




**APSS 2025**  
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# Asia Pacific Symposium on Safety 2025

**November 9–12, 2025**

Maison Glad Hotel Jeju,  
Republic of Korea

**Organized by**

 **The Korean Society of Safety**  
The Korean Society of Safety



**Japan Society for Safety Engineering, Japan**



**National Institute of Occupational Safety and Health, Japan**  
JNIOOSH

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**GASTRON 가스트론**



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- Memo



Dear safety professionals and valued guests from the Asia-Pacific and around the world,

It is a great pleasure and honor to invite you to the Asia Pacific Symposium on Safety 2025 (APSS 2025), which will be held in Jeju, Korea.

APSS began in 1999 in Gyeongju, Korea, as a simple symposium between Korea and Japan. Over the years, it has become a major international event focused on improving industrial safety and preventing disasters across the Asia-Pacific region.

This event is held every two years in a different country. For more than 20 years, APSS has helped people share academic ideas, work together on technical solutions, and find new ways to improve industrial safety. This year, experts and researchers from 14 countries will join us, including Korea, Japan, China, Taiwan, Singapore, Hong Kong, Thailand, Vietnam, India, Australia, the United Kingdom, the United States, Mexico, and Poland

We meet at a time of fast changes - with new science, new technology, rising climate change, and growing global uncertainty. These changes mean we must think about safety in a bigger way. We must move past just technical rules and create a complete system that connects technology, society, the environment, and policy.

APSS 2025 will be a global place to confirm the core value of safety and explore new ideas for how we can all work together in the future. Industrial safety is a job for all of us, not just one country. It is essential for sustainable development and the well-being of people.

The Korean Society of Safety, as the host for APSS 2025, is dedicated to making international cooperation stronger and growing a safety culture that puts people first. We plan to do this by actively sharing knowledge among all participating countries.

I truly hope that APSS 2025 will be important for making progress in safety science. I also hope it will build a stronger base for global partnerships and mutual understanding. I wish all participants a rewarding symposium with great inspiration and meaningful exchange.

**Dal Jae Park**

President, The Korean Society of Safety  
Chair, National Organizing Committee, APSS 2025



Speaker, Woo Won Shik  
The National Assembly, Republic of Korea



Minister, Kim YoungHoon  
Employment and Labor, Republic of Korea



President, Kim Hyun Joong  
Korea Occupational Safety Health Agency,  
Republic of Korea



President, Lim MuSong  
Korea Industrial Safety Association, Republic of  
Korea



President, Ritsu Dobashi  
Japan Society for Safety Engineering, Japan



Deputy Director-General, Katsutoshi Ohdo  
National Institute of Occupational Safety and Health,  
Japan

### NOC (National Organizing Committee)

Chan Kyu Kang, Hankyong National University, Republic of Korea  
Dong-Joon Kim, Kyungil University, Republic of Korea  
Jae-Ho Kim, Daejeon University, Republic of Korea  
Jeong Hun Kim, STECENC, Republic of Korea  
Taehoon Kim, Seoul National University of Science and Technology, Republic of Korea  
Dal Jae Park, Seoul National University of Science and Technology, Republic of Korea  
Jungchul Park, Korea National University of Transportation, Republic of Korea  
Jong Yil Park, Seoul National University of Science and Technology, Republic of Korea  
Hyeongon Park, Pukyong National University, Republic of Korea  
Yongyoon Suh, Dongguk University, Republic of Korea  
Chang Geun Song, Incheon National University, Republic of Korea  
Jeong-Hun Won, Chungbuk National University, Republic of Korea  
Tae Keun Oh, Incheon National University, Republic of Korea  
Seung-Yong Ok, Hankyong National University, Republic of Korea  
Byungtae Yoo, Korea National University of Transportation, Republic of Korea  
Sol Hee Yoon, Seoul National University of Science and Technology, Republic of Korea  
Gibaek Lee, Korea National University of Transportation, Republic of Korea  
Sung-Eun Lee, Hoseo University, Republic of Korea  
Jieun Lee, Pukyong National University, Republic of Korea  
Chang Jun Lee, Pukyong National University, Republic of Korea  
Jae-Yong Lim, Seoul National University of Science and Technology, Republic of Korea  
Seungho Jung, Ajou University, Republic of Korea  
Sangeun Jin, Pusan National University, Republic of Korea  
Youngbo Choi, Chungbuk National University, Republic of Korea

### IPC (International Program Committee Members)

Prof. Chang Jun Lee, Pukyong National University, Republic of Korea  
Prof. Woogyung Kim, Hiroshima University, Japan  
Prof. Xinyan Huang, Hong Kong Polytechnic University, Hongkong  
Prof. Gao Wei, Dalian University of Technology, China  
Prof. Jenq-Renn Chen, National Kaohsiung University of Science and Technology, Taiwan  
Dr. Felipe Ong, BS&B Safety Systems Asia Pacific Pte Ltd, Singapore  
Prof. Wimolsiri Pridasawas, King Mongkut's University of Technology Thonburi, Thailand

## Plenary Speaker 1



### **Safety Culture of Organizations in the Chemical Industry**

**Masaki Nakagawa** (Environment & Safety Department of Environment & Safety division, Mitsubishi Chemical Corporation, Japan)

**Short Biography:**

Mr. Masaki Nakagawa is a manager of Environment & Safety Department of Environment & Safety division at Mitsubishi Chemical Corporation. He is a member of Japan Society for Safety Engineering, Safety Division of the Society Chemical Engineers, Japan and CCPS (Center for Chemical Process Safety). He has been a board member of Society of Safety Engineering since 2016 and served as Vice President from 2018 to 2019, and he is a member of CCPS Planning Board. Mr. Nakagawa has worked in production, research & development, and Safety & Environment department. His responsibilities include analyzing the causes of accidents and proposing measures to prevent recurrence, promoting risk assessments, and developing and enhancing safety engineering technologies. He has developed risk assessment systems and applied them to many processes at Mitsubishi Chemical, contributing to the prevention of accidents.

## Plenary Speaker 2



### **Important Safety Gaps for Process Industries for Dust Explosion Risk!**

**Felipe Ong** (Asia Pacific, Industrial Explosion Protection Division, BS&B Safety Systems (Asia Pacific) Pte Ltd., Singapore)

**Short Biography:**

Mr. Felipe Ong is the Head of Asia Pacific, Industrial Explosion Protection Division with BS&B Safety Systems with vast experience in combustible dust risk management. He is an active member of IES, IChemE, Society of Loss Prevention (SLP, Singapore). He has over 33 years of industrial experiences on Dust Explosion Prevention & Protection Technologies. Felipe travels extensively across Asia Pacific Regions as well as Europe & has extensive knowledge on the latest Codes & Standards, best engineering practices driven by both USA (NFPA) & European Standard (ATEX), China (Chinese GB), Australia & NZ (AS/NZS) as well as Singapore latest ACoP SS667:2020 Approved Code of practice for handling, storage and processing of combustible dust. He has conducted many Dusts Explosion Risk Assessment and have assisted several customers in actual incident finding and have provided practical Solution to many of his customers in this area.

### Plenary Speaker 3



#### **Geotechnical studies for the prevention of workplace accidents in construction**

**Satoshi TAMATE** (Occupational Accident Investigation, National Institute of Occupational Safety, Japan)

#### Short Biography:

Dr. Satoshi TAMATE is a former director at center for Occupational Accident Investigation, National Institute of Occupational Safety, Japan (JNIOOSH), and a research fellow for special appointment at present. He received PhD from Musashi Institute of Technology, MSc and BSc from Muroran Institute of Technology. He studied in the University of Tokyo and the University of Western Australia as a visiting researcher. Main research area is soil mechanics and geotechnical engineering. Soils collapses cause cave-in accidents during trench excavations and cutting slopes, leaving digging workers buried in collapsed soil even in shallow depths. A personal soil guard system was developed as practical safety measures to prevent labor accidents. This system has a simple structure to bear horizontal earth pressure. It is widely used at ground excavations. In addition, drill rigs and mobile cranes are heavy machinery used in construction sites. Sufficient bearing capacity is required in the supporting ground to keep the machinery horizontal. However, overturning accidents frequently occur because of ground penetration at the foundations of lower careers. Safety requirements on bearing capacity of supporting grounds are studied for tall super structures. He studies geotechnical safety measures for prevention of accidents at constructions.

### Plenary Speaker 4



#### **The impact of outdoor environmental factors on construction accidents and strategies for their prediction and management**

**Jaewook Jeong** (The Department of Safety Engineering, Seoul National University of Science and Technology , Republic of Korea)

#### Short Biography:

Prof. Jaewook Jeong is an Associate Professor in the Department of Safety Engineering at Seoul National University of Science and Technology (SeoulTech) and a licensed Professional Engineer (P.E.) in Korea. He leads the S3PARC Lab (Safety, Smart, and Sustainability-driven Advanced Research in Construction) and teaches construction safety and management in his department. Prof. Jeong earned his Ph.D. from Yonsei University in Korea and has over 20 years of experience as a researcher and professional engineer in Korea, the United States, and Singapore. His research focuses on quantitative and probabilistic analysis of accident risks, design for safety, and improving safety policies in the field of the construction industry. He strives to scientifically and objectively simulate and predict various subjective uncertainties and risk factors inherent in the construction industry.

## Plenary Speaker 5



### **AI-Powered Smart Fire Safety: Progress and Perspectives**

**Xinyan Huang** (The Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong)

Short Biography:

Prof. Xinyan Huang is an Associate Professor at Dept of Building Environment and Energy Engineering, The Hong Kong Polytechnic University. He received his PhD from Imperial College London, MSc from University of California, San Diego, and BEng from Southeast University. Prof. Huang is a Combustion Scientist and a Fire Safety Engineer who has co-authored over 200 journal papers and reviewed over 80 journals. He is an Associate Editor of Fire Technology and International Journal of Wildland Fire, an editorial member of J. Building Engineering, J. Safety Sci. Resil., Fire Safety J. and Fire & Materials, a Chartered Building Services and Fire Engineer. He is a board member of Int. Association of Fire Safety Science (IAFSS) and the Int. Association of Wildland Fire (IAWF), a committee member for the HK Fire Safety Code, and a Fire Expert for the HK High Court. He is a winner of the NSFC Excellent Young Scientists Fund, Bernard Lewis Fellowship and Sugden Best Paper Award from Combustion Grand Award from HKIE, and "5 under 35" Award from Society of Fire Protection Engineers (SFPE).

## Plenary Speaker 6



### **Enhancing Worker Risk Perception: The Role of VR-Based Education Systems (Tentative)**

**Jieun Lee** (The Department of Safety Engineering, Pukyong National University, Republic of Korea)

Short Biography:

Prof. Jieun Lee is an assistant professor in the Department of Safety Engineering at Pukyong National University. She earned her Ph.D. in Engineering from the University of Tsukuba in 2020, focusing on human behavior in interactions with automated systems. Her research interests include enhancing human-machine interaction and designing safe and effective human-machine systems. By integrating engineering principles with insights from human factors and cognitive psychology, Dr. Lee addresses challenges in automation and safety, particularly in reducing human error and improving risk management in advanced technological environments.

## Registration Fee

| Category              | Before Sep. 30 | From Oct. 1 |
|-----------------------|----------------|-------------|
| Presenter/Participant | USD 600        | USD 700     |
| Student               | USD 450        | USD 550     |
| Accompanying Visitor  | USD 300        | USD 350     |

## Additional Information

Lunches and two coffee coupons will be provided during the conference.

Each participant needs to register. Each full registration allows the submission of two papers and can have a maximum of one additional paper registration fee.

Student registration covers only one paper. (additional paper registration is not allowed).

Full and student registration includes coffee breaks and lunches, conference proceedings, welcome reception and dinner banquet.

Accompanying person registration includes the welcome reception and dinner banquet.

The accompanying person has no access to the technical programs of the conference.

## Oral presentations

Oral presentations are organized in sessions scheduled at specific conference rooms, which are indicated in the program together with the time of presentation of each contribution.

Each oral presentation has a length of 20 minutes(15minute presentation, 5minute Q&A).

The allocated presentation time cannot be exceeded.

