

*International Conference on
PPrecision Engineering and Sustainable Manufacturing*

PRESM 2024

July 7 Sun – 12 Fri, 2024

Paradise Hotel Busan, Busan, Korea

PROGRAM BOOK

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 Korean Society for Precision Engineering (KSPE, Korea)

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 The Japan Society for Precision Engineering (JSPE, Japan)
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*International Conference on
P**R**ecision Engineering and S**U**stainable M**A**nufacturing*

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July 7 Sun — **12** Fri, 2024

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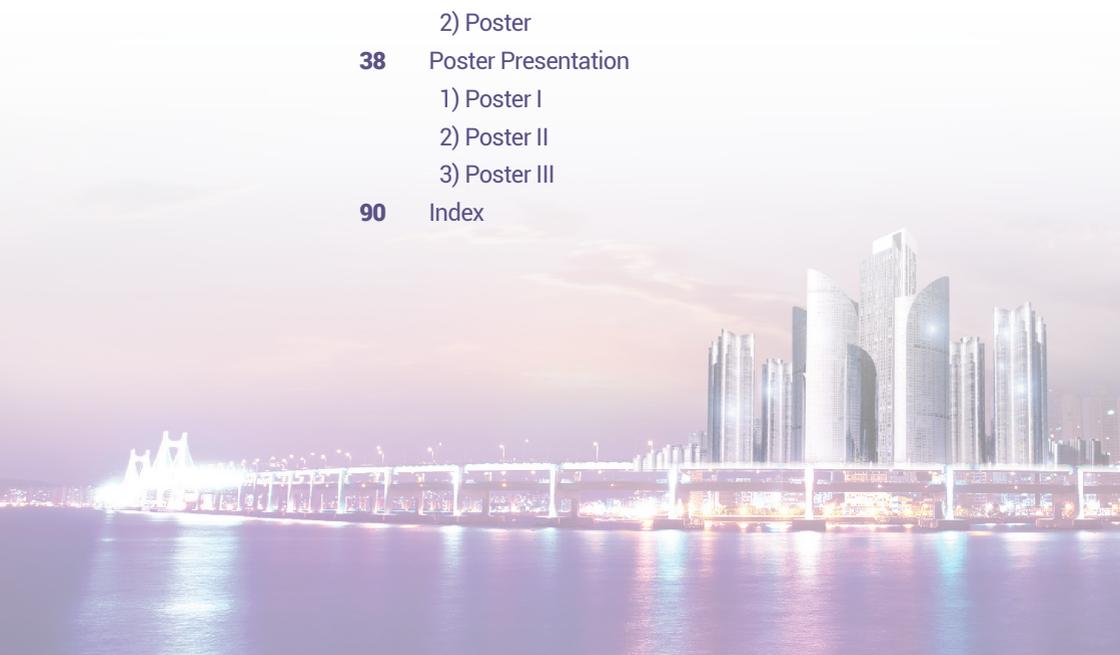
Program & Proceedings



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Welcome Message

Welcome to PRESM 2024



On behalf of all the committee members of PRESM 2024 and the Korean Society for Precision Engineering (KSPE), we would like to thank all guest speakers, session organizers, co-organizing societies, and governmental supporters for PRESM 2024, which will be held from July 7 to July 12, 2024, in Busan, Korea.

Since 2011, PRESM has been dedicated to developing precision engineering and sustainable manufacturing to benefit the global society. In the past few years, in-person attendance at PRESM has been limited due to the impact of COVID-19. However, starting from last year in Okinawa, Japan, PRESM was fully recovered as a face-to-face conference. The participants' passion last year reminded us of how valuable PRESM is to our precision engineering community.

Nowadays, the importance of "Smart & Green" is increasing in all fields, including precision engineering. The KSPE recently announced a new vision: "Precision Engineering for Sustainable and Prosperous Life, Foreve", focusing on smart and green. PRESM 2024 aims to engage in in-depth discussions about the future of precision engineering and international collaborations, particularly in the direction of smart and green.

I sincerely hope that PRESM 2024 will be a fruitful academic conference for all participants. Finally, I would like to thank all the guest speakers who will give distinguished presentations despite their busy schedules. With your participation, we are confident that PRESM 2024 will be enjoyable and meaningful to everyone. Thank you.

Chair of PRESM 2024

Prof. Byung-Kwon Min, Yonsei University, Korea
Korean Society for Precision Engineering (KSPE)

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Internet of Sustainable Production

• **Keyword:** Sustainability

• **Abstract:** The transformation towards sustainability, aligned with FESG factors (Financial, Environmental, Social, Governmental), is challenging the production industry to adopt new sustainable business practices. Companies must shift from maximizing product sales to providing necessary goods and services, such as mobility or production capacity, with minimal resource use. A sustainable market economy aims to reduce the number of products in circulation, optimizing the use of existing products to meet the demand. In the machine tool

9 July (Tue)
11:00-11:40 (40')

Session Chair

Sung-Hoon Ahn
(Seoul National University,
Korea)

industry, sustainability goals can be addressed by focusing on efficient use, extended product life, and circular economy practices. The keynote "Sustainability in Production Lines" highlights measures for efficient use, particularly in machine tools. Energy efficiency in machine tools largely depends on auxiliary systems like cooling and hydraulics. Reducing the baseline energy consumption of these systems requires energy-optimized solutions, which should also be adaptive. For example, model-predictive cooling can shorten warm-up phases, enabling immediate high-quality production with less energy. Additionally, minimizing process times through productivity-enhancing measures can further reduce energy consumption per part. Sharing process knowledge via an open-source cloud architecture can significantly boost global productivity levels of machine tools. Digitalizing and objectifying expert knowledge about optimal operating parameters, provided by process planners or machine operators, can be converted into transferable metrics. This availability of expert knowledge is crucial for enhancing productivity and quality. Extracting and digitalizing expert knowledge helps companies maintain internal know-how and ease knowledge transfer to new, inexperienced staff, mitigating skills shortages due to demographic changes. Cross-departmental applications, such as using operator knowledge in CAM programming, are also possible. To foster a global competition among companies in sharing sustainability-enhancing know-how, new business models providing monetary incentives are necessary.

Plenary 2



Turgut M. Gür

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Hurdles and Opportunities on the Road to Clean Energy Transition

• **Keywords:** Carbon footprint, Renewable energy, Electrochemical energy storage, Batteries, Electrolytic hydrogen, Nanostructuring

• **Abstract:** Currently, fossil fuels provide more than 80% of the world's energy needs and 60% of the global electricity generation, while releasing ~37 Gt of CO₂ annually into the atmosphere that is considered the primary cause of global warming. To alter the course of climate change, mitigation efforts require drastic reductions in CO₂ emissions by a scale of giga-tons while at the same time meeting the ever-increasing energy demands of the world by tera-watts. These constraints pose unprecedented challenges for the world community and require a multi-prong approach for rapid decarbonization of the energy economy, and especially electric power generation. A realistic strategy is especially

10 July (Wed)
11:00-11:40 (40')

Session Chair

Suk Won Cha
(Seoul National University,
Korea)

important during the transition period while gradually switching from a fossil fuel-based to a renewable energy-based decarbonized economy without major disruptions. Developing advanced power generation and storage systems such as fuel cells provide a smooth transition pathway into a clean energy economy without major disruptions in energy production by allowing smart use of fossil fuels with total carbon capture until renewable sources eventually become the dominant source for global energy. Ultimately, however, renewable energy is the most essential component defining a sustainable energy future. Currently, renewable power sources generate nearly 30% of the world electricity. Despite vast investments and rapid expansion especially in intermittent renewable sources such as solar and wind, however, their deployment rates are still slower than is required to meet urgent climate mitigation targets. For faster and effective integration into the electric grid, intermittent renewable sources require adequate electrical energy storage. Globally, pumped hydro is the dominant storage technology that makes up nearly 95% of the total storage inventory. Unfortunately, pumped-hydro is highly site-constrained by geography and is not available or accessible widely across the globe. There is great need for distributed and portable energy storage technologies at large scale to facilitate rapid integration of renewables into the electric grid. In this regard, electrochemical energy storage systems offer very attractive opportunities for portable and distributed storage both for short-term and long-term durations. This talk will provide a broad overview from a global perspective of the grand challenges in energy and emissions, review the status of renewable energy and storage systems, and present electrochemical energy storage options. It will also introduce design tools for materials innovation including the roles of doping and nanostructuring for effective management of electrons and ions in storage materials to improve performance.



Beomjoon Kim

Professor
Department of Mechanical and Biofunctional Systems
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Where is MAP in Medicals

• **Keywords:** Microneedle array patch (MAP), Dissolvable polymer, DDS, Bio-sensor, ISF

• **Abstract:** Here, new transdermal drug delivery system by using dissolvable MAP (Microneedle Array Patch) will be introduced. We investigate a novel fabrication method to achieve the user-friendliest, low-cost, and safest way for dissolvable microneedle patches with vaccine delivery, several medical treatments such as bio-tagging [1], photodynamic therapy, and even glucose sensing [2]. We also develop several aspects of bio-sensors components to accomplish portable Point-of-Care diagnostic devices, which are disposal, user-friendly, low-cost, and highly sensitive. We fabricated porous microneedle on a paper substrate to develop a novel platform for direct integration of sensors [3]. The device painlessly monitors fluid in the skin within seconds. Anyone can use the disposable patch without training, making it highly practical. Additionally, fabrication is easy, low cost, and the glucose sensor can be swapped for other paper-based sensors that monitor other important biomarkers. Furthermore, to monitor the biological information through the skin continuously, a novel microneedles' structure is proposed by combining flexible "sponge-like" porous PDMS matrix and the coating by dissolvable hyaluronic acid (HA). Among the MNs, porous MNs have advantages such as applicability to fluidic systems and to biocompatible materials. Although the porous MNs were applied to ISF sampling, continuous ISF sampling has not been realized. For this, a new type of porous MN should be developed to address the challenges of mechanical and fluidic requirements for successful insertion into the skin and ISF extraction continuously.

11 July (Thu)
11:00-11:40 (40')

Session Chair

Young Hun Jeong
(Kyungpook National
University, Korea)

Keynote Speech



Chih-Hsing Chu

Professor, Director

Department of Industrial Engineering and Management
Alliance of Highly Interactive Augmented Reality Technologies
National Tsing Hua University (Taiwan)

Title Augmented Reality Assisted Human-robot Collaboration in Smart Manufacturing



Cha Bum Lee

Associate Professor

Department of Mechanical Engineering, Texas A&M University (USA)

Title Via Metrology, Inspection and Digital Review System for Advanced Electronics Packaging



Simon Park

Professor

Schulich School of Engineering, Department of Mechanical and Manufacturing Engineering, University of Calgary (Canada)

Title Nanocomposite Innovations: Shaping the Future of Sensing and Battery Manufacturing



Keiichi Nakamoto

Professor

Department of Mechanical Systems Engineering
Tokyo University of Agriculture & Technology (Japan)

Title Studies toward DX in Machining by a Computer Aided Process Planning System



Bakir Babic

Doctor

Acting Project Leader: Nanometrology, Department of Industry, Science and Resources, National Metrology Institute of Australia (Australia)

Title Traceable and Accurate Measurements at the Nanoscale

Keynote Speech

**Chung-Soo Kim****Doctor**

Smart Manufacturing Technology Group
Korea Institute of Industrial Technology (Korea)

Title Product Design and Development with Metal Binder Jetting Additive Manufacturing

**Hung-Yin Tsai****Professor**

Chair Professor & Dean, College of Engineering, Department of Power Mechanical Engineering, National Tsing Hua University (Taiwan)

Title Fabrication and Field Emission Characteristic of Carbon-based Nano Composite Materials

**Jungkyu (Jay) Kim****Professor**

Department of Mechanical Engineering
University of Utah (USA)

Title A Fully Integrated Lab-on-a-chip for Space Exploration: Astrobiology and Crew Health Monitoring

**Michinao Hashimoto****Associate Professor**

Pillar of Engineering Product Development
Singapore University of Technology & Design (Singapore)

Title Direct Ink Writing 3D Printing for Fabricating Microfluidic Devices

**Kyung-In Jang****Doctor**

Robotics and Mechatronics
Daegu Gyeongbuk Institute of Science & Technology (Korea)

Title Bio-to-byte: Stealthy Neural Recorder for Primates

Keynote Speech



Michiya Matsusaki

Professor

Department of Applied Chemistry
Graduate School of Engineering, Osaka University (Japan)

Title Cell Surface Engineering for Biofabrication and Regenerative Medicine



Min Hwan Lee

Associate Professor

Graduate Program in Materials and Biomaterials Science and Engineering
Department of Mechanical Engineering, University of California, Merced (USA)

Title Enhanced Durability of Oxygen Electrodes via Atomic-scale Surface Overcoat



Jun-Ki Choi

Professor

Department of Mechanical and Aerospace Engineering
University of Dayton (USA)

Title Multiscale Pathways for Achieving Carbon Neutrality through Industrial Decarbonization



Jiyoung Chang

Associate Professor

Department of Mechanical Engineering
University of Utah (USA)

Title Transformative Approaches in Nanofiber Fabrication: The Impact of Precision Near-field Electrospinning in Micro/Nano Manufacturing



Arata Kaneko

Professor

Department of Mechanical Systems Engineering
Faculty of Systems Design, Tokyo Metropolitan University (Japan)

Title Transfer-printing and Related Printing Technologies for Micro/Nano-structure and MEMS Fabrications

Keynote Speech

**Ming-Tsang Lee****Professor**

Department of Power Mechanical Engineering
National Tsing Hua University (Taiwan)

Title Green and Intelligent Laser Manufacturing: Novel Processes and Multiphysics Simulation

**Seung Ki Moon****Professor**

School of Mechanical and Aerospace Engineering
Nanyang Technological University (Singapore)

Title Quality Prediction in Laser-directed Energy Deposition through Multi-sensor Fusion and Machine Learning

**Parviz Kahhal****Doctor (Lecturer)**

School of Engineering
The University of Waikato (New Zealand)

Title Machine Learning-based AM Process Optimization

**Chee Kai Chua****Professor**

Associate Provost for Research, Director, Centre for Healthcare Education, Entrepreneurship and Research @ SUTD (CHEERS), Cheng Tsang Man Chair Professor, Singapore University of Technology & Design (Singapore)

Title Digital Gastronomy - the Next Frontier of Additive Manufacturing

**Toru Kizaki****Professor**

Department of Mechanical Engineering
The University of Tokyo (Japan)

Title Possibility of Large-scale Array of Temperature Sensors Interconnected in Series for Smart Manufacturing

Keynote Speech



Takehiro Hayasaka

Associate Professor

Graduate School of Engineering, Graduate Department of Aerospace Engineering, Nagoya University (Japan)

Title Smart Cutting/Monitoring Technologies for Realization of Carbon-neutral Manufacturing



Patrick Kwon

Professor

Department of Mechanical Engineering
Michigan State University (USA)

Title Processing Nitinol for Biomedical Stent Applications Using Selective Laser Melting



Peter Kang Jae Lee

Doctor

Advanced Technology and Development BU
DN Solutions (Korea)

Title Innovative Manufacturing Solutions for Machine Tools Builders and Industries

PRESM 2024 Program

Program at a Glance

JULY	7 (SUN)	8 (MON)	9 (TUE)	10 (WED)	11 (THU)	12 (FRI)
		Registration Open 8:30-17:00				
09:00		M1 Focus Session A High Precision Metrology and Field Robot Application	T1 Focus Session E Advanced Manufacturing and Monitoring System	W1 Focus Session H Sustainable Future Energy for Carbon Neutralization	H1 Focus Session K Smart Technology for Machine Tools and Manufacturing System	Technical Tour at LG Electronics Changwon Factory 1 & DN Solutions * Only registrants can participate
10:00		Coffee Break				
		Opening				
11:00		M2 Focus Session B Advanced Instrumentation and Virtualization for Smart Manufacturing	Coffee Break	Coffee Break	Coffee Break	
			Plenary Session I *Prof. Christian Brecher	Plenary Session II *Prof. Turgut M. Gür	Plenary Session III *Prof. Beomjoon Kim	
			Break	Break	Break	
12:00		Lunch	Lunch	Lunch	Lunch	
13:00		M3 Focus Session C Intelligent Materials and Design	T2 Focus Session F Lab on a Chip and Precision Engineering for Bio Health	W2 Focus Session I Micro/Nano Manufacturing Technology	H2 Focus Session L Manufacturing Research in U.S.A.	
14:00	PRESM 2024 Committee Meeting	Coffee Break	Coffee Break	Coffee Break		
15:00		M4 Focus Session D Precision Measurement for Precision Engineering	T3 Focus Session G Biofabrication and Additive Manufacturing for Future Health	W3 Focus Session J Advanced Materials and Processes for Additive Manufacturing		
16:00		Break	Break	Break		
		Poster Session I Q&A 3. Automation, Measurement & Control 4. Materials & Design	Poster Session II Q&A [Regular] 1. Manufacturing Processes (1) 6. Bio & Health 7. New and Renewable Energy 8. Sustainable Technology [Special] 1. Railway Engineering 3. Innovative Design and Integrated Manufacturing Session	Poster Session III Q&A [Regular] 1. Manufacturing Processes (2) 2. Machine Tools & Systems 5. Micro/Nano Technology [Special] 2. Multidisciplinary Research & Mechatronics for Aero/Defense Applications	Coffee Break & Ready for Banquet	
17:00					Banquet PRESM2024 Awards & Farewell	
18:00						
19:00						

PRESM 2024 Program

Focus Session

[A] High Precision Metrology and Field Robot Application

Introduction This session covers two topics related to precision robot technology in industrial applications. The first topic discusses robot technologies for precision metrology, including sensor technologies for position measurement in harsh environments, mechanical systems for ultra-precise and high-speed positioning, and applications of infrared laser beam transport technology used in semiconductor equipment. The second topic presents cases of field robot technology applicable in industrial settings and applications of 3D printing. These technologies represent important examples showcasing the state-of-the-art applications of industrial robot technology.

