Sup Gil, and Young-Ouk Lee(KAERI)
- P02C10 A Neutronic Feasibility Study of an OPR-1000 Core Design with Boron-bearing Fuel**  
Kyung-Hoon Lee, Sang-Yoon Park, Chung-Chan Lee, and Yong-Sik Yang(KAERI)
- P02C11 Understanding of Relationship between Density of State and Surface Oxidation on Ni(111) Using First Principles Method**  
Kwang Beom Ko, Jong Jin Kim, and Ji Hyun Kim(UNIST)
- P02C12 An Evaluation on the Influence of Axial Reflector Thickness into the Fission Source Convergence in MC Eigenvalue Calculation of VHTR Prismatic Reactor**  
Seung Hyun Lee, Song Hyun Kim, and Jong Kyung Kim(HYU)  
Jae Man NOH(KAERI)

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- P02C13      Analysis of Fuel Temperature Reactivity Coefficients According to Burn-up and Pu-239 Production in CANDU Reactor**  
Hae Sun Jeong, Chang Je Park, Jong Yeob Jung, Yong Mann Song, and Kwang Soon Ha(KAERI)
- P02C14      A Preliminary Study on the Conceptual Design of Thorium/Uranium Mixed Nuclear Fuel for the Alternative of Burnable Poison in Commercial Pressurized Water Reactor**  
Dong Hwan KIM, Song Hyun KIM, and Jong Kyung KIM(HYU)
- P02C15      Statistical Error Analysis of Reactivity Measurement**  
Sithisak Thammaluckana and Chang Joo Hah(KINGS)
- P02C16      Simulation of a Neutron Noise Analysis Method for the Detection of Reactor Internals Vibration**  
Robby Christiana(KAIST)  
Seon Ho Song(KINS)

## 제 3 분과 A

### 방사성폐기물관리 (Radioactive Waste Management)

좌 장 정해룡(Haeryong JUNG), 서범경(Bum-Kyoung SEO)

발표장소 에메랄드

일 정 | 10. 25(금)

- 09:00**      **Copper Ferrocyanide Functionalized Magnetic Nanoparticles Using Polyelectrolyte for the Removal of Cesium**  
Hee-Man Yang, Kune woo Lee, Bum-Kyoung Seo, and Jei Kwon Moon(KAERI)
- 09:20**      **Establishment the Code for Prediction of Waste Volume on NPP Decommissioning**  
W. H. Cho, S. K. Park, Y. D. Choi, I. S. Kim, and J. K. Moon(KAERI)
- 09:40**      **Development of Cost Estimation Methodology of Decommissioning for PWR**  
Sang Il Lee, Yeon Jae Yoo, Yong Kyu Lim, Hyeon Sik Chang, and Geun Ho Song(HEC)
- 10:00**      **Stability of Decontamination Foam Containing Silica Nanoparticles and Viscosifier**  
In-Ho Yoon, Chong-Hun Jung, Suk Bon Yoon, Chorong Kim, Jun-Young Jung, Sang Yoon Park, Jei-Kwon Moon, and Wang-Kyu Choi(KAERI)
- 10:20**      **Measurement of Physical Strength of Fixed Soil by Polyelectrolyte Complex**  
Yong Suk Choi, Sang Un Kwon, Bum-Kyoung Seo, and Jei Kwon Moon(KAERI)
- 10:40**      **Coffee Break**
- 11:00**      **Application of Flame Spraying Coatings of Neutron-absorbing Boron-polymer Composite Powder for Spent Nuclear Fuel Container**  
Jin-Ju Park, Sung-Mo Hong, Eun-Kwang Park, Kyoung-Youl Kim, Min-Ku Lee, and Chang-Kyu Rhee(KAERI)  
Won-Hyuk Rhee(Daewah Alloytech)
- 11:20**      **Development of Radioactive Inventory Evaluation System Using 3D Shape and Multiple Radiation Measurement**  
Sang Chul Lee and Won Seok Kim(BHI)  
Byong Sub Han(ENESYS)  
Joo Hyun Moon(DU)
- 11:40**      **Reviews of the In-situ Demonstration Test of the Engineered Barrier System in Many Countries**  
Minsoo Lee and Heui-Joo Choi(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 3분과 B

#### 방사성폐기물관리 - Poster (Radioactive Waste Management)

좌 장 최왕규(Wang Kyu CHOI), 최희주(Heui Joo CHOI)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P03B01 Estimation of the Magnitude of Excavation Damaged Zone at KURT**  
Won-Jin Cho, Jin-Sub Kim, Changsoo Lee, and Heui-Joo Cho(KAERI)
- P03B02 Washing Technology Development for Gravel Contaminated with Uranium**  
Uk-Ryang Park, Gye-Nam Kim, Seung-Soo Kim, Wan-Suk Kim, and Jai-Kwon Moon(KAERI)
- P03B03 Analysis of UREX+1a and Pyroprocessing Technologies from Safeguards Aspects**  
Mutava Victor Musembi(KAIST)  
Jeong Seung-Young(KINS)  
Kwon Eun-Ha(KAERI)
- P03B04 Corrosion Characteristics of Inconel-600 at the NP(Cu)-HYBRID Decontamination Demonstration Test with HANARO FTL Specimen**  
Jun-Young Jung, Sang Yoon Park, Hui-Jun Won, Seon-Byeong Kim, Wang-Kyu Choi, and Jei-Kwon Moon(KAERI)
- P03B05 A Comparative Study on the Destruction of Hydrazine**  
Woo-Seong Lee, Hui-Jun Won, Sang-Yoon Park, Wang -Kyu Choi, and Jei-Kwon Moon(KAERI)
- P03B06 Preliminary Criticality Calculation on Conceptual Deep Borehole Disposal System for Trans-metal Waste during Operational Phase**  
In-young Kim, Heui-Joo Choi, and Dong-Geun Cho(KAERI)
- P03B07 Decontamination Process Development for Gravels Contaminated with Uranium**  
Gye-Nam Kim, Uk-Ryang Park, Seung-su Kim, Won-Suk Kim, and Jei-Kwon Moon(KAERI)
- P03B08 Development of Regulatory Framework on Decommissioning of Nuclear Facilities in the Philippines**  
Ronald E. Piquero(KAIST)  
Jung Joon Lee and Sang Myeon Ahn(KINS)
- P03B09 Comparison of Activation Analysis Codes Between ORIGEN-S and FLUKA**  
Jeong Dong Kim, Hong Yeop Choi, Yong Deok Lee, Chang Je Park, and Ho-Dong Kim(KAERI)
- P03B10 A Study on the Design of Novel Neutron Absorber Using Artificial Rare Earth Compound**  
Song Hyun Kim, Chang Ho SHIN, Seung Hyun LEE, Jeia PARK, and Jong Kyung KIM(HYU)  
Soon Young KIM(RADCORE)  
Hwan Seo PARK(KAERI)
- P03B11 Development of Practical Remediation Process for Uranium-Contaminated Concrete**  
S. S. Kim, W. S. Kim, G. N. Kim, and J. K. Moon(KAERI)

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**P03B12      Detection Simulation of SiC Semiconductor Detector**

Hong Yeop Choi, Jeong Dong Kim, Yong Deok Lee, and Ho-Dong Kim(KAERI)

**P03B13      Study on the High Volume Reduction of Radioactive Wastes**

Kim Ki Hong, Kang Il Sik, and Hong Dae Seok(KAERI)

Jeon Gil Ho(RADIN Co.Ltd.,)

**P03B14      Development of 3D Visualization Technology for Medium-and Large-sized Radioactive Metal Wastes from Decommissioning Nuclear Facilities**

Arim Lee, Chan Hee Park, Jung Min Lee, Rinah Kim, and Joo Hyun Moon(DU)



### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과 A

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

- 핵연료 피복관(Fuel Cladding)

좌 장 김원주(Weon Ju KIM), 김현길(Hyun Gil KIM)

발표장소 메이플

일 정 | 10. 24(목)

- 09:00      Fabrication of SiCf/SiC Composite by a Polymer Impregnation and Pyrolysis Process**  
Sun-Han Kim, Yang-Il Jung, Dong-Jun Park, Jung-Hwan Park, Hyun-Gil Kim, and Jeong-Yong Park(KAERI)  
Sun-Ig Hong (CNU)
- 09:20      Cr Layer Coating on Zirconium Alloy Cladding Tube Applied to Accident Tolerant Fuel**  
Hyun-Gil Kim, Il-Hyun Kim, Yang-Il Jung, Dong-Jun Park, Jeong-Yong Park, and Yang-Hyun Koo(KAERI)
- 09:40      Microstructure Characterization of SiC<sub>f</sub>/SiC Composites by X-ray Computed Microtomography**  
Weon-Ju Kim, Daejong Kim, Choong Hwan Jung, and Ji Yeon Park(KAERI)  
Lance L. Snead(ORNL)
- 10:00      Characteristics of SiC Layers in TRISO Particle Fuel Deposited at Low Temperatures**  
Weon-Ju Kim, Daejong Kim, Ji Yeon Park, Yeon-Ku Kim and Moon Sung Cho(KAERI)
- 10:20      Basic Study on the Development of a Metal Cladding with Protective SiC Composites**  
Seonho Noh and Kwangheon Park(KHU)
- 10:40      Coffee Break**
- 11:00      Fabrication and Measurements of Hoop Strength of a Multi-Layered SiC Composite Tube**  
Daejong Kim, Jongmin Lee, Weon-Ju Kim, and Ji Yeon Park(KAERI)
- 11:20      Terminal Solid Solubility of Hydrogen in Zircaloy-4 by Differential Scanning Calorimetry**  
Ju-seong Kim and Yong-soo Kim(HYU)
- 11:40      Hydride Effects on the Ductility of Zircaloy-4 by Ring Compression Test**  
Ju-seong Kim, Tae-hoon Kim, Ji-whan Ryu, and Yong-soo Kim(HYU)
- 12:00      The High-temperature Oxidation Kinetics of Zr-alloy Claddings in Air and Steam**  
Kyung Tae Kim and Kwangheon Park(KHU)
- 12:20      The Effect of Temperature and Cooling Rate on Hydride Reorientations of High Burnup Claddings under Interim Dry Conditions**  
Su-Jeong Min, Myeong-Su Kim, Chu-Chin Won, and Kyu-Tea Kim(DU)
- 12:40      Evaluation of the Weld-line Defects of a Nuclear Fuel Rod End Plug Weld by RPW Process**  
Tae-hyung Na and Sang-Jae Han(KEPCO NF)  
Jae-seong Kim(WeldOne Ltd.)

## 제 4 분과 B

## 핵연료 및 원자력재료(Nuclear Fuel and Materials)

- 원자력재료 I (Nuclear Materials I)

좌 장 허도행(Do Haeng HUR), 윤지현(Ji Hyun YOON)

발표장소 마호가니

일 정 | 10. 24(목)

- 09:00 Effect of Residual Strain Induced by Cold Working on PWSCC of Alloy 690**  
Sung-Woo Kim, Seong-Sik Hwang, and Yun-Soo Lim(KAERI)
- 09:20 Effect of Mechanical Alloying and Hot Consolidation Processes on the Microstructure and Mechanical Properties of ODS Steels**  
Sanghoon Noh, Byoung-Kwon Choi, Chang-Hee Han, Ki-Baik Kim, Suk Hoon Kang, Young-Bum Chun, and Tae Kyu Kim(KAERI)
- 09:40 Considerations for Metallographic Observation of Intergranular Attack in Steam Generator Tubes**  
Do Haeng Hur, Myung Sik Choi, Deok Hyun Lee, and Jung Ho Han(KAERI)
- 10:00 A Study of Microstructural Changes by Thermal Aging in the Interface between Low Alloy Steel and Ni-base Alloy Filler Metal**  
Kyoung Joon Choi, Jong Jin Kim, Seung Chang Yoo, and Ji Hyun Kim(UNIST)
- 10:20 Structural Analysis of Ni/NiO-water Interface Using X-ray Reflectivity**  
Jong Jin Kim, Seung Hyun Kim, and Ji Hyun Kim(UNIST)  
Chi Bum Bahn(ANL)  
Chang Yong Park(CIW)
- 10:40 Coffee Break**
- 11:00 Optimized Thermo-Mechanical Treatment Condition for Enhancing Fracture Toughness of 9Cr-Nanostructured Ferritic Alloy**  
Ji-Hyun Yoon and Suk-Hoon Kang(KAERI)  
Thak S. Byun and David T. Hoelzer(ORNL)
- 11:20 Effect of Alloying Element and Heat Treatment on Mechanical and Corrosion Property of Ni-Cr-Co-Mo Alloy at 950°C**  
Dong-Jin Kim, Su Jin Jung, Byung Hak Moon, Sung Woo Kim, Yun Soo Lim, and Hong Pyo Kim(KAERI)
- 11:40 The Study on the SCC Behaviors of Type 304 Stainless Steel Piping in the Presence of Na<sub>2</sub>S**  
S. C. Kim, S. M. Kim, Y. J. Lee, A. R. Cho, S. K. Bae, B. Y. Lee, and S. Y. Lee(KAU)
- 12:00 Metal Fuel Fabrication for Gen IV SFR in KAERI**  
Ki-Hwan Kim, Hoon Song, Jong-Hwan Kim, Ho-Jin Ryu, Seok-Jin Oh, Soo-Sung Kim, Ho-Jin Lee, and Chan-Bock Lee(KAERI)
- 12:20 The Effect of High Temperature Liquid Sodium on Mechanical Properties and Microstructure of Ferritic-Martensitic Steel**  
Sang Hun Shin and Ji Hyun Kim(UNIST)  
Jun Hwan Kim(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과 C

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

- 핵연료 성능해석 및 가공(Fuel Performance Analysis & Fabrication)

좌 장 이영우(Young Woo RHEE), 이정구(Jeong Goo LEE)

발표장소 메이플

일 정 | 10. 25(금)

- 09:00 Development of Multidimensional Gap Conductance Model Using Virtual Link Gap Element**  
Hyo Chan Kim, Yong Sik Yang, Dae Ho Kim, Je Geon Bang, Sun Ki Kim, and Yang Hyun Koo(KAERI)
- 09:20 Preliminary Assessment of Transient Performance of TRISO Fuel Particle**  
Jonghwa Chang, Yong Wan Kim, and Won-Jae Lee(KAERI)
- 09:40 Evaluation of Gap Conductance Approach for Mid-Burnup Fuel LOCA Analysis**  
Joosuk Lee and Swengwoong Woo(KINS)
- 10:00 Gadolinia-bearing Assembly Design for Reduction of Critical Boron Concentration in APR 1400**  
Wan Shakirah Wan Abdul Kahar and Chang Joo Hah(KINGS)  
Ki Bong Seong and Do Ik Chang(KEPCO NF)
- 10:20 In-Reactor Densification of Dual Cooled Annular Fuel Pellet During Irradiation Test at HANARO**  
Young Woo Rhee, Dong Joo Kim, Hyoung Mun Kwon, Keon-Sik Kim, Jong Hun Kim, Jang Soo Oh, Jae Ho Yang, and Yang Hyun Koo(KAERI)
- 10:40 Coffee Break**
- 11:00 Be-free Brazing Process Proposed for CANDU Fuel Bundle Manufacture**  
Jung-Gu Lee, Min-Ku Lee, and Chang-Kyu Rhee(KAERI)  
Choon-Ho Park(KEPCO NF)
- 11:20 Development of Finite Element Model for the Static Buckling Behavior of the Spacer Grid**  
Young-Ik Yoo, Nam-Gyu Park, Kyoung-Ju Kim, and Jung-Min Suh(KEPCO NF)
- 11:40 Fuel Rod Drag Force Prediction for Mid Grid Spring Design**  
Su-Pil Ryu, Joo-Young Ryu, Dong-Geun Ha, Kyoung-Bo Eom, Sang-Youn Jeon, and Jung-Min Suh(KEPCO NF)
- 12:00 A Study on the Fuel Assembly Seismic Analysis without Holddown Springs**  
O Cheol Kwon, Dong Geun Ha, Kyou Seok Lee, Sang Yoon Jeon, and Jung Min Suh(KEPCO NF)
- 12:20 The Effects of Nuclear Fuel Geometry on Debris Filtering Efficiency**  
Hak-In Lee, Joo Young Ryu, Jin-Sun Kim, Joon-Kyoo Park, Sang-Yoon Jeon, and Jung-Min Suh(KEPCO NF)
- 12:40 Study on Enhanced Thermal Conductivity of  $\text{HfO}_2/\text{xGnP}$  Composites**  
In Guk Kim, Seung Won Lee, Ji Hyun Kim, and In Cheol Bang(UNIST)