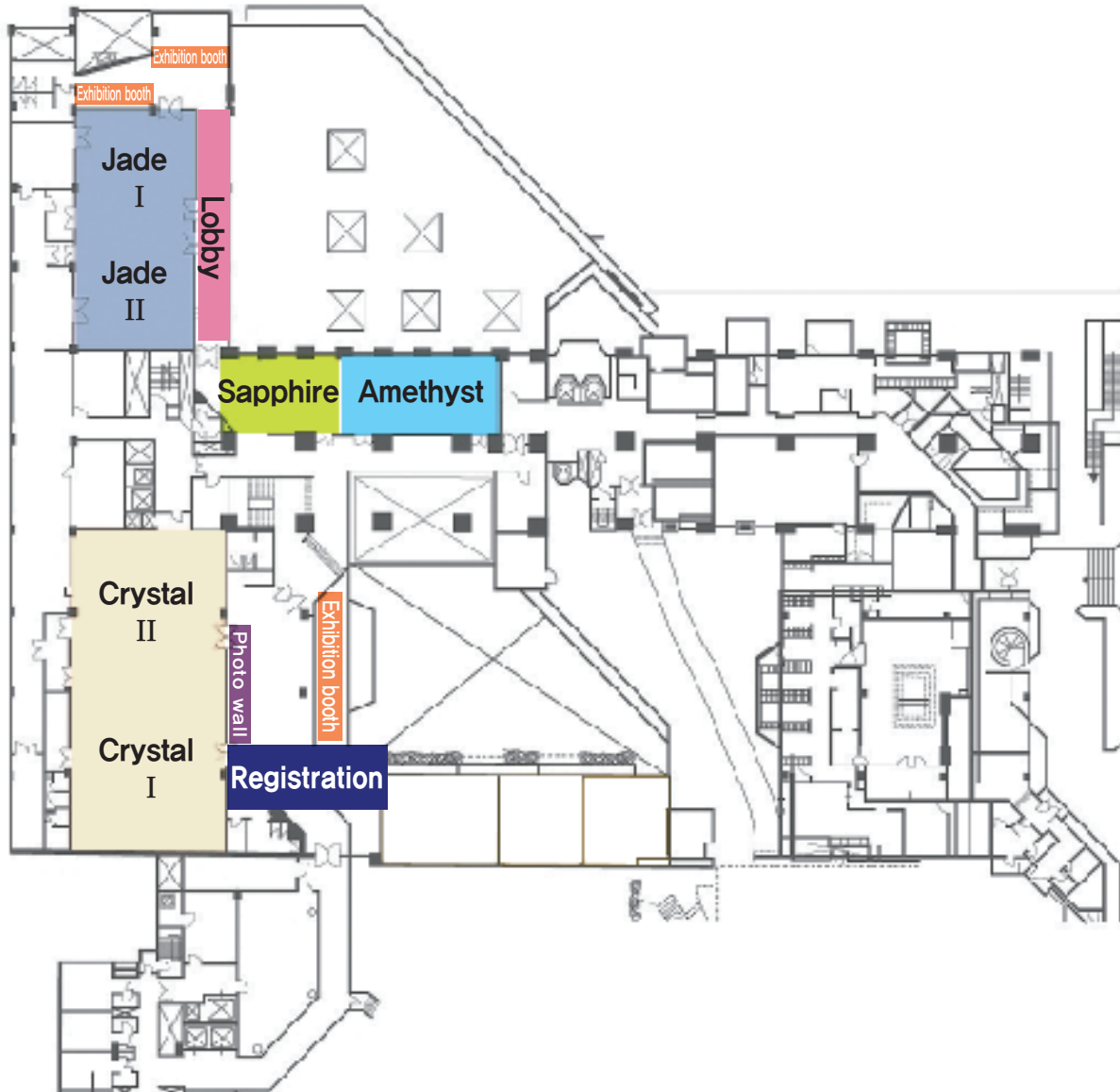
The presentation file(PPT) must be uploaded to a laptop in a conference room before your session starts.

## Poster presentations

Poster presenters are expected to print and bring their physical poster to the poster hall for display and presentation on their assigned day.

The board will be used VERTICALLY. The actual printed poster dimensions are 5 feet high x 3 feet wide.

## 2F



|              |              |                |                 |               |                |
|--------------|--------------|----------------|-----------------|---------------|----------------|
| Jade I (2F)  | Jade II (2F) | Crystal I (2F) | Crystal II (2F) | Sapphire (2F) | Lobby(2F)      |
| Oral Session |              |                |                 |               | Poster Session |

|               |
|---------------|
| Amethyst (2F) |
| Lounge        |

### Asia Pacific Symposium on Safety 2025 (APSS 2025)\_Time Table

## November 9, 2025

|              |              |
|--------------|--------------|
| Registration | Lobby (1F)   |
| 16:00~18:00  | Registration |

## November 10, 2025

|                   |  |                       |                   |                      |                       |
|-------------------|--|-----------------------|-------------------|----------------------|-----------------------|
| Registration      | Crystal Lobby (2F)   |                       |                   |                      |                       |
| 09:00~18:00       | Registration   |                       |                   |                      |                       |
| Opening Ceremony  | Crystal I (2F)   |                       |                   |                      |                       |
| 09:30~10:00       | Opening Ceremony   |                       |                   |                      |                       |
| 10:00~10:20       | Break Time   |                       |                   |                      |                       |
| Keynote Speaker I | Crystal I (2F)   |                       |                   |                      |                       |
| 10:20~11:30       | Keynote Speaker (Mr. Masaki Nakagawa) / Keynote Speaker (Mr. Felipe Ong) |                       |                   |                      |                       |
| 11:30~13:30       | Lunch  |                       |                   |                      |                       |
| Oral Session I    | Jade I (2F)  | Jade II (2F)          | Crystal I (2F)    | Crystal II (2F)      | Sapphire (2F)         |
| 13:30~15:30       | Explosion and Fire I   | Explosion and Fire II | Process Safety I  | Electrical Safety    | Safety Education I    |
| 15:30~15:50       | Break Time   |                       |                   |                      |                       |
| Oral Session II   | Jade I (2F)  | Jade II (2F)          | Crystal I (2F)    | Crystal II (2F)      | Sapphire (2F)         |
| 15:50~17:50       | Explosion and Fire III   | Explosion and Fire IV | Process Safety II | Emergency Response I | Construction Safety I |
| Welcome Reception | Crystal I (2F)   |                       |                   |                      |                       |
| 18:30~20:30       | Welcome Reception  |                       |                   |                      |                       |

**Asia Pacific Symposium on Safety 2025 (APSS 2025)\_Time Table**

## November 11, 2025

|                    |   |                       |                        |                                 |                        |
|--------------------|---|-----------------------|------------------------|---------------------------------|------------------------|
| Registration       | Crystal Lobby (2F)  |                       |                        |                                 |                        |
| 09:00~18:00        | Registration  |                       |                        |                                 |                        |
| Keynote Speaker II | Crystal I (2F)  |                       |                        |                                 |                        |
| 09:30~10:40        | Keynote Speaker (Dr. Satoshi Tamate) / Keynote Speaker (Prof. Jaewook Jeong)                      |                       |                        |                                 |                        |
| Poster Session I   | Lobby (2F)  |                       |                        |                                 |                        |
| 10:40~11:40        | Explosion and Fire, Occupational Safety, Process Safety, Emergency Response, Safety Education     |                       |                        |                                 |                        |
| 11:40~13:10        | Lunch   |                       |                        |                                 |                        |
| Oral Session III   | Jade I (2F)   | Jade II (2F)          | Crystal I (2F)         | Crystal II (2F)                 | Sapphire (2F)          |
| 13:10~15:10        | Explosion and Fire V  | Explosion and Fire VI | Occupational Safety I  | Material Safety Chemical Safety | Construction Safety II |
| 15:10~15:20        | Break Time  |                       |                        |                                 |                        |
| Oral Session IV    | Jade I (2F)   | Jade II (2F)          | Crystal I (2F)         | Crystal II (2F)                 | Sapphire (2F)          |
| 15:20~17:20        | Explosion and Fire VII  | Risk Assessment I     | Occupational Safety II | Risk Assessment II              | Protection Engineering |
| Poster Session II  | Lobby (2F)  |                       |                        |                                 |                        |
| 17:20~18:20        | Risk Assessment, Material Safety, Chemical Safety, Construction Safety, Electrical Safety, Others |                       |                        |                                 |                        |
| Banquet            | Crystal I (2F)  |                       |                        |                                 |                        |
| 18:30~20:30        | Banquet   |                       |                        |                                 |                        |

## November 12, 2025

|                          |  |                     |                    |                       |               |
|--------------------------|--|---------------------|--------------------|-----------------------|---------------|
| Registration             | Crystal Lobby (2F)   |                     |                    |                       |               |
| 08:30~13:00              | Registration   |                     |                    |                       |               |
| Keynote Speaker III      | Crystal I (2F)   |                     |                    |                       |               |
| 09:00~10:10              | Keynote Speaker (Prof. Xinyan Huang) / Keynote Speaker (Prof. Jieun Lee) |                     |                    |                       |               |
| 10:10~10:20              | Break Time   |                     |                    |                       |               |
| Oral Session V           | Jade I (2F)  | Jade II (2F)        | Crystal I (2F)     | Crystal II (2F)       | Sapphire (2F) |
| 10:20~12:00              | Explosion and Fire VIII  | Risk Assessment III | Risk Assessment IV | Emergency Response II | Others        |
| Award & Closing Ceremony | Crystal I (2F)   |                     |                    |                       |               |
| 12:00~12:30              | Award & Closing Ceremony   |                     |                    |                       |               |

November 10, 2025

## Oral Session I

13:30~15:30

Chair : Wookyung Kim(Hiroshima University, Japan)

Place : Jade I (2F)

## Explosion and Fire I(OA)

- OA-01** Detailed Analysis of The Detonation Behavior of Hydrogen/Oxygen Mixtures under Various Conditions  
Ryohei Eda<sup>1</sup> and Toshio Mogi<sup>1</sup>(<sup>1</sup>The University of Tokyo, Japan)
- OA-02** Study on the Correlation between Thermal Decomposition Enthalpy of Lithium Battery Separators and Explosion Delay Time  
Dongin Park<sup>1</sup> and Taehoon Kim<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Incheon National University, Republic of Korea)
- OA-03** Influences of Testing Conditions on Hot Surface Ignition Temperature (HSIT) of Hydrocarbons  
Tomoki Sawayama<sup>1</sup>, Tomoki Ozawa<sup>2</sup>, Masato Nakazawa<sup>3</sup>, Kazunori Kuwana<sup>4</sup> and Tomohiko Imamura<sup>2</sup> (<sup>1</sup>Graduate School of Suwa University of Science, Japan, <sup>2</sup>Suwa University of Science, Japan, <sup>3</sup>Tokyo Metropolitan Industrial Technology Research Institute, Japan, <sup>4</sup>Tokyo University of Science, Japan)
- OA-04** Quantitative Evaluation of Heat Accumulation and Ignition Risk in Purged Polymer Lumps  
Takashi Odagiri<sup>1</sup>, Erika Noda<sup>1</sup>, Kouya Mura<sup>2</sup>, Manabu Okuyama<sup>1</sup> and Motohiko Sumino<sup>2</sup>(<sup>1</sup>Mie Safety Engineering Section, Safety Engineering Technology Development Office, Production Technology Department, Technology Division, Mitsubishi Chemical Corporation, Japan, <sup>2</sup>Safety Engineering Section, Safety Engineering Technology Development Office, Production Technology Department, Technology Division, Mitsubishi Chemical Corporation, Japan)
- OA-05** Thermal Hazards of Addition Compounds of Hydrogen Peroxide: Hydrogen Peroxide-urea  
Yosuke Nishiwaki<sup>1</sup>(<sup>1</sup>National Institute of Occupational Safety and Health, Japan)

Chair : Dong Joon Kim(Kyungil University, Republic of Korea)

Place : Jade II (2F)

## Explosion and Fire II (OA)

- OA-06** Empirical Equations of Incident Pressure and Impulse in Shock Tube Experiments Using Explosive  
Young Beom Kwon<sup>1</sup> and Jong Yil Park<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Seoul National University of Science and Technology, Republic of Korea)