Organizer Prof. Jay I. Jeong (Kookmin University, Korea)

Date, Time Monday, 8 July, 2024 / 09:00-10:15 (KST, UTC +09:00)

Details **Session Chairs:** Profs. Yangjin Kim (Pusan National University, Korea)
 Changwon Kim (Pukyong National University, Korea)

Paper No.	Time	Title / Presenter & Authors
M1-FA1	09:00-09:15 (15)	Design of a Novel ROS-based Autonomous Mobile Robot for Mushroom Cultivation *Rong-Yuan Jou (National Formosa University, Taiwan), Jin-Chuan Chi (National Formosa University), Hsin-Der Shih (Taiwan Agricultural Research Institute, Ministry of Agriculture, Executive Yuan)
M1-FA2	09:15-09:30 (15)	Mass Production via Projection-based 3D Printer *Brian Lee (Sungkyunkwan University, Korea), Minsung Kim (Sungkyunkwan University)
M1-FA3	09:30-09:45 (15)	Development of Testing Methods for Evaluating Drone Sensor Performance in Low Visibility Conditions Using a Smoke Chamber *Bong Keun Kim (National Institute of Advanced Industrial Science & Technology, Japan), Yasushi Sumi (National Institute of Advanced Industrial Science & Technology), Takuya Ogure (National Institute of Advanced Industrial Science & Technology), Kiyoshi Fujiwara (National Institute of Advanced Industrial Science & Technology)
M1-FA4	09:45-10:00 (15)	Error Compensation of the Moving Mirror Assembly in the Spectroscopic Sensor with Ultra-small Fast Steering Mirror *Ho Sang Kim (Institute for Advanced Engineering, Korea), Jin Woo Kim (Institute for Advanced Engineering), Hyo Wook Bae (Moori Technologies Co., Ltd.), Do Hyun Park (Moori Technologies Co., Ltd.)
M1-FA5	10:00-10:15 (15)	Active Manipulation of Deep Ultraviolet Laser Beam for High Precision Semiconductor Metrology *Young-Jin Kim (KAIST, Korea), Seungjai Won (KAIST), Taewon Kim (KAIST), Seungman Choi (KAIST), Byunggi Kim (KAIST), Jungyoon Kim (KAIST), Seung-Woo Kim (KAIST)

PRESM 2024 Program

[B] Advanced Instrumentation and Virtualization for Smart Manufacturing

Introduction In the era of digital transformation, various virtualization technologies, including digital twins, metaverse, augmented/virtual/extended reality (AR/VR/XR), and manufacturing avatars, are fused to effectively implement smart manufacturing platforms. In addition, novel digital instrumentation technology must be developed to enable the collection and processing of big data in smart manufacturing practices. This focus session covers advanced instrumentation and virtualization technologies to accelerate the advent of the smart manufacturing paradigm.

Organizer Sang Won Lee (Sungkyunkwan University, Korea)

Date, Time Monday, 8 July, 2024 / 10:40-12:00 (KST, UTC +09:00)

Details **Session Chairs:** Profs. Sang Won Lee (Sungkyunkwan University, Korea)
Chih-Hsing Chu (National Tsing Hua University, Taiwan)

Paper No.	Time	Title / Presenter & Authors
M2-FB1 Keynote	10:40-11:05 (25')	Augmented Reality Assisted Human-robot Collaboration in Smart Manufacturing *Chih-Hsing Chu (National Tsing Hua University, Taiwan)
M2-FB2 Keynote	11:05-11:30 (25')	Via Metrology, Inspection and Digital Review System for Advanced Electronics Packaging *Cha Bum Lee (Texas A&M University, USA), Kuan Lu (Texas A&M University), Pengfei Lin (Texas A&M University), Heebum Chun (Texas A&M University), Jiyong Park (Korea Institute of Industrial Technology), Byunggi Kim (The University of Tokyo), Masahiro Nomura (The University of Tokyo)
M2-FB3	11:30-11:45 (15')	Industrial Twinverse with Digital Twin and Metaverse for Smart Manufacturing Platform *Sang Won Lee (Sungkyunkwan University, Korea)
M2-FB4	11:45-12:00 (15')	Research on the Metaverse Platform for Smart Robotic Manufacturing Processes *DongChan Kim (UNIST, Korea), HyungWook Park (UNIST), Chang Hyeon Mun (UNIST), JongWoo Han (UNIST)

PRESM 2024 Program

[C] Intelligent Materials and Design

Introduction Intelligent materials and design can react to the environmental variation and switchable system. These materials and design have been the main factors for the future industries. The researches on these fields have been including the multifunctional materials and flexible design for the emerging industries.

Organizer Prof. Hyung Wook Park (UNIST, Korea)

Date, Time Monday, 8 July, 2024 / 13:00-14:35 (KST, UTC +09:00)

Details **Session Chairs:** Profs. Young-Jin Kim (KAIST, Korea)
Simon Park (University of Calgary, Canada)

Paper No.	Time	Title / Presenter & Authors
M3-FC1 Keynote	13:00-13:25 (25')	Nanocomposite Innovations: Shaping the Future of Sensing and Battery Manufacturing *Simon Park (University of Calgary, Canada)
M3-FC2 Keynote	13:25-13:50 (25')	Studies toward DX in Machining by a Computer Aided Process Planning System *Keiichi Nakamoto (Tokyo University of Agriculture & Technology, Japan)
M3-FC3	13:50-14:05 (15')	Tensile Testing as Alternative Evaluation Method for Enhanced Adhesion of Diamond-like Carbon Coatings with Different Titanium Buffer Layers *Young-Jun Jang (Korea Institute of Materials Science, Korea), Jae-Il Kim (Korea Institute of Materials Science), Jongkuk Kim (Korea Institute of Materials Science)
M3-FC4	14:05-14:20 (15')	Relationship between Sintering Conditions and Effective Thermal Conductivities of Al-TiB ₂ Particle Dispersed Composite *Kenjiro Sugio (Hiroshima University, Japan), Haruki Matsuura (Hiroshima University), Gen Sasaki (Hiroshima University)
M3-FC5	14:20-14:35 (15')	Self-assembled VS ₂ /MXene Nanocomposite Electrodes: A Promising Approach for Next-generation Supercapatteries *Rahul Sadashiv Ingole (Seoul National University of Science & Technology, Korea), Jong G. Ok (Seoul National University of Science & Technology), Kwangjun Kim (Seoul National University of Science & Technology), Minwook Kim (Seoul National University of Science & Technology), Yong Tae Kim (Seoul National University of Science & Technology), Snehal Laxman Kadam (Seoul National University)

PRESM 2024 Program

[D] Precision Measurement for Precision Engineering

Introduction The importance of precision measurement in the field of precision engineering is gradually increasing. In this focus session will cover several topics widely used in advanced precision engineering, such as length measurement, vibration measurement, temperature measurement, and micro/nano-scale dimensional metrology.

Organizer Dr. Jonghan Jin (Korea Research Institute of Standards & Science, Korea)

Date, Time Monday, 8 July, 2024 / 14:50-16:30 (KST, UTC +09:00)

Details **Session Chairs:** Dr. Jonghan Jin (Korea Research Institute of Standards & Science, Korea)
Prof. Cha Bum Lee (Texas A&M University, USA)

Paper No.	Time	Title / Presenter & Authors
M4-FD1 Keynote	14:50-15:15 (25')	Traceable and Accurate Measurements at the Nanoscale *Bakir Babic (National Measurement Institute Australia, Australia)
M4-FD2	15:15-15:30 (15')	Evaluation of Angular Errors in a Piezo Flexure Scanner for Metrological Atomic Force Microscopy *Ryosuke Kizu (National Institute of Advanced Industrial Science & Technology, Japan), Ichiko Misumi (National Institute of Advanced Industrial Science & Technology)
M4-FD3	15:30-15:45 (15')	Absolute Distance Measurement based on Multi-wavelength Interferometry Directly Using Many Comb Modes of an Electro-optic Comb *Jungjae Park (Korea Research Institute of Standards & Science, Korea), Jonghan Jin (Korea Research Institute of Standards & Science), Yoon-Soo Jang (Korea Research Institute of Standards & Science)
M4-FD4	15:45-16:00 (15')	The Comparative Study of Optical Property Changes in Molded Lenses due to Material Property Variations *June Park (Korea Photonics Technology Institute, Korea)
M4-FD5	16:00-16:15 (15')	Measurement of the Reduction of Airborne Wear Particles Generated at the Wheel-rail Contact: Effect of Tap Water Application *HyunWook Lee (Korea Railroad Research Institute, Korea), YuJin Lee (University of Science and Technology)
M4-FD6	16:15-16:30 (15')	Improving Measurement Precision of Frequency Comb Based Spectral Interferometry by Line-by-line Spectral Shaping *Yoon-Soo Jang (Korea Research Institute of Standards & Science, Korea)

PRESM 2024 Program

[E] Advanced Manufacturing and Monitoring System

Introduction This session presents advancements in manufacturing and monitoring systems, showcasing pioneering research and cutting-edge technology in the field. It features a variety of topics that extend the limits of conventional manufacturing techniques through the integration of state-of-the-art technologies in additive manufacturing, material processing, digital twin applications, and AI-based data-driven simulations.

Organizer Prof. Sung-Hoon Ahn (Seoul National University, Korea)

Date, Time Tuesday, 9 July, 2024 / 09:00-10:50 (KST, UTC +09:00)

Details **Session Chairs:** Drs. Hyunmok Son (Seoul National University, Korea)
Daniel Zontar (Fraunhofer IPT, Germany)

Paper No.	Time	Title / Presenter & Authors
T1-FE1 Keynote	09:00-09:25 (25)	Product Design and Development with Metal Binder Jetting Additive Manufacturing *Chung-Soo Kim (Korea Institute of Industrial Technology, Korea)
T1-FE2 Keynote	09:25-09:50 (25)	Fabrication and Field Emission Characteristic of Carbon-based Nano Composite Materials *Hung-Yin Tsai (National Tsing Hua University, Taiwan)
T1-FE3	09:50-10:05 (15)	Physics-informed Digital Twin for Virtual Assembly Variation Prediction *Roham Sadeghi Tabar (Chalmers University of Technology, Sweden), Kristina Wärmefjord (Chalmers University of Technology), Rikard Söderberg (Chalmers University of Technology)
T1-FE4	10:05-10:20 (15)	Simulating Complex Systems From Sample Data for Data Augmentation in AI and Training *Daniel Zontar (Fraunhofer IPT, Germany), Christian Brecher (Fraunhofer IPT)
T1-FE5	10:20-10:35 (15)	Additive Manufacturing with One-time Robotic Ultrasonic Forging/ Shaping *Curtis Kuan (Industrial Technology Research Institute, Taiwan), Sheng-Chieh Hsu (Industrial Technology Research Institute), Su-Jhen Lin (Industrial Technology Research Institute), Chin-Chi Hsiao (Industrial Technology Research Institute), Chien-Yu Wu (Industrial Technology Research Institute), Shu Huang (Industrial Technology Research Institute)
T1-FE6	10:35-10:50 (15)	Comprehensive Evaluation of Reinforcement Learning for HVAC Control Using An Open-source Building Simulation Platform *Xinlin Wang (Commonwealth Scientific and Industrial Research Organisation, Australia), Hao Wang (Monash University)

PRESM 2024 Program

[F] Lab on a Chip and Precision Engineering for Bio Health

Introduction Lab on a Chip and precision engineering technologies are at the forefront of bio health innovations, creating transformative solutions for medical and scientific challenges. To foster scientific exchange and collaboration among multidisciplinary researchers, we have invited two keynote speakers and three distinguished experts to share their insights. This session will cover cutting-edge research and future perspectives in this dynamic field.

Organizer Prof. Yun Jung Heo (Kyung Hee University, Korea)

Date, Time Tuesday, 9 July, 2024 / 13:00-14:35 (KST, UTC +09:00)

Details **Session Chairs:** Prof. Yun Jung Heo (Kyung Hee University, Korea)
Dr. Ge Gao (Beijing Institute of Technology, China)

Paper No.	Time	Title / Presenter & Authors
T2-FF1 Keynote	13:00-13:25 (25)	A Fully Integrated Lab-on-a-chip for Space Exploration: Astrobiology and Crew Health Monitoring * Jungkyu (Jay) Kim (University of Utah, USA), Zachary Estlack (University of Utah), Andrew Pack (University of Utah), Matin Golozar (University of Utah), Anna Butterworth (University of California, Berkeley), Richard Mathies (University of California, Berkeley),
T2-FF2 Keynote	13:25-13:50 (25)	Direct Ink Writing 3D Printing for Fabricating Microfluidic Devices * Michinao Hashimoto (Singapore University of Technology & Design, Singapore)
T2-FF3	13:50-14:05 (15)	Microchannel Wall Consisting of Tiny Pillars for Higher Throughput of Image-activated Large-cell Sorting * Akihiro Isozaki (Ritsumeikan University, Japan), Yuma Nakazawa (Ritsumeikan University)
T2-FF4	14:05-14:20 (15)	Engineering Microphysiological System for Advancing Disease Modeling and Drug Testing * Jessie Sungyun Jeon (KAIST, Korea)
T2-FF5	14:20-14:35 (15)	Studying Bone Regeneration with Scaffold and Bone Defect Morphology: Contact Area and Pore Direction * Min-Soo Ghim (Wonkwang University, Korea), Young-Sam Cho (Wonkwang University), You Min Kim (Wonkwang University), Su-Ji Han (Wonkwang University), Meiling Quan (Beihua University), Young Yul Kim (Catholic University of Korea)

PRESM 2024 Program

[G] Biofabrication and Additive Manufacturing for Future Health

Introduction Biofabrication and Additive Manufacturing are transformative technologies that enable the creation of multiscale 3D architectures using diverse living cells and biomaterials. These advancements possess the potential to generate functional tissues and organs with significant translational prospects in clinical settings. This session features esteemed presenters who will foster scientific discourse, enhance professional networks, and cultivate collaborative relationships among multidisciplinary researchers. We will delve into pioneering research and forward-looking perspectives on the impact of biofabrication in advancing healthcare.

Organizer Prof. Dong Sung Kim (POSTECH, Korea)

Date, Time Tuesday, 9 July, 2024 / 14:50-16:25 (KST, UTC +09:00)

Details **Session Chairs:** Profs. Dong Sung Kim (POSTECH, Korea)
Michinao Hashimoto (Osaka University, Japan)

Paper No.	Time	Title / Presenter & Authors
T3-FG1 Keynote	14:50-15:15 (25)	Bio-to-byte: Stealthy Neural Recorder for Primates *Kyung-In Jang (Daegu Gyeongbuk Institute of Science & Technology, Korea)
T3-FG2 Keynote	15:15-15:40 (25)	Cell Surface Engineering for Biofabrication and Regenerative Medicine *Michiya Matsusaki (Osaka University, Japan)
T3-FG3	15:40-15:55 (15)	Coaxial Bioprinting of Vascular Grafts and Disease Models *Ge Gao (Beijing Institute of Technology, China)
T3-FG4	15:55-16:10 (15)	High-precision 3D Cell Spheroid Printing Technology to Produce Engineered Tissue with Enhanced Functionality *Hyun-Wook Kang (UNIST, Korea)
T3-FG5	16:10-16:25 (15)	Bioprinting Technology for Advanced Tissue Therapeutics *Jinah Jang (POSTECH, Korea)

PRESM 2024 Program

[H] Sustainable Future Energy for Carbon Neutralization

Introduction A lot of research on sustainable energy technology and related manufacturing techniques is being conducted around the world to realize carbon neutrality. In this session, we will review and discuss hydrogen production, solid state batteries, and the latest technologies and manufacturing technology trends related to carbon neutralization.

Organizer Prof. Young Beom Kim (Hanyang University, Korea)

Date, Time Wednesday, 10 July, 2024 / 09:30-10:50 (KST, UTC +09:00)

Details **Session Chairs:** Profs. Young Beom Kim (Hanyang University, Korea)
Jun-Ki Choi (University of Dayton, USA)

Paper No.	Time	Title / Presenter & Authors
W1-FH1 Keynote	09:30-09:55 (25')	Enhanced Durability of Oxygen Electrodes via Atomic-scale Surface Overcoat *Min Hwan Lee (University of California, USA)
W1-FH2 Keynote	09:55-10:20 (25')	Multiscale Pathways for Achieving Carbon Neutrality through Industrial Decarbonization *Jun-Ki Choi (University of Dayton, USA)
W1-FH3	10:20-10:35 (15')	Liquid Lithium Metal Processing of Ultrathin Metal Anodes for Solid State Batteries *Yun Seog Lee (Seoul National University, Korea)
W1-FH4	10:35-10:50 (15')	Hydrogen Energy/Electrochemical/Thermochemical Clean Hydrogen Production Technology *Sangwook Park (Seoul National University, Korea)

PRESM 2024 Program

[I] Micro/Nano Manufacturing Technology

Introduction Micro/Nano manufacturing technology is being performed in a variety of domains, ranging from the creation of micro/nano structure to the methodologies for device fabrication with functionality. Various applications of micro/nano novel process and manufacturing technologies will be covered in this session. These technologies have great potential for use in numerous industries and will give useful insights for extended investigation.