## 제 4 분과 D

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

- 원자력재료 II 및 해석(Nuclear Materials II & Analysis)

좌 장 황성식(Seong Sik HWANG), 송기남(Ki Nam SONG)

발표장소 마호가니

일 정 | 10. 25(금)

- 09:00      Radiation Induced Changes in Austenitic Stainless Steel after He Ion Irradiation**  
Hyung-Ha Jin, Sangyeop Lim, and Junhyun Kwon(KAERI)
- 09:20      Initiation and Propagation of PWSCC of Alloy 600/690 in PWRs**  
Seong Sik Hwang, Sung Woo Kim, and Yun Soo Lim(KAERI)
- 09:40      Analysis of Creep Rupture Data of Alloy 617 for VHTR Application**  
Woo-Gon Kim, Min-Whan Kim, and Yong-Wan Kim(KAERI)  
Jae-Young Park and I.M.W. Ekaputra(PKNU)
- 10:00      Finite Element Ductile Crack Growth Simulation of Test Specimen with Residual Stresses**  
Chang-Young OH and Yun-Jae Kim(KU)
- 10:20      Multicomponent Modeling of Radiation-Induced Segregation Behavior in Ion-irradiated Stainless Steel 316**  
Gyeong-Geun Lee, Hyung-Ha Jin, and Junhyun Kwon(KAERI)
- 10:40      Coffee Break**
- 11:00      Consideration of Weld Mechanical Properties on the Structural Performance of Nuclear Components**  
Keenam Song(KAERI)  
D-P Shin(AD Solution)
- 11:20      Mode Analysis of Downstream Flow from Rotating Fan Using Double Proper Orthogonal Decomposition**  
Huinam Rhee(SNU)  
Tae-Sung Kim, Doo Byung Yoon, and Jin Ho Park(KAERI)
- 11:40      Assessment of Alloy 690/152 Cylindrical Weld Specimen**  
Sang Hwan Lee, Da Hye Kim, and Yoon-Suk Chang(KHU)  
Sung-Woo Kim and Seong-Sik Hwang(KAERI)
- 12:00      Battelle Full-Scale Pipe Fracture Simulation of Carbon Steels with a Circumferential Crack**  
Jae-Jun Han, Nak-Hyun Kim, and Yun-Jae Kim(KU)  
Jong Hyun Kim(KEPCO E&C)
- 12:20      Thermomechanical Analysis of Reactor Vessel Upper Head Vent Nozzles**  
Sung H. Yu(PHILOSOPHIA Inc.,)  
Kune Y. Suh(SNU)
- 12:40      Evaluation of the Depth-dependent Yield Strength of Ion-irradiated F82H Steels Using a FE Analysis and Nanoindentation**  
Jong-Min Kim, Chan-Sun Shin, Sang-Hoon Noh, and Bong-Sang Lee(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과 E

#### 핵연료 및 원자력재료(Nuclear Fuel and Materials)-Poster - 핵연료 I (Fuel I)

좌 장 양재호(Jae Ho YANG), 천진식(Jin Sik CHEON)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P04E01 Measurement of Nucleate Pool Boiling Heat Transfer Limit Using Fuel Cladding Material**  
Chi Young Lee, Chang Hwan Shin, Dong Seok Oh, Tae Hyun Chun, and Wang Kee In(KAERI)
- P04E02 3D FE Simulation of the Nuclear Fuel Rod Considering the Gap Conductance between the Pellet and Cladding**  
Chang-Hak Kang, Sung-Uk Lee, and Dong-Yol Yang(KAIST)  
Hyo-Chan Kim and Yong-Sik Yang(KAERI)
- P04E03 Analysis of Nitride or Silicide Layers on Single or Duplex Coated U-Mo Powder**  
Woo Jeong Kim, Ji Min Nam, and Kyu Hong Lee(KAERI)  
Ho Jin Ryu(KAIST)
- P04E04 Comparative Study of Cladding Corrosion with a Protective Film of Silicon Carbide**  
Dong Hee Lee and Kwang Heon Park(KHU)
- P04F05 Fabrication of Duplex Coated U-Mo-Ti Atomized Powder**  
Ji Min Nam, Woo Jeong Kim, and Kyu Hong Lee(KAERI)  
Ho Jin Ryu(KAIST)
- P04E06 Coating Thickness Measurement of TRISO-Coated Fuel Particles Using X-ray Image Plate**  
Woong Ki Kim, Yeon Ku Kim, Kyung Chai Jeong, Young Woo Lee, Bong Goo Kim, Sung Ho Eom, Young Min Kim, and Moon Sung Cho(KAERI)
- P04E07 Effects of Final Annealing on the Corrosion Behavior and Hardness of Zr-Nb-Fe-P Alloy**  
Min-Young Choi, Chung-Yong Lee, Yoon-ho Kim, Yong-Kyoon Mok, Seung-Jae Lee, and Jung-Min Suh(KEPCO NF)
- P04E08 Effect of Hydrogen Content for Mechanical Properties of ZIRLO™ Tubes**  
Yeon-Soo Na, Tae-Sik Jung, Dae-Gyun Ko, Yeong-Man Lee, and Yong-Kyoon Mok(KEPCO NF)
- P04E09 Reduction Behaviors of Zr for  $\text{LiCl-KCl-ZrCl}_4$  and  $\text{LiCl-KCl-ZrCl}_4\text{-CdCl}_2$**   
Si-Hyung Kim, Jongho Yoon, Gha-Young Kim, Tack-Jin Kim, Joon-Bo Shim, Kwang-Rag Kim, Jae-Hoo Jung, Do-Hee Ahn, and Senng-Woo Paek(KAERI)
- P04E10 Fabrication of U-10wt.%Zr Fuel Slug for SFR by Injection Casting**  
Jong-Hwan Kim, Hoon Song, Hyung-Tae Kim, Young-Mo. Ko, Ki-Hwan Kim, and Chan-B. Lee(KAERI)
- P04E11 Validation of OPERA3D PCMI Analysis Code**  
Ji Hoon Jeun, Jae Myung Choi, and Jong Sung Yoo(KEPCO NF)  
G. Cheng, K.S. Sim, and Girma Chassie(Candu Energy INC.,)

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- P04E12      Development of Cold Pilgering Technology for PLUS7 Guide Thimble Tube**  
Ki Bum Park, In Kyu Kim, Min Young Park, Jong Yeol Kahng, and Hung Soon Chang(KEPCO NF)
- P04E13      Zirconium and Vanadium Composite as Inter-diffusion Barrier between Metallic Fuel and Clad Material**  
Kang-Soo Lee, Seok-Hee Lee, and Sung-Pil Woo(Yonsei Univ.)  
Seung-Hyun Jee, You-Na Lee, and Young-Soo yoon(GCU)
- P04E14      Thermal Decomposition Characteristics of ADU Gel Spheres**  
Jeong Kyung Chai, Eom Sung Ho, Kim Yeon Ku, Kim Young Min, Kim Woong Ki, Kim Bong Ku, Lee Young Woo, and Cho Moon Seoung(KAERI)
- P04E15      The Effect of Zn Addition On The CRUD Structure**  
Jooyoung Park, Kwangheon Park, and Nobuaki Sato(KHU)
- P04E16      In-situ Oxide Analysis on the Surface of Zr-alloy in PWR Primary Water Environment Using Raman Spectroscopy**  
Jong Jin Kim, Seung Hyun Kim, and Ji Hyun Kim(UNIST)

### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과 F

#### 핵연료 및 원자력재료(Nuclear Fuel and Materials)-Poster -핵연료 II(Fuel II)

좌 장 김윤호(Yoon Ho KIM), 박정웅(Jeong-Yong PARK)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P04F01 Application of PLUTO Test Facility for U.S NRC Licensing of a Fuel Assembly**  
Dongseok Oh, Changhwan Shin, Kanghee Lee, and Heungseok Kang(KAERI)
- P04F02 A Study on the Growth of Grid Width for the Manufactured Strap Conditions**  
Jae-Jun Lee, Joung-Yeul Lee, Il-Kyu Kim, Yong-Hwan Kim, and Jung-Cheol Shin(KEPCO NF)
- P04F03 Observation of  $\text{UO}_2$  Powder Oxidation by X-ray Diffraction**  
Wonyoung Jung, Kwangheon Park, and Hyoungju Yoon(KHU)
- P04F04 Study on Conditions of Laser Welding for Manufacturing Irradiation Rig of Dual Cooled Fuel**  
Ka-Hye Kim, Jintae Hong, Sung-Ho Heo, Sung-Ho Ahn, and Chang-Young Joung(KAERI)
- P04F05 Analysis of the Fuel-Clad Gap Region in High Burn-up PWR**  
Y.H. Jung, B.O. Yoo, G.S. Kim, S.B. Ahn, and Y.S. Joo(KAERI)
- P04F06 Effects of Zinc Injection on the Cladding Oxide Thickness in the Domestic Nuclear Power Plant**  
Hak-Kyu Yoon, Hong-Jin Kim, and Jung-Cheol Shin(KEPCO NF)
- P04F07 Development of Welding and Instrumentation Technology for Nuclear Fuel Test Rod**  
Chang-Young Joung, Sung-Ho Ahn, Sung-Ho Heo, Jin-Tae Hong, and Ka-Hye Kim(KAERI)
- P04F08 The Effect of Dissolved Hydrogen on Zirconium Alloy Oxidation in Air**  
Yunmock Jung and Kwangheon Park(KHU)  
Nobuaki Sato(Tohoku Univ.)
- P04F09 Oxidation Behaviors and Its Kinetics of Zircaloy-4 in Air**  
Je Geon Bang, Sun Ki Kim, and Tae Hyun Chun(KAERI)
- P04F10 Endplug Welding Techniques Developed for SFR Metallic Fuel Elements**  
Jung Won Lee, Soo Sung Kim, Yoon Myeng Woo, Hyung Tae Kim, Ho Jin Lee, and Ki Hwan Kim(KAERI)
- P04F11 Fabrication of Cr-doped  $\text{UO}_2$  Fuel Pellet Using Liquid Phase Sintering**  
Dong-Joo Kim, Jae Ho Yang, Keon Sik Kim, Young Woo Rhee, Jong Hun Kim, Jang Soo Oh, and Yang Hyun Koo(KAERI)
- P04F12 Manufacturing of FeCrAl/Zr Dual Layer Tube for its Application to LWR Fuel Cladding**  
Dong Jun Park, Do Wan Lim, Yang Il Jung, Hyun Gil Kim, and Jeong Yong Park(KAERI)
- P04F13 Development of Cyclic Pressurization Fatigue Test Technique for Spent Fuel Cladding Tube**  
Jeong-nam Jang, Sung-geun Kim, Hang-seok Seo, and Do-sik Kim(KAERI)

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**P04F14      Preliminary Test of QMS in the Fission Gas Puncturing System for the Post Irradiation Examination in a Hotcell**

Heemoon Kim, Byung Ok Yoo, Dae Gyu Park, Sang Ryul Baek, Yang Hong Jung, and Sang Bok Ahn(KAERI)

**P04F15      Estimation of Fission Gas Release in FCM Fuel and UO<sub>2</sub> Pellets**

Young Min Kim and M. S. Cho(KAERI)

**P04F16      An Adjusted Discount Rate Model for Fuel Cycle Cost Estimation**

S. K. Kim, G. B. Kang, and W. I. Ko(KAERI)



### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과 G

#### 핵연료 및 원자력재료(Nuclear Fuel and Materials)-Poster -원자력재료Ⅲ (Nuclear MaterialsⅢ)

좌 장 김홍표(Hong Pyo KIM), 김성우(Sung-Woo KIM)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P04G01 Ni-based Superalloy Development for VHTR - Methodology Using Design of Experiments and Thermodynamic Calculation**  
Sung-Woo Kim and Dong-Jin Kim(KAERI)
- P04G02 Material Properties of Grade 91 Steel at Elevated Temperature and Comparison with Design Code**  
Hyeong-Yeon Lee and Woo-Gon Kim(KAERI)  
Han-Sang Lee and Yun-Jae KIM(KU)
- P04G03 A Study of Thermal Aging Effects on Microstructures of Type-II Boundary in Dissimilar Metal Weld Joint**  
Seung Chang Yoo, Kyung Joon Choi, and Ji Hyun Kim(UNIST)
- P04G04 Nanocoating Application for the Prevention of Flow Accelerated Corrosion in Secondary System of Nuclear Power Plants**  
Seung Hyun Kim, Jae Hoon Huh, Jin Sung Kwak, Soon-Yong Kwon, and Ji Hyun Kim(UNIST)
- P04G05 Microstructure Evolution of Ferritic ODS Steel by a Simple Torsion Test**  
Hyun Ju Jin, Suk Hoon Kang, Sang Min Park, and Tae Kyu Kim(KAERI)
- P04G06 Thermal Properties of Beryllium Metal**  
Tae-Won Cho, Je-Kyun Baek, Gwan-yoon Jeong, Ji-Hyeon Kim, and Dong-Seong Sohn(UNIST)
- P04G07 Modified Injection Casting for Preventing the Evaporation of Volatile Elements**  
Hoon Song, Jong-Hwan Kim, Young-Mo Ko, Ki-Hwan Kim, and Chan-Bock Lee(KAERI)
- P04G08 Effects of Impurity on the Corrosion Behavior of Alloy 617 in Helium Environment**  
Su-Jin Jung, Dong-Jin Kim, and Gyeong-Geun Lee(KAERI)
- P04G09 Friction Stir Processing of ODS and FM Steels**  
Suk Hoon Kang, Young-Bum Chun, Sang Hoon Noh, Jin Sung Jang, and Tae Kyu Kim(KAERI)
- P04G10 Effects of Yttrium Oxide Addition on Microstructure and Tensile Properties of 15Cr Ferritic Steels**  
Ji-Eun Choi, Sang hoon Noh, Byung-Kwon Choi, Chang-Hee Han, Suk Hoon Kang, Ki-Baik Kim, Sun-Ig Hong, and Tae Kyu Kim(KAERI)
- P04G11 Measurement of Impedance of Oxide Layers on Ferritic-Martensitic Steels in Sodium Environment**  
Sang Hun Shin, Jeong Hyun Lee, Jeong Gi Lee, and Ji Hyun Kim(UNIST)