- OA-07** Numerical Investigation of High-Velocity Airflow Suppression Effects on N-Heptane Gas-Phase Combustion: Implications for Pneumatic Wildfire Control Systems  
Fanbao Chen<sup>1</sup>, Depeng Kong<sup>1</sup>, Rajnish N. Sharma<sup>2</sup>, Shaoqi Cui<sup>2</sup> and Juntao Huo<sup>1</sup>(<sup>1</sup>College of Mechanical and Electronic Engineering, China University of Petroleum, China, <sup>2</sup>Department of Mechanical Engineering, The University of Auckland, China)
- OA-08** Investigation of an Organic Peroxide Dust Explosion Incident  
Hsiao-Yun Tsai<sup>1</sup>, Hsiang-Ching Peng<sup>1</sup>, Pao-Hsun Huang<sup>1</sup>, Li-Yu Yeh<sup>1</sup>, Jenq-Renn Chen<sup>1</sup> and Jeanmay Yeh<sup>2</sup>(<sup>1</sup>Department of Safety, Health and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan, <sup>2</sup>National Fire Agency, Taiwan)
- OA-09** Comparative Performance Evaluation of IG-541 and FK-5-1-12 for Fire Suppression in Wind Turbine Nacelles  
Heung Su Lee<sup>1</sup>, Moon Woo Park<sup>1</sup>, Seung Hyun Lee<sup>1</sup> and Dong Hwan Kim<sup>1</sup>(<sup>1</sup>Renewable Energy Safety Research Center, Fire Insurers Laboratories of Korea, Republic of Korea)
- OA-10** Effects of Potassium on Spontaneous Combustion of Coconut Husk During Storage  
Kantapong Jansongsang<sup>1</sup>, Pongsapak Rattanachai<sup>1</sup>, Pawin Chaivatamaset<sup>2</sup>, Thanet Unchaisri<sup>2</sup> and Wimolsiri Pridasawas<sup>1</sup>(<sup>1</sup>Department of Chemical Engineering, King Mongkut's University of Technology Thonburi, Thailand, <sup>2</sup>Combustion Research Laboratory, Pilot Plant Development and Training Institute, Thailand)

Chair : Chang Jun Lee(Pukyong National University, Republic of Korea)

Place : Crystal I (2F)

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### Process Safety I(OC)

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- OC-01** A Reliability Estimation Method for Machine Learning-based Anomaly Detection Systems: A Case Study of Hydrogen Leakage from a Hydrogen Pipeline  
Jun Furota<sup>1</sup>, Jo Nakayama<sup>2</sup>, Kazuyuki Namba<sup>1</sup>, Ryosuke Omori<sup>1</sup>, Tomoya Suzuki<sup>2</sup> and Yu-ichiro Izato<sup>1</sup>( Graduate School of Environment and Information Sciences, Yokohama National University, Japan, <sup>2</sup>Institute for Multidisciplinary Sciences, Yokohama National University, Japan)
- OC-02** Multi-Objective Optimization of an Ammonia-Cracking Process for Hydrogen Production Using NSGA-III: Balancing Economy with NOx and CO2 Emissions  
Minsuk Lim<sup>1</sup>, Youngbeom Park<sup>2</sup>, Inhye Kim<sup>1</sup>, Jeongjae Oh<sup>1</sup>, Konan Alain Cedric Nzisso<sup>1</sup> and Sunghyun Cho<sup>1</sup>(<sup>1</sup>School of Chemical Engineering, Jeonbuk National University, Republic of Korea, <sup>2</sup>School of Chemical Engineering, Jeonbuk National University, Republic of Korea, <sup>3</sup>Clean Energy Research Center, Jeonbuk National University, Republic of Korea)
- OC-03** Imaging Study of Tailings Body Cavities Based on High-Density Resistivity Method  
Wang Feiyue<sup>1</sup>, Zhou Shuo<sup>1</sup>, Zhao lianga<sup>1</sup> and Pei Zhongweia<sup>1</sup>(<sup>1</sup>Institute of Disaster Prevention Science and Safety Technology, Central South University, China)
- OC-04** Smart Technology Implementation for Enhanced Safety Management in Taiwan's Chemical Parks  
Rong-Zan, Lin<sup>1</sup> Yu-Chun, Wu<sup>1</sup>, Yen-Ju, Lu<sup>1</sup> and Chen-Hua, Wang<sup>1</sup>(<sup>1</sup>Department of Safety Health and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan)

Chair : Taketoshi Koita  
(National Institute of Occupational Safety and Health Japan, Japan)

Place : Crystal II (2F)

### Electrical Safety (OH)

- OH-01** Large Energy Storage Lithium Iron Phosphate Battery: Thermal Runaway, Safety Warning and Emergency Response Studies  
D.H. Chang<sup>1</sup>, K. C. Lin<sup>1</sup>, P. H. Hsieh<sup>1</sup>, Y. T. Chu<sup>1</sup>, Pao-Hsun Huang<sup>1</sup>, Hsiang-Ching Peng<sup>2</sup>, Li-Yu Yeh<sup>2</sup>, Yun-Shan Wu<sup>2</sup>, Shao-En-Tian<sup>2</sup>, Hsiao-Yun Tsai<sup>2</sup> and Jenq-Renn Chen<sup>2</sup>(<sup>1</sup>Taiwan Semiconductor Manufacturing Company, Taiwan, <sup>2</sup>Department of Safety, Health and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan)
- OH-02** Method of Management for 3kW PV System Based on Failure Modes and Effects Analysis  
Byung-Jik Kim<sup>1</sup> and Hyung-Jun Song<sup>2</sup>(<sup>1</sup>National Research Safety Headquarters, Korea Research Institute of Bioscience and Biotechnology, Republic of Korea, <sup>2</sup>Department of Safety Engineering, Seoul National University of Science and Technology, Republic of Korea)
- OH-03** Evaluation of Ignition Risk Caused by Abnormal Discharge from Electrostatic Liquid Coating Guns with the Use of a Small Spark Ignition Test Device  
Kwangseok Choi<sup>1</sup>, Kihyuk Jung<sup>2</sup>, Yuta Endo<sup>1</sup>, Takaaki Mizutani<sup>1</sup> and Kenzo Yanagida<sup>3</sup>(<sup>1</sup>National Institute of Occupational Safety and Health, Japan, <sup>2</sup>Occupational Safety and Health Research Institute, Republic of Korea, <sup>3</sup>Asahi Sunac Corporation, Japan)
- OH-04** Fundamental Study of Spark Discharge with Polarity in Needle Electrodes Change  
Taketoshi Koita<sup>1</sup> and Kwangseok Choi<sup>1</sup>(<sup>1</sup>National Institute of Occupational Safety and Health, Japan)
- OH-05** Development of an Arc Fault Detection Device for Solar Power Generation based on Multi-impedance Combination  
Junghwan Byeon<sup>1</sup>, Park, Jeong Jae<sup>1</sup> and Song Il Keun<sup>2</sup>(<sup>1</sup>Korea Occupational Safety and Health Agency, Republic of Korea<sup>2</sup> Korea Energy Solution, Republic of Korea)
- OH-06** Experimental Evaluation on Arc Discharge Energy Generated by Electric Short of Wire in a Compressor for Room Air Conditioner (RAC)  
Masato Takagi<sup>1</sup>, Ryosei Hirano<sup>2</sup>, Shugo Aida<sup>2</sup>, Jun-ichi Suematsu<sup>1</sup> and Tomohiko Imamura<sup>2</sup>(<sup>1</sup>Graduate School of Engineering and Management, Suwa University of Science, Japan, <sup>2</sup>Department of Mechanical and Electrical Engineering, Suwa University of Science, Japan)

Chair : SeungHo Jung (Ajou University, Republic of Korea)

Place : Sapphire (2F)

### Safety Education (OL)

- OL-01** Research on Incident Cause Analysis Support Methods in Medical Institutions using Large Language Model (LLM)  
Taisei Kiryu<sup>1</sup>, Yuriko Imura<sup>1</sup>, Yuka Banno<sup>1</sup> and Yusaku Okada<sup>1</sup>(<sup>1</sup>Graduate School of Science and Technology, Keio University, Japan)

- OL-02** Chemical Process Safety Education at the University Level  
Krittin Korkerd<sup>1</sup>, Pongsapak Rattanachai<sup>1</sup>, Kantapong Jansongsang<sup>1</sup>, Kiattinatapon Juengchareonpoon<sup>1</sup>, Suvit Tia<sup>1</sup> and Wimolsiri Pridasawas<sup>1</sup>(<sup>1</sup>Department of Chemical Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi, Thailand)
- OL-03** A Study on Methods for Measuring the Effectiveness of Andragogy-type Training for Personnel at the Core of Human Error Response Activities - Proposal of an Assessment Method using a Competency Map Required for Core Personnel in Human error Response Activities -  
Yu Shibuya<sup>1</sup> and Yusaku Okada<sup>1</sup>(<sup>1</sup>Keio University, Japan)
- OL-04** Fire and Effluent Characteristics of Indian Wood Fuels: Field Measurements and Analysis  
 Pushpendra K. Vishwakarma<sup>1</sup>, Rajeeb K. Upadhyay<sup>1</sup>, Karishma Yadav<sup>1</sup> and Kirti B. Mishra<sup>1</sup>(<sup>1</sup>Technological Risk Research and Analysis Group (TRAG), Department of Mechanical and Industrial Engineering, Indian Institute of Technology Roorkee, India)
- OL-05** Augmented Reality for Enhancing Educational Experience in Laboratory Safety Training  
Saizhe Ding<sup>1</sup>, Tong Lu<sup>1</sup>, Xin Lv<sup>2</sup>, Yuxin Zhang<sup>1</sup>, Rong Deng<sup>1</sup> and Xinyan Huang<sup>1</sup>(<sup>1</sup>Research Center for Smart Urban Resilience and Firefighting, Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong, <sup>2</sup>QingPu Fire and Rescue Division, China)
- OL-06** Challenge on Visibility in Virtual Reality Smoke Environment  
Vuong Duc Dat<sup>1</sup>, Seongkyung Park<sup>1</sup> and Masayuki Mizuno<sup>1</sup>(<sup>1</sup>Tokyo University of Science, Japan)

## Oral Session II

15:50~17:50

Chair : SeungHo Jung(Ajou University, Republic of Korea)

Place : Jade I (2F)

### Explosion and Fire III(OA)

- OA-11** Development of a Test Method for Evaluating the Shock Hazard of Lithium-ion Batteries (LiBs)  
Ken Okada<sup>1</sup>, Shiro Kubota<sup>1</sup>, Tomoharu Matsumura<sup>1</sup>, Takahiro Tamba<sup>1</sup>, Tei Saburi<sup>1</sup>, Ryoji Makino<sup>1</sup> and Yoshiyasu Saito<sup>1</sup>(<sup>1</sup>National Institute of Advanced Industrial Science and Technology, Japan)
- OA-12** Effect of the Methane Concentration on the Spherical Flame Propagation of Iron-Methane-air Mixture  
Akihiro Ueda<sup>1</sup>, Tomoyuki Johzaki<sup>1</sup>, Takuma Endo<sup>1</sup> and Wookyung Kim<sup>1</sup>(<sup>1</sup>Graduate School of Advanced Science and Engineering, Hiroshima University, Japan)
- OA-13** A Reduced Model to Predict the Critical Temperature of Hot-surface Ignition  
Osamu Kadowaki<sup>1</sup>, Kazunori Kuwana<sup>1</sup>, Masato Nakazawa<sup>2</sup> and Tomohiko Imamura<sup>3</sup>(<sup>1</sup>Tokyo University of Science, Japan, <sup>2</sup>Tokyo Metropolitan Industrial Technology Research Institute, Japan, <sup>3</sup>Suwa University of Science, Japan)

**OA-14 Investigating Flame Pulsation Frequency Identification via Flame Hight Analysis and Deep Learning for Heat Release Rate Prediction**

Changlin Liu<sup>1</sup>, Zilong Wang<sup>1</sup> and Xinyan Huang<sup>1</sup>(<sup>1</sup>Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong)

Chair : Mieko Kumasaki(Yokohama National University, Japan)

Place : Jade II (2F)

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**Explosion and Fire IV(OA)**

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**OA-15 Assessing the Degree of Pyrophoricity for Gaseous Silanes**

Trung Thanh Nguyen<sup>1</sup>, Hsiao-Yun Tsai<sup>2</sup>, Jeng-Renn Chen<sup>2</sup> and Eugene Y. Ngai<sup>3</sup>(<sup>1</sup>Deo Ca Research and Training Institute, Ho Chi Minh City University of Transport, Vietnam, <sup>2</sup>Department of Safety, Health and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan, <sup>3</sup>Chemically Speaking LLC, Whitehouse Station, United States)

**OA-16 Effectiveness of Single Sprinkler Head to Provide for Tenable Egress Path in a Typical 3-bedroom Dwelling Unit in Singapore**

ZHU, Shiyi<sup>1</sup>, RAJARAM, Vijay<sup>2</sup> and SIN Siang-Meng Ivan<sup>3</sup>(<sup>1</sup>National University of Singapore, Singapore, <sup>2</sup>ProDesign Engineers Pte Ltd., Singapore, <sup>3</sup>National University of Singapore, Singapore)

