International Conference on
PRecision Engineering and Sustainable Manufacturing

PRESM

PRESM 2025

July 6 Sun — **11** Fri, 2025

Chiang Mai Marriott Hotel, Chiang Mai, Thailand

PROGRAM BOOK

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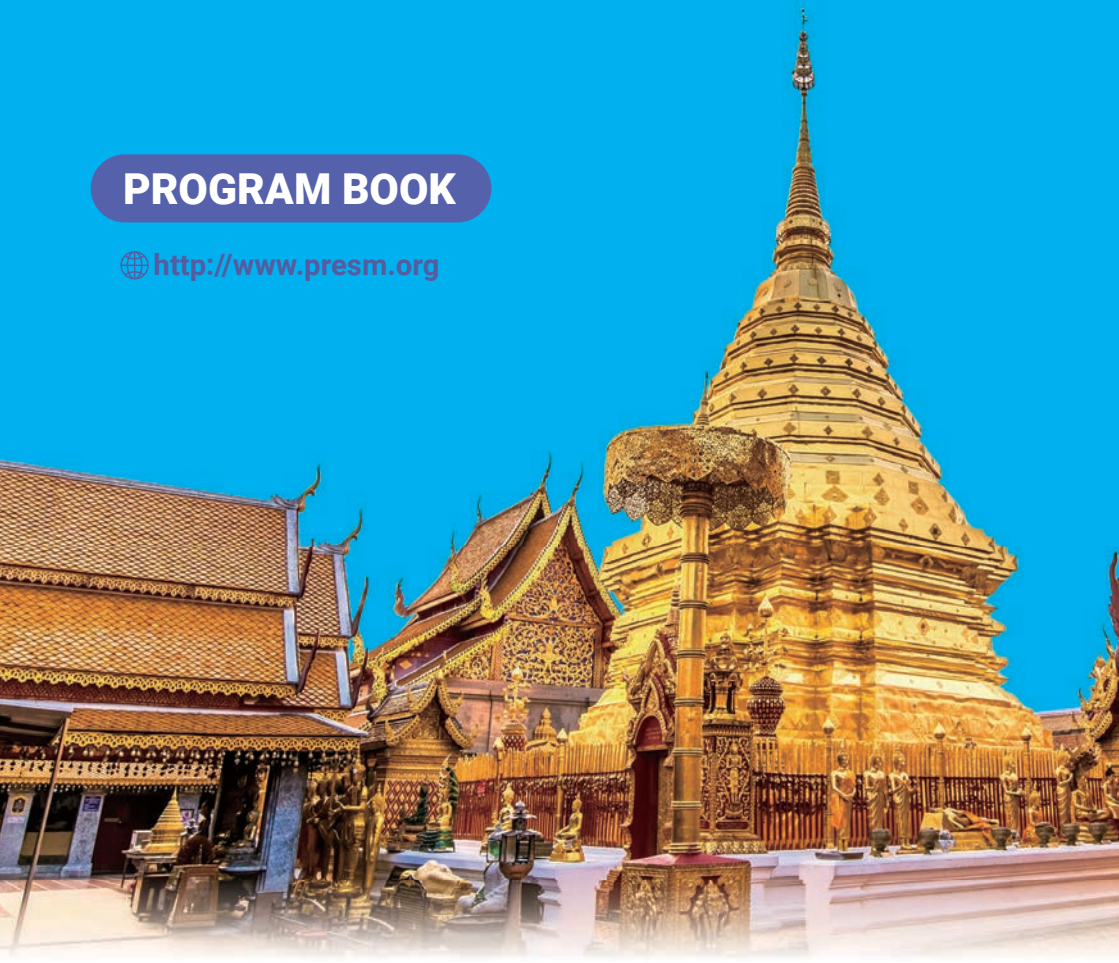