Organizer Dr. Jeongdai Jo (Korea Institute of Machinery Materials, Korea)

Date, Time Wednesday, 10 July, 2024 / 13:00-14:30 (KST, UTC +09:00)

Details **Session Chairs:** Prof. Bong-Keel Lee (Chonnam National University, Korea)
Dr. Joon-wan Kim (Tokyo Institute of Technology, Japan)

Paper No.	Time	Title / Presenter & Authors
W2-FI1 Keynote	13:00-13:25 (25')	Transformative Approaches in Nanofiber Fabrication: The Impact of Precision Near-field Electrospinning in Micro/Nano Manufacturing *Jiyoung Chang (University of Utah, USA), Tae-Gon Kim (Korea Institute of Industrial Technology)
W2-FI2 Keynote	13:25-13:50 (25')	Transfer-printing and Related Printing Technologies for Micro/Nano-structure and MEMS Fabrications *Arata Kaneko (Tokyo Metropolitan University, Japan)
W2-FI3 Keynote	13:50-14:15 (25')	Green and Intelligent Laser Manufacturing: Novel Processes and Multiphysics Simulation *Ming-Tsang Lee (National Tsing Hua University, Taiwan)
W2-FI4	14:15-14:30 (15')	Recast of Nanoporous Carbonized Micro-holes during Laser Drilling of Polyimide Film *Swami Siddharth (Industrial Technology Research Institute, Taiwan), Yi-Wei Lin (Industrial Technology Research Institute), Ming-Tsang Lee (National Tsing Hua University)

PRESM 2024 Program

[J] Advanced Materials and Processes for Additive Manufacturing

Introduction Additive manufacturing (AM) technologies have shown significant advancements across numerous industrial sectors. In this focus session, we will share insights into the latest innovative advancements in the additive manufacturing in view of materials science and process engineering.

Organizer Prof. Sang-hu Park (Pusan National University, Korea)

Date, Time Wednesday, 10 July, 2024 / 14:45-16:40 (KST, UTC +09:00)

Details **Session Chairs:** Profs. Sang-hu Park (Pusan National University, Korea)
Suk-Hee Park (Pusan National University, Korea)

Paper No.	Time	Title / Presenter & Authors
W3-FJ1 Keynote	14:45-15:10 (25')	Quality Prediction in Laser-directed Energy Deposition through Multi-sensor Fusion and Machine Learning *Seung Ki Moon (Nanyang Technological University, Singapore)
W3-FJ2 Keynote	15:10-15:35 (25')	Machine Learning-based AM Process Optimization *Parviz Kahhal (The University of Waikato, New Zealand)
W3-FJ3 Keynote	15:35-15:55 (25')	Digital Gastronomy - The Next Frontier of Additive Manufacturing *Chee Kai Chua (Singapore University of Technology & Design, Singapore)
W3-FJ4	15:55-16:10 (15')	Recent Research on Various Micro/Nano 3D Printing Processes in KITECH *Cheol Woo Ha (Korea Institute of Industrial Technology, Korea)
W3-FJ5	16:10-16:25 (15')	3D Printing of Fe Shape Memory Alloy and Its Potential Applications *Wook-Jin Lee (Pusan National University, Korea)
W3-FJ6	16:25-16:40 (15')	Defect Detection and Correction in Additive Manufacturing via Machine Learning Techniques *Suk-Hee Park (Pusan National University, Korea)

PRESM 2024 Program

[K] Smart Technology for Machine Tools and Manufacturing System

Introduction Machine tools and manufacturing systems are very important fields that form the basis of the manufacturing industry, which is currently undergoing innovation such as the 4th industrial revolution. This focus session discusses recent technological advances in machine tools and manufacturing systems.

Organizer Drs. Dong Yoon Lee (Korea Institute of Industrial Technology, Korea)
Peter Kang Jae Lee (DN Solutions, Korea)

Date, Time Thursday, 11 July, 2024 / 09:00-10:50 (KST, UTC +09:00)

Details **Session Chairs:** Drs. Dong Yoon Lee (Korea Institute of Industrial Technology, Korea)
Peter Kang Jae Lee (DN Solutions, Korea)

Paper No.	Time	Title / Presenter & Authors
H1-FK1 Keynote	09:00-09:25 (25)	Possibility of Large-scale Array of Temperature Sensors Interconnected in Series for Smart Manufacturing *Toru Kizaki (The University of Tokyo, Japan), Satsuma Ando (The University of Tokyo), Yuta Teshima (The University of Tokyo), Shun Tanaka (The University of Tokyo), Naohiko Sugita (The University of Tokyo)
H1-FK2 Keynote	09:25-09:50 (25)	Smart Cutting/Monitoring Technologies for Realization of Carbon-neutral Manufacturing *Takehiro Hayasaka (Nagoya University, Japan), Kyungki Lee (Nagoya University), Eiji Shamoto (Nagoya University)
H1-FK3	09:50-10:05 (15)	Comparative Analysis of Tooling Methods for Delamination Formations in the Edge Trimming Process of High-modulus CFRP *Dave Kim (Washington State University, USA), Tae-Gon Kim (Korea Institute of Industrial Technology), Sabbir Uddin (Washington State University), Seong Hyeon Kim (Korea Institute of Industrial Technology)
H1-FK4	10:05-10:20 (15)	Ultrashort Lasers for Smart Microfabrication & Instrumentation *Seung-Woo Kim (KAIST, Korea), Young-Jin Kim (KAIST)
H1-FK5	10:20-10:35 (15)	Reconfiguring Production Layout based on Product Module Lifecycle Using a Simulation-optimization Approach for Resource Efficiency *Jongsuk Lee (Nanyang Technological University, Singapore), Seung Ki Moon (Nanyang Technological University)
H1-FK6	10:35-10:50 (15)	Real-time Virtual Sensor with Physics Driven Digital Twin: Theory and Application *Jin-Gyun Kim (Kyung Hee University, Korea), Seungin Oh (Kyung Hee University), Hyunwoo Baek (Kyung Hee University), Ji-won Lee (Kyung Hee University), Dahye Son (Kyung Hee University)

PRESM 2024 Program

[L] Manufacturing Research in U.S.A.

Introduction Members of Manufacturing Alliance of Korean Engineers and Researchers (MAKER) who are conducting cutting edge research in advanced and smart manufacturing will present their research results.

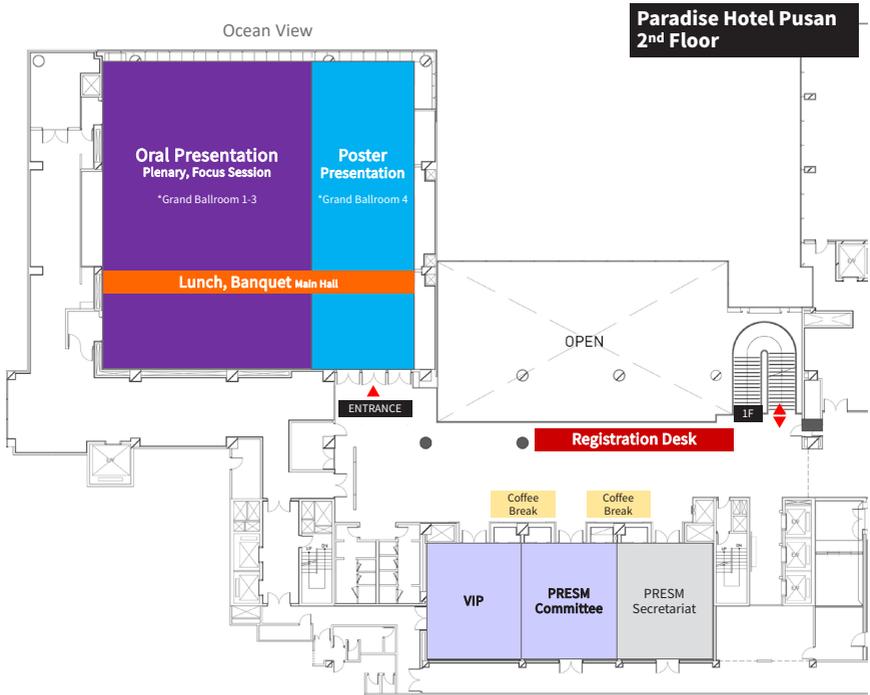
Organizer Prof. Patrick Kwon (Michigan State University, USA)

Date, Time Thursday, 11 July, 2024 / 13:00-15:20 (KST, UTC +09:00)

Details **Session Chairs:** Dr. Chang-Ju Kim (Korea Institute of Machinery & Materials, Korea)
Prof. Jae-Won Choi (The University of Akron, USA)

Paper No.	Time	Title / Presenter & Authors
H2-FL1 Keynote	13:00-13:25 (25)	Processing Nitinol for Biomedical Stent Applications Using Selective Laser Melting *Patrick Kwon (Michigan State University, USA), Haseung Chung (Michigan State University), Tareq Md Sarower (Michigan State University), Alexandra DeFilippis (Michigan State University)
H2-FL2 Keynote	13:25-13:50 (25)	Innovative Manufacturing Solutions for Machine Tools Builders and Industries *Peter Kang Jae Lee (DN Solutions, Korea)
H2-FL3	13:50-14:05 (15)	Studying Tool Geometry Effect in Ultra-precision Machining of Single Crystal 8 mol% Ytria-stabilized Zirconia *Sangkee Min (University of Wisconsin-Madison, USA), Dae Nyoung Kim (University of Wisconsin-Madison), Suk Bum Kwon (University of Wisconsin-Madison)
H2-FL4	14:05-14:20 (15)	Process Monitoring and Control in Metal Additive Manufacturing *Jihoon Jeong (Texas A&M University, USA)
H2-FL5	14:20-14:35 (15)	Additive Manufacturing of Rubber Using Direct-ink-write (DIW) *Jae-Won Choi (The University of Akron, USA), Sarath Kamath (The University of Akron), Daewoong Park (The University of Akron), Mehdi Sahami (The University of Akron)
H2-FL6	14:35-14:50 (15)	Laser-assisted Ultrafine Selective Metallization of Glass Surface Using Supersonic Spray Deposition *Seunghwan Jo (Korea Military Academy, Korea), Martin B. -G. Jun (Purdue University), Semih Akin (Rensselaer Polytechnic Institute), Minsoo Park (Seoul National University of Science & Technology)
H2-FL7	14:50-15:05 (15)	Factors Affecting Forces in Deep-hole Bone Drilling *Jueun Lee (Cal Poly Humboldt, USA), Justin Boetius (Abbott Laboratories)
H2-FL8	15:05-15:20 (15)	Generalized and Generative AI for Manufacturing *Martin B. -G. Jun (Purdue University, USA), Jiho Lee (Purdue University), Eunseob Kim (Purdue University), Yuseop Sim (Purdue University), Changheon Han (Purdue University), Hojun Lee (Purdue University)

Floor Plan



[Address] 296, Haeundaehaebyeon-ro, Haeundae-gu, Busan, Korea



Conference Information

Registration

The registration desk will be located on the 2nd floor of the Paradise Busan Hotel.

Category	On-site Registration
Date	from 18 May to 12 July, 2024
Regular	USD 730 / KRW 900,000
Student	USD 410 / KRW 500,000
Banquet	USD 90 / KRW 110,000

1. Please check your registration with the participant's name at the Registration Desk.
2. Registered participants can receive the name tag, program book, e-proceedings (USB), and lunch coupons.
3. A Banquet coupon is provided to Regular participants and to the person who purchased the banquet coupon.
4. On-site registration is available in Cash and Credit Card (KRW) and ONLY for Non-presenter. ; Presenter should complete the Early-Registration.

Conference Information

Lunch

Date	Time	Place
Monday, 8 July – Thursday, 11 July, 4 days	12:00 – 13:00	Grand Ballroom 1-3 (2F) in Paradise Hotel Busan

- A lunch box will be provided in the Grand Ballroom and should be exchanged for a lunch coupon.
- Lunch coupons cannot be exchanged for other dates.
- An additional Lunch coupon can be purchased at the registration desk by credit card & cash (KRW).

Banquet

Thursday, 11 July, 17:00-19:30

- Paradise Hotel Busan, Grand Ballroom 1-4 (2F)
- Please submit the coupon for Banquet to staff when you enter the Grand Ballroom 1-4 (2F).
- An additional Banquet coupon can be purchased at the registration desk by credit card & cash (KRW).

Awards & Farewell

Thursday, 11 July, 17:00-17:30

There will be an announcement of the PRESM2025 conference by Chiang Mai University and closing remarks from the organizing committee in Grand Ballroom 1-4 (2F). The Best Paper Award and Young Researcher Awards will also be announced, and a traditional Korean performance by the Busan Metropolitan Dance Company is scheduled as well.

Conference Information

Technical Tour

Technical Tour of PRESM 2024 is planned to visit at LG Electronics Changwon Factory '1' & DN Solutions in Changwon, Korea.

Date/Time	Program
Friday, 12 July 08:50-16:30	※ Meeting Place: Bus Stop between Annex Building and Main Building at Paradise Hotel
08:50	Paradise Hotel ▶ LG Electronics Changwon Factory 1 (Light Factory)
10:30-11:20	Tour (Part 1) Group A & Group B
11:20-11:40	LG Electronics Changwon Factory 1 (Light Factory) ▶ DN Solutions in Changwon
11:40-12:00	Introduction of DN Solutions
12:00-13:00	Lunch at DN Solutions
13:00-14:20	Tour (Part2) Group A & Group B
14:30	Visit Event Ends
14:30-15:30	DN Solutions ▶ Gimhae International Airport
15:30-16:30	Gimhae International Airport ▶ Busan Station ※ No return to Paradise Hotel Busan ※

※ The maximum number of participants is limited and the cost is free.



Conference Information

Journal Publication

Selected papers will be published in journals below after passing through peer review.

- Journal of the Korean Society for Precision Engineering
SCOPUS
- International Journal of Precision Engineering and Manufacturing
SCIE, SCOPUS / Impact Factor 2.6 (2023)
- International Journal of Precision Engineering and Manufacturing-Green Technology
SCIE, SCOPUS / Impact Factor 5.3 (2023)
- International Journal of Precision Engineering and Manufacturing-Smart Technology



Presentation Guideline

ORAL: Focus Session

- Presentation time: 15 mins / Presentation: 12 mins & Q&A 3 mins
 - 1) 1st timer alert: 2 mins remaining (10 mins after start)
 - 2) 2nd timer alert: 12 mins after start (end of time)
- Presentation materials: Please bring your PPT material on a USB memory.
; no specific format & template required
- Please upload your presentation material on the computer in the conference room by 10 mins before the session.
- Please wear your name tag and follow the instructions of the session chair.
- You can ask for help from our staff in blue vest.

POSTER: Regular & Special Session

- Poster size: A0 (900 × 1,200 mm)
- All Presenters should print and bring their posters and no specific format required.
- The poster Paper Number is attached on the top of the board.
- Items needed to attach the posters will be provided by the PRESM secretariat.
- Please be prepared to 3-5 mins speech and answer questions from poster session chair with wear your name tag.
- Please make sure that your poster is presented properly to avoid being listed as a no-show poster.

Category	Poster Mounting & Presentation Time	Date & Location
Poster I	Affixation Time: 13:30-15:30 Presentation Time: 16:30-17:30	Monday, 8 July Grand Ballroom 4 (2F)
Poster II	Affixation Time: 13:30-15:30 Presentation Time: 16:30-17:30	Tuesday, 9 July Grand Ballroom 4 (2F)
Poster III	Affixation Time: 13:40-15:40 Presentation Time: 16:40-17:40	Wednesday, 10 July Grand Ballroom 4 (2F)

Presenter Notice

1. Please do not submit presentation materials to the PRESM secretariat.
2. The PRESM secretariat does not offer poster-hanging services for authors.
3. There will be no poster printer or printing shop available near the venue.