**OA-17 Investigation of a Method for Quantifying the Extinguishing Performance of Aerosol Fire-Extinguishing Agents**

Yuika Sasahara<sup>1</sup>, Kyoshiro Usuki<sup>1</sup>, Mieko Kumasaki<sup>2</sup>, Ken Okada<sup>3</sup> and Tatsuki Endo<sup>4</sup>(<sup>1</sup>Graduate School of Environment and Information Sciences, Yokohama National University, Japan, <sup>2</sup>Faculty of Environment and Information Sciences, Yokohama National University, Japan, <sup>3</sup>National Institute of Advanced Industrial Science and Technology, Japan, <sup>4</sup>Yamato Protec Corporation, Japan)

**OA-18 Microbial Degradation of Low-Rank Coal: Microstructural Evolution and Oxidation Retardation Mechanisms**

Hang Guo<sup>1</sup>, Xin Yi<sup>1</sup>, Hua Gong<sup>1</sup> and Yuwei Wang<sup>1</sup>(<sup>1</sup>School of Safety Science and Engineering, Xi'an University of Science and Technology, China)

**OA-19 Structural Fuel Load Modelling and Intelligent Assessment in Wildland Urban**

Yifei Ding<sup>1</sup>, Thomas Gernay<sup>2</sup> and Xinyan Huang<sup>1</sup>(<sup>1</sup>Research Centre for Smart Urban Resilience and Firefighting, Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong, <sup>2</sup>Department of Civil and Systems Engineering, Johns Hopkins University, United States)

Chair : Wimolsiri Pridasawas  
(King Mongkut's University of Technology Thonburi, Thailand)

Place : Crystal I (2F)

### Process Safety II (OC)

- OC-05** Data-Driven Identification of Process Safety Management Deficiencies via Clustering and Self-Organizing Maps  
Rong-Zan, Lin<sup>1</sup>, Yu-Chun, Wu<sup>1</sup>, Yen-Ju, Lu<sup>1</sup> and Chen-Hua, Wang<sup>1</sup> (<sup>1</sup>Department of Safety Health and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan, <sup>2</sup>Department of Safety and Environmental Engineering Technical Services, Industrial Safety and Health Association, Taiwan)
- OC-06** Analysis of Generated Gas and Ion Species After Discharging Humidified Air by Silent Electric Discharge  
Rei Ishikawa<sup>1</sup>, Takaaki Mizutani<sup>2</sup> and Mieko Kumasaki<sup>3</sup> (<sup>1</sup>Graduate School of Environment and Information Sciences, Yokohama National University, Japan, <sup>2</sup>National Institute of Occupational Safety and Health, Japan, <sup>3</sup>Faculty of Environment and Information Sciences, Yokohama National University, Japan)
- OC-07** Lessons from a Catastrophic Explosion Accident at Pingtung Science Park of Taiwan: A Process Safety Management Perspective  
Chan-Cheng Chen<sup>1</sup> and Yu-Chun Wu<sup>1</sup> (<sup>1</sup>Department of Safety, Health and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan)
- OC-08** Risk Assessment and Safety Design Improvement for Emission Gas Treatment System in Semiconductor Manufacturing Process  
Won Chang Shin<sup>1</sup> and Dal Jae Park<sup>2</sup> (<sup>1</sup>Department of Safety Engineering, Graduate School of Safety, Seoul National University of Science and Technology, Republic of Korea, <sup>2</sup>Department of Safety Engineering, Faculty of Engineering, Seoul National University of Science and Technology, Republic of Korea)
- OC-09** Application of Adiabatic Calorimetry for Emergency Pressure Relief of Runaway Chemical Reactions  
James P. Burelbach<sup>1</sup> (<sup>1</sup>Fauske & Associates, United States)

Chair : Yoshihiko Sato  
(National Institute of Occupational Safety and Health Japan, Japan)

Place : Crystal II (2F)

### Emergency Response I(OJ)

- OJ-01** A Coupled Modeling Framework for Flood-Induced Natech Domino Effects in Urban Lifeline Systems  
Leiwei Li<sup>1</sup>, Feiyue WANG<sup>1</sup> and Qian YANG<sup>1</sup> (<sup>1</sup>Central South University, China)
- OJ-02** The Impact of Inaccurate Supply-demand Types for Emergency Supplies on the Psychological Pain of Victims: Data from Flood Disasters in China  
Qian Yang<sup>1</sup>, Feiyue Wang<sup>1</sup>, Zihuan Wang<sup>1</sup>, Bo Ma<sup>1</sup>, Jiajie Lu<sup>1</sup> and Leiwei Li<sup>1</sup> (<sup>1</sup>Institute of Disaster Prevention Science and Safety Technology, School of Civil Engineering, Central South University, China)
- OJ-03** VR-Based Experimental Study on Escape Behavior in University Library on Upper Floors during Fire Scenarios in High-rise Institutional Building  
Masayuki Mizuno<sup>1</sup>, Seongkyung Park<sup>1</sup> and Toshinari Tanaka<sup>2</sup> (<sup>1</sup>Tokyo University of Science, Japan, <sup>2</sup>Taisei Advanced Center of Technology, Japan)

- OJ-04** Wayfinding during an Unannounced Fire Drill Using the Intelligent Dynamic Exit Sign System in a High School  
Ho Yin Wong<sup>1</sup>, Weikang Xie<sup>1</sup>, Yuxin Zhang<sup>1</sup> and Xinyan Huang<sup>1</sup>(<sup>1</sup>Research Centre for Smart Urban Resilience and Smart Firefighting, Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong)
- OJ-05** Study on Evacuation Guidance for Wheelchair Users in Fire - Analysis of Navigation Systems Effectiveness for Guiding Wheelchair Users to Emergency Elevators in Department Stores with VR Experiment  
SeongKyung Park<sup>1</sup>, Masayuki Mizuno<sup>1</sup> and Toshinari Tanaka<sup>2</sup>(<sup>1</sup>Tokyo University of Science, Japan, <sup>2</sup>Taisei Advanced Center of Technology, Japan)

Chair : Jeong-Hun Won(Chungbuk National University, Republic of Korea)

Place : Sapphire (2F)

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### Construction Safety I(OI)

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- OI-01** Development of Deep Learning Driven Physical Hazard Detection Framework for Construction Accident Prevention  
Jaehui Son<sup>1</sup>, Jaewook Jeong<sup>1</sup>, Louis Kumi<sup>1</sup>, Minji Kim<sup>1</sup>, Sangho Yun<sup>1</sup>, Minwoo Song<sup>1</sup>, Jiwon Hwang<sup>1</sup>, Minsang Gu<sup>1</sup> and Hajung Kim<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Seoul National University of Science and Technology, Republic of Korea)
- OI-02** A Study on Fall Accident Prevention from Boatswain`s Chair Type Suspended Scaffolding  
Yongsoo Seo<sup>1</sup> and Jeongjae Park<sup>1</sup>(<sup>1</sup>Korea Occupational Safety and Health Agency, Republic of Korea)
- OI-03** Head Injury Risk in Low-Height Fall  
Haeyoung Kim<sup>1</sup>, Hiroki Takahashi<sup>1</sup>, Yasumichi Hino<sup>1</sup>, Katsutoshi Ohdo<sup>1</sup>, Hideki Oyama and Masahiro Okamura<sup>2</sup>(<sup>1</sup>Construction Safety Group, National Institution of Occupation Safety and Health, Japan, <sup>2</sup>JSOL Co., Ltd., Japan)
- OI-04** Use of a Hybrid III Anthropomorphic Test Device to Compare Full Body Harness to Body Belt Biomechanics in a Fall from Height  
Keith G. Mattson<sup>1</sup>, Kyoungho Lee<sup>1</sup> and Sangyoung Lee<sup>1</sup>(<sup>1</sup>Personal Safety Division, 3M Company, Republic of Korea)
- OI-05** Investigation of Wedge Connections in Wedge-Lock Scaffolding Systems  
Chang He<sup>1</sup>, Yasumichi Hino<sup>1</sup>, Hiroki Takahashi<sup>1</sup> and Haeyoung Kim<sup>1</sup>(<sup>1</sup>Construction Safety Research Group, National Institute of Occupational Safety and Health, Japan)

November 11, 2025

## Poster Session I

10:40~11:40

Chair : Sung Eun Lee(Hoseo University, Republic of Korea)

Place : Lobby (2F)

## Explosion and Fire(PA)

- PA-01** Investigation of the Characteristics of Electrostatic Discharges Occurring between Non-conductors  
Yuta Endo<sup>1</sup>(National Institute of Occupational Safety and Health, Japan)
- PA-02** Fire and Explosion Hazards of Cathode Scrap Powder Generated in Waste Battery Recycling Processes  
Dong-Hyun Seo<sup>1</sup>, Hyeong-Uk Kim<sup>2</sup>, Yi-Rac Choi<sup>1</sup>, Jin-Ho Lim<sup>3</sup> and Jun-Young Lee<sup>1</sup>(<sup>1</sup>OSHRI, KOSHA, Republic of Korea, <sup>2</sup>Daejeon-Sejong Metropolitan Office, KOSHA, Republic of Korea, <sup>3</sup>Ulsan Regional Office, KOSHA, Republic of Korea)
- PA-03** A Study on Accidents during Maintenance of Storage Tank Using FTA Techniques  
Sangwon Lee<sup>1</sup>, Yihyeon Park<sup>1</sup>, Yongwoo Hwang<sup>2</sup> and Youngwoo Chon<sup>1</sup>(<sup>1</sup>Environmental Safety Engineering, Inha University, Republic of Korea, <sup>2</sup>Environmental Engineering, Inha University, Republic of Korea)
- PA-04** Fire Suppression System for the Inhibition of Thermal Runaway Propagation in Lithium-ion Battery Modules  
Dongbin Im<sup>1</sup>, Byungyul Kim<sup>2</sup>, Seungyoon Jung<sup>2</sup>, Hyeonju Kim<sup>1</sup>, Seungwoo Chu<sup>1</sup>, Bongjo Jang<sup>1</sup> and Youngbo Choi<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Chungbuk National University, Republic of Korea, <sup>2</sup>FireKim, Republic of Korea)
- PA-05** Observation of Burn Patterns in Full-Scale Building Combustion Experiments Using Liquid Fuels  
Takatsuna Mishima<sup>1</sup>, Hiroki Yamasaki<sup>1</sup>, Toshikazu Ichikawa<sup>1</sup>, Akihiro Kawaguchi<sup>1</sup>, Masakatsu Honma<sup>1</sup> and Katsuhiko Okamoto<sup>1</sup>(<sup>1</sup>National Research Institute of Police Science, Japan)
- PA-06** Burning Characteristics of Flammable Gels Prepared by Adding Expanded Polystyrene to Flammable Liquids  
Akihiro Kawaguchi<sup>1</sup>, Takatsuna Mishima<sup>1</sup>, Hiroki Yamasaki<sup>1</sup>, Toshikazu Ichikawa<sup>1</sup>, Masakatsu Honma<sup>1</sup> and Katsuhiko Okamoto<sup>1</sup>(<sup>1</sup>National Research Institute of Police Science, Japan)
- PA-07** Experimental Study on Opening Conditions for Smoke Vent System Design in Large Space Buildings  
Yoolim Lee<sup>1</sup>, Hyeonbo Shim<sup>1</sup>, Sungeun Lee<sup>1</sup> and Youngjin Kwon<sup>3</sup>(<sup>1</sup>Hoseo University, Republic of Korea)
- PA-08** A Risk Management Method for Incidents Caused by Inappropriate Data Flow in Smart Factories  
Jinto Ishikawa<sup>1</sup> and Takashi Hamaguchi<sup>1</sup>(<sup>1</sup>Nagoya Institute of Technology, Japan)
- PA-09** Risk of Fire and Explosion due to Functional Changes in Residential Buildings in Hanoi, Vietnam  
Doan Thanh Binh<sup>1</sup>(<sup>1</sup>Urban & Architectural Institute, Hanoi University of Civil Engineering, Vietnam)