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- P04G12      Surface Characteristics on the Stress Corrosion Cracking of Alloy 690TT in Lead-containing Caustic Solution**  
Byung-Hak Moon, Dong-Jin Kim, Hong-Pyo Kim, and Seong-Sik Hwang(KAERI)
- P04G13      Preliminary Study for Temperature Variation Verification of Radiant Heating Furnace for High Temperature Corrosion Test**  
JeKyun Baek, TaeWon Cho, Ji-Hyeon Kim, Gwan Yoon Jeong, and Dong-Seong Sohn(UNIST)
- P04G14      Estimation of Graphite Dust Production in ITER TBM**  
Ji-Ho Kang and Eung Seon Kim(KAERI)
- P04G15      A Study on Corrosion and Fretting Wear Resistance of Alloy 690 Tubes**  
Ju-Jin Won, Su-Jung Min, Myeong-Su Kim, and Kyu-Tea Kim(DU)
- P04G16      Study of an Induction Brazing Process for the Instrumentation Feed through Part**  
Jintae Hong, Sung-Ho Ahn, Chang-Young Joung, Ka-Hye Kim, and Sung-Ho Heo(KAERI)
- P04G17      Analysis for Aging and Operating Experiences of Reactor Vessel Internals**  
Ki Hyoung Lee, Jeong Soon Park, Han Ok Ko, and Myung Jo Jhung(KINS)
- P04G18      Effect of Welding Processes on Tensile Properties of HT9 Alloy Joints**  
Soo-Sung Kim, Yoon-Myeng Woo, Jung-won Lee, and Ki-Hwan Kim(KAERI)
- P04G19      Radiation Induced Defect Flux Behaviors at Zirconium Based Component**  
Sang Il Choi and Ji Hyun Kim(UNIST)  
Jun hyun Kwon and Gyeong-Geun Lee(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 4 분과H

#### 핵연료 및 원자력재료(Nuclear Fuel and Materials)-Poster -건전성 및 설계해석 (Integrity & Design Analysis)

좌 장 이봉상(Bong Sang LEE), 강흥석(Heung Seok KANG)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P04H01 Development of K and COD Solutions of Non-idealized Circumferential Through-wall Cracks for PARTRIDGE**  
Jeong Soon Park, Sun Hye Kim, Jin Su Kim and Jin Ho Lee(KINS)  
Eun Sub Yun and Jae Gon Lee(KHNP)  
Hong Sun Park, Young Jin Oh, Sun Yeh Kang, and Ki Seok Yoon(KEPCO E&C)  
Do Jun Shim(EMC2)
- P04H02 Assessment of Pressure Fluctuation Effect for Thermal Fatigue in a T-junction Using Thermo-Hydro Analysis**  
Jaebum Pyo, Jungwoo Kim, and Namsu Huh(SEOULTECH)  
Sunhye Kim(KINS)
- P04H03 Finite Element Based Crack Opening Displacement Estimates for Complex-cracked Pipes Under Pure Bending Moment**  
Jae-Uk Jeong and Jae-Boong Choi(SKKU)  
Do-Jun Shim(EMC2)  
Yun-Jae Kim(KU)  
Nam-Su Huh(SEOULTECH)
- P04H04 Effect of Ovality on Maximum External Pressure of Helically Coiled Steam Generator Tubes with a Rectangular Wear**  
Dong-In Shin, Eun-Mo Lim, and Nam-Su Huh(SEOULTECH)  
Shin-Beom Choi, Je-Yong Yu, Ji-Ho Kim, and Suhu Choi(KAERI)
- P04H05 Numerical Analysis of Reactor Internals Under Hydrodynamic Loads**  
Da Hye Kim and Yoon-Suk Chang(KHU)  
Myung Jo Jhung(KINS)
- P04H06 Design of a Small Capsule for a Low-temperature Irradiation in HANARO**  
Man Soon Cho, Kee Nam Choo, Seong Woo Yang, and Sang Joon Park(KAERI)
- P04H07 Fuel Assembly Damping Summary**  
Kanghee Lee, Heungseok Kang, Dongseok Oh, Kyungho Yoon, Hyungkyu Kim, and Jaeyong Kim(KAERI)
- P04H08 Design and Varification of HANARO Irradiation Test Capsule for Mini Plate Fuel**  
Seong Woo Yang, Seung Jae Park, Yoon Taeg Shin, Kee Nam Choo, and Man Soon Cho(KAERI)
- P04H09 Consideration of Beyond Design Basis Earthquake on the Flaw Evaluation of Pipes**  
Ye Ji kim and Il Soon Hwang(SNU)
- P04H10 Quantification of J-integral for the Circumferentially Cracked Pipes Under Mechanical and Thermal Loads between R6 and A16**  
Hyun-Suk Nam, Chang-Young Oh, and Yun-Jae Kim(KU)

## 제 5 분과 A

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

- 결정론적 및 확률론적 안전성 평가(Deterministic & Probabilistic Safety Analysis)

좌 장 하상준(Sang Jun HA), 김도형(Dohyoung KIM)

발표장소 컨벤션A

일 정 | 10. 24(목)

- 09:00 Evaluation for a 6-inch Cold Leg Break Test of ATLAS Using TRACE Code**  
Byung Gil Huh, Dong-Gu Kang, Seung Hun Yoo, and Kwang-Won Seul(KINS)
- 09:20 Loss of Coolant Accident Analysis for 1MW PUSPATI Triga Mark II Research Reactor (RTP) Using MARS-KS Code**  
Abd Aziz Sadri(KAIST)  
Andong Shin(KINS)
- 09:40 Audit Calculations of ATWS for Ulchin Unit 1&2 Power Uprate**  
Jun Soo Lee, Byung Gil Huh, Yong Seog Choi, and Kwang-Won Seul(KINS)
- 10:00 A Preliminary Assessment of APR1400 LBLOCA for Integral Time at Temperature**  
Won Ho Kim, Kang Moon Lee, Tae Beom Lee, In Hun Kim, and Jae Il Lee(KEPCO NF)
- 10:20 An Analytical Investigation of Loop Seal Clearings for the SBLOCA Tests**  
Y. S. Kim, K. Y. Choi, S. Cho., H. S. Park, K. H. Kang, N. H. Choi, B. D. Kim, and K. H. Min(KAERI)
- 10:40 Coffee Break**
- 11:00 Developing Optimal Procedure of Emergency Outside Cooling Water Injection for APR1400 Extended SBO Scenario Using MARS Code**  
Jong Rok Hwang and Seung Jong Oh(KINGS)
- 11:20 Improvement of the PSA Model Using a Best-estimate Thermal-hydraulic Analysis of LOCA Scenarios**  
Dong Hyun Lee and Jae Jun Jeong(PNU)  
Ho-Gon Lim(KAERI)
- 11:40 Examination of the Emergency Planning Zone (EPZ) Using Level 3 PSA Approach with MACCS2**  
Bui Hoang Ha and Seung Jong Oh(KINGS)  
Ji Yong Oh(KHNP CRI)
- 12:00 Evaluation of Fault Detection Coverage of Digital I&C Systems**  
Seung Jun Lee and Wondea Jung(KAERI)
- 12:20 Various Approaches to Improve Availability of a Standby Component**  
Sung Min Shin and Hyun Gook Kang(KAIST)

### Ⅲ. 분과별 논제 및 발표자

#### 제 5분과 B

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

- 기초 열수력 실험 및 모델링(Basic Thermal-Hydraulic Experiment & Modeling)

좌 장 어동진(Dong Jin EUH), 윤병조(Byong-Jo YUN)

발표장소 컨벤션B

일 정 | 10. 24(목)

- 09:00 Rayleigh-Benard Natural Convection Cell Formation and Nusselt Number**  
Je-Young Moon and Bum-Jin Chung(KHU)
- 09:20 Laminar Mixed Convection Heat Transfer Correlation for Horizontal Pipes**  
Myeong-Seon Chae and Bum-Jin Chung(KHU)
- 09:40 Open Channel Natural Convection Heat Transfer on a Vertical Finned Plate**  
Joo Hyun Park, Jeong-Hwan Heo, and Bum-Jin Chung(KHU)
- 10:00 Investigation of Rayleigh-Taylor Instability Wavelength Under Pressure Effect Using High Speed Video and Particle Image Velocimetry**  
Han Seo, Sung Bo Moon, and In Cheol Bang(UNIST)
- 10:20 Scoping Test on the Effects of Boron and Buffer in the Mockup PLUS7 Fuel Assembly of the APR1400**  
Suh Jeong-kwan, Kwon Sun-guk, Kim Jae-won, and Lee Jae-yong(KHNP CRI)
- 10:40 Coffee Break**
- 11:00 Matching Index-of-Refraction for 3D Printing Model Using Mixture of Herb Essential Oil and Light Mineral Oil**  
Min Seop Song, Hae Yoon Choi, and Eung Soo Kim(SNU)
- 11:20 CFD Benchmark Tests on a 5x5 Rod Bundle Array**  
Seok-Kyu Chang, Seok Kim, and Chul-Hwa Song(KAERI)
- 11:40 Numerical Evaluation of Averaging BDFT(bidirectional flow tube) Flow Meter on Applicability in the Fouling Condition**  
J. P. Park, J. H. Jeong, and B. J. Yun(PNU)  
D. W. Jerng(CAU)
- 12:00 Uncertainty Estimation of Void Packet Determination in Pipes of Emergency Core Cooling System Using Ultrasonic Test**  
Seung-Chan Lee and Duk-Joo Yoon(KHNP CRI)
- 12:20 Experimental Investigation of Wall Heat Flux Partitioning During Subcooled Nucleate Boiling on a Vertical Wall**  
Junkyu Song, Junseok Park, Satbyoul Jung, and Hyungdae Kim(KHU)

## 제 5 분과 C

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

- 중대사고 및 화재 안전 (Severe Accident & Fire Safety)

좌 장 박래준(Rae-Joon PARK), 정용훈(Yong Hoon JEONG)

발표장소 컨벤션C

일 정 | 10. 24(목)

- 09:00      Application of Core Exit Temperature for Effective Safety Injection Strategy of Severe Accident Management Guidance**  
Seongnyeon Lee and Sung Joong Kim(HYU)  
Kwang Soon Ha(KAERI)
- 09:20      The Simulation of Fukushima Unit-2 Accident with MELCOR 1.8.6 based on the Plant Data Being Provided from BSAF Program**  
Jong-Hwa Park, Seong-Wan Hong, and Jin-Ho Song(KAERI)
- 09:40      Comparison of MCCI Analysis Results Using the Newest MAAP5**  
Mi Ro Seo and Hyeong Taek Kim(KHNP CRI)
- 10:00      Application of MELCOR Code to the MCCI Analysis in Severe Accident Sequences**  
Sooyong Park and Kwang-II Ahn(KAERI)
- 10:20      Shock Attenuation Effectiveness by Simple Obstacles to Mitigate Severe Accident Explosive Loads**  
Jin-Su Kim and Jong-Woon Park(DU)
- 10:40      Coffee Break**
- 11:00      Application Study of Fire Severity Classification**  
In-Hwan Kim, Hyeong-Taek Kim, Moon-Hak Jee, and Yun-Jung Kim(KHNP CRI)
- 11:20      Fire Source Accessibility of Water Mist Fire Suppression Improvement through Flow Method Control**  
Jun-Ho Jung, Hyeong-Taek Kim, Yun-Jung Kim, and Mun-Hee Park(KHNP CRI)
- 11:40      Risk Assessment of the Main Control Room Fire Using Fire Simulations**  
Dae Il Kang, Kilyoo Kim, and Seung-Cheol Jang(KAERI)
- 12:00      Effect of Cesium-Molybdate on Cs Behavior for Source Term Estimation**  
Seok-Jung HAN and Kwang-II AHN(KAERI)
- 12:20      The Effect of Containment Filtered Venting System on The Severe Accident Management Strategies of the CANDU6 Plant**  
Youngho Jin(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 5 분과 D

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

- 모델링 및 시뮬레이션 기술(Advanced Modeling & Simulation Technology)

좌 장 김경두(Kyung Doo KIM), 김요한(Yo Han KIM)

발표장소 컨벤션A

일 정 | 10. 25(금)

- 09:00 Preliminary Assessment of a PWR Steam Generator Analysis Code, CUPID-SG**  
I. K. Park, S. J. Lee, S. H. Kim, H. R. Kim, and H. Y. Yoon(KAERI)
- 09:20 Coupling of THALES and FROST Using MPI Method**  
Jin Woo Park, Seok Hee Ryu, Chan Do Jung, Jee Hoon Jung, Kil Sup Um, and Jae Il Lee(KEPCO NF)
- 09:40 Parallel Computing Characteristics of Two-Phase Thermal-Hydraulics Code, CUPID**  
Jae Ryong Lee and Han Young Yoon(KAERI)
- 10:00 Assessment of the Wall Drag and Form Loss Partitioning Methods for Dispersed Flow**  
Byoung Jae Kim, Seung Wook Lee, and Kyung Doo Kim(KAERI)
- 10:20 Development of Workbench Programs for CUPID1.7 Code**  
Yun-Je Cho, Ik -Kyu Park, Jae-Ryong Lee, Seung-Jun Lee, and Han-Young Yoon(KAERI)
- 10:40 Coffee Break**
- 11:00 On the Polyhedral Mesh Generation**  
Sang Yong Lee, Chan Eok Park, and Jong Joo Sohn(KEPCO E&C)
- 11:20 Code Accuracy Assessment with Time-Domain Bilateral Kernel Regression**  
Moon-Ghu Park(Sejong Univ.)
- 11:40 Performance Comparison of Containment PT Analysis between CAP and CONTEMPT Code**  
Yeon Jun Choo, Soon Joon Hong, Su Hyun Hwang, Min Ki Kim, and Byung Chul Lee(FNC Tech.)  
Sang Jun Ha and Hoon Choi(KHNP CRI)
- 12:00 Uncertainty of Water-hammer Loads for Safety Related Systems**  
Seung-Chan LEE and Duk-Joo YOON(KHNP CRI)

## 제 5 분과 E

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

- 노심용융물 억류 및 코어 캐처(In-Vessel Retention and Core Catcher)

좌 장 김환열(Hwan Yeol KIM), 김성중(Sung Joong KIM)

발표장소 컨벤션B

일 정 | 10. 25(금)

- 09:00 Flow Boiling on a Downward-Facing Inclined Plane Wall of Core Catcher**  
Hyoung-Tak Kim and Kwang-Hyun Bang(KMOU)  
Jungsoo Suh(KHNP CRI)
- 09:20 Improvement of the Wall Boiling and Bubble Diameter Models for the Analysis of Core Catcher by Using CUPID**  
Dong Hun Lee, Byung Jo Yun, and Jae Jun Jeong(PNU)
- 09:40 CHF of a Downward Curved SA508 Surface with Boric Acid and TSP**  
Hae Min Park and Yong Hoon Jeong(KAIST)
- 10:00 Advanced In-Vessel Retention (IVR) Strategy by External Reactor Vessel Cooling (ERVC) with Liquid Metal**  
Seong Dae Park and In Cheol Bang(UNIST)
- 10:20 Revisit of Penetration Failure Models and Calculations for APR1400 ICI Penetrations**  
Sang Mo An and Hwan Yeol Kim(KAERI)
- 10:40 Coffee Break**
- 11:00 External Reactor Vessel Cooling Strategy Application for APR1400 Station Blackout Scenarios**  
Tran Quang Diep Khanh and Oh Seung Jong(KINGS)  
Seo Mi Ro(KHNP CRI)
- 11:20 Numerical Analysis of In-Vessel Retention Using MARS-Ga for APR1400 Under the Ga-based External Reactor Vessel Cooling**  
Sarah Kang, Seong Dae Park, and In Cheol Bang(UNIST)
- 11:40 Effectiveness of In-Vessel Retention Strategies and Minimum Safety Injection Flow Over Postulated Severe Accidents of OPR1000**  
Sung Joong Kim, Seungwon Seo, and Seongnyeon Lee(HYU)  
Hwan-Yeol Kim, Kwang Soon Ha, Jonghwa Park, and Raejoon Park(KAERI)
- 12:00 Numerical Calculation of Pressure Loss Coefficients in External Reactor Vessel Cooling Channel**  
Hye Chang Lee(HIU)  
Tae Hyub Hong and Sang Won Lee(KHNP CRI)
- 12:20 Natural Circulation Phenomena on the Cooling Channel of an Ex-vessel Core Catcher**  
Kwang Soon Ha, Bo Wook Rhee, Sang Woo Noh, and Rae Joon Park(KAERI)