Poster Presentation I

Monday, 8 July, 16:30-17:30

(Grand Ballroom 4)

3. Automation, Measurement & Control

- PP3-001 A003 A High Linear Two Stage LNA Using Post Linearization Technique for Radar Application**
Unal Aras (Pukyong National University)
Jee Youl Ryu (Pukyong National University)
Tahesin Delwar (Pukyong National University)
Gi Hong Park (Pukyong National University)
Sun Woo Lee (Pukyong National University)
- PP3-002 A007 Synchronous Measurement of Position-independent Geometric Errors of Dual Rotary Axes on Five-axis Machine Tools**
Chien-Sheng Liu (National Cheng Kung University)
Yu-Ta Chen (National Formosa University)
Yu-Jun Yan (National Cheng Kung University)
Chih-Chun Cheng (National Chung Cheng University)
- PP3-003 A022 Control Method for Maintaining Dynamic Performance of a 6DOF Hybrid-reluctance-type Magnetic Levitator during Payload Mass Changes**
Chang Hwan Kim (Yonsei University)
Jun Young Yoon (Yonsei University)
Hyeong Min Yoon (Yonsei University)
Jae Woo Jung (Yonsei University)
- PP3-004 A033 Sensorless Admittance Control for Continuum Robots: Parameter Identification Methodology**
Myung-oh Kim (Korea Institute of Industrial Technology)
Dong-Wook Lee (Korea Institute of Industrial Technology)
Jaeuk Cho (Korea Institute of Industrial Technology)
Dongwoon Choi (Korea Institute of Industrial Technology)
Duk-Yeon Lee (Korea Institute of Industrial Technology)
- PP3-005 A034 Machine Learning Based Parameter Identification Method for a Dual-arm Social Robot**
Jaeuk Cho (Korea Institute of Industrial Technology)
Dong-Wook Lee (Korea Institute of Industrial Technology)
Myung-oh Kim (Korea Institute of Industrial Technology)
Dongwoon Choi (Korea Institute of Industrial Technology)
Duk-Yeon Lee (Korea Institute of Industrial Technology)

- PP3-006** A035 **Adaptive Feedforward Control for Precise Long-stroke Motion of 1-DOF Voice Coil Motor System with Friction-based Guides**
Hyeong Min Yoon (Yonsei University)
Jun Young Yoon (Yonsei University)
- PP3-007** A039 **A Study on the Driving Safety and Edge Case Analysis of Autonomous Vehicles on Digital Twin-based Campus and Real-time Vehicle Simulator**
Kyung-Jin Lee (Yeungnam University)
Seong-Jin Kwon (Yeungnam University)
Dong-Whan Lee (Korea Automotive Technology Institute)
Tae-Lim Kim (Korea Automotive Technology Institute)
- PP3-008** A040 **Energy-efficient AI: A Proposal for a New Systolic Array NPU Architecture Optimized for Data Processing**
SunWoo Lee (Pukyong National University)
Jeeyoul Ryu (Pukyong National University)
GiHong Park (Pukyong National University)
Unal Aras (Pukyong National University)
Tahesin Samira Delwar (Pukyong National University)
- PP3-009** A045 **Measurement of Weld Beads Using Monocular Vision and Neural Network**
Yung Jie Yang (National Cheng Kung University)
Chun Hui Chung (National Cheng Kung University)
Huang Lun Hao (National Cheng Kung University)
- PP3-010** A046 **Comparison of Different Convolutional Neural Network Models in Automatic Milling Process Planning**
Chi-Wei Yang (National Cheng Kung University)
Chunhui Chung (National Cheng Kung University)
- PP3-011** A047 **Pass-wise Tool Wear Prediction in Turning Operations based on Hilbert Transform and Long Short-term Memory Models**
Bing-Xian Cai (National Cheng Kung University)
Chun Hui Chung (National Cheng Kung University)
- PP3-012** A048 **Identifying Weld Seams from Point Cloud Data Using Random Forest Algorithm for Robotic Grinding**
Kai-Bo Chang (National Cheng Kung University)
Chun Hui Chung (National Cheng Kung University)
Barry Huang (Da Shiang Automation)

Poster Presentation I

- PP3-013** A058 **Hall Sensor Based Position Estimation of Permanent Magnet Linear Synchronous Motor in Varying Acceleration Region Using Type-4 Phase-locked Loop**
Kyujin Kang (Yonsei University)
Jun Young Yoon (Yonsei University)
Sangmin Lee (Yonsei University)
Hyo Geon Lee (Yonsei University)
Sang Won Jung (Yonsei University)
Jae Hyun Kim (Yonsei University)
Byung Wook Jeon (Yonsei University)
Jae Heon Jung (Yonsei University)
Chang Hwan Kim (Yonsei University)
- PP3-014** A060 **Adaptive Line Recognition for Diverse P&IDs: Approaches based on Data Augmentation and Transfer Learning**
Yoochan Moon (Korea University)
Duhwan Mun (Korea University)
SeungTae Han (Korea University)
Ji-Beob Kim (Korea University)
- PP3-015** A063 **Reduction Method of Moving and Vertical-direction Force Ripple in Permanent Magnet Linear Synchronous Motors**
Sangmin Lee (Yonsei University)
Jun Young Yoon (Yonsei University)
Yoon Sik Kwon (Massachusetts Institute of Technology)
Jae Heon Jung (Yonsei University)
Kyujin Kang (Yonsei University)
Jae Hyun Kim (Yonsei University)
Sang Won Jung (Yonsei University)
- PP3-016** A084 **Soil Interaction Force Estimation via Identified Excavator Dynamics with Particle Filter**
Seonwoo Kim (Korea University)
Daehie Hong (Korea University)
Jihun Kim (Korea University)
Chanwoo Kim (Korea University)
- PP3-017** A094 **Development of Omnidirectional Mobile Robot with Two Driving and Steering Modules Used in Logistics Environment**
Yong Choi (Korea Institute of Robotics & Technology Convergence)
Eui-Jung Jung (Korea Institute of Robotics & Technology Convergence)
SungHo Park (Korea Institute of Robotics & Technology Convergence)
SoEun Son (Korea Institute of Robotics & Technology Convergence)
ChulHee Bae (Korea Institute of Robotics & Technology Convergence)
GunRae Cho (Korea Institute of Robotics & Technology Convergence)

- PP3-018** A125 **Numerical Study of Electromagnetic Field-based Leakage Diagnosis Method**
Changhyeon Kim (Sungkyunkwan University)
Eun-Ho Lee (Sungkyunkwan University)
Young-Dae Shim (Sungkyunkwan University)
Jihun Kim (Sungkyunkwan University)
Ja-uk Gu (Sungkyunkwan University)
- PP3-019** A141 **Development of Moving WPT Circuit for Seat Slider**
Suhan Kim (Gyeongbuk Technopark)
Junyoung Chae (Gyeongbuk Technopark)
EunJu Shin (Gyeongbuk Technopark)
Hyunsub Yook (DAS)
- PP3-020** A148 **Application of Deep Learning in Parts Grasping**
Alan C. Lin (National Taiwan University of Science and Technology)
Kuan-Cheng Lin (National Taiwan University of Science and Technology)
- PP3-021** A170 **Congestion-based Path Planning for Autonomous Mobile Robot**
TaeHyun Lim (Sejong University)
SeongHan Kim (Sejong University)
YongGu Kang (Sejong University)
Sekang Oh (Sejong University)
- PP3-022** A171 **Data-driven Approach for Harmonic Drive Reducer Fault Diagnosis Using Acceleration Inertial Sensor and Machine Learning**
Md Saiful Islam (Tech University of Korea)
Hyo-Young Kim (Tech University of Korea)
Jaehong Shim (Tech University of Korea)
Kihyun Kim (Tech University of Korea)
- PP3-023** A188 **Intelligent Fire Detection via a Class Adaptive Ensemble Neural Network**
Eunchan Do (Hanyang University)
Ki-Yong Oh (Hanyang University)
Suhyun Park (Hanyang University)
- PP3-024** A189 **Pilot Study of Camera-based End-effector Position Estimation in Endoscopic Robot for Control Purposes**
Junho Hong (Korea University)
Daehie Hong (Korea University)
- PP3-025** A191 **Simulation Study on Singularity Avoidance of a Roll-pitch Gimbal considering Inter-axis Coupling Effect**
Jong In Han (Agency for Defense Development)
Sun Ho Kim (Agency for Defense Development)

Poster Presentation I

- PP3-026** A204 **Minimization of Axial Flux Permanent Magnet Motors Cogging Torque Using Harmonic Balancing Skew Method**
Jong Min Sung (Yonsei University)
Jun Young Yoon (Yonsei University)
Jae Hyun Kim (Yonsei University)
Sangmin Lee (Yonsei University)
Bo Min Kang (Yonsei University)
Jung Min Park (Yonsei University)
Kang Hee Lee (Yonsei University)
Byung Wook Jeon (Yonsei University)
Jae Heon Jung (Yonsei University)
Jung Ki Lee (Yonsei University)
Jun Hui Park (Yonsei University)
Chang Hwan Kim (Yonsei University)
Dong Hyeon Park (Yonsei University)
- PP3-027** A208 **Analysis of Expansion Force according to Geometric and Braiding Characteristics of Flow Disruptor for Treating Cerebral Aneurysm**
Chanhee Won (Korea Institute of Industrial Technology)
Hye-Jin Lee (Korea Institute of Industrial Technology)
- PP3-028** A212 **Active Learning based on Weighted Uncertainty Difference Sampling for an Automated Warping Detection Model in Additive Manufacturing**
Jungyeon Moon (Incheon National University)
Kijung Park (Incheon National University)
- PP3-029** A214 **An Automated Recommendation Framework of Design Parameters for Additive Manufacturing**
Kyudong Kim (Incheon National University)
Kijung Park (Incheon National University)
- PP3-030** A234 **Improving Cornering Feel of Autonomous Vehicle by Speed Control**
MinSu Kim (Pusan National University)
ChangSun Ahn (Pusan National University)
- PP3-031** A237 **AI Based System Modeling and MPC Design for EV Battery Thermal Management System**
SeongJae Mun (Pusan National University)
ChangSun Ahn (Pusan National University)
SeongJae Mun (Pusan National University)
KiHeon Nam (Pusan National University)

- PP3-032** A240 **Phase Feedback Control Method for High Frequency Synchronous Control of Multi-axis Pneumatic Cylinders**
Beomsik Sim (Chungnam National University)
Wonkyun Lee (Chungnam National University)
Woo-Jin Lee (Korea Institute of Industrial Technology)
- PP3-033** A254 **Seamless Steering Handover from Autonomous to Human Driving**
JungHee Kim (Pusan National University)
ChangSun Ahn (Pusan National University)
- PP3-034** A255 **A Study on Maritime Drowning Victim Detection Using Attention Module based on CNN**
Yang Zhao (Pukyong National University)
Kyung-Chang Lee (Pukyong National University)
Jung-Ho Kang (Pukyong National University)
- PP3-035** A256 **Novel Fringe Projection Method for 3D Surface Measurement Utilizing a Cylindrical Mechanical Projector**
Mincheol Choi (Yonsei University)
Jae-Sang Hyun (Yonsei University)
- PP3-036** A260 **Enhanced Camera Pose Estimation in a 2-projector Structured Light System**
Sehoon Tak (Yonsei University)
Jae-Sang Hyun (Yonsei University)
Keunhee Cho (Yonsei University)
- PP3-037** A267 **High-resolution Tactile Sensor Using Structured Light**
Ingu Yeo (Yonsei University)
Jae-Sang Hyun (Yonsei University)
- PP3-038** A269 **Design of Underwater Image Contrast Enhancement Algorithm for Detection of Fish Farm Net Damage**
Jung-Ho Kang (Pukyong National University)
Kyung-Chang Lee (Pukyong National University)
Uk-Jin Baek (Pukyong National University)
- PP3-039** A286 **The Significance of LiDAR Sensor Noise Modeling in Autonomous Driving in Adverse Weather Conditions for the Advancement of Road Safety**
Junseok Heo (Chonnam National University)
Seunghwoi Han (Chonnam National University)
Hyeokjin Ju (Chonnam National University)
Hyojung Kim (Chonnam National University)
Heun Yun (Chonnam National University)

Poster Presentation I

- PP3-040** A304 **Precision Assembly System for Enhancing Optical Resolution of Endomicroscopic Imaging System**
Yeonhee Chang (Daegu Gyeongbuk Institute of Science and Technology)
Cheol Song (Daegu Gyeongbuk Institute of Science and Technology)
Jintaek Im (Daegu Gyeongbuk Institute of Science and Technology)
Myungho Lee (Daegu Gyeongbuk Institute of Science and Technology)
Kyuhang Lee (General Optics Co., Ltd.)
- PP3-041** A309 **A Worker Following Robot Capable of Transportation and Weeding**
Minsu Kang (Korea Institute of Robotics & Technology Convergence)
Yongjun Choi (Korea Institute of Robotics & Technology Convergence)
Heonsoo Choi (Korea Institute of Robotics & Technology Convergence)
Hunggil Hong (Korea Institute of Robotics & Technology Convergence)
Kibeom Park (CH Motors Co., Ltd.)
- PP3-042** A314 **Thin Film Thickness Measurement Using an Artificial Neural Network Algorithm with Consideration for Measurement Environment**
Joonyoung Lee (University of Science and Technology)
Jonghan Jin (University of Science and Technology)
- PP3-043** A318 **Design of Functional Architecture for Test Scenarios of Automated Valet Parking Systems**
HyunJoon Kim (Kongju National University)
MoonSik Kim (Kongju National University)
- PP3-044** A319 **Design of Path Tracker with Disturbance Observer for Autonomous Vehicle**
HeungSik Park (Kongju National University)
MoonSik Kim (Kongju National University)
YoungChoon Kim (Kongju National University)
JeongSeok Lee (Kongju National University)
- PP3-045** A321 **A Study on the Take-over Characteristics according to Non-driving Related Tasks in Autonomous Vehicle**
DongJu Kim (Kongju National University)
MoonSik Kim (Kongju National University)
YoungChoon Kim (Kongju National University)
DongHyun Im (Kongju National University)
SunHong Park (Korea Automotive Technology Institute)

- PP3-046** A323 **Machine Learning-based Prediction of Weld Width in Aluminum Laser Scanning Welding Process with Coaxial Vision and Spectrum Monitoring**
Woo-In Choo (Korea Institute of Industrial Technology)
Dong Hyuck Kam (Korea Institute of Industrial Technology)
Sungbin Im (Korea Institute of Industrial Technology)
Minsun Oh (Korea Institute of Industrial Technology)
Wonjung Ju (Korea Institute of Industrial Technology)
Dongchoul Kim (Sogang University)
- PP3-047** A324 **Prediction of Penetration Depth Using Spectrometer and Photodiode at High-speed Laser Welding**
Hyeonhee Kim (Korea Institute of Industrial Technology)
Minjung Kang (Korea Institute of Industrial Technology)
Joonghyeon Shin (Korea Institute of Industrial Technology)
Yong Hoon Jang (Yonsei University)
- PP3-048** A333 **Analysis and Optimization of Droplet Shape according to Driving Signal in DOD System Using Non-newtonian Fluid**
Kahee Lee (Tech University of Korea)
Kwang Kim (Tech University of Korea)
- PP3-049** A351 **Enhanced Pressure Control Using a Disturbance Observer for Pneumatic Active Vibration Isolator**
Jae-Min Shin (Soongsil University)
Hyeong-Joon Ahn (Soongsil University)
- PP3-050** A253 **Reinforcement Learning-based Robot Arm Control for Pick and Place of Occluded Target Objects**
Jinseok Kim (Soongsil University)
Donghun Lee (Soongsil University)
Taeho Kim (Soongsil University)
Haneul Jeon (Soongsil University)
Hojin Yoon (Soongsil University)
Haegyem Choi (Soongsil University)
- PP3-051** A282 **Hierarchical Reinforcement Learning Based Target Object Manipulation in Unstructured Environments**
Taeho Kim (Soongsil University)
Donghun Lee (Soongsil University)
Haneul Jeon (Soongsil University)
Haegyem Choi (Soongsil University)
Jinseok Kim (Soongsil University)
Hojin Yoon (Soongsil University)

Poster Presentation I

4. Materials & Design

- PP4-001** A010 **Long-term Low Friction of Ti-overcoated and Doped Diamond-like Carbons**
Jae-Il Kim (Korea Institute of Materials Science)
Noritsugu Umehara (Nagoya University)
- PP4-002** A029 **Thermal Property of CNT Block Reinforced Cu Matrix Composite Materials**
Bohan Li (Hiroshima University)
Yongbum Choi (Hiroshima University)
Kazuhiro Matsugi (Hiroshima University)
Kenjiro Sugio (Hiroshima University)
- PP4-003** A036 **Design of Reinforced Bidirectional Artificial Muscles: Enhancing Force for Soft Bellows Actuators**
Altair Sales Coutinho Junior (Sungkyunkwan University)
Hugo Rodrigue (Sungkyunkwan University)
Sarang Kim (Sungkyunkwan University)
- PP4-004** A052 **Biomimetic Modeling of Knee Bone Structure and Motion: Utilizing 3D Printing and Artificial Muscles**
Minchae Kang (Dongguk University)
Min-Woo Han (Dongguk University)
Suyeon Seo (Dongguk University)
- PP4-005** A055 **Mimicking Knee Joint Movement through the Application of 3D Printing Technology and Shape Memory Alloy (SMA) Patches**
Suyeon Seo (Dongguk University)
Min-Woo Han (Dongguk University)
Minchae Kang (Dongguk University)
- PP4-006** A065 **Investigation of the Tribological and Electrical Characteristics of CNT-metal Nanoparticle Composite Coating for Durable Electric Contact Element**
Sang-Hoon Lee (Kyungpook National University)
Hyun-Joon Kim (Kyungpook National University)
- PP4-007** A072 **Lubrication Characteristics of Vegetable Oil and Nanoparticles for Application of Eco-friendly Lubricants**
Geon Kim (Kyungpook National University)
Hyun-Joon Kim (Kyungpook National University)