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**Occupational Safety(PD)**


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- PD-01** A Study on the Development of Korean Safety Ladder (K-Ladder) for the Prevention of Accident for Portable Ladder Workers  
Jongmoon Hwang<sup>1</sup>, Jeongjae Park<sup>1</sup> and Woojune Jung<sup>2</sup>(<sup>1</sup>Occupational Safety and Health Research Institute, Republic of Korea Occupational Safety and Health Agency, Republic of Korea, <sup>2</sup>Occupational Safety and Health Research Institute, Republic of Korea Occupational Safety and Health Agency, Republic of Korea)
- PD-02** How Care Workers at Elderly Care Facilities in Japan Prevent Fall Accidents: A Qualitative Study  
Akiko Takahashi<sup>1</sup>, Natsuko Wasaki<sup>1</sup> and Makoto Mishina<sup>2</sup>(<sup>1</sup>National Institute of Occupational Safety and Health, Japan, <sup>2</sup>Cyvision Ltd., Japan)
- PD-03** Development of an Evaluation Method for Safety and Operational Comfort using a Six-wheeled Flatbed Truck as a Model  
Shoken Shimizu<sup>1</sup>, Kohei Nomura<sup>1</sup>, Yuka Koremura<sup>1</sup> and Rieko Hojo<sup>1</sup>(<sup>1</sup>Safety and ANSHIN Technology Research Center of GOP, Japan)
- PD-04** Visualization of Quarterly Trends by Industry and Accident Type for Occupational Accident in Japan  
Chiemi Kan<sup>1</sup>, Kyoko Hamajima<sup>1</sup> and Teruhito Otsuka<sup>1</sup>(<sup>1</sup>National Institute of Occupational and Health, JAPAN)
- PD-05** Current Status and Future Direction of Training of Laboratory Safety Management Experts in Korea  
Han Jin Jo<sup>1</sup>, Byung Jik Kim<sup>1</sup>, Si Hyeong Kim<sup>1</sup>, Mu Hwa Song<sup>1</sup>, Seong Pil Chung<sup>1</sup>, Sung Yun Yu<sup>1</sup> and Hwang Won Lee<sup>1</sup>(<sup>1</sup>National Research Safety Headquarters, Korea Research Institute of Bioscience and Biotechnology, Republic of Korea)
- PD-06** Development of Smart Safety Solutions for Construction Sites Using Smart Glasses: A Case Study in the Electric Power Industry  
Dongyeop Lee<sup>1</sup>, Deasik Lim<sup>1</sup> and Kihyun Kim<sup>1</sup>(<sup>1</sup>Convergence Technology Lab, KEPCO Research institute, Republic of Korea)
- PD-07** The Relationship between Organizational Communication and Employees' Active Involvement in Safety Activities - A Case Study of a Chemical Industrial Company -  
Tomiya Hirano<sup>1</sup>, Xiaodong Feng<sup>1</sup> and Kun Zhang<sup>1</sup>(<sup>1</sup>Nagaoka University of Technology, Japan)
- PD-08** Effect of Working Environment and Immersion Factors on Job Satisfaction among Migrant Workers  
Kwang Jae Chung<sup>1</sup>, Sun Young Park<sup>1</sup>, Min Chu Kim<sup>1</sup>, Ki deok Eom<sup>1</sup> and Seong Hyun Jeong<sup>2</sup>(<sup>1</sup>Smart Safety Research Department, Occupational Safety and Health Research Institute, KOSHA, Republic of Korea, <sup>2</sup>Management Labour Cooperation Department, Management Support Bureau, KOSHA, Republic of Korea)

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**Process Safety(PC)**


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- PC-01** Enhancement of Leak Detection and Backflow Suppression in Gas Cabinets for High-Pressure Gas Cylinders  
Seoungwoo Chu<sup>1</sup>, Hyeonju Kim<sup>1</sup>, Dongbin Im<sup>1</sup>, Taejin Ahn<sup>1</sup> and Youngbo Choi<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Chungbuk National University, Republic of Korea, <sup>2</sup>SAMSUNG Display, Republic of Korea, <sup>3</sup>Department of Big Data, Chungbuk National University, Republic of Korea)

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### Emergency Response(PJ)

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- PJ-01** A Study on RealTime Emergency Response and PreEvent Audio Playback in Public Safety Systems  
Jae Heum Lee<sup>1</sup>, Heyung Sub Lee<sup>2</sup>, Makhtumov Nodirbek<sup>1</sup> and Byung Chun Jeon<sup>1</sup>(<sup>1</sup>Netvision Telecom Inc, Republic of Korea, <sup>2</sup>Electronics and Telecommunications Research Institute, Republic of Korea)

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### Safety Education(PL)

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- PL-01** Development of An Accident Type Classification Framework for Heavy Equipment Operation to Seek VR Safety Education Requirements  
Minseo Ku<sup>1</sup> and Jieun Lee<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Pukyong National University, Republic of Korea)

## Oral Session III •

13:10~15:10

Chair : Ong Chin Leong Felipe(Ngee Ann Polytechnic, Singapore)

Place : Jade I (2F)

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### Explosion and Fire V(OA)

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- OA-20** Onset of Flame Acceleration in Vent Gases Released during Lithium-ion Battery Thermal Runaway  
Tongyu ZHAO<sup>1</sup>, Akihiro UEDA<sup>1</sup>, Yichen GAN<sup>1</sup>, Tomoyuki JOHZAKI<sup>1</sup>, Takuma ENDO<sup>1</sup>, Byoungjik PARK<sup>2</sup> and Wookyung KIM<sup>1</sup>(<sup>1</sup>Graduate School of Innovation and Practice for Smart Society, Hiroshima University, Japan, <sup>2</sup>Department of Fire Safety Research, Korea Institute of Civil Engineering and Building Technology, Republic of Korea)
- OA-21** Flame Propagation Near the Flammability Limit of Lean Hydrogen-Oxygen Mixtures  
Weisheng CHU<sup>1</sup>, Akihiro UEDA<sup>1</sup>, Takuma ENDO<sup>1</sup>, Tomoyuki JOHZAKI<sup>1</sup> and Wookyung KIM<sup>1</sup>(<sup>1</sup>Graduate School of Advanced Science and Engineering, Hiroshima University, Japan)
- OA-22** Experimental Assessment of Biomass Dust Explosion Hazards During Biomass Fuel Usage  
 Nham Sy Trung Kien<sup>1</sup>, Ritsu Dobashi<sup>1</sup>, Mizuki Shoyama<sup>2</sup> and Choi Kwangseok<sup>2</sup>(<sup>1</sup>Department of Global Fire Science and Technology, Graduate School of Science and Technology, Tokyo University of Science, Japan, <sup>2</sup>National Institute of Occupational Safety and Health, Japan)
- OA-23** Fire Situational Awareness-based Emergency Response Dually Driven by Large Language Model and Deep Learning Model  
Weikang Xie<sup>1</sup>, Jihao Shi<sup>1</sup>, Fu Xiao<sup>1</sup> and Xinyan Huang<sup>1</sup>(<sup>1</sup>Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong)

**OA-24** The Modification of PFDavg Formula on IEC 61508-6

Jinhyung Park<sup>1</sup>, Kyoshik Park<sup>2</sup>, Joungbeen Lee<sup>3</sup> and Chang Jun Lee<sup>3</sup>(<sup>1</sup>Yokogawa Electric Korea Co.,Ltd, Republic of Korea, <sup>2</sup>Department of Safety Health Convergence Engineering, Soongsil University, Republic of Korea, <sup>3</sup>Department of Safety Engineering, Pukyong National University, Republic of Korea)

Chair : Kazunori Kuwana(Tokyo University of Science, Japan)

Place : Jade II (2F)

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**Explosion and Fire VI(OA)**

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**OA-25** Domino Effect Analysis using Quantitative Risk Assessment

Hyangjig Lee<sup>1</sup>, Byung-Tae Yoo<sup>2</sup>, Jae Wook Ko<sup>1</sup> and Chang Jun Lee<sup>3</sup>(<sup>1</sup>Department of Chemical Engineering, Kwangwoon University, Republic of Korea, <sup>2</sup>Department of Safety Engineering, Korea National University of Transportation, Republic of Korea, <sup>3</sup>Department of Safety Engineering, Pukyong National University, Republic of Korea)

**OA-26** Experimental Investigation of Thermal Runaway Spread and Effects of Sprinkler in Reused Battery Storage

Moon-Woo Park<sup>1</sup>, Ki-Yong Oh<sup>2</sup>, Dong-hwan Kim<sup>3</sup>, Heung-su Lee<sup>3</sup> and Seung-hyun Lee<sup>3</sup>(<sup>1</sup>Department of Mechanical Convergence Engineering, Hanyang University, Republic of Korea, <sup>2</sup>School of Mechanical Engineering, Hanyang University, Republic of Korea, <sup>3</sup>Fire Insurers Laboratories of Korea, Korea Fire Protection Association, Republic of Korea)

**OA-27** Proposal of a Vertical Velocity Distribution Function in a Fire-Induced Flow Field in Tunnels with Rectangular Cross-Sections

Yuji Saito<sup>1</sup>, Yoshiki Sakurai<sup>2</sup>, Hideyuki Oka<sup>3</sup>, Kyoko Kamiya<sup>4</sup> and Yasushi Oka<sup>2</sup>(<sup>1</sup>Graduate School of Environment and Information Sciences, Yokohama National University, Japan, <sup>2</sup>Faculty of Environment and Information Sciences, Yokohama National University, Japan, <sup>3</sup>Maritime Risk Assessment Department, National Maritime Research Institute, National Institute of Maritime, Port and Aviation Technology, Japan <sup>4</sup>Faculty of Engineering, Suwa University of Science, Japan)

**OA-28** Designing Safe Escape Routes of High-Rise Cinemas: Utilizing External Wind Pressure for Smoke Control

Hong-Sheng HUANG<sup>1</sup> and Ching-Yuan LIN<sup>1</sup>(<sup>1</sup>Department of Architecture, National Taiwan University of Science and Technology, Taiwan)

Chair : Youngbo Choi(Chungbuk National University, Republic of Korea)

Place : Crystal I (2F)

### Occupational Safety I(OD)

- OD-01** A Proposal about Well-being Assessment according to Safety Aspect based on Results of Surveys about Well-being of Nursing  
Rieko Hojo<sup>1</sup>, Yuka Matsuda<sup>2</sup>, Akane Yamada<sup>3</sup>, Kotono Watanabe<sup>4</sup>, Aki Yokoyama<sup>5</sup>, Koki Nakano<sup>1</sup> and Shoken Shimizu<sup>6</sup>(<sup>1</sup>Nagaoka University of Technology, Japan, <sup>2</sup>Otsu Municipal Hospital, Japan, <sup>3</sup>Shiga University of Medical Science Hospital, Japan, <sup>4</sup>Saitama Medical University Hospital, Japan, <sup>5</sup>Kyushu University Hospital, Japan, <sup>6</sup>Safety and ANSHIN Technology Research Center of GOP, Japan)
- OD-02** Research on Improving Occupational Safety Management Activities in Organizations Benefits of Safety Climate Surveys and Examples of Improvements in Overseas  
Kazumitsu Suzuki<sup>1</sup>(<sup>1</sup>SHEQ Management Department GX Solutions Mitsubishi Heavy Industries, Ltd., Japan)
- OD-03** Quantitative HAZOP Using Multiphysics System-level Modeling for a Lithium-ion Battery Module  
Tomoya Suzuki<sup>1</sup>, Jo Nakayama<sup>1</sup> and Yu-ichiro Izato<sup>2</sup>(<sup>1</sup>Institute for Multidisciplinary Sciences, Yokohama National University, Japan, <sup>2</sup>Faculty of Environment and Information Sciences, Yokohama National University, Japan)
- OD-04** Passive Risk-Taking in Group Settings: An Occupational Safety Concern  
Chenyue WANG<sup>1</sup> and Tzu Yang LOH<sup>1</sup>(<sup>1</sup>Department of Chemical and Biomolecular Engineering, College of Design and Engineering, National University of Singapore, Singapore)

Chair : Kwangseok Choi  
 (National Institute of Occupational Safety and Health Japan, Japan)

Place : Crystal II (2F)

### Material Safety(OE) / Chemical Safety(OK)

- OE-01** Study on Accumulation Behavior Thermal Decomposition Hazards of Organic Peroxides  
Wakana Hirayama<sup>1</sup>, Kohei Sasahara<sup>1</sup>, Gou Kawano<sup>1</sup> and Isao Eto<sup>1</sup>(<sup>1</sup>Safety Engineering Group, Sumitomo Chemical Co., Ltd., Japan)
- OK-01** Comparative Evaluation of Chemical Segregation Methods Based on Chemical Compatibility Assessment in Chemical Laboratories  
Uiam Lee<sup>1</sup> and Dal Jae Park<sup>2</sup>(<sup>1</sup>Department of Safety Engineering, Graduate School of Safety, Seoul National University of Science and Technology, Republic of Korea, <sup>2</sup>Department of Safety Engineering, Seoul National University of Science and Technology, Republic of Korea)
- OK-02** Thermal Hazards of Sodium Percarbonate Caused by CO<sub>2</sub> Exposure  
Mieko Kumasaki<sup>1</sup>, Shun Nakami<sup>2</sup> and Yosuke Nishiwaki<sup>3</sup>(<sup>1</sup>Faculty of Environment and Information Sciences, Yokohama National University, Japan, <sup>2</sup>Graduate School of Environment and Information Sciences, Yokohama National University, Japan, <sup>3</sup>National Institute of Occupational Safety and Health, Japan)
- OK-03** Safety Leadership, Safety Behavior, and Job Burnout: Evidence from Korea's Chemical Industry  
Hyunmin Lee<sup>1</sup>, Minseo Nam<sup>1</sup>, Hyun-gil Kwon<sup>1</sup>, Jintaek Mo<sup>1</sup> and Byungtae Yoo<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Korea National University of Transportation, Republic of Korea)