### Ⅲ. 분과별 논제 및 발표자

#### 제5분과F

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

- 신형 경수로 열수력(Advanced Reactor Thermal Hydraulics)

좌 장 권태순(Tae-Soon KWON), 김한곤(Han-Gon KIM)

발표장소 컨벤션C

일 정 | 10. 25(금)

- 09:00 Thermal Mixing In-plant Test in Shinkori Unit 3 IRWST**  
Soon Joon HONG, Yeon Joon CHOO, Hui Kwon KOO, and Doo Yong LEE(FNC Tech.)  
Jae Jik KIM(KEPCO E&C)  
Jae Sik JEONG, Man Heung PARK, and Young Tae MOON(KHNP)
- 09:20 Analysis on the Safety Verification Tests of the ECCS Driven by the Electrically 4 Trains During LBLOCA**  
Yusun Park, Hyun-sik Park, Kyoung-ho Kang, Nam-hyun Choi, Kyoung-ho Min, and Ki-yong Choi(KAERI)
- 09:40 Influence of ECCS Core Barrel Duct on Reflood Behavior Predicted by MARS Code**  
Young Seok Bang, Gong Hee Lee, and Sweng Woong Woo(KINS)  
Min Jeong Hwang and S. K. Sim(En2T)
- 10:00 Design of Passive Decay Heat Removal System Using Thermosyphon for Low Temperature and Low Pressure Pool Type LWR**  
Jangsik Moon, Byung-Hyun You, Yong Hun Jung, and Yong Hoon Jeong(KAIST)
- 10:20 Effect of Water-Air Clearing on Thermal Mixing in IRWST Using Three-Dimensional CFD Analysis**  
Jeong Hee Ha, Doo Yong Lee, and Soon Joon Hong(FNC Tech.)  
Jae Sik Jeong, Man Heung Park, and Young Tae Moon(KEPCO E&C)
- 10:40 Coffee Break**
- 11:00 An SBLOCA Test for Shutdown Cooling Line Break Using the SMART-ITL Facility**  
Hwang Bae, Dong Eok Kim, Sung Uk Ryu, Yong-Cheol Shin, Yung-Joo Ko, Sung-Jae Yi, and Hyun-Sik Park(KAERI)
- 11:20 Test Results of Reactor Coolant System Natural Circulation Using the SMART-ITL Facility**  
Dong Eok Kim, Hwang Bae, Sung Uk Ryu, Hyun-Sik Park, and Sung-Jae Yi(KAERI)
- 11:40 Comparison of SMART-SDA and SMART-PSS Behaviors Using an SBLOCA Scenario**  
Doo-Hyuk Kang, Yung-Joo Ko, and Jae-Seung Suh(SENTECH)  
Hyun-Sik Park, Sang-Ki Moon, Rae-Joon Park, and Sung-Jae Yi(KAERI)
- 12:00 A Preliminary Analysis for SMART-ITL SBLOCA Tests Using the MARS/KS Code**  
Yeon-Sik Cho, Yung-Joo Ko, and Jae-Seung Suh(SENTECH)  
Hyun-Sik Park, Sang-Ki Moon, Hwang Bae, and Sung-Jae Yi(KAERI)
- 12:20 Technical Issues for Validation Tests of SMART Passive Safety Injection System**  
Hyun-Sik Park, Hwang Bae, Dong-Eok Kim, Sung-Uk Ryu, Kyoung-Ho Min, and Sung-Jae Yi(KAERI)

## 제 5 분과 G

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

- 임계열유속 및 비등 열전달(Critical Heat Flux and Boiling Heat Transfer)

좌 장 문상기(Sang Ki MOON), 방인철(In Cheol BANG)

발표장소 오펜

일 정 | 10. 25(금)

- 09:00**      **Flow Instability and Critical Heat Flux for Downward Flow in a Vertical Narrow Rectangular Channel Heated From Both-sides**  
Juhyung Lee and Soon Heung Chang(KAIST)  
Daeseong Jo(KAERI)
- 09:20**      **CHF and Bubble Departure Dynamics of the Thin Flat Plate Heater**  
Wooram Lee and Jae Young Lee(HGU)
- 09:40**      **Simultaneous Investigation of Dynamics and Heat Transfer Associated with a Single Bubble Nucleate Boiling**  
Satbyoul Jung and Hyungdae Kim(KHU)
- 10:00**      **Experimental Study of Effect of Graphene Oxide Colloid on the Critical Heat Flux**  
Ji Min Kim and Moo Hwan Kim(POSTECH)  
Ho Seon Ahn(INU)
- 10:20**      **Reflood Heat Transfer in SiC and Graphene Oxide Coated Tube**  
Kyung Mo Kim, Seung Won Lee, and In Cheol Bang(UNIST)
- 10:40**      **Coffee Break**
- 11:00**      **Enhanced CHF with Bubble Cutter and Artificial Flow in Nuclear Plants**  
Chan Hee Jung and Kune Y. Suh(SNU)
- 11:20**      **CNT Coating Enhances Pool Boiling Heat Transfer and Critical Heat Flux**  
Gwang Hyeok Seo, Jongwoong Yoon, Gyoodong Jeun, and Sung Joong Kim(HYU)  
Wonjoon Choi(KU)
- 11:40**      **Doubling of Critical Heat Flux Using a Grapheme Oxide Nanofluid and its Repeatability**  
Sung Bo Moon and In Cheol Bang(UNIST)
- 12:00**      **Quenching Experiment with Modified Surface Using Anodic Oxidation**  
Jun-Young Kang, Seol-Ha Kim, HangJin Jo, and Moo Hwan Kim(POSTECH)  
Ho Seon Ahn(INU)
- 12:20**      **Experimental Study on Enhancement of Flow Boiling CHF in a Completely Wetted Tube Over Atmospheric Pressure**  
Kyung Won Hwang, Jun-Young Kang, and Moo Hwan Kim(POSTECH)

### Ⅲ. 분과별 논제 및 발표자

#### 제 5 분과 H

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

좌 장 조형규(Hyoung Kyu CHO), 박현식(Hyun Sik PARK)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P05H01 An OECD-ATLAS Project for Thermal-Hydraulic Safety Improvement after the Fukushima Accident**  
Ki-Yong Choi, Kyoung-Ho Kang, Seung-Wook Lee, Sank-Ki Moon, and Chul-Hwa Song(KAERI)
- P05H02 Subcooled Pool Boiling on 3-Degree Inclined Tube Surface**  
Myeong-Gie Kang(ANU)
- P05H03 Pool Boiling Heat Transfer on the Inside Surface of an Inclined Tube**  
Myeong-Gie Kang(ANU)
- P05H04 A Preliminary Study of Transverse Curvature Effects on Condensation Heat Transfer on Vertical Tube in the Presence of Non-condensable Gas**  
Yeon-Gun Lee and Sin Kim(JNU)  
Dong-Wook Jerng(CAU)
- P05H05 Milli-scale Structure and Micro-scale Structure Effect on Pool Boiling**  
Jin Man Kim, HangJin Jo, and Moo Hwan Kim(POSTECH)
- P05H06 Nucleate Boiling Heat Transfer of Nanofluids with Carbon Nanotubes on Plain and Low Fin Surfaces**  
Ki-Jung Park(KAERI)  
Dongsoo Jung(Inha Univ.)
- P05H07 Heat Loss Evaluation of the SMART-ITL Primary System**  
Sung Uk Ryu, Hwang Bae, Dong Eok Kim, Keun Tae Park, Hyun-Sik Park, and Sung-Jae Yi(KAERI)
- P05H08 Performance Evaluation of a Passive Flow Controlling Safety Injection Tank Considering Nitrogen Gas Solubility**  
Seung-Jun Lee, In-Cheol Chu, Young-Jung Youn, and Ki-Yong Choi(KAERI)
- P05H09 Performance Verification of the Lattice-type ECCS Sump Strainer to Prevent the Thin-bed Effect**  
Je-Joong Sung, Chang-Hyun Kim, and Sang-Jun Ha(KHNP CRI)
- P05H10 Sensitivity Study of Fiber Length Effect on Pressure Drops in the Mockup PLUS7 Fuel Assembly**  
Kim Jae-won, Suh Jeong-kwan, Kwon Sun-guk, and Lee Jae-yong(KHNP CRI)
- P05H11 A Preliminary Experimental Study on Flow Boiling CHF Characteristics of Ballooned Channel**  
Yong Jin Kim, Sub Lee Song, and Soon Heung Chang(KAIST)  
Sang Ki Moon(KAERI)

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- P05H12      DVI Film Flow Instability Based on the Normal Mode Analysis**  
Jae Young Lee(HGU)  
Dong Jin Euh(KAERI)
- P05H13      Influence of the Particle Length of Carbon Nanotube for Pool Boiling Critical Heat Flux Enhancement of Nanofluids**  
Sung Seek Park, Yong Hwan Kim, and Nam Jin Kim(JNU)
- P05H14      Thermal-Hydraulic Integral Effect Test with ATLAS for an Intermediate Break Loss of Coolant Accident at a Pressurizer Surge Line**  
Kyoung-Ho Kang, Seok-Cho, Hyun-Sik Park, Nam-Hyun Choi, Yu-Sun Park, Jong-Rok Kim, Byoung-Uhn Bae, Yeon-Sik Kim, Kyung-Doo Kim, Ki-Yong Choi, and Chul-Hwa Song(KAERI)
- P05H15      Development of a Phenomena Identification Ranking Table (PIRT) for a Station Black Out (SBO) Accident of the APR1400**  
Kyoung-Ho Kang, Chul-Hwa Song, Bub-Dong Chung, Kyung-Doo Kim, Seung-Wook Lee, and Ki-Yong Choi(KAERI)  
Byong-Jo Yun and Jae-Jun Jeong(PNU)  
Young-Suk Bang and Yong-Ho Ryu(KINS)  
Han-Gon Kim(KHNP CRI)  
Chul-Jin Choi(KEPCO E&C)  
Chang-Hwan Ban(KEPCO NF)  
Suk-Ku Sim(En2T)
- P05H16      Experimental Study on the Passive Containment Cooling System of PWR using Multi-Pod Heat Pipe**  
Gyeong-Ho Nam and Sang-Nyung Kim(KHU)
- P05H17      Effects of Exit Quality on the Flow Boiling CHF Enhancement of Nanofluids**  
Taeseung Lee, Dong Hoon Kam, and Yong Hoon Jeong(KAIST)

### Ⅲ. 분과별 논제 및 발표자

#### 제 5 분과 I

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

좌 장 박찬억(Chan Eok PARK), 김태완(Tae Wan KIM)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P05I01      Assessment of MARS for Direct Contact Condensation in the Core Make-up Tank**  
Keun Tae Park(SNU)  
Ik Kyu Park and Seung Wook Lee(KAERI)
- P05I02      An Effect of Heat Exchanger Pipe Diameters on the Condensation Heat Transfer for PCCS Designs**  
Jae Young Lee(HGU)  
Dong Wook Jerng(CAU)
- P05I03      A Study on the Application of DRHRS in SMART Reactor**  
Y. S. Kim, Y. J. Youn, J. K. Park, K. H. Min, and H. S. Park(KAERI)  
D. H. Kang(SE&T)
- P05I04      Numerical Study of Condensation Heat Exchanger Design in a Cooling Jacket: Correlation Investigation**  
Myoung Jun Kim and Hee Joon Lee(Kookmin Univ.)  
Han-Ok Kang, Tae-Ho Lee, and Cheon-Tae Park(KAERI)
- P05I05      Comparative Study of Turbulence Model Performance for Axisymmetric Sudden Expansion Flow**  
Youngmin Bae, Young-In Kim, Keung Koo Kim, and Juhyeon Yoon(KAERI)
- P05I06      Transient Thermal Hydraulic Analyses of Heavy Water System**  
Daeseong Jo, Suki Park, Jonghark Park, and Heetaek Chae(KAERI)
- P05I07      Power Trip Set-points of Reactor Protection System for New Research Reactor**  
Byeonghee Lee and Soohyung Yang(KAERI)
- P05I08      Assessment of the SPACE Code Using the ATLAS SLB-GB-01 Test**  
Yo-Han Kim, Chang Keun Yang, and Seyun Kim(KHNP CRI)
- P05I09      Sensitivity Investigation of Reactivity Induced Accidents for a 5MW Research Reactor**  
Soo Been Yum, Su Ki Park, and Young Jong Chung(KAERI)
- P05I10      Pump Design for High Temperature Sulfuric Acid Transfer System**  
Jung-sik Choi and Jae-Hyuk Choi(KMOU)  
Young-Joon Shin and Ki-Young Lee(KAERI)
- P05I11      Sensitivity Study for Wall Boiling Model in ANSYS CFX**  
Gong Hee Lee, Young Seok Bang, Sweng Woong Woo, and Ae Ju Cheong(KINS)
- P05I12      Simulation of Power Maneuvering Experiment of MASLWR Test Facility by MARS-KS Code**  
Ju Yeop Park(KINS)

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- P05I13 Preliminary Modeling of Permanent Magnet Probe Flowmeter for Voltage Signal Estimation**  
Uiju Jeong and Sung Joong Kim(HYU)  
Ji-Young Jeong and Tae-Joon Kim(KAERI)
- P05I14 Preliminary Analysis of a Flashing Experiment Using the CUPID Code**  
Jun Yeob Lee and Jae Jun Jeong(PNU)  
Han Young Yoon(KAERI)
- P05I15 Analysis on the Direct Vessel Injection Line Break Accident at APR+ Standard Design**  
Youngho Lee and Huichang Yang(TUV Rheinland Korea)  
Kap Kim(KINS)
- P05I16 Cold-Leg Small Break LOCA Analysis of APR1400 Plant Using a SPACE/sEM Code**  
Sang-Gyu Lim, Suk-Ho Lee, Keuk-Jong Yu, Han-Gon Kim, and Jae-Yong Lee(KHNP CRI)
- P05I17 Assessment of Bubble Departure Diameter Models for Nucleate Boiling Heat Transfer**  
N. H. Hoang, V. T. Nguyen, I. C. Chu, D. J. Euh, and C. H. Song(KAERI)
- P05I18 3-D Analysis of Natural Circulation in PCCT of PAFS Using the CUPID Code**  
Seung-Jun Lee and Han Young Yoon(KAERI)
- P05I19 Simulation of Station Blackout Scenario in Low-power and Shutdown Condition of Westinghouse Two-loop Plant with RELAP5 Code**  
Seyun Kim and Sang-Jun Ha(KHNP CRI)
- P05I20 CFD Simulation of Spent Fuel in a Dry Storage System**  
Young Kyun Kwack, Wang Kee In, Chang Hwan Shin, Tae Hyun Chun, and Dong Hak Kook(KAERI)
- P05I21 Development of a Real-time Core Thermal-hydraulics Model for SMART Simulator**  
Seong-Jin Kim, Kyong-Won Seo, Hyuk Kwon, and Dae-Hyun Hwang(KAERI)
- P05I22 Passive Strategy with Integrated Passive Safety System (IPSS) for DBAs in SBO**  
Sang Ho Kim, Jihee Kim, Jae Young Choi, Inseop Jeon, and Soon Heung Chang(KAIST)
- P05I23 Assessment of CUPID1.7 Code with PWR Sub-channel and Bundle Test (PSBT) Benchmark**  
Yun-Je Cho, Ik-Kyu Park, and Han-Young Yoon(KAERI)
- P05I24 Verification Using the SPACE Code for SGTR of Hanul Unit 4**  
Chang-Keun Yang, Yo-han Kim, and Sang-Jun Ha(KHNP CRI)
- P05I25 Computational Fluid Dynamic Simulation of Square Array Rod Subchannel**  
Hyung M. Son and Kune Y. Suh(SNU)
- P05I26 Implementation of the Pure and Mixture Gases Properties in MARS-GCR**  
Won Jae Lee and Heung N. Lee(KAERI)
- P05I27 Main Steam Line Break Analysis for the Fully Passive Safety System of SMART**  
Seong Wook Lee, Ji-Han Chun, Kyoo Hwan Bae, and Keung Koo Kim(KAERI)
- P05I28 Reevaluation of Kori Unit 4 Natural Circulation Test**  
Nassir Yassin(KAIST)  
Sweng-Woong Woo(KINS)
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### Ⅲ. 분과별 논제 및 발표자