- PP4-008** A076 **Highly Transparent, Colorless Optical Film with Outstanding Mechanical Strength and Folding Reliability Using Mismatched Charge-transfer Complex Intensification**
Sung Woo Hong (Korea Institute of Industrial Technology)
- PP4-009** A095 **Novel 3D Analytical Modeling Method for Transverse Flux Linear Motors**
Bo Min Kang (Yonsei University)
Jun Young Yoon (Yonsei University)
Jae Hyun Kim (Yonsei University)
Kyujin Kang (Yonsei University)
Byung Wook Jeon (Yonsei University)
Kang Hee Lee (Yonsei University)
Ji Won Han (Yonsei University)
- PP4-010** A097 **Additive Manufacturing for Skew Magnetization Fixture of Annular Magnet**
Tsong-Wei Chang (National Cheng Kung University)
Mi-Ching Tsai (National Cheng Kung University)
Po-Wei Huang (National Cheng Kung University)
Hsiao-Hung Yu (National Cheng Kung University)
Ching-Chien Huang (National Kaohsiung University of Science and Technology)
Chih-Chieh Mo (National Kaohsiung University of Science and Technology)
- PP4-011** A098 **Investigation of Axial-radial Bevel Magnetic Gear based on Magnetic 3D Printing**
Po-Wei Huang (National Cheng Kung University)
Tsong-Wei Chang (National Cheng Kung University)
Hsiao-Hsien Huang (National Cheng Kung University)
Pin-Hao Liao (National Cheng Kung University)
I-Hua Jiang (National Cheng Kung University)
Mi-Ching Tsai (National Cheng Kung University)
- PP4-012** A099 **Optimization of Flex Spline Design Variables considering Nominal-the-best Characteristic of Harmonic Drive**
Hankun Yeon (Korea Electronics Technology Institute)
Joo Han Kim (Korea Electronics Technology Institute)
Myungsung Lee (Korea Electronics Technology Institute)
- PP4-013** A101 **Load Estimation of the Motor Grader Simulator Using F-T Sensor**
Jihun Kim (Korea University)
Daehie Hong (Korea University)
Chanwoo Kim (Korea University)
Seonwoo Kim (Korea University)

Poster Presentation I

- PP4-014** A102 **Metameric Self-growing Overtube for Colonoscopy**
Yongjung Lee (Korea University)
Daehie Hong (Korea University)
Chanwoo Kim (Korea University)
Seonghyeon Won (Korea University)
Woocheol Shin (Korea University)
Jinwoo Park (Korea University)
MyungIn Jin (Korea University)
- PP4-015** A103 **A Design of Piezoelectrically Driven Moving Mirror Assembly (MMA) Using Circular Bending PZT Plates**
Jin Woo Kim (Institute for Advanced Engineering)
Ho Sang Kim (Institute for Advanced Engineering)
- PP4-016** A107 **Development of a System to Assist Depth Estimation and Control in Endoscopic Monocular Environment through SLAM**
Jinwoo Park (Korea University)
Daehie Hong (Korea University)
Chanwoo Kim (Korea University)
Seonghyeon Won (Korea University)
Woocheol Shin (Korea University)
Jihun Kim (Korea University)
MyungIn Jin (Korea University)
Yongjung Lee (Korea University)
- PP4-017** A108 **Configuration of the Device and Environment for Automatic Forest Product Selection**
Soeun Son (Korea Institute of Robotics & Technology Convergence)
Hyun-Joon Chung (Korea Institute of Robotics & Technology Convergence)
Junyoung Kim (Korea Institute of Robotics & Technology Convergence)
Jungjun Kim (Korea Institute of Robotics & Technology Convergence)
Seungwoo Kim (Korea Institute of Robotics & Technology Convergence)
Sungchul Jee (Korea Institute of Robotics & Technology Convergence)
- PP4-018** A110 **Shape Memory Alloy Actuator based on Knot Structure**
Eunsol Park (Dongguk University)
Min-Woo Han (Dongguk University)
Juhee Lee (Dongguk University)

- PP4-019** A114 **A Study on the Design of Mobile Robots for All-way Movement and Structural Improvement of Steering & Driving Modules**
Soeun Son (Korea Institute of Robotics & Technology Convergence)
Gun Rae Cho (Korea Institute of Robotics & Technology Convergence)
Sungho Park (Korea Institute of Robotics & Technology Convergence)
Yong Choi (Korea Institute of Robotics & Technology Convergence)
Eui-Jung Jung (Korea Institute of Robotics & Technology Convergence)
Hyunseock Shin (Korea Institute of Robotics & Technology Convergence)
- PP4-020** A115 **Self-growing Robot Overtube with Pulling Motion for Loop Elimination in Colonoscopy**
MyungIn Jin (Korea University)
Daehie Hong (Korea University)
Chanwoo Kim (Korea University)
Seonghyeon Won (Korea University)
Woocheol Shin (Korea University)
Jinwoo Park (Korea University)
Yongjung Lee (Korea University)
Jihun Kim (Korea University)
- PP4-021** A118 **ERCP Surgical Robot Teleoperation Controller Mimicking Surgical Movement**
Woocheol Shin (Korea University)
Daehie Hong (Korea University)
Chanwoo Kim (Korea University)
Seonghyeon Won (Korea University)
Jinwoo Park (Korea University)
Jihun Kim (Korea University)
Yongjung Lee (Korea University)
MyungIn Jin (Korea University)
- PP4-022** A122 **Formation of Photo-reactive Heterostructure from a Multicomponent Amorphous Alloy with Atomically Random Distribution**
Hae Jin Park (Sejong University)
Ki Buem Kim (Sejong University)
- PP4-023** A129 **Utilizing Shape Memory Alloys Sheets for Bi-directional Auxetic Structures**
Yeong Jae Park (Sungkyunkwan University)
Hugo Rodrigue (Sungkyunkwan University)
- PP4-024** A130 **Evaluation of Rollable-based Layer Jamming Device with Variable Stiffness**
Jae Hyuck Jang (Sungkyunkwan University)
Hugo Rodrigue (Sungkyunkwan University)

Poster Presentation I

- PP4-025** A142 **Effect of Sintering Condition on Mechanical Properties of Hot-press Sintered Tungsten**
Huiseong Hong (Hiroshima University)
Gen Sasaki (Hiroshima University)
- PP4-026** A149 **Multi-scale Hybrid Reinforced Super Duplex Stainless Steel Matrix Composites with High Strength and Ductility via Laser Powder Bed Fusion and an In-situ Synthesis Strategy**
Yongjian Fang (Sungkyunkwan University)
Jonghwan Suhr (Sungkyunkwan University)
Yali Zhang (Sungkyunkwan University)
- PP4-027** A150 **Synthesis of Crack-free WC10%-Ni60AA Cermet/Inconel 718 Composite Hardfacing by Laser Directed Energy Deposition**
Shanshan He (Pusan National University)
Sang-Hu Park (Pusan National University)
Do-Sik Shim (Korea Maritime and Ocean University)
- PP4-028** A153 **Enhancing Durability and Improving Dielectric Properties in Dielectric Elastomer Actuator**
Sumin Jung (Dongguk University)
Min-Woo Han (Dongguk University)
Minchae Kang (Dongguk University)
- PP4-029** A169 **Evaluation of Optical Performance of EO/IR System according to Adhesive Patterns between Its Mirror and Metallic Mount under Various Environmental Conditions for Aircraft Applications**
Ji-Hun Bae (Agency for Defense Development)
Kwang-Woo Park (Agency for Defense Development)
- PP4-030** A177 **Enhancement of Biocompatibility on Grade 5 Titanium (Ti-6Al-4V) for Medical Implantable Devices Using Large Pulsed Electron Beam (LPEB)**
Yonghoon Lee (Kyungpook National University)
Jisoo Kim (Kyungpook National University)
- PP4-031** A182 **A Study of the Deformation Behavior and Finite Element Analysis of the Copper Wire for Hairpins Forming Process**
Ji Seob An (Korea Institute of Industrial Technology)
Myeong Sik Jeong (Korea Institute of Industrial Technology)
Min Ji Jo (Korea Institute of Industrial Technology)
A Ra Jo (Korea Institute of Industrial Technology)
Sun Kwang Hwang (Korea Institute of Industrial Technology)
Ji Won Lee (GMB Korea Co., Ltd.)
Young Hoon Moon (Pusan National University)

- PP4-032** A193 **Inverse Design for Acoustic Resonator via Dual Variational Autoencoder**
Keon Ko (Pusan National University)
Sang Min Park (Pusan National University)
Min Woo Cho (Pusan National University)
Kyung Jun Song (Pusan National University)
- PP4-033** A194 **Investigation of the Surface Texturing on the Tribological Properties of Mechanical Components**
Hyukjae Ma (Yonsei University)
Dae-Eun Kim (Yonsei University)
- PP4-034** A196 **Serpentine Structure with Local Reinforcement Strategy for Stretchable Thin Film Devices**
Ho-Gyun Park (Dankook University)
Ji-Hyeon Song (Dankook University)
Seung-Ho Baek (Dankook University)
Hyeongjin Jo (Dankook University)
- PP4-035** A197 **Preparation of Cu-Al Alloys with Excellent Metallurgical Bonding Properties Using Directed Energy Deposition**
Changliang Yao (Korea Maritime and Ocean University)
Do-Sik Shim (Korea Maritime and Ocean University)
Kwangyong Shin (Korea Maritime and Ocean University)
- PP4-036** A200 **Explicit Analysis on Mechanical Strengthening Mechanisms of Metal Composite STS 316L with SiO₂ Particles**
Hong-Seok Kim (Pusan National University)
Sang-Hu Park (Pusan National University)
- PP4-037** A228 **Optimized Machine Learning Model for Kirigami Patterns for Stretchable Sensor**
Min-Jae Jo (Dankook University)
Ji-Hyeon Song (Dankook University)
Yujun Song (Dankook University)
- PP4-038** A229 **Fabrication and Application of Multi-functional Radiative Cooling Materials**
Jonghun Yi (Hanyang University)
Dong Rip Kim (Hanyang University)
- PP4-039** A231 **Response Surface Methodology Analysis of Deformation of Injection Molded Products with Different Thickness Ratio**
Jiwon Park (Chonnam National University)
Bong-Kee Lee (Chonnam National University)

Poster Presentation I

- PP4-040** A238 **Overcomming Bias-vatiance Tradeoff in Designing Mechanical Metamaterials**
Namjung Kim (Gachon University)
Dongseok Lee (KAIST)
Chanyoung Kim (KAIST)
Dosung Lee (Gachon University)
Youngjoon Hong (KAIST)
- PP4-041** A265 **3D Printed Bidirectional Telescopic Actuator: Design and Manufacturing**
Sewoong Chung (Sungkyunkwan University)
Hugo Rodrigue (Sungkyunkwan University)
- PP4-042** A283 **A Study of Temperature and Thickness Effect on Tensile Behavior of PET FELT Material**
Euichul Jeong (Korea Institute of Industrial Technology)
Sunghee Lee (Korea Institute of Industrial Technology)
Yongdae Kim (Korea Institute of Industrial Technology)
Jeongwon Lee (Korea Institute of Industrial Technology)
Jenehee Lee (Korea Institute of Industrial Technology)
- PP4-043** A293 **Computational Prediction of Electrical Properties in EV Wiring Harness Terminals: A Comparison between Copper and Aluminum Materials**
Sunmi Shin (Korea Institute of Industrial Technology)
Ho Sung Jang (Korea Institute of Industrial Technology)
Seckjin Yun (Korea Institute of Industrial Technology)
Dongshin Lee (DNDE Inc.)
Jongdeok Lee (DNDE Inc.)
Haeun Choi (UHB)
Youngcheol Lee (UHB)
Jin-Young Park (Korea Institute of Industrial Technology)
- PP4-044** A313 **Prediction of Mechanical Properties and Material Design Optimization for Al-Mg-Si Alloy Extrusions Using Machine Learning**
Yoshikazu Hayashi (Hiroshima University)
Kenjiro Sugio (Hiroshima University)
Gen Sasaki (Hiroshima University)
Masahiko Shioi (SankyoTateyama, Inc.)
Masato Okuno (SankyoTateyama, Inc.)
- PP4-045** A329 **Analysis of Flow Characteristics according to Moisture Reduction of Moisture-containing Particles in a Horizontal Mixing Dryer**
Minkyung Sim (Tech University of Korea)
Kwang Kim (Tech University of Korea)

- PP4-046** A356 **A Study on Structural Safety Evaluation of Ro-Ro Ship Car Deck Using Multi-body Dynamics and Structural Analysis**
Sung Wook Kang (Changwon National University)
Hyun Soo Kim (Pusan National University)
Min Goo Cho (Pusan National University)
Jun Su Park (Changwon National University)
Jang Ik Park (Dae Lyun Engineering)
Byung Moon Kwak (HEXAGON Co., Ltd.)
Ki Seok Choi (HEXAGON Co., Ltd.)
- PP4-047** A357 **Variation of Tensile and Fatigue Properties of Rolled Mg-3Al Alloy with Ca Addition**
Hyun Ji Kim (Kyungpook National University)
Sung Hyuk Park (Kyungpook National University)
Chae Hyeon Lee (Kyungpook National University)
Jiehua Li (Leoben University)
- PP4-048** A389 **Conductive Yarn-based Knitted Strain Sensor for Wearable Applications**
Ju-Hee Lee (Dongguk University)
Min-Woo Han (Dongguk University)
Jihun Seong (Dongguk University)
- PP4-049** A393 **Enhancement of Noise and Vibration Characteristics in a 5 HP Industrial Gear Reducer**
Jinuk Baek (Gyeongsang National University)
Sungki Lyu (Gyeongsang National University)
Namyong Kim (Gyeongsang National University)
- PP4-050** A326 **Synthesis of Wood-based Activated Carbon with Bioactivator and Microwave Heating**
Denni Kurniawan (Universiti Teknologi Brunei)
Nur Athilah 'Iffi A. Jinnidi (Universiti Teknologi Brunei)
Fethma M. Nor (Curtin University)

Poster Presentation II

Tuesday, 9 July, 16:30-17:30

(Grand Ballroom 4)

1. Manufacturing Processes

- PP1-001** A006 **Optimization of Cortical Bone Robot Drilling Cooling and Processing Conditions**
DongMin Kim (Korea Institute of Industrial Technology)
JuHyung Ha (Korea Institute of Industrial Technology)
Joonhyeok Choe (Kyungpook National University)
DoYoung Kim (Chungnam National University)
- PP1-002** A019 **Additive Manufacturing of Radio Frequency Cavity for Particle Accelerators**
In Yong Moon (Korea Institute of Industrial Technology)
Seung Jun Han (Korea Institute of Industrial Technology)
Min Ji Ham (Korea Institute of Industrial Technology)
Won Rae Kim (Korea Institute of Industrial Technology)
- PP1-003** A024 **Deep Learning-based Optimization for Minimizing Delamination in Unidirectional CFRP Drilling Processes**
Eddy Kurniawan (Pusan National University)
Ji Hoon Kim (Pusan National University)
Yong Chan Hur (Pusan National University)
- PP1-004** A031 **Development of Array-type Polishing Tool Using Hydrostatic Pressure for Polishing Aspherical Surfaces**
Yasuhiro Tsuchiya (Chiba Institute of Technology)
Hideo Takino (Chiba Institute of Technology)
Keita Takatsuka (Chiba Institute of Technology)
Takahito Igawa (Chiba Institute of Technology)
- PP1-005** A032 **Mold Repair Technology Research Using Wire Arc Additive Manufacturing Technology**
Myoung Pyo Hong (Korea Institute of Industrial Technology)
- PP1-006** A037 **Stock Removal Polishing of Silicon Carbide Wafer by a Femtosecond Laser Pulses**
YoungKuk Kim (Korea Institute of Industrial Technology)
JiHoon Jeong (Korea Institute of Industrial Technology)
Shin Kim (Korea Institute of Industrial Technology)
InSik Lee (Korea Institute of Industrial Technology)
YuSung Kim (Korea Institute of Industrial Technology)
DaeWook Kim (Korea Institute of Industrial Technology)
ByungChul Cha (Korea Institute of Industrial Technology)

Poster Presentation II

- PP1-007** A043 **Investigation of Thermal Mechanical Characteristics on External Load of Pore Defect Part Using a DED Process**
Dong Il Jung (Chosun University)
Dong-Gyu Ahn (Chosun University)
Kwang Kyu Lee (Chosun University)
- PP1-008** A054 **Study on Shape Changes due to Ultra-precision Processing of Thin Plates**
Hwan Ho Maeng (Chungnam National University)
Geon Hee Kim (Hanbat National University)
Jin Yong Heo (Hanbat National University)
Jong Gyun Kang (Chungnam National University)
Joong Kyu Ham (Chungnam National University)
Seong Hyeon Park (Chungnam National University)
- PP1-009** A069 **Automatic Tool Paths Generation for Assembly Process Simulation and Code Generation Utilizing the STEP Standard and Genetic Algorithm**
Byeongguk Kim (Korea Institute of Industrial Technology)
Hoonhee Lee (Korea Institute of Industrial Technology)
Minseok Park (Korea Institute of Industrial Technology)
Seonghoon Ha (Korea Institute of Industrial Technology)
- PP1-010** A081 **Analysis of Time Variation of the Experimentally Obtained Current Waveforms to Identify the Equivalent Circuit Parameters in ECM**
Qingrong Zhang (Tokyo University of Agriculture and Technology)
Wataru Natsu (Tokyo University of Agriculture and Technology)
Hongping Luo (Guangdong University of Technology)
- PP1-011** A083 **Relationship between Inter-electrode Environment and Exhaustion Behavior of Byproducts in Electrical Discharge Drilling of Micro Deep-hole**
Ye Chen (Tokyo University of Agriculture and Technology)
Wataru Natsu (Tokyo University of Agriculture and Technology)
Zuyuan Yu (Dalian University of Technology)
- PP1-012** A085 **A Study of the Deposition Efficiency in DED Additive Manufacturing Processes**
Ming-Chyuan Lu (National Chung Hsing University)
Yan-You Lin (National Chung Hsing University)
Yu-Xuan Lin (National Chung Hsing University)
Shih-Ming Wang (National Chung Hsing University)
Yao-Yang Tsai (National Taiwan University)
- PP1-013** A109 **Heat Accumulation Effect in Laser Ablation Using Sub-picosecond Pulses**
Jihoon Jeong (Korea Institute of Industrial Technology)
Youngkuk Kim (Korea Institute of Industrial Technology)