Chair : Haeyoung Kim  
(National Institute of Occupational Safety and Health Japan, Japan)

Place : Sapphire (2F)

### Construction Safety II (OI)

- OI-06** Accident Trend Analysis of Construction Sites in Korea by Project Scale and Period Using BERTopic with GLM  
Seung-Hyeon Shin<sup>1</sup>, Jeong-Hun Won<sup>2</sup>, Hyeon-Ji Jeong<sup>3</sup>, Doo Hwan Shin<sup>4</sup> and Byung Yun Min<sup>5</sup>(<sup>1</sup>Department of Big Data, Chungbuk National University, Republic of Korea, <sup>2</sup>Department of Safety Engineering, Chungbuk National University, Republic of Korea, <sup>3</sup>Department of Disaster Prevention Engineering, Chungbuk National University, Republic of Korea, <sup>4</sup>Division of Industrial Safety, Gangdong University, Republic of Korea, <sup>5</sup>Construction Site Accident Prevention Policy Division, Ministry of Employment and Labor, Republic of Korea)
- OI-07** Field Study on Equipment Spotter's Attention on Mobile Scaffolds Using Helmet-Mounted  
Sung Bum Choi<sup>1</sup>, Young Beom Kwon<sup>1</sup> and Jong Yil Park<sup>2</sup>(<sup>1</sup>Department of Safety Engineering, Seoul National University of Science and Technology, Republic of Korea)
- OI-08** Challenges of using BIM in the Safety Field in Japan  
Ryohei Kitazawa<sup>1</sup> and Rieko Hojo<sup>1</sup>(<sup>1</sup>Nagaoka University of Technology, Japan)
- OI-09** Object Recognition of Temporary Structures Using Drones and Deep Learning  
Min Guk Kang<sup>1</sup>, Jeong-Hun Won<sup>1</sup> and Seokwon Yoon<sup>3</sup>(<sup>1</sup>Department of Safety Engineering, Chungbuk National University, Republic of Korea, <sup>2</sup>Department of Disaster Prevention Engineering, Chungbuk National University, Republic of Korea, <sup>3</sup>ITU Co., Ltd., Republic of Korea)
- OI-10** Influence of Wind Direction and Tree Plantings on Flow Structure and Pollutant Dispersion within Urban Street Canyon  
Huixin Ma<sup>1</sup>, Xuanyi Zhou<sup>2</sup> and Depeng Kong<sup>1</sup>(<sup>1</sup>Center for Offshore Engineering and Safety Technology, China University of Petroleum (East China), Qingdao, China, <sup>2</sup>State Key Laboratory of Disaster Reduction in Civil Engineering, Tongji University, Shanghai, China)

## Oral Session IV

15:20~17:20

Chair : Tomohiko Imamura (Suwa University of Science, Japan)

Place : Jade I (2F)

### Explosion and Fire VII(OA)

- OA-29** Flash Point Estimation of Binary Mixtures of Polymer and Flammable Solvent  
Kazem Lakzian<sup>1</sup> and Horng-Jang Liaw<sup>1</sup>(<sup>1</sup>Department of Safety, Health, and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan)

- OA-30** A Study on Efficient Estimation of Self-Ignition Temperature Based on ARC and AKTS Analyses  
Yeongsoo Choi<sup>1</sup>, Kouya Murai<sup>2</sup>, Manabu Okuyama<sup>1</sup> and Motohiko Sumino<sup>2</sup>(<sup>1</sup>Process Engineering Department, Production Engineering Division, Mitsubishi Chemical Corporation, Taiwan, <sup>2</sup>Process Engineering Department, Production Engineering Division, Mitsubishi Chemical Corporation, Taiwan)
- OA-31** An Experimental Evaluation of the Ignition Risk by Collision of a UAV Propeller in the Hydrogen Atmosphere  
Soto Moreno Johan Alexis<sup>1</sup>, Kosuke Yoshizaki<sup>2</sup>, Ayumu Miyahara<sup>3</sup>, Hiroki Igarashi<sup>4</sup>, Teruhito Otsuka<sup>5</sup>, Hideki Masago<sup>3</sup>, Toshiro Hoshi<sup>3</sup> and Tetsuya Kimura<sup>3</sup>(<sup>1</sup>Nittoku Co. Ltd., Japan, <sup>2</sup>Japan Automobile Research Institute, Japan, <sup>3</sup>Nagaoka University of Technology, Japan, <sup>4</sup>University of Tokyo, Japan, <sup>5</sup>Japan National Institute of Occupational Safety and Health, Japan)
- OA-32** Experimental Study on Vertical Distributions of Temperature and Extinction Coefficient within the Smoke Layer Propagating along the Upslope Ceiling in an Inclined Tunnel with a Vertically Elongated Rectangular Cross Section  
Kyoko Kamiya<sup>1</sup>, Hideyuki OKA<sup>2</sup> and Yasushi OKA<sup>3</sup>(<sup>1</sup>Faculty of Engineering, Suwa University of Science, Japan, <sup>2</sup>Maritime Risk Assessment Department, National Maritime Research Institute, National Institute of Maritime, Port and Aviation Technology, Japan, <sup>3</sup>Faculty of Environment and Information Science, Yokohama National University, Japan)

Chair : Jaewook Jeong  
(Seoul National University of Science and Technology, Republic of Korea)

Place : Jade II (2F)

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### Risk Assessment I(OB)

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- OB-01** A Method to Apply Security Measures based on Security Guidelines in Companies  
Yuta Konishi<sup>1</sup> and Takashi Hamaguchi<sup>1</sup>(<sup>1</sup>Nagoya Institute of Technology, Japan)
- OB-02** A Study on the Development of Quantitative Risk Assessment System Linked to GIS for the Buried Pipeline Integrity Management  
Ik Keun Yoon<sup>1</sup>, Ho Jin Jung<sup>1</sup> and Seung Kyu Dan<sup>1</sup>(<sup>1</sup>Korea Gas Corporation Research Institute Division, Republic of Korea)
- OB-03** Developing a Case Study on Risk Assessment Implementation Using the Structured Scenario Diagram for Fire and Explosion Accidents Caused by Runaway Reaction  
Yoshihiko Sato<sup>1</sup>, Yukiyasu Shimada<sup>1</sup> and Yosuke Nishiwaki<sup>1</sup>(<sup>1</sup>National Institute of Occupational Safety and Health, Japan)
- OB-04** Risk Assessment through Visualization of OT-IT Alarm Coordination Against Cyberattacks  
Hiroto Koike<sup>1</sup> and Takashi Hamaguchi<sup>1</sup>(<sup>1</sup>Nagoya Institute of Technology, Japan)
- OB-05** Dynamic Risk Assessment Based on Consumer Safety Knowledge and Behaviors Coupling  
Hailong Yan<sup>1</sup>, Xiaodong Feng<sup>2</sup>, Kenichi Miura<sup>3</sup>, Fang Jiang<sup>4</sup>, Lanyun Wang<sup>5</sup> and Kun Zhang<sup>2</sup>(<sup>1</sup>Department of Information and Management Systems Engineering, Nagaoka University of Technology, Japan, <sup>2</sup>Department of System Safety Engineering, Nagaoka University of Technology, Japan, <sup>3</sup>Department of Information Science and Control Engineering, Nagaoka University of Technology, Japan, <sup>4</sup>Department of Safety Science and Engineering, Henan Polytechnic University, China, <sup>5</sup>School of Safety Science and Engineering, Changzhou University, China)

Chair : Sol Hee Yoon  
(Seoul National University of Science and Technology, Republic of Korea)

Place : Crystal I (2F)

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### Occupational Safety II (OD)

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- OD-05** The Impact of Disorder on Occupational Safety from a Broken Windows Perspective  
Zhuowen ZHANG<sup>1</sup> and Tzu Yang LOH<sup>1</sup>(<sup>1</sup>Department of Chemical and Biomolecular Engineering, College of Design and Engineering, National University of Singapore, Singapore)
- OD-06** A Study on the Improvement of Near-Miss Reporting Systems for Human Error Management in the Railway Staff  
Sanglog KWAK<sup>1</sup> and Chanwoo Park<sup>2</sup>(<sup>1</sup>Korea National University of Transportation, Republic of Korea, <sup>2</sup>Korea Railroad Research Institute, Republic of Korea)
- OD-07** Influence of Organizational Characteristics on Safety and Health Activities Effectiveness: Evidence from South Korea  
Young Woo Kim<sup>1</sup> and Sol Hee Yoon<sup>2</sup>(<sup>1</sup>First Authors' Gyeongsang National University, Industrial Engineering, Republic of Korea, <sup>2</sup>Department of Safety Engineering, Seoul National University of Science and Technology, Republic of Korea)
- OD-08** Study on Improvement Measures of Domestic and International Industrial Robot Systems : Focused on Analysis of Industrial Robot Accidents  
Park Im mi<sup>1</sup> and Tae-Gu Kim<sup>2</sup>(<sup>1</sup>Department of Emergency and Disaster Management Inje University, Republic of Korea, <sup>2</sup>Department of Occupational Health and Safety Engineering Inje University, Republic of Korea)
- OD-09** Challenges in Machinery Risk Assessment and the Development of Work Procedures Manuals for Safer Operations  
Koichi Shirakashi<sup>1</sup>, Masahide Wakakura<sup>2</sup>, Atsumi Miyake<sup>1</sup> and Yu-ichiro Izato<sup>1</sup>(<sup>1</sup>Yokohama National University, Japan, <sup>2</sup>Japan Industrial Safety Competency Center, Japan)

Chair : Yoshihiko Sato  
(National Institute of Occupational Safety and Health Japan, Japan)

Place : Crystal II (2F)

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### Risk Assessment II (OB)

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- OB-06** A Longitudinal Study of Organizational Safety Culture Change Based on the Safety Culture Survey Results  
Genki Hamanishi<sup>1</sup> and Akira Tose<sup>2</sup>(<sup>1</sup>Graduate School of Science and Technology, Niigata University, Japan, <sup>2</sup>Faculty of Engineering, Niigata University, Japan)
- OB-07** Liquid Hydrogen Leakage Analysis using CFD with a Droplet Model  
Eisuke Kono<sup>1</sup> and Tadahiro Shibutani<sup>1</sup>(<sup>1</sup>Yokohama National University, Japan)
- OB-08** Risk Perception Analysis of Hydrogen Refueling Stations Based on Quantitative Risk Assessment  
Soo Bin Park<sup>1</sup> and Dal Jae Park<sup>2</sup>(<sup>1</sup>Department of Safety Engineering, Graduate School, Seoul National University of Science and Technology, Republic of Korea, <sup>2</sup>Department of Safety Engineering, Faculty of Engineering, Seoul National University of Science and Technology, Republic of Korea)

- OB-9** Risk Correlation Analysis of Gas Station Data Based on D-S Evidence Theory and Dynamic Bayesian Networks  
 Feng Xiangsong<sup>1</sup>, Dong Shaohua<sup>1</sup>, Sun Heng<sup>3</sup> and Zuo Lili<sup>3</sup>(<sup>1</sup>College of Safety and Ocean Engineering, China University of Petroleum (Beijing), China, <sup>2</sup>Pipeline Technology and Safety Research Center, China University of Petroleum (Beijing), China, <sup>3</sup>National Engineering Research Center for Pipeline Safety, China University of Petroleum (Beijing), China)
- OB-10** Risk Assessment of Hydrogen-Doped Natural Gas Pipelines Based on Dynamic Bayesian Networks  
 Yiheng Li<sup>1</sup>, Qingquan Duan<sup>1</sup> and Xia Sun<sup>1</sup>(<sup>1</sup>College of Safety and Ocean Engineering, China University of Petroleum (Beijing), China)
- OB-11** Comparative Probit Analysis using PHAST and ALOHA Software of Accident Consequences with respect to the Natural Gas-Hydrogen Co-Firing Ratio in a Combined-Cycle Gas Turbine Plant  
 Jaeha Kim<sup>1</sup>, Da Hee Kim<sup>2</sup> and Min Chul Lee<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Incheon National University, Republic of Korea)