#### 제 5 분과 J

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

좌 장 김종태(Jongtae KIM), 이정재(Jung Jae LEE)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

**P05J01 Analysis of Hydrogen Concentration Distribution During an SBO Accident for Shin-Ulchin APR1400**

Jongtae Kim and Seong-Wan Hong(KAERI)

**P05J02 Comparison of Severe Accident Monitoring Parameters for OPR1000 and CANDU**

Lee Youngseung, Kim Hyeongtaek, and Shin Jungmin(KHNP CRI)

**P05J03 The Effect of the Venting Area for CFVS on the Containment**

Young Su Na, Kwang Soon Ha, Rae-Joon Park, and Jong-Hwa Park(KAERI)  
Song-Won Cho(NSE)

**P05J04 Analysis of the National Action Plans of France, Germany, and the UK to Reflect the Post-Fukushima Lessons Learned and Stress Test Peer Review**

Sang-Kyu Ahn, Sang-Won Kim, Young Gill Yune, Hyung-Joon Ahn, Won Joon Chang, and Seung-Ho Cho(KINS)

**P05J05 Control Carbon to Prevent Corium Stratification In-Vessel Retention**

A-Ra Go, Seung-Hyun Hong, and Sang-Nyung Kim(KHU)

**P05J06 Investigation of CET Effect as a SAMG Entry Condition under Severe Accidents of OPR1000**

Seungwon Seo, Gyoodong Jean, and Sung Joong Kim(HYU)  
Hwan-Yeol Kim and Kwang Soon Ha(KAERI)

**P05J07 Preliminary Analysis of Ex-Vessel Steam Explosion Using TEXAS-V Code for APR1400**

Sung Chu Song, Jung Jae Lee, Yong Jin Cho, and Taesuk Hwang(KINS)

**P05J08 SBLOCA Analysis Using Modified MAAP4 Code through Semi-empirical CHF Correlation Application**

Sang-Woo Noh, Kwang-Soon Ha, and Hwan-Yeol Kim(KAERI)  
Kune-Yull Suh(SNU)

**P05J09 Severe Accident Mitigation by Using Core Catcher Applicable for Korea Standard Nuclear Power Plant**

Hae-Kyun Park and Sang-Nyung Kim(KHU)

**P05J10 An Experimental Investigation of Corium Jet Impingement on Structural Material**

Sang Mo An, Kwang Soon Ha, Beong Tae Min, Seong Ho Hong, and Hwan Yeol Kim(KAERI)

**P05J11 Modeling of Station Blackout Accident for APR1400 with Recent MELCOR Versions**

Han-Chul Kim, Sung-Han Lee, and Taesuk Hwang(KINS)  
Jun Heo, Won-Tae Kim, and Hyung-Seok Kim(Aritec)

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- P05J12      Cost vs. Risk for Partial Underground Transmission Lines Near NPP**  
Dhuhair, Mohammad and Jay James(KINGS)
- P05J13      FAC Characteristics according to the Concentration of Chromium at 150° C**  
T. J. Park and H. P. Kim(KAERI)
- P05J14      Severe Accident Management Strategy for EU-APR1400**  
Do Hyun Hwang and Yong Soo Kim(KHNP CRI)  
Sun Hong Yoon(KEPCO E&C)
- P05J15      Containment Performance Analysis with Large Break LOCA for EU-APR1400**  
Do Hyun Hwang, Keun Sung Lee, and Yong Soo Kim(KHNP CRI)
- P05J16      A Study on Reinforcement of the Accident Management System in Korea**  
Sung-Han Lee and Han-Chul Kim(KINS)



### Ⅲ. 분과별 논제 및 발표자

#### 제 5 분과 K

#### 원자력열수력 및 안전(Thermal Hydraulics and Safety)-Poster - 확률론적 안전성 평가(Probabilistic Safety Assessment)

좌 장 김길유(Kil Yoo KIM), 한석중(Seok Joong HAN)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P05K01 Coping Strategies for Beyond-Design-Basis External Events: Insights from the U.S. EDMG and FLEX Approaches**  
Jaewhan Kim and Kwang-II Ahn(KAERI)  
Inn Seock Kim(ISSA Tech.)
- P05K02 Assessment of Evacuation Protective Action Strategies For Emergency Preparedness Plan**  
Joomyung Lee and Moosung Jae(HYU)  
Kwangil Ahn(KAERI)
- P05K03 Review of SFR Design Safety Using Preliminary Regulatory PSA Model**  
Hyun Ju Na and Yong Suk Lee(FNC Tech.)  
Andong Shin and Nam Duk Suh(KINS)
- P05K04 Development of Common Cause Failures (CCF) Multiplier Calculation Program for PSA**  
Baehyeuk Kwon and Moosung Jae(HYU)  
Janghwan Na(KHNP CRI)
- P05K05 A Study on the Design of Electronic SAMG Functional Modules**  
S. H. Park, J. H. Kim, and K. I. Ahn(KAERI)
- P05K06 A Study on the Frequency of Initiating Event of OPR-1000 During Outage Periods**  
JaeBeol Hong and MooSung Jae(HYU)

## 제 6 분과 A

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

좌 장 황원태(Won-Tae HWANG), 차형기(Hyunki CHA),  
김인규(In Kyu KIM)

발표장소 에메랄드

일 정 | 10. 24(목)

- 09:00 Quantification of Dilution Characteristics of Radioactive Materials in Korean Nuclear Sites**  
Hyojoon Jeong, Misun Park, Haesun Jeong, Wontae Hwang, Eunhan Kim, and Moonhee Han(KAERI)
- 09:12 Evaluation of Geometric Progression (GP) Buildup Factors Using MCNPX 2.7.0**  
Kyung-O KIM, Gyuhong ROH, Chang Je PARK, Haksung KIM, and Byungchul LEE(KAERI)
- 09:24 A Preliminary Study on the Optimization of Source Angular Bias for Monte Carlo Simulation in a Large Radiation Generation Facility**  
Do Hyun KIM, Song Hyun KIM, and Jong Kyung KIM(HYU)
- 09:36 Overview of the Radioecological Research at KAERI**  
Yong-Ho Choi, Kang-Muk Lim, Byung-Ho Kim, and Dong-Kwon Keum(KAERI)
- 09:48 Analytical Simulation Platform Describing Projections in Computed Tomography Systems**  
HanbeanYoun and Ho Kyung Kim(PNU)
- 10:00 Performance Characterization of Large-area CMOS FPD for Micro-CT Applications**  
Soohwa Kam, Hosang Jeon, and Ho kyung Kim(PNU)
- 10:12 Feasibility Study of an Active Sandwich Detector for Dual-energy Imaging**  
Dongwoon Kim, Jong Chul Han, and Ho Kyung Kim(PNU)
- 10:24 Coffee Break**
- 10:34 [ Invited Lecture ] (좌장 김인규)**  
**Local-scale modelling of the releases of 137-Cs and 90-Sr from Fukushima NPP into the Pacific Ocean**  
Raul Periañez(Universidad de Sevilla)
- 11:04 Verification of Effectiveness of Gamma Irradiator Calibration Result**  
Suh Jang-soo, Song Jae-jun, Han Kyoung-ho, Park Jang-soon, and Jung Do-young(Sae-an ENG)
- 11:16 Study on Digital Pulse Shape Discrimination System in BF<sub>3</sub> Detector**  
Jinhyeong Kim, J.H. Kim, and H.D. Choi(SNU)
- 11:28 Test of Effective Solid Angle Code for the Efficiency Calculation of Volume Source**  
M.Y. Kang, J.H. Kim, and H.D. Choi(SNU)  
G.M. Sun(KAERI)

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- 11:40      Modification of the Developed Code for Isotopic Analysis of Uranium**  
J.H. Kim and H.D. Choi(SNU)
- 11:52      A New Cancer Radiotherapy System Using Multi Robotic Manipulators**  
Seungho Kim, Nam Ho Lee, Byung Chul Lee, Kyung Min Jeung, Seong Uk Lee, Yeong-geol Bae, and  
Hyunseok Na(KAERI)
- 12:04      Development of a Real-time Personal Dosimeter System and Its Application to Hanul Unit-4**  
Kidoo Kang, Moonhyung Cho, and Jungkwon Son(KHNP CRI)

## 제 6 분과 B

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

-방사선 방호/차폐/안전/환경연구

(Radiation Protection/Shielding/Safety/Environment)

좌 장 김병수(Byeong Soo KIM), 서경석(Kyung-Suk SUH)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

**P06B01 Dispersion Target Fabrication for Fission Mo-99 Using Centrifugal Atomization Uranium Powder**

Moon soo Sim and Jong Hyeon Lee(CNU)

Ho Jin Ryu, Jong Man Park, and Chang Kyu Kim(KAERI)

**P06B02 The Design of Shielding Material for Ultra Low-background Gamma-ray Spectrometry**

H. J. Kim, S. K. Kang, H. Kim, H. J. Lim, M. W. Lee, D. H. Jeong, J. K. Kim, K. M. Yang, and Y. R. Kang(DIRAMS)

**P06B03 Measurement of Gamma Spectrum at Domestic Nuclear Power Plant with CZT Semiconductor Detector**

KANG SEO KON, KANG HWA YOON, LEE BYOUNG-IL, and KIM JEONG-IN(KHNP RHRI)

**P06B04 Public Dose Assessment Modeling from Skyshine by Proton Accelerator**

S. A. Mwambinga(KAIST)

S. J. Yoo(KINS)

**P06B05 Radiation Monitoring of Underground Uranium Mine in Mongolia**

Enkhbat Norov(KAIST)

**P06B06 The Contour Mapping Program for Prompt Environmental Radiation Distribution Display**

Uk Jae Lee, Dong Han Yoo, and Hee Reyoung Kim(UNIST)

**P06B07 The Estimation of Environmental Radiation from the TENORM of the Industry Concentrated Area**

So Jung Kim, Dong Han Yoo, and Hee Reyoung Kim(UNIST)

**P06B08 Comparison of Transmission Ratio as Existence of Shielding Structure for Low-Background Gamma Spectrometry**

Y. U. Kye, S. G. Shin, and M. H. Cho(POSTECH)

W.Namkung(PAL)

G.N. Kim(KNU)

M. W. Lee(DIRAMS)

**P06B09 Suggested PAZ Size of Pressurized Light Water Reactor**

Sang Hyun Park and Seung Young Jeong(KINS)

**P06B10 Dispersion of Radioactive Materials from JRTR Following a Postulated Accident Using HOTSPOT Code**

Qusai M. Mistarihi(KAIST)

Kwan Hee Lee(KINS)

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**P06B11      Characterization of Scattered Radiation in Helical CT Geometries Using Monte Carlo Simulations**

Ji Woong Park, Jong Chul Han, and Ho Kyung Kim(PNU)

## 제 6 분과 C

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

- 방사선 생명의학/중성자·RI 이용/방사선기기/가공(Radiation BioMedical/  
Neutron · RI Application/Instrumentation/Radiation-Processing)

좌 장 여순목(Sun Mog YEO), 김종국(Jong Guk KIM)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P06C01 Protective Effect of Curcumin Against Ionizing Radiation (IR)-induced Cytotoxicity and Genotoxicity in HepG2 Cells**  
Dong-Min Chung, S. M. Nasir Uddin, Tae Ho Ryu, Mi Young Kang, and Jin Kyu Kim(KAERI)
- P06C02 Decursin Reduce Radio-resistance of Hypoxic Regions under the Proton Beam Therapy by Induced HIF-1 $\alpha$  Degradation**  
Myung-Hwan Jung and Kye-Ryung Kim(KAERI)
- P06C03 Core/Shell Structured Magnetic Nanoparticles for Biological Applications**  
Jeong Chan Park and Myung Hwan Jung(KAERI)
- P06C04 Simulation of Ni-63 Based Nuclear Micro Battery Using Monte Carlo Modeling**  
Tae Ho Kim and Ji Hyun Kim(UNIST)
- P06C05 Simulation on the Optimum Thickness of Ni-63 for Nuclear Battery Development**  
S.K. Kang, M.W.Lee, Y.R.Kang, H.J.Lim, D. J. Rhee, and D.H.Jeong(DIRAMS)  
K.J. Son(KAERI)  
B.G.Choi (ETRI)
- P06C06 Development of Target System for Production of I-123 in Cyclotron 30**  
JaeJun You, HyunWoo Jung, Byung Il Kim, KwonSoo Chun, JiSeub Lee, Hyun Park, JunYong Choi, SangKwon Bang, Seyoung Oh, and GaeHong Kim(KIRAMS)  
DongHoon Lee(TU)
- P06C07 I-123 Nuclide Production System Constructed by Cyclotron 30**  
HyunWoo Jung, JaeJun You, Byung Il Kim, KwonSoo Chun, JiSeub Lee, Hyun Park, JunYong Choi, SangKwon Bang, Seyoung Oh, and GaeHong Kim(KIRAMS)  
DongHoon Lee(TU)
- P06C08 Feasibility Study on Simultaneous Multi-Radioisotope Production Using Double Stacked Target in MC-50 Cyclotron**  
Gyehong Kim, Kwonsoo Chun, and Byungil Kim(KIRAMS)
- P06C09 Production of Alpha Particle Emitting  $^{211}\text{At}$  Using MC-50 Cyclotron**  
Gyehong Kim, Kwonsoo Chun, and Byungil Kim(KIRAMS)
- P06C10 Property of Prepared N719 Dye Using Gamma-irradiation and Its Dye-sensitized Solar Cell Application**  
Hwa-Jung Kim, Hae-Jun Park, and Ju-Woon Lee(KAERI)

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- P06C11      Preliminary Study of Position-Sensitive Large-Area Radiation Portal Monitor**  
Chang HwY Lim, Hyunok Kim, and Myung-Kook Moon(KAERI)  
Jongyul Kim(KAIST)  
Jong-Won Park and Yong-Kon Lim(KIOST)
- P06C12      Neutron Signal and Noise Separation of the  $^6\text{Li}$  - ZnS(Ag)Scintillator(BC702) Using Flash ADC**  
S. G. Shin, Y. U. Kye, and M. H. Cho(POSTECH)  
W.Namkung(PAL)  
G.N. Kim(KNU)  
M. W. Lee(DIRAMS)
- P06C13      Irradiation Chamber Design for the Study of Proton Beam Induced Radiation Damage**  
Kye-Ryung Kim, Bum-Seok Kim, Maeng-Jun Kim, and Myung-Hwan Jung(KAERI)

## 제 7 분과 A

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

좌 장 장지호(Ji-Ho JANG), 오영국(Yeong-Kook OH)

발표장소 루비

일 정 | 10. 24(목)