Poster Presentation II

- PP1-014** A112 **Investigation of the Thermal Characteristics by Length and Height of Thin-wall Structure Fabricated by the DED Process Using Finite Element Analysis**
Kwangkyu Lee (Chosun University)
Dong-Gyu Ahn (Chosun University)
- PP1-015** A117 **Design of Morphology Changed TPMS Heat Exchanger based on Mathematical Filtering Method**
Seo-hyeon Oh (Seoul National University of Science and Technology)
Keun Park (Seoul National University of Science and Technology)
Do Ryun Kim (Seoul National University of Science and Technology)
Jeong Eun Kim (Seoul National University of Science and Technology)
- PP1-016** A119 **A Study on the Hardness Variation of Al6063 Manufactured by DED Process through UNSM**
Daeun Choi (Korea Institute of Industrial Technology)
Kwangyong Shin (Korea Institute of Industrial Technology)
Kiyong Lee (Korea Institute of Industrial Technology)
Gyengyun Baek (Gwangju University)
- PP1-017** A121 **Investigation of Mechanical and Thermal Properties of DLP-printed PUMA/SiO₂ Ceramic Composites**
Jiwan Kang (Seoul National University of Science and Technology)
Keun Park (Seoul National University of Science and Technology)
Seong Hyeon Park (Carima Co., Ltd.)
- PP1-018** A126 **Tribological Characteristics of Ferrous Alloy Manufactured by DED Process with Respect to Fabrication Parameters**
Dae-Jin Kim (Kyungpook National University)
Hyun-Joon Kim (Kyungpook National University)
Segon Heo (Korea Institute of Machinery and Materials)
Min-Kyo Jung (Korea Institute of Machinery and Materials)
- PP1-019** A132 **Deformation Prediction Based FEM Analysis in Cutting Process of Rib Structure with Thin Wall**
Mi-Ru Kim (Korea Institute of Industrial Technology)
Hoon-Hee Lee (Korea Institute of Industrial Technology)
Min-Suk Park (Korea Institute of Industrial Technology)

- PP1-020 A144 Laser-induced Surface Geometry Control Process for Functional Surface with Tunable Wettability**
Sung Jin Park (Kookmin University)
Bong Chul Kang (Kookmin University)
Sun Young Kim (Kookmin University)
Kyu Hyeon Kim (Kookmin University)
Hui Ae Park (Kookmin University)
Je Seong Lee (Kookmin University)
- PP1-021 A147 Preliminary Research on Temperature Measurement of Die Casting Mold Using FBG Sensor Embedded via Additive Manufacturing**
Jihoon Jang (Gwangju University)
Gyeong-Yun Baek (Gwangju University)
Hyeong Seong Kim (Gwangju University)
- PP1-022 A163 Multi-material Additive Manufacturing Process of Piezoresistive Sensor Embedded Soft-actuator**
In Hwan Lee (Chungbuk National University)
Kwang Yeol Yu (Chungbuk National University)
Ho Chan Kim (Andong National University)
- PP1-023 A174 Numerical Analysis of Clamping Force and Deformation of Tie Bars in Die Casting Machine**
Do Hyeon Lee (Korea Institute of Industrial Technology)
Jeonghong Ha (Korea Institute of Industrial Technology)
- PP1-024 A175 Femtosecond Laser Micromachining of Silicon Carbide for Cross-sectional Specimen**
Ah Hyun Shin (Korea Institute of Industrial Technology)
Jeonghong Ha (Korea Institute of Industrial Technology)
- PP1-025 A176 Fabrication of Micropillars Using Femtosecond Laser Micromachining**
Youn Jae Shin (Korea Institute of Industrial Technology)
Jeonghong Ha (Korea Institute of Industrial Technology)
- PP1-026 A416 Tool Path Generation Algorithm of Robot Manipulator considering Posture-dependent Constraints Variation**
Joon-Soo Lee (Yonsei University)
Byung-Kwon Min (Yonsei University)
Jong-Min Lim (Yonsei University)
Sangwon Kang (Yonsei University)
Jae Ho Lee (ROBOTIS)

Poster Presentation II

- PP1-027** A417 **Modeling of Burr Formation in Drilling of 3D-printed Carbon Fiber Reinforced Polymer with Pilot Holes**
Jae Hoon Ahn (Yonsei University)
Byung-Kwon Min (Yonsei University)

6. Bio & Health

- PP6-001** A025 **Fabrication of Biodegradable Spear Microneedles Containing mRNA**
Seung-Jun Lee (Seowon University)
Jeong-Gun Lee (S-Skin Co., Ltd.)
- PP6-002** A026 **Study on the Fabrication and Characterization of L-theanine-loaded Dissolving Microneedles for Transdermal Drug Delivery**
Seoyoung Lee (University of Utah Asia Campus)
Seung-Jun Lee (Seowon University)
- PP6-003** A057 **Analysis of Whole-body Angular Momentum in the Elderly during the Timed-up and Go Test (TUG)**
Jeong-Bae Ko (Korea Institute of Industrial Technology)
Jae-Soo Hong (Korea Institute of Industrial Technology)
Young-Hwee Lee (Korea Institute of Industrial Technology)
Dong-Gi Lee (Korea Institute of Industrial Technology)
- PP6-004** A062 **Surface Modification of Orthopaedic Implants Using Newly Synthesized Bone-like Apatite Grown Protein-coated Titanium Dioxide Nanoparticles**
Il Won Suh (Jeonbuk National University)
Cheol Sang Kim (Jeonbuk National University)
Se Rim Jang (Jeonbuk National University)
Sun Hee Cho (Jeonbuk National University)
- PP6-005** A066 **Development of an Injection-molded Lab-on-a-disc for Separation of Circulating Tumor Cell and Cell-free DNA from Whole Blood**
Chul Jin Hwang (Korea Institute of Industrial Technology)
Jeong-Won Lee (Korea Institute of Industrial Technology)
Taek Yong Hwang (Korea Institute of Industrial Technology)
Seokkwan Hong (Korea Institute of Industrial Technology)
Sung-Hun Lee (Clinomics Inc.)

Poster Presentation II

- PP6-006** A067 **Development of an Injection-molded Liquid Biopsy Cartridge for Monitoring EGFR Gene Mutations in Lung Cancer**
Taek Yong Hwang (Korea Institute of Industrial Technology)
Chul Jin Hwang (Korea Institute of Industrial Technology)
Jeong-Won Lee (Korea Institute of Industrial Technology)
Jeongjin Kang (Korea Institute of Industrial Technology)
Sung-Hun Lee (Clinomics Inc.)
- PP6-007** A090 **Continuous Gait Phase Estimation Using LSTM-based Domain-adaptation When Wearing an Exoskeleton**
Ji Su Park (Korea Institute of Science and Technology)
Choong Hyun Kim (Korea Institute of Science and Technology)
Junho Choi (Korea Institute of Science and Technology)
- PP6-008** A093 **Stitched Textile Sensors for Tactile and Strain Detection**
Jihun Seong (Dongguk University)
Min-Woo Han (Dongguk University)
Ju-Hee Lee (Dongguk University)
- PP6-009** A100 **Development of an AI-based Customized Exercise Range Setting System**
Hyun Jong Lee (National Rehabilitation Center)
Jung Hwan Kim (National Rehabilitation Center)
Jea Hak Kim (National Rehabilitation Center)
Jun Pil Shin (National Rehabilitation Center)
- PP6-010** A123 **Fabrication of Spiderweb-mimetic Fibrous Scaffold with Controlled Topography and Mechanical Properties via a Modified Electrospinning Method**
Sunhee Cho (Jeonbuk National University)
Se Rim Jang (Jeonbuk National University)
Cheol Sang Kim (Jeonbuk National University)
Il Won Suh (Jeonbuk National University)
- PP6-011** A127 **Development of an Integrated System for Gait Analysis and Data Collection**
Kyeong-Jun Seo (National Rehabilitation Center)
Jung Hwan Kim (National Rehabilitation Center)
JunHyeok Ham (Gendata Inc.)
Ji-Eun Cho (National Rehabilitation Center)

Poster Presentation II

- PP6-012** A135 **Taste Bud-inspired Single Drop Multi-taste Sensing for Comprehensive Flavor Analysis with Deep Learning Algorithms**
Junwoo Yea (Daegu Gyeongbuk Institute of Science and Technology)
Kyung-In Jang (Daegu Gyeongbuk Institute of Science and Technology)
Han Hee Jung (Hannam University)
Hyunjong Lee (Daegu Gyeongbuk Institute of Science and Technology)
Jeongho Kwak (Daegu Gyeongbuk Institute of Science and Technology)
Jihwan P. Choi (KAIST)
- PP6-013** A136 **Semantic Segmentation of Fractured Clavicle in CT Images**
Seungjin Kong (Korea Institute of Industrial Technology)
Donghyun Kim (Korea Institute of Industrial Technology)
Tleuliyev Azat (Korea Institute of Industrial Technology)
- PP6-014** A164 **Fabrication of Porous Microneedle Array with Adjustable ISF Extraction Ability Using Microfluidic Technology**
Boyu Qin (The University of Tokyo)
Beomjoon Kim (The University of Tokyo)
Jongho Park (The University of Tokyo)
- PP6-015** A165 **Flexible Neural Probes with Bioresorbable Shuttle for Studying Natural Behaviors of Non-human Primates**
Janghwan Jekal (Daegu Gyeongbuk Institute of Science and Technology)
Kyung-In Jang (Daegu Gyeongbuk Institute of Science and Technology)
Saehyuck Oh (Daegu Gyeongbuk Institute of Science and Technology)
- PP6-016** A166 **Wireless, Battery-free, Fully Implantable Neural Recorder for Non-human Primates**
Saehyuck Oh (Daegu Gyeongbuk Institute of Science and Technology)
Kyung-In Jang (Daegu Gyeongbuk Institute of Science and Technology)
Janghwan Jekal (Daegu Gyeongbuk Institute of Science and Technology)
- PP6-017** A168 **Poly (ethylene glycol) Dimethacrylate (PEGDMA) Multi-functional Pillar-patterned Surface for Osteogenic Differentiation of Pre-osteoblast and Anti-bacterial Effects to Escherichia Coli and Staphylococcus Aureus**
Nae-un Kang (Wonkwang University)
Young-Sam Cho (Wonkwang University)
Ga Hyun Kim (Daejeon St, Mary's Hospital)
Hee-kyeong Kim (Wonkwang University)
Young Yul Kim (Daejeon St, Mary's Hospital)
Hyun-Ha Park (Wonkwang University)

Poster Presentation II

- PP6-018** A181 **Platelet-rich Plasma (PRP)-derived Bioink for Accelerated and Uniform Vascularization of Adipose Tissue Grafts in Vivo**
Hanan Jamal Mohamed (UNIST)
Hyun-Wook Kang (UNIST)
Wonwoo Jeong (Wake Forest Institute for Regenerative Medicine)
- PP6-019** A199 **Simulating Standing Lumbar Spine Conditions in Supine MRI with Axial-loading Device and Lumbar Support**
Hyunjoon Hwang (Korea University)
Yongnam Song (Korea University)
Younghoon Yoo (Korea University)
Sebin Kim (Korea University)
- PP6-020** A233 **Support-less 3D Bioceramic Technology for High-performance Bone Regeneration and Complex Scaffold Fabrication**
Yeong-Jin Choi (Korea Institute of Materials Science)
- PP6-021** A242 **Comprehensive Analysis of ISF Sampling Capability via 3D-printed Lattice Microneedles**
Yeongjun Song (Sungkyunkwan University)
Brian J. Lee (Sungkyunkwan University)
- PP6-022** A264 **Fabrication of Polyglycolic Acid Porous Microneedles Array Patch Using Nonsolvent-induced Phase Separation Method**
Heyi Jing (The University of Tokyo)
Beomjoon Kim (The University of Tokyo)
Jongho Park (The University of Tokyo)
- PP6-023** A280 **Enhanced Dopamine Detection in Neurological Disorders Using a Double-sided Flexible Neural Probe**
Jeongdae Ha (Daegu Gyeongbuk Institute of Science and Technology)
Kyung-In Jang (Daegu Gyeongbuk Institute of Science and Technology)
Han Hee Jung (Hannam University)
- PP6-024** A281 **Development of an Amperometric Sensor for Acetylcholine Detection**
Jieun Son (Daegu Gyeongbuk Institute of Science and Technology)
Kyung-In Jang (Daegu Gyeongbuk Institute of Science and Technology)

Poster Presentation II

- PP6-025** A288 **Research on Microdevices to Stretch Alveolar Cells with High-frequency**
Taiki Otomo (Tokyo Institute of Technology)
Joon-wan Kim (Tokyo Institute of Technology)
Tatsuya Matsubara (Johns Hopkins University School of Medicine)
Deok-Ho Kim (Johns Hopkins University School of Medicine)
Masashi Ikeuchi (Tokyo Medical and Dental University)
Kazuhiro Yoshida (Tokyo Institute of Technology)
- PP6-026** A296 **Development of a Bed-attached Rehabilitation Device Integrated with Cycle and Stepper for Elderly Individuals**
Seunghyun Ko (Osong Medical Innovation Foundation)
Kangmoo Lee (Osong Medical Innovation Foundation)
Minchul Song (Osong Medical Innovation Foundation)
Sunchoel Yang (Osong Medical Innovation Foundation)
Changho Lee (Osong Medical Innovation Foundation)
- PP6-027** A308 **Assessment of Military Helmet Ballistic Performance Using Ballistic Load Sensing Headform for Head Injury Evaluation**
Yi-Chiuan Hsieh (National Defense University)
Yu-Liang Chen (National Defense University)
- PP6-028** A336 **Exploring Micropillar Geometry in Microfluidic Devices for Enhanced Particle Manipulation**
Yun Peng Yeh (National Taiwan University of Science and Technology)
Martin Kwek (National Taiwan University of Science and Technology)
- PP6-029** A359 **Pilot Study on Analyzing Mental Stress in Workers due to Changes in Workplace Temperature and Humidity**
Young Hwee Lee (Korea Institute of Industrial Technology)
Jae Soo Hong (Korea Institute of Industrial Technology)
Jeong Bae Ko (Korea Institute of Industrial Technology)
Dong Gi Lee (Korea Institute of Industrial Technology)
Byungsoo Kang (Korea Institute of Industrial Technology)
- PP6-030** A391 **Investigating the Mechanisms of Electrical Stimulation Therapy for Stroke Using ex Vivo Stroke Models**
Eunmin Ko (KAIST)
Jennifer H. Shin (KAIST)
Jegal Uk (KAIST)

PP6-031 A392 Cellular Response of Neurons to Electrical Stimulation by TENG

Jennifer H. Shin (KAIST)
 Uk Jegal (KAIST)
 Bhatia Divij (KAIST)
 Eunmin Ko (KAIST)
 Hyungsoon Park (KAIST)

7. New and Renewable Energy**PP7-001 A023 A Study on the Correlation Analysis between Railway Environmental Factors and Energy Saving**

Hanmin Lee (Korea Railroad Research Institute)
 Jaewon Kim (Korea Railroad Research Institute)
 Hwanhee Cho (Korea Railroad Research Institute)
 Hosung Jung (Korea Railroad Research Institute)

PP7-002 A068 Structural and Chemical Optimization of Nanofiber-based Air Electrodes for Reversible Solid Oxide Cells

Seungwoo Han (Sungkyunkwan University)
 Wonyoung Lee (Sungkyunkwan University)
 Hyun Sik Yoo (Sungkyunkwan University)

PP7-003 A071 A Comprehensive Study on Bearing Failure and Replacement in Wind Turbines for Improved Efficiency

Jui-Hung Liu (National Chin-Yi University of Technology)
 Chun-Chieh Wang (Industrial Technology Research Institute)
 Jien-Chen Chen (Industrial Technology Research Institute)

PP7-004 A074 Design Improvement of Wind Turbine Hub Pin Lock Structure

Jui-Hung Liu (National Chin-Yi University of Technology)
 Rong-Mao Lee (National Chin-Yi University of Technology)
 Chun-Chieh Wang (Industrial Technology Research Institute)
 Jien-Chen Chen (Industrial Technology Research Institute)
 Wen-Jeng Lai (National Atomic Research Institute)

PP7-005 A077 Failure Analysis in Existing SCADA Data Using Neural Network Time-series: Nonlinear Autoregressive Network with Exogenous Inputs (NARX)

Jui-Hung Liu (National Chin-Yi University of Technology)
 Chun-Chieh Wang (Industrial Technology Research Institute)
 Nelson T. Corbita Jr (University of Science and Technology of Southern Philippines)