Chair : Jieun Lee (Pukyong National University, Republic of Korea)

Place : Sapphire (2F)

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### Protection Engineering(OP)

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- OP-01** Development of a Thermodynamic Model for Swelling Stress of Bentonite: Thermodynamic Data of Inter-layer Water in Na-Bentonite  
 Haruo Sato<sup>1</sup>(<sup>1</sup>Faculty of Environmental, Life, Natural Science and Technology, Japan)
- OP-02** A Thermodynamic Analysis on the Swelling Stress of Ca-Bentonite under Various Solution Conditions  
 Kosuke Ichikawa<sup>1</sup> and Haruo Sato<sup>2</sup>(<sup>1</sup>Graduate School of Environmental, Life, Natural Science and Technology, Okayama University, Japan, <sup>2</sup>Faculty of Environmental, Life, Natural Science and Technology, Institute of Academic Research, Okayama University, Japan)
- OP-03** Development of an Environmental-Safety Risk Assessment Model for Firewater Runoff in Chemical Storage Facilities Using a Double Materiality Assessment  
 Cheolhee Yoon<sup>1</sup>, Han Gyujin<sup>1</sup>, Seungho Jung<sup>1</sup> and Mimi Min<sup>1</sup>(<sup>1</sup>Department of Environmental Engineering, Ajou University, Republic of Korea)
- OP-04** Design of an Integrated Firefighting Suit with Hazardous Gas Monitoring and Early Warning Applying a Time Series Model  
 Yiwei Peng<sup>1</sup>, Wenguo Weng<sup>1</sup>, Maohua Zhong<sup>1</sup>, Xinyan Huang<sup>2</sup> and Zhichao He<sup>1</sup>(<sup>1</sup>School of Safety Science (SSAFS), Tsinghua University, Hong Kong, <sup>2</sup>Department of Building Environment and Energy Engineering, Hong Kong Polytechnic University, Hong Kong)

## Poster Session II

17:20~18:20

Chair : Chang Jun Lee(Pukyong National University, Republic of Korea)

Place : Lobby (2F)

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**Risk Assessment(PB)**

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**PB-01** Safety Management of Long-term Chemical Equipment

Dong Joon Kim<sup>1</sup>, Dong Woo Song<sup>2</sup>, Byung Tae Yoo<sup>3</sup> and Han Hee Lee<sup>4</sup>(<sup>1</sup>Kyungil University, Republic of Korea, <sup>2</sup>Halla University, Republic of Korea, <sup>3</sup>Korea National University of Transportation, Republic of Korea, <sup>4</sup>Korea Occupational Safety and Health Agency, Republic of Korea)

**PB-02** Development of a Quantitative Severity Prediction Model using Automotive Accidents and Fire Reports in Japan

Ayuka Shinagawa<sup>1</sup>, Hailong Yan<sup>1</sup>, Xiaodong Feng<sup>2</sup> and Kun Zhang<sup>2</sup>(<sup>1</sup>Department of Information and Management Systems Engineering, Nagaoka University of Technology, Japan, <sup>2</sup>Department of System Safety Engineering, Nagaoka University of Technology, Japan)

**PB-03** Research on Risk Classification of Oil and Natural Gas Pipelines Based on Text Mining and Apriori Algorithm

Zi Ye<sup>1</sup>, Qingquan Duan<sup>1</sup> and Shengkai Ma<sup>1</sup>(<sup>1</sup>College of Safety and Ocean Engineering, China University of Petroleum, China)

**PB-04** Risk Evaluation of Hydrogen Refueling Stations Using Gas Leak Concentration Monitoring

JungHoon Kim<sup>1</sup>, Dongjoo Shin<sup>1</sup> and Gukjin Seo<sup>1</sup>(<sup>1</sup>Korea Gas Safety Corporation, Republic of Korea)

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**Material Safety(PE)**

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**PE-01** Comparison on Hardness Characteristics of Electron Beam Welded SA508 Gr.3 Cl.2 for Innovative Small Modular Reactor Vessel

Jaehwan Park<sup>1</sup>(<sup>1</sup>Central Research Institute, Korea Hydro & Nuclear Power Co., Republic of Korea)

**PE-02** Mechanical Property Test on Electron Beam Welded Small Modular Reactor Material

Jaehwan Park<sup>1</sup> and Taesoon Kim<sup>1</sup>(<sup>1</sup>Central Research Institute, Korea Hydro & Nuclear Power Co., Republic of Korea)

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**Chemical Safety(PK)**

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- PK-01** A Study on the Cause of Ammonia Refrigeration Facility Leakage and Prevention Strategy Using Bow-tie and 5Why Techniques  
Narin Jeong<sup>1</sup> and Young Woo Chon<sup>1</sup>(<sup>1</sup>Environmental Technology & Safety Technology, Inha University, Republic of Korea)
- PK-02** Comparative Evaluation of Stabilizer Formulations for Enhanced Long-Term Storage of Highly Concentrated Hydrogen Peroxide  
Hyeonju Kim<sup>1</sup>, Dongbin Im<sup>1</sup>, Seoungwoo Chu<sup>1</sup> and Youngbo Choi<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Chungbuk National University, Republic of Korea)
- PK-03** Impact of Cultural Dimensions on Accident Severity among Migrant Workers in Korean Chemical Manufacturing  
Doo Hwan Shin<sup>1</sup>, Jeong-Hun Won<sup>2</sup>, Hye Min Lee<sup>3</sup> and Seung-Hyeon Shin<sup>4</sup>(<sup>1</sup>Division of Industrial Safety, Gangdong University, Republic of Korea, <sup>2</sup>Department of Safety Engineering, Chungbuk National University, Republic of Korea, <sup>3</sup>Safety and Health Inspection Planning Division, Ministry of Employment and Labor, Republic of Korea, <sup>4</sup>Department of Big Data, Chungbuk National University, Republic of Korea)

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**Construction Safety(PI)**

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- PI-01** Failure Analysis and Maintenance Method of Steel Wire Rope for Pile Driver Free Fall Drop Hammer  
Park Jae Suk<sup>1</sup>(<sup>1</sup>Occupational Safety Research Bureau, Occupational Safety and Health Research Institute, KO-SHA, Republic of Korea)
- PI-02** A Study on the Correlation Analysis between the Establishment and Implementation Status of the Construction Company Safety and Health Management System and Construction Safety Evaluation Indicators  
Jeongjae Park<sup>1</sup>(<sup>1</sup>Occupational Safety and Health Research Institute, Republic of Korea Occupational Safety and Health Agency, Republic of Korea)
- PI-03** Study on Rail Temperature Reduction Using Thermal Insulation Fabric in Railway Applications  
Juyeop Park<sup>1</sup>, Jaeheon Choe<sup>2</sup> and Donghoon Kang<sup>1</sup>(<sup>1</sup>Railroad Accident Research Department, Korea Railroad Research Institute, Republic of Korea, <sup>2</sup>Department of Safety Engineering, Incheon National University, Republic of Korea)
- PI-04** A Study on the Distribution of Legal Responsibility of Contractors in Construction Safety in Korea - Focusing on the Supreme Court's Decision on Incheon Port Authority's Responsibility -  
Cho Jinwoo<sup>1</sup> and Lee Minwoo<sup>1</sup>(<sup>1</sup>Business & Policy Research Division, Korea Expressway Corporation Research Institute, Republic of Korea)

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**Electrical Safety(PH)**

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- PH-01** Evaluation of Ignition Hazard of Abnormal Discharges from Bipolar Electrostatic Ionizer Using Compact Spark Ignition Test Apparatus  
Takeshi Matsunaga<sup>1</sup> Yuki Osada<sup>2</sup>, Wookyung Kim<sup>3</sup> and Kwangseok Choi<sup>1</sup> (1National Institute of Occupational Safety and Health, Japan, 2KASUGA DENKI, INC., Japan, 3Hiroshima University, Japan)
- PH-02** Development of an Automatic Fire Suppression System for Battery Fire Mitigation  
DongMin Kim<sup>1</sup>, KyeongSik Park<sup>1</sup>, YuSeon Jang<sup>1</sup> and EunSeong Go<sup>1</sup> (1R&D Center, Hanbit Safety Technology Group Corporate, Republic of Korea)

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**Others(PN)**

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- PN-01** Analysis of Stress Levels Influenced by Emergency Disaster Messages: Focusing on Familiar and Unfamiliar Disasters  
Suyeon Yu<sup>1</sup> and Jieun Lee<sup>1</sup> (1Department of Safety Engineering, Pukyong National University, Republic of Korea)
- PN-02** A Study on Growth Risks of Visually Impaired Acupuncture-Moxibustion and Massage Clinics  
Yukihito Shimamura<sup>1</sup> (Tsukuba University of Technology, Japan)
- PN-03** Analysis of the Impact of Counterflow on Pedestrian Descent in a Staircase during a Full-Building Evacuation Drill in a High-Rise Office Building  
Taehyeong Kim<sup>1</sup>, Seongkyung Park<sup>1</sup> and Masayuki Mizuno<sup>1</sup> (1Tokyo University of Science, Japan)
- PN-04** Investigating the Influences of Riders' Information Processing on Fall Accidents in Electric Kickboard  
Clarista Josephine Nathania<sup>1</sup> and Jieun Lee<sup>1</sup> (1Department of Safety Engineering, Pukyong National University, Republic of Korea)

November 12, 2025

## Oral Session V

10:20~12:00

Chair : Xinyan Huang(The Hong Kong Polytechnic University, Hong Kong)

Place : Jade I (2F)

**Explosion and Fire VIII(OA)**

- OA-33** Retrofitting Point-Extraction Ventilation in Existing In-Service Vehicle Tunnels with Enhanced Smoke Control Strategies: Full-Scale Test Results  
ChingHsun Huang<sup>1</sup>, ShiuanCheng Wang<sup>2</sup>, LiYu Tseng<sup>3</sup>, TsungLi Lin<sup>4</sup>, ChiJi Lin<sup>3</sup> and ChungHwei Su<sup>1</sup>(<sup>1</sup>Department of Safety, Health and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan, <sup>2</sup>Department of Public Safety and Fire Science, Chia Nan University of Pharmacy and Science, Taiwan, <sup>3</sup>Department of Mechanical Engineering, CECI Engineering Consultants, Inc, Taiwan, <sup>4</sup>General of Highway Bureau, Ministry of Transportation and Communications, Taiwan)
- OA-34** Reassessing Natural Smoke Exhaust Design in Atrium Fires Using CFD Simulation of Smoke and Heat Movement  
TzuJan Hsu<sup>1</sup>, RyhNan Pan<sup>2</sup>, ShiuanCheng Wang<sup>3</sup>, JenChieh Cheng<sup>1</sup> and ChungHwei Su<sup>1</sup>(<sup>1</sup>Department of Safety, Health and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan, <sup>2</sup>Department of Safety, Taiwan Police College, Taiwan, <sup>3</sup>Department of Public Safety and Fire Science, Chia Nan University of Pharmacy and Science, Taiwan)
- OA-35** Dynamic Prediction of High-pressure Hydrogen Jet Flame Scene Based on Hybrid Deep Learning Method  
Jiahui Zou<sup>1</sup>, Yunqing Xu<sup>1</sup> and Yi Liu<sup>1</sup>(<sup>1</sup>State Key Laboratory of Chemical Safety, China University of Petroleum, China)

Chair : Sangeun Jin(Pusan National University, Republic of Korea)

Place : Jade II (2F)

**Risk Assessment III(OB)**

- OB-12** Efforts Toward the Digital Transformation of Relational Information System for Chemical Accidents Database (RISCAD)  
Ryoji Makino<sup>1</sup>, Tei Saburi<sup>1</sup> and Maki Suzui<sup>1</sup>(<sup>1</sup>National Institute of Advanced Industrial Science and Technology, Japan)
- OB-13** Research on Oil and Natural Gas Pipeline Hazard Detection Based on the LDA2Vec Model  
Shengkai Ma<sup>1</sup>, Qingquan Duan<sup>1</sup> and Zi Ye<sup>1</sup>(<sup>1</sup>College of Safety and Ocean Engineering, China University of Petroleum (Beijing), China)