- 09:00 RF Field Distribution Tuning of Drift Tube Linac**  
Han-Sung Kim, Hyeok-Jung Kwon, Ji-Ho Jang, and Yong-Sub Cho(KAERI)
- 09:20 An Anti-alias Frequency Finite Impulse Response Low-pass Filter Algorithm Based on FPGA for a KOMAC 13-MHz RF Cavity's Digital Control System**  
Ying-Min Li, Ji-ho Jang, Young-Gi Song, Hyeokjun-Kwon, and Yong-Sub Cho(KAERI)
- 09:40 The Construction of Beam Diagnostics System for the 100-MeV Proton Accelerator**  
Sang-Pil Yun, Hyeok-Jung Kwon, Kyung-Tae Seol, Han-Sung Kim, Young-Gi Song, Ji-Ho Jang, and Yong-Sub Cho(KAERI)
- 10:00 RF Operation for the 100MeV Proton Linac**  
Kyung-Tae Seol, Hyeok-Jung Kwon, Dae-il Kim, Han-Sung Kim, Young-Gi Song, Ji-Ho Jang, and Yong-Sub Cho(KAERI)
- 10:20 Accelerator-Driven System with Current Technology**  
Hee Seock Lee and Tae-Yeon Lee(POSTECH)
- 10:40 Coffee Break**
- 11:00 Design and RF Test of Broadband Coaxial Hybrid Splitter for ITER ICRF System**  
H. J. Kim, S. J. Wang, B. H. Park, H. L. Yang, and J. G. Kwak(NFRI)  
J. J. Choi(KWU)
- 11:20 Status and Strategy of the GAMMA-FR Code Validation for ITER TBM and Fusion Reactor System in Korea**  
H. G. Jin, D. W. Lee, K. I. Shin, E. H. Lee, J. S. Yoon, and S. K. Kim(KAERI)  
M. Y. Ahn and S. Cho(NFRI)
- 11:40 Selection of Tritium Permeable Membranes of Measuring the Tritium Concentration in Liquid Breeders**  
B. G. Choi(UST)  
D. W. Lee, E. H. Lee, K. I. Shin, and H. G. Jin(KAERI)  
H. G. Lee(NFRI)
- 12:00 Optimization of Surrounding Reflector Material for Hyb-WT**  
M. Tariq Siddique, Song-Hee Hong, and Myung-Hyun Kim(KHU)



### Ⅲ. 분과별 논제 및 발표자

#### 제 7 분과 B

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

좌 장 설경태(Kyung-Tae SEOL), 이희석(Hee-Seock LEE)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P07B01    Status of Development of the Tritium Permeation Sensor for Liquid Breeder and Performance Test Plan**  
Eo Hwak Lee, Jae Sung Yoon, Suk Kwon Kim, Hyung Gon Jin, and Dong Won Lee(KAERI)  
Bo Guen Choi(UST)  
Hyun Gon Lee(NFRI)
- P07B02    Design and Analysis of HIP Joined W and Ferritic-Martensitic Steel Mockup for Fusion Reactor Divertor Development**  
D. W. Lee, K. I. Shin, S. K. Kim, H. G. Jin, E. H. Lee, and J. S. Yoon(KAERI)  
S. Y. Moon and B. G. Hong(CBNU)
- P07B03    Investigation into the In-box LOCA Consequence and Structural Integrity of the KO HCCR TBM in an ITER**  
D. W. Lee, H. G. Jin, K. I. Shin, E. H. Lee, J. S. Yoon, and S. K. Kim(KAERI)  
M. Y. Ahn and S. Cho(NFRI)
- P07B04    Status of the Design Tool Development for ITER TBM and Fusion Reactor System in Korea**  
H. G. Jin, D. W. Lee, K. I. Shin, E. H. Lee, J. S. Yoon, and S. K. Kim(KAERI)  
M. Y. Ahn and S. Cho(NFRI)
- P07B05    Current Structural Design of Side Wall in KO HCCR TBM for ITER**  
K. I. Shin, D. W. Lee, J. H. Gon, E. H. Lee, S. K. Kim, and J. S. Yoon(KAERI)  
S. Cho(NFRI)
- P07B06    A Study on the Ion Beam Extraction Using High Current Bucket Type Ion Source for 300mm Ion Beam Width**  
Bom Sok Kim, Chan Young Lee, and Jae Sang Lee(KAERI)
- P07B07    Corrosion Test for ARAA in the Experimental Loop for Liquid Breeder**  
J. S. Yoon, S. K. Kim, E. H. Lee, H. G. Jin, K. I. Shin, B. G. Choi, D. W. Lee, Y. I. Jung(KAERI)  
H. G. Lee(NFRI)
- P07B08    Evaluation and Simulations of KoHLT-EB for the Plasma Facing Components**  
Suk-Kwon Kim, Hyung Gon Jin, Kyu In Shin, Bo Guen Choi, Eo Hwak Lee, Jae-Sung Yoon, and Dong Won Lee(KAERI)  
Seungyon Cho(NFRI)
- P07B09    Beam Optics for Typical Part of ISOL Beam Lines**  
Ji-Ho Jang, Hyeok-Jung Kwon, Han-Sung Kim, and Yong-Sub Cho(KAERI)
- P07B10    Phenomena Identification and Ranking Table for K-DEMO**  
Kyemin Oh, Myung-Suk Kang, and Gyunyoung Heo(KHU)  
Hyoung-Chan Kim(NFRI)

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**P07B11      Performance Results of the Modulator for the 100MeV Proton Linac**

Dae-Il Kim, Hyeok-Jung Kwon, Han-Sung Kim, Kyung-Tae Seol, and Yong-Sub Cho(KAERI)

**P07B12      Frequency Control Loop for Drift Tube Linac**

Hyeok-Jung Kwon, Han-Sung Kim, Kyung-Tae Seol, Young-Gi Song, Ji-Ho Jang, and Yong-Sub Cho(KAERI)

**P07B13      Network based Data Management System for KOMAC Proton Linac**

Young-Gi Song, Hyeok-Jung Kwon, Ji-Ho Jang, and Yong-Sub Cho(KAERI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 8분과 A

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

- 원전 운전/정비, 설계, 제작, 경년열화 (NPP's Operating & Maintenance Technology, Design, Manufacture, Equipment Aging Management)

좌 장 박진균(Jinkyun PARK), 권원택(Won Taek KWON)

발표장소 사파이어

일 정 | 10. 24(목)

- 09:00 The Improvement of Plant Efficiency by Testing and Revising of the Reactor Thermal Power Calculation Program**  
Hyun Sung-kwan, Park Yeong-don, and Jeong Kang-cheol(KHNP)
- 09:20 Verification of SAMG Entry Condition for APR1400**  
Junghyun Yun, Taewan Kim, and Jonghyun Kim(KINGS)
- 09:40 A Study on Rating of AOP (Abnormal Operation Procedure) Based on Difficulty Importance, and Frequency**  
Sun Yeong Choi and Wondea Jung(KAERI)
- 10:00 Equipment Reliability Improvement for Koeberg Nuclear Power Plant Auxiliary Feedwater System**  
Noloyiso Gloria Mtoko and Seungjong Oh(KINGS)
- 10:20 Overview of Commissioning Startup Test of RCPTF**  
Y. S. Kim, B. D. Kim, Y. J. Youn, J. K. Park, H. S. Choi, S. kim, B. U. Bae, Y. J. Cho, H. J. Chung, C. H. Chung, S. K. Oh, and S. Cho(KAERI)
- 10:40 Coffee Break**
- 11:00 Scoping and Selection of Safety Significant Structures, Systems and Components for Containment Spray System**  
Ohaga Eric Owino and Lee Yong-Kwan(KINGS)
- 11:20 Inspection and Evaluation for Wall-thinned Pipe Due to Liquid Droplet Impingement Erosion in Secondary Piping System of Nuclear Power Plant**  
Dae Young Lee and Hyeok Ki Seo(KEPCO E&C)  
Yun-Jae Kim(KU)
- 11:40 Burst Test of Stress Corrosion Cracked Steam Generator Tubes under Internal Pressure**  
Kuk-Hee Lee, Hong-Deok Kim, Yong-Seok Kang, In-Chul Kim, Min-Woo Nam, and Ki-Seok Shin(KHNP CRI)  
Sung-Woo Kim(KAERI)
- 12:00 Development of An Environmentally-Assisted Fatigue Monitoring System for Advanced Power Reactors (APR1400)**  
Park June-soo, Kim Yeonjeong, Kang Sun-yeh, Yoon Ki-seok, and Choi Taek-sang(KEPCO E&C)

## 제 8 분과 B

### 원전 건설 및 운영 기술 - Poster

### (Nuclear Power Plant Construction and Operation Technology)

- 원전 건설 및 운영 기술 (NPP's Construction and Operation Technology)

좌 장 최소영(So Young CHOI), 장희승(Hee Seung CHANG)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

**P08B01 The Development of an Inspection System Using 3-D Image Display for Detecting Inside Defects on Steam Generator Tubes**

Hyun Ju Yoo, Hee Jong Lee, Chan-Hee Cho, and Tae-Hun Lee(KHNP CRI)

**P08B02 Electrical Grid Conditioning For First NPP Integration, a Systems Engineering Approach Incorporating Quality Function Deployment**

Henry Pwani and J. James(KINGS)

**P08B03 Development of Mitigation Strategy for Beyond Design Basis External Events for NRC Design Certification**

Kim Dong-Hak, Lee Jae-Jong, and Kim Myung-Ki(KHNP CRI)

**P08B04 The Development of Stochastic Process Modeling Through Risk Analysis Derived From Scheduling of NPP Project**

Kwang-Ho Lee and Myung-Sub Roh(KINGS)

**P08B05 Sizing Performance of the Newly Developed Eddy Current System**

Chan Hee Cho, Hee Jong Lee, Hyun Ju Yoo, Gyoong Young Moon, and Tae Hoon Lee(KHNP CRI)

**P08B06 Improvement of Equipment Reliability for Auxiliary Feed Water System**

Lee Sang Deok and Lee Yong Kwan(KINGS)

**P08B07 Wear on Plugged Tube due to the Foreign Objects on the Secondary Side of Steam Generator**

Hyung-nam Kim, Nam-Cheoul Cho, and Min-Woo Nam(KHNP CRI)

**P08B08 A Study on the Functional Elements of Configuration Management throughout the Life Cycle of Nuclear Power Plant**

C. S. Yeom(IAE)

Y. S. Cho(KINS)

**P08B09 Evaluation of Effect by Internal Flow on Ultrasonic Testing Flaw Sizing in Piping**

Jeong-Seok Lee, Byung-Sik Yoon, and Yong-Sik Kim(KHNP CRI)

**P08B10 Demonstration for the Applicability of the EPRI ETSS on the SG Tube Wear Defects Formed at the Tube Support Structure**

Ki Seok Shin, Keun Young Cheon, and Min Woo Nam(KHNP CRI)

Kyong Mahn Min(UMI)

**P08B11 Estimations of C\* and COD for Non-Idealized Circumferential Through-Wall Crack in Cylinders under Creep Conditions**

Han-Bum Surh, Min-Gu Won, and Jae-Boong Choi(SKKU)

Nam-Su Huh(SNU)

Doo-Ho Cho and Andong Shin(KINS)

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- P08B12      Uncertainty Analysis of Inleakage Test for Pressurized Control Room Envelop**  
J. B. Lee(KHNP CRI)
- P08B13      Improvement of Support Structure & Facilities Management System in NPP**  
Joon Hyun Park, Hong Pyo Lee, and Myung-Sug Cho(KHNP CRI)
- P08B14      A Method to Quantify Thermal Ageing Effect on Fracture Toughness of Cast Stainless Steel (CF8M)**  
Jun-Young Jeon, Nak-Hyun Kim, and Yun-Jae Kim(KU)  
Mi-Yeon Lee and Jin-Weon Kim(CSU)
- P08B15      Similarity Analysis of Cable Insulations by Chemical Test**  
Jong-Seog Kim(KHNP CRI)
- P08B16      Regulatory Assessment Technologies for Aging of Reactor Vessel Internals**  
Myung Jo Jhung, Jeong Soon Park, and Hanok Ko(KINS)
- P08B17      Sensitivity of a Torsional Guided Wave Signal Using a Magnetostrictive Transducer Technique**  
Yong-Moo Cheong and Duck-Hyun Lee(KAERI)
- P08B18      Stress-based Fatigue Assessment of Major Component in NPP Using Modified Green's Function Approach**  
HanOk Ko and MyungJo Jhung(KINS)  
JaeBoong Choi(SKKU)
- P08B19      Study for Relation of Pressure and Aging Degradation during LOCA Test**  
Jong-Seog Kim(KHNP CRI)
- P08B20      Study on PWSCC Susceptibility Index Considering Threshold Value**  
HyungJun Kim, JuneHo Chung, and TaeRyong Kim(KINGS)
- P08B21      Limit Load Analysis of Heat Induction Bending Pipe (90°) with Thinning on the Extrados**  
ChangKyun Oh and TaeRyong Kim(KINGS)  
Kyung-Dong Bae(KU)
- P08B22      Effect of Width of Repair Welding on Stress Distribution of Dissimilar Metal Butt Weld of Nuclear Piping**  
Won-Shik Hwang, Hwee-Seung Lee, and Nam-Su Huh(SNU)
- P08B23      Application of Early Streamer Emission (ESE) Air Terminal in Lightning Systems of NPP**  
Seung-Wook Lee and Myoung-Sub Roh(KINGS)
- P08B24      Fluid-Induced Vibration Analysis for Reactor Internals Using Computational FSI Method**  
Jong Sung Moon, Kun Woo Yi, Ki Kwang Sung, In Young Im, and Taek Sang Choi(KEPCO E&C)
- P08B25      The Risk Management in New Technology Deployment to Nuclear Power Plant**  
Kil-Young Jung and Myung-Sub Roh(KINGS)
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- P08B26     A Tsunami Wave Propagation Analysis for the Ulchin Nuclear Power Plant Considering the Tsunami Sources of Western Part of Japan**  
Hyun-Me Rhee, Min-Kyu Kim, and In-Kil Choi(KAERI)  
Dong-Hoon Sheen(CNU)
- P08B27     A Study on the Effect of Nonlinear Response of Containment Building on Floor Response Spectrum**  
Junhee Park and In-Kil Choi(KAERI)
- P08B28     Experimental Study on the Damping Characteristics of Steel Plate Concrete Wall by Cyclic Loading Test**  
Sung Gook Cho and Gihwan So(JACE KOREA)  
Dookie Kim(KNU)
- P08B29     Assessment of LRB Seismic Isolation Device for Nuclear Power Plant**  
Hong-Pyo Lee and Myung-Sug Cho(KHNP CRI)  
Jin-Young Park and Kwang-Seok Jang(UNISON e-Tech)
- P08B30     Assessment of EQS Seismic Isolation Device for Nuclear Power Plant**  
Hong-Pyo Lee and Myung-Sug Cho(KHNP CRI)

### Ⅲ. 분과별 논제 및 발표자

#### 제 8 분과 C

#### 원전 건설 및 운영 기술

#### (Nuclear Power Plant Construction and Operation Technology)

- 원전 건설, 내진/구조 (NPP's Construction and Structural Engineering)

좌 장 방상윤(Sang Youn, BANG), 주광호(Kwang Ho JOO)

발표장소 사파이어

일 정 | 10. 25(금)