Poster Presentation II

- PP7-006** A091 **Combinatorial Deposition of Pinhole-free and High-performance, Nanothin Electrolyte for Hydrogen-fueled, Low-temperature Solid Oxide Fuel Cells Supported on a Nanoporous Substrate**
Sanghoon Ji (Korea Institute of Civil Engineering and Building Technology)
Gu Young Cho (Dankook University)
Han Gil Seo (Dankook University)
Nari Park (Korea Institute of Civil Engineering and Building Technology)
Miseon Kim (Korea Institute of Civil Engineering and Building Technology)
Weonjae Kim (Korea Institute of Civil Engineering and Building Technology)
Suk Won Cha (Seoul National University)
- PP7-007** A151 **Development of Triboelectric Tire-based AIoT System for Robust Self-powered Recognition of Vehicular/Robotic Mobility**
Baek Gyu Kim (Pusan National University)
Sang Min Park (Pusan National University)
Jin Yeong Song (Pusan National University)
Min Woo Cho (Pusan National University)
Ji Gyo Park (Pusan National University)
Dongwhi Choi (Kyung Hee University)
Chengkuo Lee (National University of Singapore)
- PP7-008** A157 **A Theoretical Study on the Effect of Channel Rib-to-channel Width Ratio of a CNT Composite Bipolar Plate on the Performance of PEMFC**
Dawit Musse Yasin (Kongju National University)
Dongkyoung Lee (Kongju National University)
Seungeun Baek (Kongju National University)
Chanhee Jeong (Kongju National University)
- PP7-009** A190 **Evaluation of Electrochemical Performances of NaCl Contaminated PEMFCs with Decontamination Devices**
Ye Rim Kwon (Dankook University)
Gu Young Cho (Dankook University)
Ho Jun Yoo (Dankook University)
Byung Gyu Kang (Dankook University)
Ki Won Hong (Dankook University)
Sun Ki Kwon (Dankook University)
- PP7-010** A209 **Numerical Study on the Effect of the Patterned Gas Diffusion Layers in Proton Exchange Membrane Fuel Cell**
Dong Kun Song (Dankook University)
Gu Young Cho (Dankook University)
Jung Soo Kim (Dankook University)
Seung Heon Lee (Dankook University)
Gyeong Won Min (Dankook University)
Do Young Jung (Dankook University)

- PP7-011 A213 Achieving Surface Nanostructured Carbon Felt Electrodes via Etching and Pyrolysis Reactions to Enhance Vanadium Redox Flow Battery Performance**
Wei-Lun Lee (National Pingtung University)
Wen-Jen Lee (National Pingtung University)
Tien Dung Cao (National Pingtung University)
Chi-Chang Chen (Industrial Technology Research Institute)
- PP7-012 A297 Facile and Mass-producible Fabrication of Tubular 3D Helix-shaped Enzymatic Biofuel Cell Using Shape Memory Polymer**
Haroon Khan (Kyungpook National University)
Gyu Man Kim (Kyungpook National University)
Dokyung Kyeong (Kyungpook National University)
Dang Dinh Nguyen (Kyungpook National University)
- PP7-013 A320 Forecasting Solar Energy Production in the United States Using Time Series Analysis**
Rajni (O. P. Jindal Global University)
- PP7-014 A338 An Ultrasensitive Laser-induced Graphene Electrode-based Triboelectric Sensor Utilizing Trapped Air as Effective Dielectric Layer**
Tapas Kamilya (Korea University of Technology and Education)
Jinhyoung Park (Korea University of Technology and Education)
- PP7-015 A340 Niobium Doped Titanium Dioxide Thin Film Fabricated via Ultrasonic Spray System for Enhanced Corrosion Resistance**
Davin Jeong (Chonnam National University)
Soonwook Hong (Chonnam National University)
Yongchan Park (Chonnam National University)
Hyeontaek Kim (Chonnam National University)
- PP7-016 A343 Fabrication of Ceria-coated Nickel Catalyst via Atomic Layer Deposition and Measurement of Catalytic Activity Using Rotating Disk Electrode**
Hyeontaek Kim (Chonnam National University)
Soonwook Hong (Chonnam National University)
Yongchan Park (Chonnam National University)
Davin Jeong (Chonnam National University)
- PP7-017 A344 Fabrication of Scandia-stabilized Zirconia Cathode Functional Layer for Low-temperature Solid Oxide Fuel Cell via DC Reactive Sputtering**
Sanghyeok Lee (Chonnam National University)
Soonwook Hong (Chonnam National University)
Yongchan Park (Chonnam National University)
Hyeontaek Kim (Chonnam National University)
Davin Jeong (Chonnam National University)

Poster Presentation II

- PP7-018** A349 **Smart Sensor Using Modular Triboelectric Nanogenerator based on Porous Structure**
Jaehee Shin (Korea University of Technology and Education)
Jinhyoung Park (Korea University of Technology and Education)
Doohyun Han (Korea University of Technology and Education)
Hyunui Hong (Korea University of Technology and Education)
- PP7-019** A350 **Fluid-dynamical Effects of Stiffened Rib Channels on Enhancing PEMFC Performance with Experimental Validation**
Choeun Kim (University of Seoul)
Youngseung Na (University of Seoul)

8. Sustainable Technology

- PP8-001** A012 **Evaluation of Deicer Impact on Growth of Plants with Chemical Types**
Chan-Young Lee (Korea Expressway Corporation Research Institute)
- PP8-002** A070 **Analysis of Tire-pavement Noise Characteristics of the Transverse Tining Concrete according to the Route**
WoongYong Lee (Korea Expressway Corporation Research Institute)
- PP8-003** A120 **Development of an Impact Prediction Program to Assess the Impact of Air Pollutants Generated on Roads on the Surrounding Environment**
Hyejin Kang (Korea Expressway Corporation Research Institute)
- PP8-004** A348 **Efficient Implementation of Security Devices Utilizing Triboelectric Nanogenerator**
DooHyun Han (Korea University of Technology and Education)
Jinhyoung Park (Korea University of Technology and Education)
Jaehee Shin (Korea University of Technology and Education)
Hyunui Hong (Korea University of Technology and Education)

Special Session - 1. Railway Engineering

- SP1-001** A011 **Development of Electric Wheelchair Impact Test for PSD**
 Sungho Yun (Korea Railroad Research Institute)
 Joo-Hyun Rho (Korea Railroad Research Institute)
 Jae-Chul Kim (Korea Railroad Research Institute)
 Jai-Kyun Mok (Korea Railroad Research Institute)
- SP1-002** A140 **Research on Prior Art of Railway Vehicles Derailment Detectors and Patent Avoidance Strategies**
 Young-Sam Ham (Korea Railroad Research Institute)
 Woo-Jin Chung (KangIn IP & Law)
- SP1-003** A158 **Fatigue Strength Evaluation and Finite Element Analysis of Repair Welding of Welded Structures for Railway Vehicles**
 Jung-Won Seo (Korea Railroad Research Institute)
 Seok-Jin Kwon (Korea Railroad Research Institute)
 Young-Sam Ham (Korea Railroad Research Institute)
- SP1-004** A159 **Evaluation of Defects for Railway Wheel Using Automated UT Inspection System**
 Seok Jin Kwon (Korea Railroad Research Institute)
 Min Soo Kim (Korea Railroad Research Institute)
 Jung Won Seo (Korea Railroad Research Institute)
 Yong Sam Ham (Korea Railroad Research Institute)
- SP1-005** A211 **A Study on Process and Test Methods for Validation of Digital Automatic Couplers**
 Jaewon Lee (Korea Testing Laboratory)
 Ji Won Jin (Korea Testing Laboratory)
 Hae Young Ji (Korea Testing Laboratory)
 No Geon Jung (Korea Testing Laboratory)
- SP1-006** A218 **Development of Axlebox Bearing Temperature Monitoring Technology for Railway Vehicles based on Infrared Thermography**
 Jeongguk Kim (Korea Railroad Research Institute)

Poster Presentation II

- SP1-007** A287 **A Study on Structural Safety Evaluation of Lower Articulation for Low-floor Trams through Structural Analysis and Testing**
Jeong Hwan Choi (Korea Testing Laboratory)
Hae Young Ji (Korea Testing Laboratory)
Ji Won Jin (Korea Testing Laboratory)
Hyung Wook Lee (Korea Testing Laboratory)
Won Joo Hwang (The JST)
- SP1-008** A312 **Temperature Measurement of Railway Vehicle Brake Discs Using a Thermal Imaging Camera and Thermal Stress Analysis Using Finite Element**
Byeong Choon Goo (Korea Railroad Research Institute)
Seok Jin Kwon (Korea Railroad Research Institute)
- SP1-009** A315 **Feasibility Study for an Ammonia-fed Solid Oxide Fuel Cell-internal Combustion Engine Hybrid System for Railway Applications**
Jaeheon Choe (Korea Railroad Research Institute)
Minki Cho (Korea Railroad Research Institute)
Suyong Choi (Korea Railroad Research Institute)
Minkyong Park (Ewha Womans University)
Wonjae Choi (Ewha Womans University)
- SP1-010** A374 **Transfer Function Characteristics Analysis of Dampers for High-speed Vehicle during Test Run**
Sang Soo Kim (Korea Railroad Research Institute)

Special Session - 3. Innovative Design and Integrated Manufacturing Session

- SP3-001** A056 **Enhancing Workplace Safety in SMEs Manufacturing Environment: The Role of Smart Sensor Technologies in Appropriate Smart Factories**
Hyunmok Son (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Guyeop Jung (Seoul National University)
Kyu-Wha Lee (Seoul National University)
Won-Jae Yun (Seoul National University)
Cheonghwa Lee (Seoul National University)
Sunghoon Bae (Seoul National University)
JaeHoon Kim (Seoul National University)
Roque Sando Vilanculo (Seoul National University)
Woo-Kyun Jung (Seoul National University)
Hyungjung Kim (Konkuk University)

- SP3-002** A152 **Enhancing Temperature Sustainability through Delayed Heat Release Using Multi-phase Changing Materials**
Wonjin Kim (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Jungwoo Park (Seoul National University)
Suhwan Jeong (Seoul National University)
Ying-Jun Quan (Seoul National University)
- SP3-003** A154 **Frequency-focused Sound Data Generator for Fault Diagnosis in Industrial Robots**
Semin Ahn (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Jinoh Yoo (Seoul National University)
Kyu-Wha Lee (Seoul National University)
Byung Dong Youn (Seoul National University)
- SP3-004** A155 **Non-intrusive Load Monitoring (NILM) Edge Device with Unsupervised Learning for Multi-state Manufacturing Machine Monitoring**
Guyeop Jung (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Howon Song (Seoul National University)
- SP3-005** A160 **A Nanoparticle Sensor Capable of Sensing Temperature and Strain with IoT-enabled Module**
Midum Oh (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Jang Hyeon Lyu (Seoul National University)
Guyeop Jung (Seoul National University)
Hyeongwon Kim (Seoul National University)
- SP3-006** A198 **Ionic Polymer Metal Composite Driven One-layered Diaphragm Micropump for Biomedical Applications**
Sofia Maria Castro Avalos (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
- SP3-007** A272 **Untethered Actuation of Ionic Polymers for Underwater Micro Robotics: Principles and Applications**
Sangrul Kim (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Kausthubharam K (Purdue University)

Poster Presentation II

- SP3-008** A385 **Polygonal Wheel Mechanism of Mobile Manipulators for Stable Indoor Obstacle Navigation**
Cheonghwa Lee (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Subin Yi (Seoul National University)
Sangrul Kim (Seoul National University)
Kisu Ok (Seoul National University)
- SP3-009** A386 **Interactive Digital Twin: Mitigating the Real-sim Gap Using Real-world Feedback Signals**
Kisu Ok (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Cheonghwa Lee (Seoul National University)

Wednesday, 10 July, 16:40-17:40

(Grand Ballroom 4)

1. Manufacturing Processes

- PP1-028** A178 **FTS Abnormal Signal Monitoring based on Artificial Intelligence Model Using Transfer Learning**
Kang Seok Kim (Pusan National University)
Deugwoo Lee (Pusan National University)
Jinuk Jang (Pusan National University)
Seongjun Lee (JETEC, Co., Ltd.)
- PP1-029** A179 **Microstructure and Mechanical Properties of Inconel 718 as Built and after Heat Treatment: Manufactured by Laser Direct Energy Deposition and Powder Bed Fusion**
Yoon Sun Lee (Korea Institute of Industrial Technology)
Da Hye Kim (Korea Institute of Industrial Technology)
Eun A Song (Korea Institute of Industrial Technology)
- PP1-030** A183 **A Study on the Viscosity Characteristics of Screw-based Material Extrusion in Additive Manufacturing**
Yunseok Lee (Korea Institute of Industrial Technology)
Jungsoo Nam (Korea Institute of Industrial Technology)
Song Hyeon Ju (Korea Institute of Industrial Technology)
Ye Won Choi (Korea Institute of Industrial Technology)
Kyeongun Song (Korea Institute of Industrial Technology)
Kangwoo Shin (Korea Institute of Industrial Technology)
Tae-Gon Kim (Korea Institute of Industrial Technology)
Seong Hyeon Kim (Korea Institute of Industrial Technology)
Seok-Woo Lee (Korea Institute of Industrial Technology)
- PP1-031** A187 **Reduction of Pores in Additively Manufactured Aluminum Parts by Friction Stir Process**
Hochan Kim (Andong National University)
Haeyong Yun (Korea Institute of Robotics & Technology Convergence)
Inhwan Lee (Chungbuk National University)
- PP1-032** A202 **Integrated Multiphysics Modeling Framework for Process-structure-property Linkage in Metal Additive Manufacturing**
Kanghyun Lee (Seoul National University)
Gunjin Yun (Seoul National University)

Poster Presentation III

- PP1-033** A207 **Dynamic and Efficient Optimization of Laser-atmospheric Pressure Plasma Jet Micro-additive Manufacturing Process**
Yu-Hsun Huang (National Tsing Hua University)
Ming-Tsang Lee (National Tsing Hua University)
Masataka Sato (Chiba University)
Hirofumi Hidai (Chiba University)
Jia-Yang Juang (National Taiwan University)
- PP1-034** A215 **Study on Cutting Characteristics of Lithium-ion Battery Anode Materials**
Mincheoul Seong (Kongju National University)
Dongkyoung Lee (Kongju National University)
MyeongHo Park (Kongju National University)
Haeun Kim (Kongju National University)
- PP1-035** A217 **Laser Ablation Threshold of LFP Depending on Relative Humidity**
Myeongho Park (Kongju National University)
Dongkyoung Lee (Kongju National University)
Mincheoul Seong (Kongju National University)
Haeun Kim (Kongju National University)
- PP1-036** A219 **Real-time Laser Beam Measurement Equipment for Welding**
Chanhee Jeong (Kongju National University)
Dongkyoung Lee (Kongju National University)
Seungeun Back (Kongju National University)
Dawit Musse Yasin (Kongju National University)
- PP1-037** A220 **Thermal Effects of Machining Parameters on 3D Printed Short Fiber Carbon Fiber Reinforced Plastic (CFRP)**
Kangwoo Shin (Korea Institute of Industrial Technology)
Tae-Gon Kim (Korea Institute of Industrial Technology)
Seok-Woo Lee (Korea Institute of Industrial Technology)
Jeongsoo Nam (Korea Institute of Industrial Technology)
Seong Hyun Kim (Korea Institute of Industrial Technology)
Kyeongeun Song (Korea Institute of Industrial Technology)
Byung-Kwon Min (Yonsei University)
- PP1-038** A221 **Effect of External Water on Mortar during Laser Scabbling**
Seonwook Lee (Kongju National University)
Dongkyoung Lee (Kongju National University)
Youngjin Seo (Kongju National University)

- PP1-039** A223 **Additive Manufacturing of Ti-6Al-4V Clavicle Customized Anatomical Plate Using Selective Laser Melting and Analysis of Material Properties and Shape Accuracy**
Sanghun Lee (Korea Institute of Industrial Technology)
Donghyun Kim (Korea Institute of Industrial Technology)
Chungsoo Kim (Korea Institute of Industrial Technology)
Seungjin Kong (Korea Institute of Industrial Technology)
Soumyabrata Basak (Korea Institute of Industrial Technology)
Donghyun Kim (Korea Institute of Industrial Technology)
- PP1-040** A235 **A Study on Die Damage of Multi-stage Cold Forging Process**
A Ra Jo (Korea Institute of Industrial Technology)
SunKwang Hwang (Korea Institute of Industrial Technology)
CheolHwan Oh (Korea Institute of Industrial Technology)
MyeongSik Jeong (Korea Institute of Industrial Technology)
YoungHoon Moon (Pusan National University)
- PP1-041** A236 **Correlation between Surface Roughness of Plating and Additive Mixing Ratios in Zinc Electroplating Process**
Yong-Jin Choi (Korea Institute of Industrial Technology)
Myeong Sik Jeong (Korea Institute of Industrial Technology)
Sun Kwang Hwang (Korea Institute of Industrial Technology)
In Kyu Lee (Korea Institute of Industrial Technology)
Sung Yun Lee (Korea Institute of Industrial Technology)
Dong Yong Park (Korea Institute of Industrial Technology)
Su Byung Jeon (Il Sung Co., Ltd.)
- PP1-042** A241 **Electrically Assisted Pressure Joining and Forging of Lightweight Structural Component**
Thanh Thuong Do (University of Ulsan)
Sung-Tae Hong (University of Ulsan)
Tu-Anh Bui-Thi (University of Ulsan)
Hyun Bae Jang (Korea Institute of Industrial Technology)
Moon-Jo Kim (Korea Institute of Industrial Technology)
- PP1-043** A243 **Influence of Build Plate Temperature on Properties in Overlap Region of Multi-laser Powder Bed Fusion Fabricated AISi10Mg**
Joo Eon Kim (UNIST)
Namhun Kim (UNIST)
Jageon Koo (UNIST)
Juchan Lee (UNIST)
Seongwon Park (UNIST)
Sungjun Choi (UNIST)