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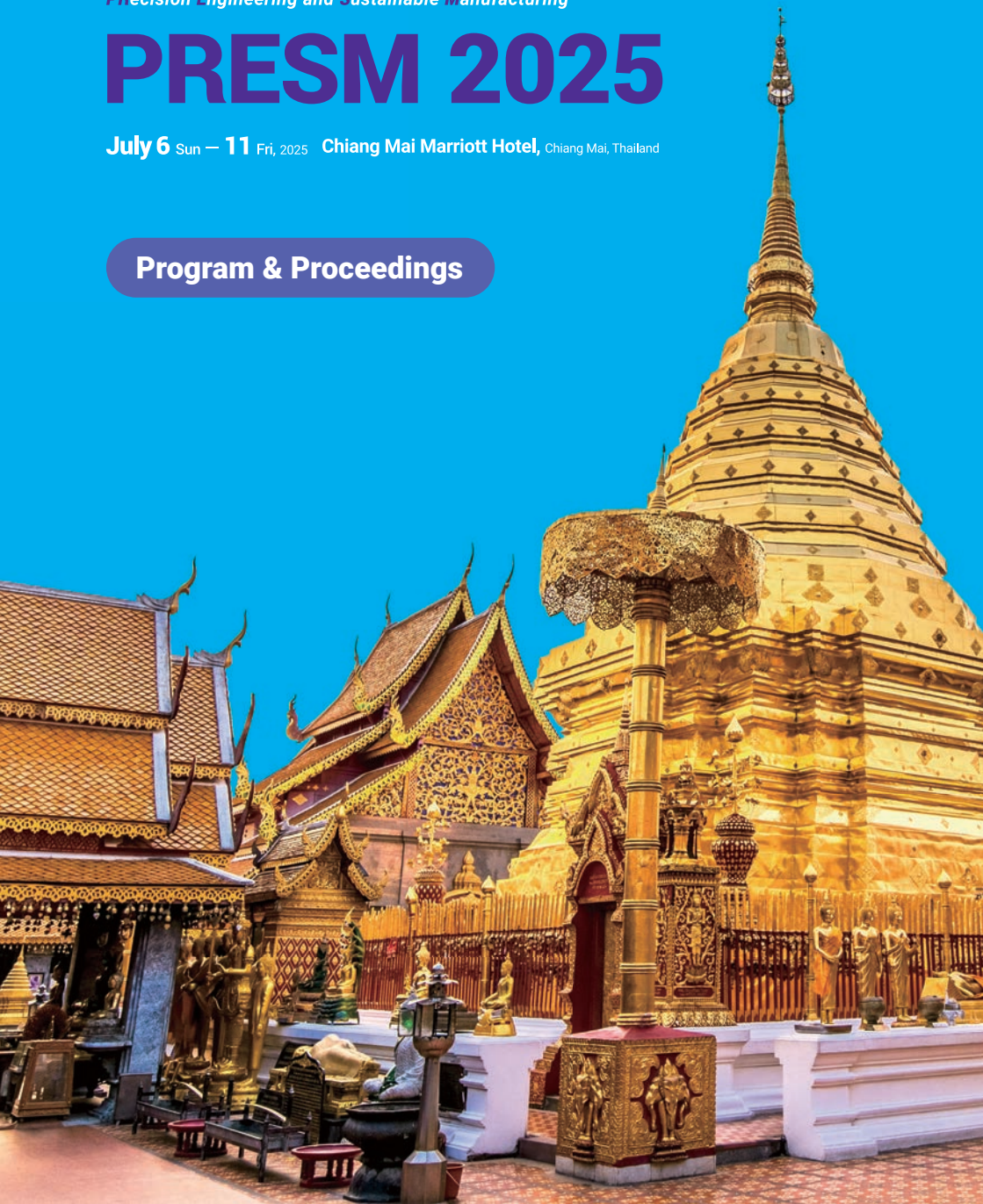
Program & Proceedings



PRESM 2025

International Conference on
PRecision Engineering and Sustainable Manufacturing

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Welcome Message

Welcome to PRESM 2025

On behalf of the committee members of PRESM 2025 and the Korean Society for Precision Engineering (KSPE), we extend our heartfelt gratitude to all guest speakers, session organizers, co-organizing societies, and governmental supporters for their invaluable contributions to PRESM 2025. The conference will take place from July 6 to 11, 2025, in Chiang Mai, Thailand.

Since its inception in 2011, PRESM has been committed to advancing precision engineering and sustainable manufacturing for the benefit of global society. Recently, KSPE announced a new vision:

"Precision Engineering for a Sustainable and Prosperous Life, Forever," emphasizing smart and green technologies.

Artificial Intelligence (AI) has become a key driver of innovation in precision engineering and manufacturing. The growing demand for AI computing has also heightened the importance of energy and environmental research. Additionally, robotics is revolutionizing industries and shaping the future of mass production. In light of these emerging trends, PRESM 2025 will highlight cutting-edge developments in AI, robotics, and sustainability.