- 09:00 NFC Based Inspection and Qualification Management (NIQM) System Preventing Counterfeit and Fraudulent Item**  
Chang Choong-koo and Kim Young-joo(KINGS)
- 09:20 ITAAC Development for APR1400 NRC Design Certification**  
Jin-Kwon Kim and Myoung-Ki Kim(KHNP CRI)
- 09:40 Assessment of the Internal Pressure Fragility of the Hanul NPP Units 3&4 Containment Building Using a Nonlinear Finite Element Analysis**  
Hyung-Kui Park and Deagi Hahm and In-Kil Choi(KAERI)
- 10:00 Preliminary Study on Impact Resistances of Fiber Reinforced Concrete Applied Nuclear Power Plants**  
Byeong Moo Jin and Young Jin Kim(Daewoo E&C)  
Se Jin Jeonb(Ajou Univ.)
- 10:20 Seismic Capacity Assessment for Spent Fuel Bay of Wolsong NPP**  
Hong-Pyo Lee and Myung-Sug Cho(KHNP CRI)
- 10:40 Coffee Break**
- 11:00 A Seismic Isolation Device Test for the Evaluation of Performance Criteria of Seismic Isolated NPPs**  
Min Kyu Kim, Jung Han Kim, and In-Kil Choi(KAERI)
- 11:20 Performance Based Failure Criteria of the Base Isolation System for Nuclear Power Plants**  
Jung Han Kim, Min Kyu Kim, and In-Kil Choi(KAERI)
- 11:40 Fragility Assessment of Rerouted Piping Systems in Seismically Isolated Nuclear Power Plant**  
Daegi Hahm, Sangshup Shin, and In-Kil Choi(KAERI)

## 제 9 분과 A

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

좌 장 권은하(Eun-Ha KWON), 고한석(Han Suk Ko)

발표장소 루비

일 정 | 10. 25(금)

- 09:00      Analysis of North Korea's Nuclear Tests under Prospect Theory**  
Han-Myung LEE, Jae-Soo RYU, Kwang-Seok LEE, Dong-hoon LEE, Eunju JUN, and Mi-Jin KIM(KAERI)
- 09:20      Conceptual Design on the System Architecture of Intellectual Export Control System(IXCS)**  
Seung-ho Jeong, Seung-hyo Yang, Jae-woong Tae, and Dong-hoon Shin(KINAC)
- 09:40      Implementing Physical Protection Education for an Enhanced Nuclear Security Culture**  
Jeong-ho Lee, Hyun-chul Kim, Ick-hyun Shin, Hyung-kyung Lee, and Kwan-kyoo Choe(KINAC)
- 10:00      Consideration on Directions of Nuclear Security in Republic of Korea**  
Jae Kwang Kim, Moon Sung Koh, and Woo Jin Kim(KINAC)
- 10:20      Comparative Study on the Relationship between Nuclear Licensees and Regulatory Bodies in Some Countries**  
Viet Phuong Nguyen(KAIST)  
K. S. Choi(KINS)
- 10:40      Coffee Break**
- 11:00      Analysis of Fukushima Daiichi Accident Using HFACS**  
Mohamed Saeed Almheiri(KAIST)  
Yun Hyung Chung(KINS)
- 11:20      Establishing the Safety Infrastructure for NPP in Mongolia**  
Enkhbat Norov(KAIST)  
Y. E. Lee(KINS)
- 11:40      Analysis of the Convention on Nuclear Safety and Suggestions for Improvement**  
K. S. Choi(KAIST)  
Viet Phuong Nguyen(KAIST)
- 12:00      Prioritizing the Countries for BOT Nuclear Power Project Using Analytic Hierarchy Process**  
Sun Woo Choi and Myung Sub Roh(KINGS)



### Ⅲ. 분과별 논제 및 발표자

#### 제 9 분과 B

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

좌 장 황용수(Yong-Soo HWANG), 이나영(Na-Young LEE)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P09B01 A Study on Classification Cases in UAE BNPP Focused on Physical Breakdown Structure for the Establishment of Intelligent Export Control System**  
Seung-hyo Yang, Jae-woong Tae, and Dong-hoon Shin(KINAC)
- P09B02 Study on the Correlation between PSR and Korean Stress Test for Continued Operation of Aging NPP**  
June-Ho Chung and Tae-Ryong Kim(KINGS)
- P09B03 Generation Mix Study Focusing on Nuclear Power by Practical Peak Forecast**  
Jung-Ho Shin and Myung-Sub Roh(KINGS)
- P09B04 Comparative Study on Research Reactor Design Requirements between IAEA and Korea**  
Won Joon Chang, Young Gill Yune, Myung Ho Song, and Seung-Ho Cho(KINS)
- P09B05 A Comparative Study on Export Control Systems of Nuclear Technology in ROK and USA**  
Jae-woong Tae and Dong-hoon Shin(KINAC)
- P09B06 A study on the validity of strategic classification processes**  
Jae-woong Tae and Dong-hoon Shin(KINAC)
- P09B07 Modeling of Mongolian Electric Energy Systems Using MESSAGE**  
Manki Lee and Jeeyoung Kim(KAERI)
- P09B08 Suggestion on Information Sharing for AP Implementation**  
Hye-Won Shim, Min-Su Kim and Byung Marn Koh(KINAC)
- P09B09 A Study for Appropriateness of National Nuclear Policy by Using Economic Analysis Methodology after Fukushima Accident**  
Jong-Myoung Shim and Myung-Sub Roh(KINGS)
- P09B10 Review of External Event Considered of Each Licensing**  
Arifin M. Susanto, Seo-Yeon Park, and Myung-Sub Roh(KINGS)
- P09B11 Optimal Procedure for Siting of Nuclear Power Plant**  
Khairiah Binti Aziuddin, Seo-Yeon Park, and Myung-Sub Roh(KINGS)

## 제 10 분과 A

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

좌 장 정연섭(Yeon-Sub JUNG), 이철권(Cheol-Kwon LEE)

발표장소 금강

일 정 | 10. 24(목)

- 09:00      Design and Analysis for an Operator's Action Sharing System**  
Yeonsub Jung and Nokyu Seong(KHNP CRI)
- 09:20      Analysis of Safety-Critical Component Failure Modes in Nuclear Power Plant (NPP)**  
Young Gyu No and Poong Hyun Seong(KAIST)
- 09:40      System Dynamics Modeling for the Resilience in Nuclear Power Plants**  
Florah Kamanja and Jonghyun Kim(KINGS)
- 10:00      A Diagnosis Support System for Abnormal Situations of Hanbit Units 3 & 4**  
Yochan Kim and Wondea Jung(KAERI)
- 10:20      Highly Reliable Power and Communication System for Essential Instruments under a Severe Accidents of NPP**  
S. J. Yoo, B. H. Choi, S. Y. Jung, and C. T. Rim(KAIST)
- 10:40      Coffee Break**
- 11:00      A Profile-based Method to Select Test Cases for Safety-critical Software**  
Hee Eun Kim and Hyun Gook Kang(KAIST)  
Han Seang Son(Joongbu Univ.)
- 11:20      Reliability Analysis of I&C Architecture of Research Reactors Using Bayesian Networks**  
Rahman Khalil ur, Jinsoo Shin, and Gyunyoung Heo(KHU)  
Hanseong Son(Joongbu Univ.)
- 11:40      A Method to Derive Monitoring Variables for a Cyber Security Test-bed of I&C System**  
Kyung-soo Han, Jae-Gu Song, Joung-Woon Lee, and Cheol-Kwon Lee(KAERI)
- 12:00      Reliability Modeling of Digital RPS with Consideration of Undetected Software Faults**  
M. Khalaquzzaman, Seung Jun Lee, and Wondea Jung(KAERI)  
Man Cheol Kim(CAU)

### Ⅲ. 분과별 논제 및 발표자

#### 제 10 분과 B

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

좌 장 허섭(Seop HUR), 이창재(Chang-Jae LEE)

발표장소 다이아몬드

일 정 | 10. 24(목) 13:00-15:00

- P10B01 Analysis of Employee's Survey for Preventing Human-Errors**  
Sung Chanho, Kim Younggb, and Joung Sanghoun(KHNP CRI)
- P10B02 Development of a Seismic Setpoint Calculation Methodology Using a Safety System Approach**  
Chang Jae Lee and Kwang il Baik(KEPCO E&C)  
Sang Jeong Lee(CNU)
- P10B03 Spurious Trip Prevention of the Diverse Protection System Using an Improved Setpoint Methodology**  
Chang Jae Lee and Kwang il Baik(KEPCO E&C)  
Sang Jeong Lee(CNU)
- P10B04 Application Method of Anthropometric Data for Operator Console of Exportable Research Reactor**  
Goo-Hyun Ryu, Jun-Hun Lee, Ja-Won Jeng, Youn-Sang Lee, and Min-Gyu Kim(PONUTech)
- P10B05 Bayesian Network Based Reliability Model of a UGV for Remote-response in Nuclear Emergency Situation**  
Heung-seop Eom and Kyungmin Jeong(KAERI)
- P10B06 Impact of Advanced HSIs on Human Reliability**  
Duc Duy Le and Jonghyun Kim(KINGS)
- P10B07 A Review on the Regulatory Strategy of Human Factors Engineering Consideration in Pakistan Nuclear Facilities**  
Sohail Sabir(KAIST)  
Seong Nam Choi(KINS)
- P10B08 Framework of the NPP I&C Security for Regulatory Guidance**  
Young-Mi Kim and Choong-Heui Jeong(KINS)
- P10B09 Reliability Analysis of Core Protection Calculator System by Combining Petri Net and Fault Tree**  
Hyejin Kim and Jonghyun Kim(KINGS)
- P10B10 An Advanced Detecting Scheme Against a Signal Distortion with a Smart Transmitter**  
JunYoung Son, Young-Mi Kim, and Choong-Heui Jeong(KINS)
- P10B11 Development of Parameter Network for Accident Management Applications**  
Sukyoung Pak, Rizwan Ahmed, and Gyunyoung Heo(KHU)  
Jung Taek Kim, Soo Yong Park, and Kwan Il Ahn(KAERI)

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**P10B12     The Designing Bus for Nuclear Safety Class Controller**

Dongil Lee, Myeongkyun Lee, and Donghwa Yun(PONUTech)  
Kwangki Ryoo(HNU)

**P10B13     Development of Testing Platform for Digital I&C System in Nuclear Power Plants**

G. Y. Park, Y. M. Kim, and C. H. Jeong(KINS)

**P10B14     Software V&V of PPS for Shin-Hanul Nuclear Power Plant Units 1&2**

Cheollak Park, Dongpa Kang, Changhui Choe, Sedo Sohn, and Seungmin Baek(KEPCO E&C)

### Ⅲ. 분과별 논제 및 발표자

#### 제 10 분과 C

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

좌 장 이동훈(Dhong-Hoon LEE), 이성진(Sung-Jin LEE)

발표장소 토파즈

일 정 | 10. 25(금)

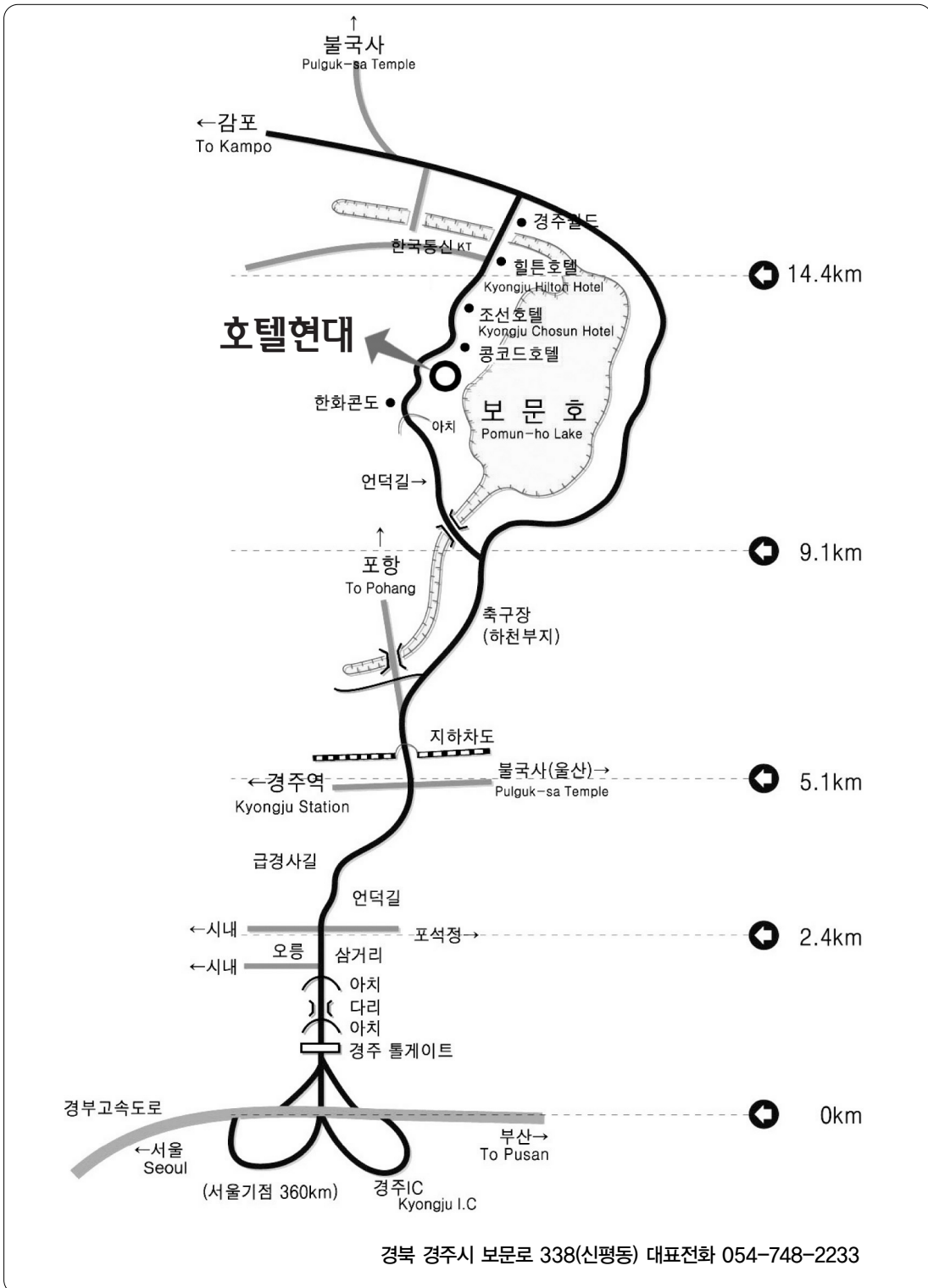
- 09:00 In-Service Inspection of Wall-thinned Defects Using a Lock-in Technique of IR Thermography**  
Kwae Hwan Yoo, Ju Hyun Kim, Man Gyun Na, and Jin Weon Kim(CSU)
- 09:20 A Study on Determination of Optimal Flow Paths for Safety Injection Using the Dijkstra Algorithm**  
Soon Ho Park, Jae Hwan Kim, Dae Seop Kim, and Man Gyun Na(CSU)
- 09:40 Mobile Computerized Procedure System for the Improved Situation Awareness among Field Workers and Main Control Room Operators**  
Sungjin Lee, Nokyu Seong, and Yeonsub Jung(KHNP CRI)
- 10:00 Functional Requirement Analysis and Function Allocation for APR 1400**  
Nuraslinda Anuar, Florah Kamanja, Nologyiso Mtoko, Nurhayati Ramli, Eric Ohaga, Bui Hoang Ha, Kim Dongyoung, Arifin M. Susanto, Zulfakar Zolkaffly, Kim Hyejin, Duy Le Duc, and Jonghyun Kim(KINGS)
- 10:20 A Comparison of Nuclear Power Plant Simulator with RELAP5/MOD3 Code about Steam Generator Tube Rupture**  
Sung Hyun Kim, Chan Ki Moon, and Sung Baek Park(KINS)  
Man Gyun Na(CSU)
- 10:40 Coffee Break**
- 11:00 Identification of Success Criteria for Automated Function Using Feed and Bleed Operation**  
Bo Gyung Kim, Sang Ho Kim, and Hyun Gook Kang(KAIST)  
Ho Joon Yoon(Khalifa Univ.)
- 11:20 Preliminary Conceptual Study for Safety Parameter Display System of PGSFR**  
Seung-Hwan SEONG, Hyun-Ju Jo, Dong-Hoon Kim, Kwang-Seop Son, and Gwi-Sook Jang(KAERI)