- OB-14** Fire Hazard Evaluation of Oxidized Palm Oils Based on Acid Value and Thermal Decomposition Behavior  
Myung Il Kim<sup>1</sup>, Mi Jeong Lee<sup>1</sup> and Jong-Bae Baek<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Korea National University of Transportation, Republic of Korea)
- OB-15** Research on Dynamic Assessment Method of Girth Weld Failure Risk of Large-Diameter Natural Gas Pipelines  
ZiMeng Liu<sup>1</sup>, QingQuan Duan<sup>1</sup> and XiaoDan Li<sup>1</sup>(<sup>1</sup>College of Safety and Ocean Engineering, China University of Petroleum (Beijing), China)

Chair : Jieun Lee(Pukyong National University, Republic of Korea)

Place : Crystal I (2F)

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### Risk Assessment IV(OB)

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- OB-16** Multi-dimensional factor analysis of anomalous events in long-distance pipelines: from case data to risk management models  
Qian Wang<sup>1</sup>, Ruipeng Tong<sup>1</sup> and Weichun Chang<sup>2</sup>(<sup>1</sup>School of Emergency Management and Safety Engineering, China University of Mining and Technology-Beijing, China, <sup>2</sup>PipeChina Research Institute of Science and Technology, China)
- OB-17** A Risk Assessment Method for Improving Incident Response Capabilities  
Yuto Furuta<sup>1</sup> and Takashi Hamaguchi<sup>1</sup>(<sup>1</sup>Nagoya Institute of Technology, Japan)
- OB-18** A Risk Assessment Method Focusing on the Relation between Data and Control Action for Consumer IoT Systems  
Koga Furuichi<sup>1</sup>, Takashi Hamaguchi<sup>1</sup> and Kenji Watanabe<sup>1</sup>(<sup>1</sup>Nagoya Institute of Technology, Japan)
- OB-19** Development of a GHS-Based Chemical Risk Assessment Tool for Small Enterprises  
Yeong Sik Park<sup>1</sup>, Mi Jeong Lee<sup>1</sup>, Hyun Gil Kwon<sup>1</sup> and Jong-Bae Baek<sup>1</sup>(<sup>1</sup>Department of Safety Engineering, Korea National University of Transportation, Republic of Korea)
- OB-20** A Risk Evolution Modeling Approach for Fire and Explosion Accidents in FPSO Based on Domino Effect  
Chengxin Wang<sup>1</sup>, Kang Liu<sup>1</sup>, Haitao Xu<sup>1</sup>, Longting Wang<sup>1</sup> and Xiaofang Liu<sup>1</sup>(<sup>1</sup>Centre for Offshore Engineering and Safety Technology in China University of Petroleum (East China), China)
- OB-21** An Analysis of Initial Accident Occurrence and Characteristics in Newly Established SMEs in Automotive Parts Manufacturing  
Jeongseop Kim<sup>1</sup>(<sup>1</sup>Occupational Safety and Health Research Institute, KOSHA, Republic of Korea)

Chair : SeongKyung Park(Tokyo University of Science, Japan)

Place : Crystal II(2F)

### Emergency Response II (OJ)

- OJ-06** Multi-task learning for Pollutant Source Localization and Release Rate Estimation  
Yiping Lin<sup>1</sup> and Hong Huang<sup>1</sup>(<sup>1</sup>School of Safety Science, Tsinghua University, China)
- OJ-07** Visibility Performance Thresholds of Exit Signs in Smoky Conditions  
Wai Kit Cheung<sup>1</sup>, Jakub Bielawski<sup>1</sup>, Lukas Arnold<sup>2</sup>, Xinyan Huang<sup>3</sup> and Wojciech Węgrzyński<sup>1</sup>(<sup>1</sup>Fire Research Department, Building Research Institute, Poland, <sup>2</sup>School of Architecture and Civil Engineering, University of Wuppertal, Germany, <sup>3</sup>Research Centre for Smart Urban Resilience and Firefighting, Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong)
- OJ-08** Autonomous Strategy for Firefighting Robot Indoor Navigation via CCTV- Based Visual Guidance  
Rong Deng<sup>1</sup>, Saizhe Ding<sup>1</sup>, Yifei Ding<sup>1</sup>, Meng Wang<sup>1</sup> and Xinyan Huang<sup>1</sup>(<sup>1</sup>Research Centre for Smart Urban Resilience and Firefighting, Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong)
- OJ-09** Deep Learning for High-Resolution Modeling of Accidental Hazardous Releases through Multisource Data Integration  
Yudie Jianyao<sup>1</sup>, Yuheng Cheng<sup>1</sup> and Xiaole Zhang<sup>1</sup>(<sup>1</sup>School of Safety Science, Tsinghua University, China)

Chair : Sanglog Kwak  
 (Korea National University of Transportation, Republic of Korea)

Place : Sapphire (2F)

### Others(ON)

- ON-01** Proposal for a Method to Support the Utilization of Near Miss Events in Human Error Response Activities of Railway Companies Using Specialized AI  
Joohyun Lee<sup>1</sup>, Yuka Banno<sup>1</sup> and Yusaku Okada<sup>1</sup>(Graduate School of Science and Technology, Keio University, Japan)
- ON-02** Robustness of MLLM-Based Driver Information Systems to Modality-Specific Data Poisoning  
Seungbin Yim<sup>1</sup>, Simon S. Woo<sup>2</sup>, Hyunmin Kang<sup>3</sup>, Hyungchai Park<sup>1</sup>, Hyochang Kim<sup>1</sup> and Hyeonrak Choi<sup>1</sup>(<sup>1</sup>Stanford Center at Incheon Global Campus, Republic of Korea, <sup>2</sup>Sungkyunkwan University, Republic of Korea, <sup>3</sup>Daegu University, Republic of Korea)
- ON-03** Japan's Energy Strategy: Investigation of the Energy Relations with Russia  
Eikoh Shimamura<sup>1</sup>(<sup>1</sup>University of Sussex, United Kingdom)
- ON-04** Investigation into Coupled Safety and Optimization of Energy Isolation Strategies for Hybrid Power System in Railway Vehicles  
Hanyu Xiong<sup>1</sup>, Hongjie Han<sup>1</sup> and Ang Qiu<sup>1</sup>(<sup>1</sup>The State Key Laboratory of Heavy-duty and Express High-power Electric Locomotive, Zhuzhou, China)













충전 한번으로 어디든 갈 수 있어야  
**과학이다**

전기 모빌리티 시대를 위해  
화학이 해야 하는 일은 무엇일까  
더 오래가는 배터리 소재로 전기차도 자유롭게 달리게 하자  
과학으로 전기 모빌리티 시대를 이끌자

**LG화학은 과학으로  
미래를 만들고 있습니다**

# 대한민국을 더 높게

AI메모리 기술로 한층 더 빛날 대한민국의 가능성과 자부심  
그 중심에 SK

We Do Technology  
첨단기술의 중심, 더 나은 세상을 만듭니다

SK hynix



# 오늘도 안전하게 일하는 당신을 응원합니다!



유이한



연유주



김태운



박민지



건설안전본부 정수한



시설안전본부 문정희


**2025년 KISA 홍보모델**  
 포스터 사진 내 홍보모델은  
 협회 직원과 직원의 자녀입니다



건설시설광역안전 2센터 정신일



경기서부지회 심지은



자연과 함께  
고객과 함께

삼성은 생명외경 사상을 바탕으로  
사람과 자연을 존중하는 기업활동을 통하여  
인류의 풍요로운 삶과 지구환경보전에 이바지하고 있습니다.



삼성EHS전략연구소

# See What You've Been Missing!

Partial Discharge · Gas Leak · Abnormal Noise Detection

## Ultrasonic sensor **BATCAM 2 S**

## Ultrasonic Camera **BATCAM CX**



### POINT



#### Gas Leak

Real-time air/gas estimated leakage and Loss amount



#### Partial Discharge

Real-time PRPD Analysis and AI-based PD classification



#### Abnormal Noise Detection

Instant noise detection in rotating equipment

### POINT



#### Alerts within 0.5s

Detects ultrasonic signals (ex. Leak, Discharge)



#### 24/7 Monitoring

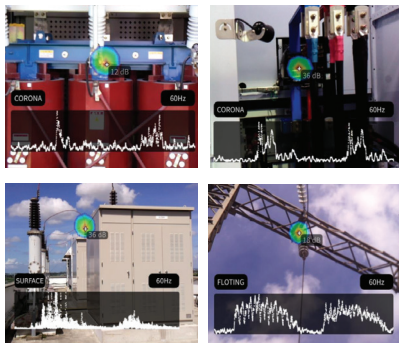
Detects gas leaks regardless of type or level



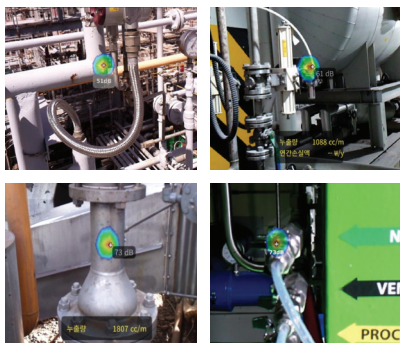
#### Easy Setup

Simple install, Easy maintenance

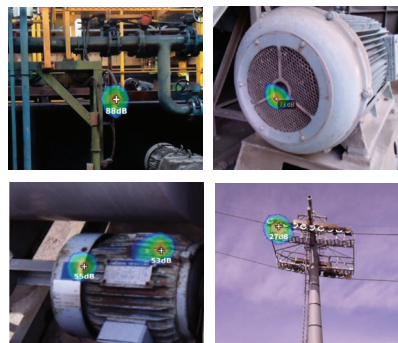
### Partial Discharge Use case



### Gas Leak Use case



### Abnormal Noise Use case



Cases of partial discharge, gas leak, and abnormal noise detected using actual ultrasonic camera BATCAM



# 공항을 넘어 세상을 바꿉니다

Beyond an Airport, Changing the World

지난 24년간 공항의 새로운 기준을 제시해 온 인천공항  
이제는 공항의 경계를 넘어 글로벌 플랫폼으로 도약합니다

AI 혁신 허브와 초연결 모빌리티가 만들어낸  
한 번도 경험하지 못한 새로운 공항

글로벌 메가 허브에서 디지털 혁신의 허브로  
인천공항은 다시 한번 새로운 시대를 향해 비상합니다



국민 곁에서 따뜻함을 전하는  
에너지 파수꾼, 한국가스공사

**KOGAS, The Leader of Energy Innovation**



# 친환경 에너지로 미래를 밝히는 글로벌 에너지 리더



# 마음과馬音



진심을 다해  
미래를 함께 만들어 갑니다

한국마사회는 매해 1조 3천억원의 사회 환원으로  
지역 사회와의 상생을 실현하고 있습니다  
행복을 나누며, 미래를 함께합니다


# 푸른 하늘 아래 빛나는 태양의 물결 한국서부발전이 만들어갑니다

WORLD WIDE WESTERN POWER

한국서부발전은  
더 넓은 중동 시장에서  
탐티어 친환경 에너지기업으로  
성장해갑니다

 한국서부발전

 국내 최초 오만  
태양광발전

 국내 최대 아랍에미리트  
태양광발전

미래의 에너지 솔루션  
소형모듈원자로 (SMR) •

안전성과 경제성을 동시에  
APR1400 •

탄소배출 제로  
대용량 수소 생산 •

해외에서 입증된 기술력  
원전수출 사업확대 •

# Energy Up, Tomorrow

탄소 배출 없는 청정 에너지로  
탄소중립 시대의 새로운 미래를 그려갑니다

**승강기 안전, 행복사회 실현**

**우리가 꿈꾸는 미래입니다**



**한국승강기안전공단**  
KOREA ELEVATOR SAFETY AGENCY

# 세계 최고를 넘어, 新에너지 세상으로 -



섬은  
떨어져 있어도 외롭지 않습니다.  
햇살이, 바다가, 바람이  
내일의 빛을 만들어줍니다.

자연에서 전기를 만들고  
마법처럼 담아뒀다가  
필요할 때 꺼내 쓸 수 있습니다.

이게 바로  
한국전력이 꿈꾸는  
깨끗한 에너지 세상입니다.



## 세계 1위 전력회사를 넘어 깨끗한 에너지 생태계를 선도하는

Beyond the Top, Leading KEPCO-

# **Asia Pacific Symposium on Safety 2025**

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Room 512, The Korea Science Technology Center The First Building, 22,  
Teheran-ro 7-gil, Gangnam-gu, Seoul 06130, Republic of Korea

Tel: +82-2-552-9331 / Fax: +82-2-552-9332

<http://www.kosos.or.kr> / E-mail: [kosos@kosos.or.kr](mailto:kosos@kosos.or.kr)

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## Asia Pacific Symposium on Safety 2025