This year, our goal is to foster in-depth discussions on the future of precision engineering and international collaborations, with a particular focus on smart and green technologies. We hope that PRESM 2025 will provide an engaging and meaningful academic platform for all participants.

Finally, I sincerely thank all the distinguished speakers for their valuable time and expertise. Your participation is what makes PRESM 2025 a dynamic and impactful conference.

We look forward to seeing you in Chiang Mai!

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President of Korean Society for Precision Engineering (KSPE)

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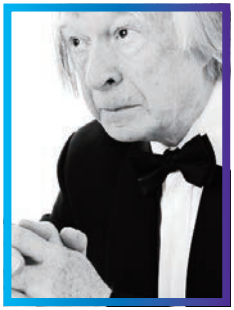
Plenary 1



Denis Noble

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Born of Water, Built on Silicon. Are We So Different in Intelligence

• Keywords •
Software versus hardware, Water versus silicon,
Living organism versus AI, Harnessing stochasticity

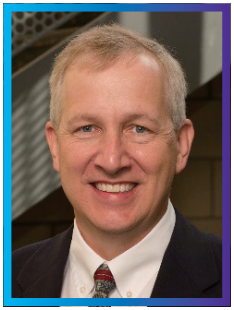
8 July (Tue)
11:00-11:40 (40')

Session Chair

Sung-Hoon Ahn
(Seoul National University, Korea)

• Abstract •

The software algorithms of Artificial Intelligence systems are implemented on hardware consisting of silicon chips. The crystalline nature of silicon is a strongly-bound diamond crystal lattice. Does this rigid hardware matter? It should, because living organisms are formed from water solutions with freely moving, randomly jiggling molecules, in turn instigating random Brownian motion in all the molecules dissolved or suspended in it. DNA, proteins and all metabolites, hormones and transmitters are naturally subject to this stochasticity. Moreover, this vast stochasticity is harnessed by the immune system and other systems to generate novel macromolecular structures, including new sequences of DNA. Living organisms do not therefore follow fixed algorithms independent of the hardware on which the algorithms are implemented. That hardware, in the form of water suspensions, is continually accessed. The number of water molecules in even the smallest cells, such as a bacterium, is of the order of 2e+10, or 20 billion molecules. This number is way beyond the capacity of any feasible silicon chip computer. In effect, organisms are open to a practically infinite number of possible formations. Adding random number generators to AI software will not therefore be sufficient to fully implement what organisms can do. Organisms harness this randomness in fine meshes between all the different levels of organisation. The lecture will illustrate the possible significance of this difference using material from chapter 7 of "Understanding living Systems" (Raymond & Denis Noble, CUP, 2023).



Steven R. Schmid

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Ubiquitous and Latent AI: The Future of Machinery

• Keywords •

Artificial intelligence, Machine design, Human-centered manufacturing

9 July (Wed)
13:00-13:40 (40')

Session Chair
Sang Won Lee
(Sungkyunkwan University, Korea)

• Abstract •

The role of artificial intelligence is exhaustively discussed in popular culture. AI can be portrayed as a lifesaving tool, designing new medicines, driving autonomous vehicles, providing information and other benefits for all people. It is also portrayed as a danger, with intelligent malevolent robots from science fiction waging a war of extermination against humanity. Thankfully, the manufacturing sector is usually saved from pontification. However, a theme that envisions the future of AI in the next few decades is appropriate for manufacturing, driven by current research focus and expenditures. In addition, the lead author led a National Science Foundation-led roadmapping effort to identify and prioritize basic research needs for cyberphysical systems in machining and machine tools, and involved a consortium of companies and universities in the United States. In addition, the authors presented a vision of AI in manufacturing in 2022, for which they were awarded the David Dornfeld Manufacturing Vision Award by the Society of Manufacturing Engineers. Their message is that AI will enable significant technological innovations in supply management, machine tool monitoring and control, cyber bidding and contracting, and machine operation. The AI will be ubiquitous, in that it will touch many aspects of daily activities. It will also be latent, in that no special notice of the presence of AI will be needed. All AI tasks have a common characteristic: The human is relied upon for decision making, with AI as a collaborative tool.