일 정 | 10.25(금)

- 09:00 Study on the Safety Classification Criteria of Mechanical Systems and Components for Open Pool-Type Research Reactors**  
Belal AL-MOMANI(KAIST)  
Jong Chull JO(KINS)
- 09:20 Sensitivity of Transmutation Capability to Recycling Scenarios in KALIMER-600TRU Burner**  
Yong-Kyo Lee and Myung-Hyun Kim(KHU)
- 09:40 Heat and Radiation Effects on Iodide Sorption by Surfactant Modified Bentonite (SMB)**  
Minkyung Kim, Sungwook Choung, and Wooyong Um(POSTECH)
- 10:00 Nuclear-Thermal Analysis of Fully Ceramic Microencapsulated Fuel via Two-Temperature Homogenized Model**  
Yoonhee Lee and Nam Zin Cho(KAIST)
- 10:20 Passive Micro Power Generation for Nuclear Safety with Thermoelectric Heat Pipe**  
Lei Sheng Chen and Jae Young Lee(HGU)  
In Cheol Bang(UNIST)
- 10:40 Coffee Break**
- 11:00 Experiment on Pool and Flow Boiling CHF for the SiC Surfaces under Atmospheric Condition**  
Dong Hoon Kam and Yong Hoon Jeong(KAIST)  
Jong Hyuk Lee(KAERI)
- 11:20 Development of a Prototypical Condensation Model for the Nearly Horizontal Heat Exchanger Tube of the APR+ PAFS(Passive Auxiliary Feed-water System)**  
Tae-Hwan Ahn, Byong-Jo Yun, and Jae-Jun Jeong(PNU)
- 11:40 Analytic Modeling of Energy-Absorption Response Functions for Photoconductor-Based X-Ray Detectors**  
Seungman Yun and Ho Kyung Kim(PNU)
- 12:00 A Comparison of Force-Time History Analysis Methods for Simplified Aircraft Impact Simulation**  
Sang-Shup Shin, Dae-Gi Hahm, and In-Kil Choi(KAERI)
- 12:20 Portable Filtered Air Suction System for Released Radioactive Gases Prevention under a Severe Accident of NPPs**  
Beom W. Gu, Su Y. Choi, and Chun T. Rim(KAIST)

## IV. 행사장안내

### 1. 행사장 교통안내



### ■ 자가차량 이용시

출발지(소요시간)	도로명
서울 (4시간 30분)	서울 - 경주/중부고속도로 - 대구 - 경주I.C - 서라벌대로 - 보문로 - 호텔현대 경주
부산(1시간 30분)	부산(경주고속도로 이용) - 경주I.C - 서라벌대로 - 보문로 - 호텔현대 경주
대구(1시간)	대구 - 경부고속도로 - 경주I.C - 서라벌대로 - 보문로 - 호텔현대 경주
대전 (2시간 30분)	대전 - 경부고속도로 - 대구 - 경주I.C - 서라벌대로 - 보문로 - 호텔현대 경주
광주(3시간)	광주 - 88고속도로 - 화원I.C - 대구 - 경주I.C - 서라벌대로 - 보문로 - 호텔현대 경주

### ■ 고속버스 이용시

운행구간	운행시간		배차간격	소요시간
	첫차	막차		
서울 → 경주	06:05	23:55	25분~150분	4시간 30분
대전 → 경주	07:40	14:50	1일 2회	3시간
대구 → 경주	06:30	21:20	40분	1시간
부산 → 경주	08:00	20:30	1시간	50분
광주 → 경주	09:45	16:50	1일 2회	4시간
김해공항 → 포항, 경주	07:05	22:05	1시간	1시간 10분

• 경주고속터미널 하차후 맞은편에서 시내버스 10번, 700번 승차 → 현대호텔 정류장 하차(요금 1,500원)

### ■ 기차 이용시(KTX)

운행구간	첫차	막차	열차	소요시간
서울 → 신경주	05:30	22:00	KTX	2시간 5분
대전 → 신경주	06:32	23:02	KTX	1시간 10분

• 신경주역 : 시내버스 700번 승차 → 현대호텔 정류장 하차(요금 1,500원)



## IV. 행사장안내

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### ■ 택시 이용시

운행구간	소요시간	요금
신경주역	약 25분~30분	약 2만 5천원
경주역	약 15분	약 1만원
경주고속터미널	약 20분	약 1만 2천원

### ■ 항공 이용시

- 김포 ↔ 부산, 김포 ↔ 울산, 김포 ↔ 포항 간 운행
- 상세한 내용은 각 항공사 홈페이지를 확인하시기 바랍니다.
  - 아시아나 항공 : 1588-8000 <http://flyasiana.com/>
  - 대 한 항 공 : 1588-2001 <http://kr.koreanair.com/>

## 2. 숙박안내

### ■ 호텔현대 경주 (행사장)

#### \* 객실 종류 및 금액

객실종류	금액	비고
Twin	100,000원	싱글 2개
Double	100,000원	더블 1개
Triple	100,000원	싱글 3개
온돌	110,000원	3인 침구류 기본
Suite	242,000원	트윈 or 더블

\* 예약방법 : 객실 예약 신청서 작성후 아래의 담당자에게 이메일로 송부

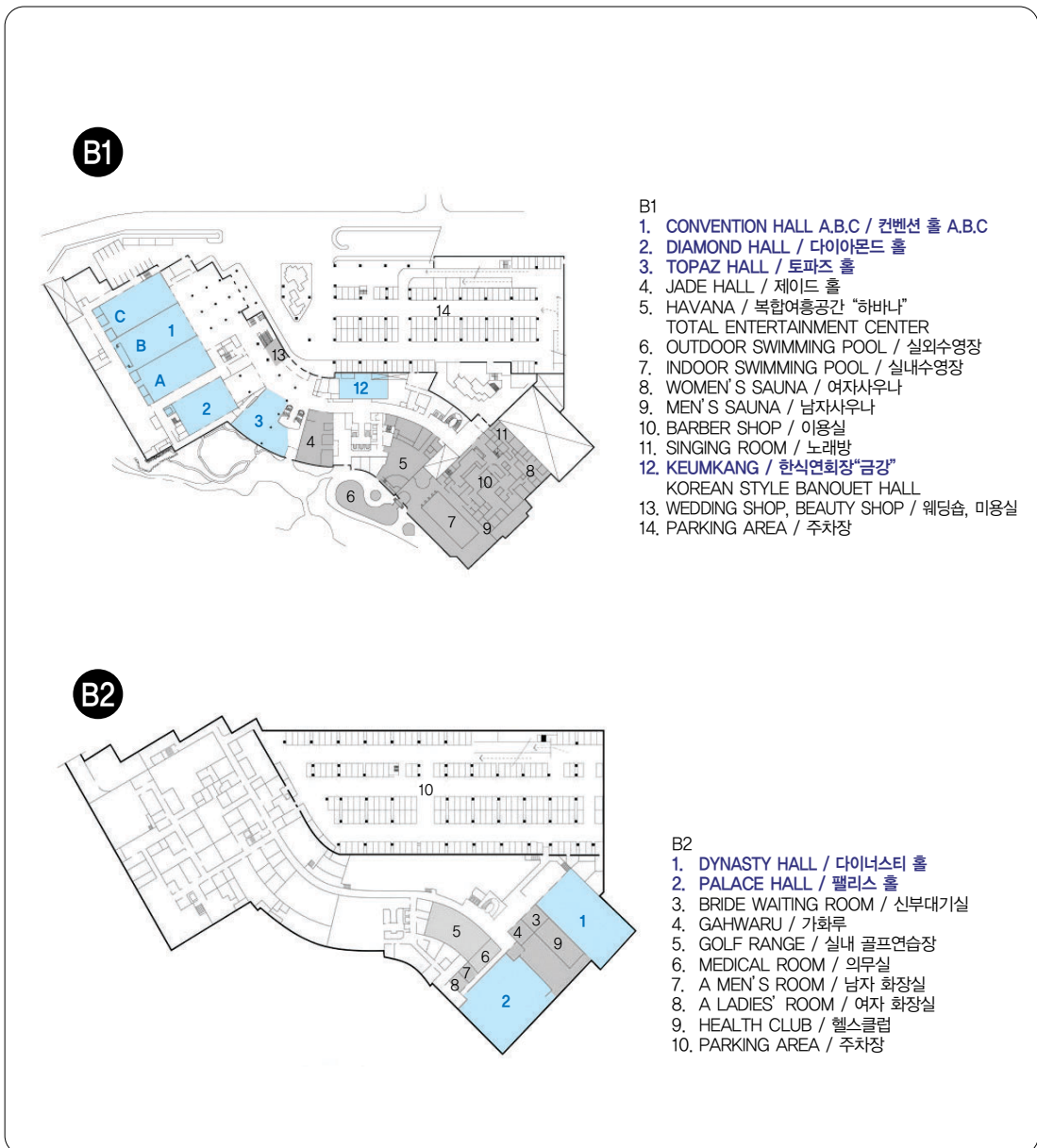
- 송 부 처 : csk6385@hanmail.net
- 문 의 처 : 010-9750-1954 (최순길 지배인)
- 예약기간 : 예약 마감시까지

※ 객실 예약 신청서는 [www.kns.org](http://www.kns.org)의 상단메뉴바의 게시판 → 문서자료실에서 다운로드 가능

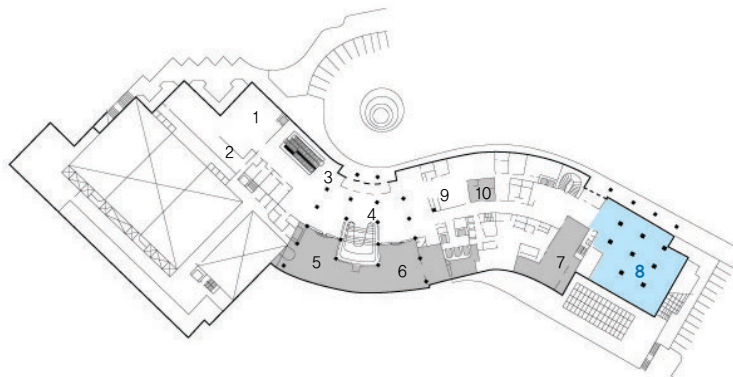
## IV. 행사장안내

### 3. 행사장 배치도

- 등록 및 접수 : 10.23(수) ~ 10.25(금) / 지하층 로비
- 정기총회 및 특별강연 : 10.24(목) 15:00 ~ 18:00 / 컨벤션A홀 (B1)
- 포스터발표 : 10.24(목) 13:00 ~ 15:00 / 다이아몬드홀 (B1)
- 만찬 : 10.24(목) 18:00 / 컨벤션홀 (B1)
- 중식 : 10.24(목) 12:00~13:30 / 크리스탈홀 (1F), 보문홀 (2F), 팰리스홀 (B2)  
10.25(금) 12:00~13:30 / 크리스탈홀(1F), 보문홀 (2F)



1F

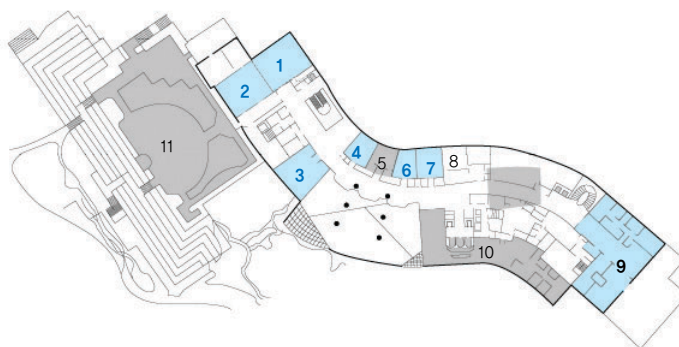


1F

- 1. RETAIL SHOPS / 소매점
- 2. CHILD CARE ROOM / 어린이 놀이방
- 3. RENT A CAR / 렌트카
- 4. MAIN LOBBY / 메인로비
- 5. LOBBY LOUNGE / 로비라운지
- 6. SARA / 커피숍 "사라"
- COFFEE SHOP

- 7. PISA/양식당 "피사"
- ITALIAN RESTAURANT
- 8. CRISTAL HALL / 크리스탈홀
- 9. FRONT DESK / 프론트데스크
- 10. CATERING OFFICE / 연회 예약사무실

2F



LEGEND

- BANQUET FACILITY / 연회시설
- LEPORTS FACILITY / 레포트시설
- RESTAURANT & BAR / 레스토랑, 바

2F

- 1. EMERALD / 에메랄드
- 2. RUBY / 루비
- 3. SAPPHIRE / 사파이어
- 4. OPAL / 오팔
- 5. JENNIFER / 제니퍼
- 6. MAPLE / 메이플
- 7. MAHOGANY / 마호가니

- 8. BUSINESS CENTER / 비즈니스센터
- 9. POMUN / "보문"
- KOREAN RESTAURANT
- 10. NANCHING / 중 · 일식당
- CHINESE · JAPANESE RESTAURANT
- 11. ROOF GARDEN / 루프가든

## V. 연구부회 모임 일정 안내

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각 연구부회별 사업계획등의 연구부회 활성화 방안을 논의하기 위한 자리를 아래와 같이 마련 하였습니다. 해당하는 연구부회 모임에 많은 참석과 관심을 부탁드립니다.

• 일 정 : 2013년 10월 24일(목) 13:30 ~ 14:30

### [연구부회별 모임 장소]

일련번호	연구부회명	모임장소	위치
1	원자로시스템기술	오팔	2F
2	원자로물리 및 계산과학	다이너스티	B2
3	방사성폐기물관리	마호가니	2F
4	핵연료 및 원자력재료	메이플	2F
5	원자력열수력 및 안전	컨벤션B	B1
6	방사선이용 및 방호	에메랄드	2F
7	양자공학 및 핵융합기술	루비	2F
8	원전 건설 및 운영 기술	사파이어	2F
9	원자력정책, 인력 및 협력	컨벤션C	B1
10	원자력계측제어 및 자동원격	금강	B1

## Ⅵ. 행운권(경품) 행사 안내

www.kns.org

우리 학회에서는 제46회 정기총회 및 2013 추계학술발표회 행사와 더불어 회원분들을 위해 아래와 같이 행운권(경품) 행사를 마련하였사오니, 많은 참여 바랍니다.

### ▶ 추첨 일정

구 분	일 시	장 소	비 고
1차	2013. 10. 24(목) 18:30	컨벤션홀(B1)	만찬시
2차	2013. 10. 25(금) 12:40	크리스탈홀(1F)	중식시

▶ 대 상 자 : 학술발표회 등록 회원(사전등록 및 현장등록)

▶ 운영방법 : 추첨을 통하여 추첨시 참석한 회원에게 경품 지급

## 2013 추계학술발표회

**발행인** | 김종경

**발행처** | 한국원자력학회

**주 소** | 대전광역시 유성구 유성대로 794(장대동 342-1)  
뉴토피아빌딩 4층

**연락처** | Tel : (042)826-2613/4 Fax : (042)826-2617

E-mail : [kns@kns.org](mailto:kns@kns.org)

**인쇄처** | 신진기획 Tel : (042)638-7887

[www.kns.org](http://www.kns.org)



사단  
법인 **한국원자력학회**  
KOREAN NUCLEAR SOCIETY

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전화 042. 826-2613 / 826-2614 팩스 042. 826-2617