Poster Presentation III

- PP1-044** A251 **A Study on Breathable Film via Formation of Microchannels within Polyethylene Using Laser**
Boseok Kang (Pusan National University)
Bosung Shin (Pusan National University)
Jinsu Kim (Pusan National University)
Sungmoo Hong (Pusan National University)
- PP1-045** A257 **Press Bending of 6061-T6 Aluminum Alloy Tube at Cryogenic Temperatures**
Yixing Zhao (University of Ulsan)
Sung-Tae Hong (University of Ulsan)
Lihong Cai (University of Ulsan)
Meiling Geng (University of Ulsan)
Jin-Woo Lee (University of Ulsan)
- PP1-046** A259 **Electrically Assisted Solid-state Spot Joining of Cast Aluminum Alloy A365-T6**
Suhyeon Choo (University of Ulsan)
Sung-Tae Hong (University of Ulsan)
Van Cong Phan (University of Ulsan)
Changjoo Lee (Hyundai Motor Co.)
Ki Seok Nam (Hyundai Motor Co.)
- PP1-047** A266 **Research on Waveform Analysis AI Algorithm for Process Monitoring Using Fast Tool Servo (FTS)**
Seung Jun Lee (JETEC, Co., Ltd.)
Deug Woo Lee (Pusan National University)
Ji An Jang (JETEC, Co., Ltd.)
Mi Ru Kim (Korea Institute of Industrial Technology)
- PP1-048** A270 **A Study on Manufacturing a CNT Composites Bipolar Plate Using Laser Processing**
Seungeun Baek (Kongju National University)
Dongkyoung Lee (Kongju National University)
Dawit Musse Yasin (Kongju National University)
Chanhee Jeong (Kongju National University)
- PP1-049** A271 **Thermal-structural Analysis of Additive Manufacturing Processes with ABAQUS User Subroutine and Application of Cavity Model**
Su Hyun Park (Korea Institute of Industrial Technology)
Kyung Hwan Jung (Korea Institute of Industrial Technology)
In Yong Moon (Korea Institute of Industrial Technology)
Hoang Cong Dang (Konkuk University)
Dong Kyu Kim (Konkuk University)

Poster Presentation III

- PP1-050** A273 **Heat Source Model Implementation for Thermal Analysis of Wire Arc Additive Manufacturing Processes Using ABAQUS User Subroutines**
Su Hyun Park (Korea Institute of Industrial Technology)
Kyung Hwan Jung (Korea Institute of Industrial Technology)
- PP1-051** A274 **Nanosecond Laser Interaction Characteristics for Enhanced Battery Performance of Polyimide Tape**
Haeun Kim (Kongju National University)
Dongkyoung Lee (Kongju National University)
Mincheoul Seong (Kongju National University)
Myeungho Park (Kongju National University)
- PP1-052** A275 **Build Orientation Optimization Framework for Metal Additive Manufacturing Using Gaussian Process Surrogate Model**
Jae Eun Park (Seoul National University)
Gun Jin Yun (Seoul National University)
Kang Hyun Lee (Seoul National University)
Min Gyu Chung (Seoul National University)
- PP1-053** A284 **Effect of Tool Surface Roughness in Micro Machining of STAVAX Using PCBN Tools**
Bo Hyun Kim (Soongsil University)
Dae Bo Sim (Soongsil University)
Ji Hyo Lee (Soongsil University)
Jae Hyun Kim (Soongsil University)
Jihong Hwang (Seoul National University of Science and Technology)
- PP1-054** A289 **Controlling Bending Curvatures of Water-responsive Shape-shifted Structures via Constrained Environments**
Sun Hye Yoon (Changwon National University)
Young Tae Cho (Changwon National University)
Seo Rim Park (Changwon National University)
Seok Kim (Changwon National University)
- PP1-055** A295 **Laser-based Temperature Measurement and Process Optimization for Polymer Substrate Processing**
Chanwoong Wi (Chonnam National University)
Seunghwoi Han (Chonnam National University)
Junwon Lee (Chonnam National University)
Jaehyung Woo (Chonnam National University)
JeongIn Han (Chonnam National University)
JiHoon Jeong (Texas A&M University)
HaKyung Jeong (Korea Institute of Machinery and Materials)

Poster Presentation III

- PP1-056** A299 **Mechanical Properties of Recycled Carbon Fiber Reinforced Plastics according to rCF Content and Annealing Treatment**
Sangjun Jeon (Kongju National University)
Daejong Yang (Kongju National University)
Seung Ki Moon (Nanyang Technological University)
- PP1-057** A300 **Cutting Force Prediction in Milling Process Using Physics-informed Neural Network**
Byungmin Kim (Hongik University)
Sangjin Maeng (Hongik University)
Dongjae Kang (Hongik University)
- PP1-058** A301 **Effects of Process Parameters on Grinding Characteristics of Large-area Square Substrate**
Sangjik Lee (Korea Institute of Industrial Technology)
Rohwon Kim (Korea Institute of Industrial Technology)
- PP1-059** A306 **A Study on Tool Wear in CFRP Milling through Machining Sound Analysis**
Taewon Seo (Korea Institute of Industrial Technology)
Minseok Ha (Korea Institute of Industrial Technology)
Song Hyeon Ju (Chung-Ang University)
Jungsoo Nam (Korea Institute of Industrial Technology)
Tae-Gon Kim (Korea Institute of Industrial Technology)
Seong Hyeon Kim (Korea Institute of Industrial Technology)
Kangwoo Shin (Korea Institute of Industrial Technology)
Seok-Woo Lee (Korea Institute of Industrial Technology)
Kyeongeun Song (Korea Institute of Industrial Technology)
- PP1-060** A307 **Robust Configuration Selection for Industrial Robots in CFRP Preform Trimming**
Hyeong Gu Kim (Korea Institute of Industrial Technology)
Seong Hyeon Kim (Korea Institute of Industrial Technology)
Tae Hwa Hong (Korea Institute of Industrial Technology)
Dave Kim (Washington State University Vancouver)
Byung-Kwon Min (Yonsei University)
- PP1-061** A311 **CMP Strategies for Dishing Control of TGV Interposers with Additives**
Seunghun Jeong (Pusan National University)
Haedo Jeong (Pusan National University)
Yeongil Shin (Pusan National University)
Jongmin Jeong (Pusan National University)
Seonho Jeong (Pusan National University)

- PP1-062** A327 **Optimization of Fiber Configuration in Additive Manufactured Composite Structures Using Reinforcement Learning**
Goanwoo Hyun (Pusan National University)
Suk-Hee Park (Pusan National University)
- PP1-063** A330 **A Study of Vacuum Thermoforming Process for EVA Sheet-based Dental Device**
Hyunjun Noh (Dankook University)
SungHan Rhim (Dankook University)
Seokhwan Jung (Dankook University)
- PP1-064** A331 **Electrochemical Curved-hole Drilling Using Chained Ball Magnets as a Tool Electrode**
SeoYoon Shin (Jeonbuk National University)
ShiHyoung Ryu (Jeonbuk National University)
SeungZoon Kim (Jeonbuk National University)
YeRam Kim (Jeonbuk National University)
MinGyu Jeong (Jeonbuk National University)
KwangGu Park (Dae Sung Co.)
- PP1-065** A342 **Real-time Surface Roughness Estimation Method based on Frequency Domain Analysis of Monitoring Signals in Metal Cutting Process**
Jaehyun Lee (Korea Institute of Industrial Technology)
Kyung-Hee Park (Korea Institute of Industrial Technology)
Soohyun Nam (Korea Institute of Industrial Technology)
Hyein Kim (Korea Institute of Industrial Technology)
- PP1-066** A345 **Research on the Detection System for Surface Defects in Hot-rolled Structural Steel**
Chanhee Lee (Korea University)
Woochun Choi (Korea University)
Jaesung Kim (Institute for Advanced Engineering)
- PP1-067** A347 **Fabrication of Electrospun Tubular Structures via Stress-induced Self-assembly**
Yeong-Seo Kim (Pusan National University)
Suk-Hee Park (Pusan National University)
Chae-Hwa Kim (Korea Institute of Industrial Technology)
Tae-Hee Kim (Korea Institute of Industrial Technology)

Poster Presentation III

- PP1-068** A354 **Tool Wear Estimation Model for the Manufacturing Site Application**
Hyein Kim (Korea Institute of Industrial Technology)
Jeongin Koo (Korea Institute of Industrial Technology)
Soohyun Nam (Korea Institute of Industrial Technology)
Kyung-Hee Park (Korea Institute of Industrial Technology)
- PP1-069** A355 **In-process Monitoring of Pipe Edge Beveling Using Multiple Sensors**
Rohwon Kim (Korea Institute of Industrial Technology)
Sangjik Lee (Korea Institute of Industrial Technology)
- PP1-070** A358 **Minimizing Energy Consumption Considering Property Requirements of Fe-79Ni-4Mo Soft Magnetic Composites by LPBF**
Chunhui Chung (National Cheng Kung University)
Chi-Chun Chen (National Cheng Kung University)
Yu-Ming Hsu (National Cheng Kung University)
Lien-Kai Chang (National Cheng Kung University)
Mi-Ching Tsai (National Cheng Kung University)
- PP1-071** A377 **Study of Dispersion of Laser Beams due to Convection Using Aberration Analysis for Laser Processes**
Ji Hun Kim (Seoul National University of Science and Technology)
Joohan Kim (Seoul National University of Science and Technology)
Seong Cheol Woo (Seoul National University of Science and Technology)
Huan Wang (Seoul National University of Science and Technology)
- PP1-072** A378 **Study on the Influence of the Wavelength of the Laser Beam on Laser Drilling of Carbon Fiber Reinforced Thermoplastics**
Huan Wang (Seoul National University of Science and Technology)
Joohan Kim (Seoul National University of Science and Technology)
Ji Hun Kim (Seoul National University of Science and Technology)
Seong Cheol Woo (Seoul National University of Science and Technology)
- PP1-073** A397 **Industry Standard Communication Protocols for Heterogeneous Machine Tools: Utilizing Unified CNC Interfaces**
Dong Yoon Lee (Korea Institute of Industrial Technology)
Young-Deuk Kim (DeeTem)

2. Machine Tools & Systems

- PP2-001** A018 **Development of a Sound-based System of Surface Roughness Prediction in Optical Element Curvature Generation**
Chien-Yao Huang (National Applied Research Laboratories)
Chung-Ying Wang (National Applied Research Laboratories)
Yen-Han Chiang (National Applied Research Laboratories)
Wei-Cheng Lin (National Applied Research Laboratories)
Shu-Cheng Shyu (National Applied Research Laboratories)
Jun-Cheng Chen (National Applied Research Laboratories)
- PP2-002** A020 **Sub-domain Analytic Modeling of Linear Flux Switching Permanent Magnet Motor Using Permeability Matrix**
Hyo Geon Lee (Yonsei University)
Jun Young Yoon (Yonsei University)
Sang Won Jung (Yonsei University)
Jae Hyun Kim (Yonsei University)
Sangmin Lee (Yonsei University)
Bo Min Kang (Yonsei University)
Jong Min Sung (Yonsei University)
Jung Ki Lee (Yonsei University)
Hong Sun Jang (Yonsei University)
- PP2-003** A021 **Side Effects in Anodic Dissolution and Machined Surface Integrity Following Electrochemical Milling of AISI304 Stainless Steels**
Yukai Wang (National Taiwan University of Science and Technology)
Chunliang Kuo (National Taiwan University of Science and Technology)
Ziliang Zhang (National Taiwan University of Science and Technology)
- PP2-004** A173 **A Novel Dynamic Model Identification Approach for Industrial Robots in Machining**
Ali Khishtan (University of Calgary)
Jihyun Lee (University of Calgary)
- PP2-005** A239 **Tool Wear Monitoring and Feed Rate Optimization in Turning based on the Power of the Spindle Motor**
Woo-Jin Lee (Korea Institute of Industrial Technology)
Wonkyun Lee (Chungnam National University)
Jun-Young Oh (Chungnam National University)
Eunseok Nam (Korea Institute of Industrial Technology)

Poster Presentation III

- PP2-006** A305 **Evaluation of Machining Performance of Walking Machining System**
Chang-Ju Kim (Korea Institute of Machinery and Materials)
Dae-Hyun Kim (Korea Institute of Machinery and Materials)
Chan-Young Lee (Korea Institute of Machinery and Materials)
Seung-Kook Ro (Korea Institute of Machinery and Materials)
- PP2-007** A310 **Automated Driving Agricultural Assistance Robot Capable of Weeding and Transporting Supplies**
Heonsoo Choi (Korea Institute of Robotics & Technology Convergence)
Yongjun Cho (Korea Institute of Robotics & Technology Convergence)
Hyunggil Hong (Korea Institute of Robotics & Technology Convergence)
Minsu Kang (Korea Institute of Robotics & Technology Convergence)
Sunho Jang (Korea Institute of Robotics & Technology Convergence)
Taehee Kwon (Korea Institute of Robotics & Technology Convergence)
Seunggi Kwon (BULLS Co., Ltd.)
Byungmin Lee (BULLS Co., Ltd.)
- PP2-008** A368 **Improved Fatigue Life Model for Cylindrical Roller Bearings Under Operating Conditions**
Jin Hyuk Sa (Kumoh National Institute of Technology)
Seong-Wook Hong (Kumoh National Institute of Technology)
Patrick John Po (Kumoh National Institute of Technology)
Gilbert Rivera (Kumoh National Institute of Technology)
Chan Sik Kang (V&C Tech Inc.)
- PP2-009** A369 **Study on the Accurate Sliding Friction Torque Estimation for Angular Contact Ball Bearings**
Patrick John Po (Kumoh National Institute of Technology)
Seong-Wook Hong (Kumoh National Institute of Technology)
Gilbert Rivera (Kumoh National Institute of Technology)
Jinhyeok Sa (Kumoh National Institute of Technology)
- PP2-010** A390 **Utilization of ROS Platform for Cooperative Robot Control and Application to Machine Tending Process**
Jaehak Lee (Korea Institute of Industrial Technology)
- PP2-011** A401 **Investigation of Cutting Forces in Peripheral Milling of Thermoplastic CFRP**
Gyubok Choi (Kyungpook National University)
Young Hun Jeong (Kyungpook National University)
MinJae Seo (Kyungpook National University)
Seung Han Yang (Kyungpook National University)

- PP2-012** A413 **Estimation and Reduction of Peak Load of CNC Machine Tools**
Wontaek Song (Yonsei University)
Byung-Kwon Min (Yonsei University)
Hyeonmin Park (Yonsei University)
- PP2-013** A414 **Integral-based Model Parameter Identification for the Rotary Axes of 5-axis Machine Tool**
Jong-Min Lim (Yonsei University)
Byung-Kwon Min (Yonsei University)
Joon-Soo Lee (Yonsei University)
Ju-Hyeong Lee (Yonsei University)
Seungmin Jeong (DN Solutions)
- PP2-014** A415 **Thermal Error Compensation Method considering Operation Conditions of Machine Tools**
Seungmin Jeong (Yonsei University)
Byung-Kwon Min (Yonsei University)
Changho Lee (DN Solutions)
Kangjae Lee (DN Solutions)

5. Micro/Nano Technology

- PP5-001** A002 **An Integrated Microfluidic System for Thermal Regulation and Waste Heat Recovery in Multi-core GPU Systems**
Pramod Vishwakarma (National Chin-Yi University of Technology)
Bivas Panigrahi (National Chin-Yi University of Technology)
Win-Jet Luo (National Chin-Yi University of Technology)
- PP5-002** A015 **Development of Wearable [NH₄]⁺ Sensor for the Detection of Sweat Ions Using Sputtered ZnO Working Electrode and AgI₃/Ag Reference Electrode Thin Films**
Ryuya Kono (Tokai University)
Kazuyoshi Tsuchiya (Tokai University)
Jyoti Jaiswal (Tokai University)
Tadahiko Matsubara (Miyahara Co., Ltd.)
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2024 **KSPE 2024**
AUTUMN CONFERENCE

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2024. 11. 13. Wed. -15. Fri.

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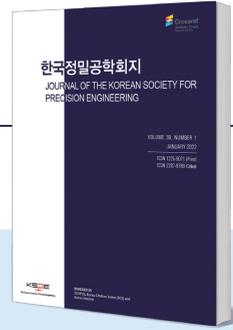
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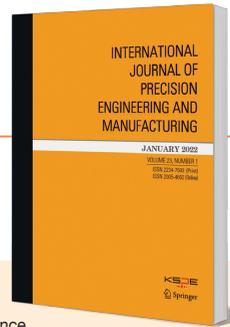
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Purdue University, USA
- Professor Young Tae Cho
Changwon National University, Korea
- Professor Sanha Kim
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- Professor Seok Kim
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July 6 Sun – 11 Fri, 2025

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Important Dates

Deadline for Abstract Submission
of Regular Session:

February 3 (Mon), 2025

Date for Acceptance Notification:
(Mail from the PRESM Secretariat)

March 31 (Mon), 2025

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Full Paper Submission (Optional):

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