Plenary 3

Thapanee Sarakonsri

Associate Professor & Doctor
Department of Chemistry, Faculty of Science
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Toward Sustainable Energy Storage: Biomass to Efficient Anodes for Next-gen Batteries

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

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

Session Chair
Hyun Wook Kang
(UNIST, Korea)

• Abstract •

Although harvesting renewable energy is currently the most promising strategy to address global energy consumption issues, energy storage technologies remain inadequate to meet growing demands. Lithium-ion batteries (LIBs), widely used for both stationary and mobile applications—including portable devices and electric vehicles (EVs)—continue to face commercialization challenges such as low energy density, limited power output, slow charging rates, material supply bottlenecks, and sustainability concerns. In Thailand, a predominantly agricultural country, large amounts of agricultural waste are generated throughout the year. At Chiang Mai University, our research team is dedicated to designing and developing sustainable anode materials derived from biomass and agricultural waste. These materials play a crucial role in determining battery capacity and cycle life. Through comprehensive physical and electrochemical characterization, we have developed a low-cost, straightforward process to convert biomass into high-performance battery materials. Porous carbon, Porous carbon compisites, and nano-silicon/silica composites have been successfully extracted from diverse biomass sources such as corn leaves, rice husk, and Streblus asper, demonstrating excellent performance in lithium-ion batteries in terms of both capacity and cycling stability. Beyond energy storage, our approach addresses critical environmental challenges, including PM2.5 air pollution, which severely affects public health and quality of life in Thailand and neighboring regions. By transforming agricultural waste into value-added energy materials, we aim to reduce environmental impact, lessen dependence on conventional resources, and contribute to a more sustainable energy future.

Erhan Budak

Professor
Manufacturing Engineering, Faculty of Eng. and Natural Sciences
Director of Manufacturing Research Lab. (MRL)
Sabanci University (Turkey)

Title: Machining Process Monitoring and Fault Detection using Physics Informed Machine Learning towards Unsupervised Manufacturing

Chee Kai Chua

Chair Professor & Associate Provost for Research
Fellow of the Singapore Academy of Engineering
Director, Centre for Healthcare Education, Entrepreneurship and Research at SUTD (CHEERS)
Singapore University of Technology & Design (Singapore)

Title: Print Me an Organ. Why Are We Not There Yet?

Shinji Deguchi

Professor
Division of Bioengineering, Graduate School of Engineering Science
The University of Osaka (Japan)

Title: AI-based Cellular Force Mapping for Precision Medicine

Chih-Yung Huang

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

Title: Precision Measurements with Micrometer Resolution in Microscale Thermal-fluid Science

Martin B.-G. Jun

Professor
School of Mechanical Engineering
Purdue University (USA)

Title: Autonomous Machining Chip Recognition and Removal System

Keynote Speech

Kazutoshi Katahira

Doctor & Senior Research Scientist
Materials Fabrication Laboratory
RIKEN (Japan)

Title: Ultra-precision Milling of Hard and Brittle Materials with PCD/NPD Microtools

Daewook Kim

Associate Professor
Optical Sciences and Astronomy, James C. Wyant College of Optical Sciences
University of Arizona (USA)

Title: Quasi-ray Tracing-based Precision Optical Alignment using Bessel Beam

Seonghwan (Sam) Kim

Professor
Mechanical and Manufacturing Engineering
University of Calgary (Canada)

Title: Advanced Functional Nanocomposites and their Applications in Physical/Chemical Sensing

Patrick Kwon

Professor & Chair & Academic Affairs
College of Engineering, Department of Engineering
San Diego State University (USA)

Title: Journey into Additive Manufacturing

Jay Lee

Clark Distinguished Professor & Director of Industrial AI Center
Department of Mechanical Engineering
University of Maryland College Park (USA)

Title: Non-traditional Machine Learning for Complex Manufacturing Systems

Sangkee Min

Associate Professor
Department of Mechanical Engineering
University of Wisconsin-Madison (USA)

Title: AI-driven Prediction of Critical Depth of Cut in Single Crystal Sapphire Ultra-precision Machining

Seung Ki Moon

Associate Professor & Assistant Chair
School of Mechanical and Aerospace Engineering
Nanyang Technological University (Singapore)

Title: Software-defined X: Novel System Architecture for Flexible Manufacturing in Industry 4.0

Kazuhito Ohashi

Professor
Faculty of Environmental, Life, Natural Science and Technology
Okayama University (Japan)

Title: Temperature Measurements for High-quality and High-precision Grinding

Hyung Gyu Park

Professor & Director
Center for Low-dimensional Transport Physics, Department of Mechanical Engineering
POSTECH (Korea)

Title: Charged 2D Confinement of a Lamellar Ion Exchange Membrane for Blue Energy Harvesting

Junsuk Rho

Professor
Department of Mechanical Engineering, Department of Chemical Engineering, Department of Electrical Engineering, POSTECH (Korea)
POSCO-POSTECH-RIST Convergence Research Center for Flat Optics and Metaphotonics (Korea)

Title: Sustainable Manufacturing of Optical Metasurfaces for Imaging, Sensing and Display

Keynote Speech

Pei-Chen Su

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

Title: Enhancing Electrochemical Performance of Perovskite Electrodes via Surface Modification for Solid Oxide Cells

Doldet Tantraviwat

Associate Professor
Department of Electrical Engineering, Faculty of Engineering
Chiang Mai University (Thailand)

Title: Power Diode Development: Overcoming the VF-Err Trade-off through Novel Process Integration

Wassanai Wattanutchariya

Associate Professor
Department of Industrial Engineering, Faculty of Engineering
Chiang Mai University (Thailand)

Title: Intelligent Food Fabrication: From Personalized Nutrition Research to Scalable Innovation with 3D Printing

Daniel Zontar

Dr.-Ing.
Department of Precision Technology and Automation
Fraunhofer Institute for Production Technology IPT (Germany)

Title: Intelligent Production Machines

Program at a Glance

July	6 (Sun)	7 (Mon)	8 (Tue)	9 (Wed)	10 (Thu)	11 (Fri)
08:30		Registration Open (10:00)	Registration Open (8:30)	Registration Open (9:30)	Registration Open (8:30)	
09:00			T1 Focus Session D Advanced Bio-health Technologies		H1 Focus Session J Robotics and Mobility	Technical Tour NARIT (National Astronomical Research Institute of Thailand) *Only registrants can participate
10:00		Coffee Break Opening M1 Focus Session A Micro/Nano Manufacturing Technology		W1 Focus Session G Intelligent Fab. Technology		
11:00			Coffee Break Plenary Speech I *Prof. Denis Noble		Coffee Break Plenary Speech III *Prof. Thapanee Sarakonsri	
12:00		Lunch	Lunch	Lunch	Lunch	
13:00		M2 Focus Session B Green and Smart Materials and Processes	T2 Focus Session E Advanced Manufacturing Processes (1)	Plenary Speech II *Prof. Steven R. Schmid	H2 Focus Session K Automation, Measurement & Control	
14:00			Coffee Break T3 Focus Session F Advanced Manufacturing Processes (2)	W2 Focus Session H Smart & Sustainable Manufacturing	Coffee Break H3 Focus Session L AI in Design and Manufacturing	
15:00		Coffee Break M3 Focus Session C Energy Devices		Coffee Break W3 Focus Session I Autonomous Manufacturing in Machining		
16:00		Poster Session I - Q&A (16:50-17:50) [Regular] 2. Machine Tools & Systems 4. Materials & Design 5. Micro/Nano Technology [Special] 4. Innovative Design and Integrated Manufacturing	Poster Session II - Q&A (16:10-17:10) [Regular] 1. Manufacturing Processes (1) 6. Bio & Health 7. New and Renewable Energy 8. Sustainable Technology [Special] 3. e-Chem Meditronic Systems	Poster Session III - Q&A (17:00-18:00) [Regular] 1. Manufacturing Processes (2) 3. Automation, Measurement & Control [Special] 1. Railway Engineering 2. Multidisciplinary Research & Mechatronics for Aero/Defense Applications 5. Human-centered Convergence Mechanical Solution	Break	
17:30	PRESM Committee Meeting				Banquet PRESM2025 Award & Farewell	
19:30						

PRESM 2025 Program

Focus Session

[A] Micro/Nano Manufacturing Technology

Introduction This session highlights advancements in micro/nano manufacturing through precise measurement and laser-assisted processing techniques. It explores thermal-fluid dynamics, laser-guided and electrochemical micromachining, and scalable fabrication of functional nanostructured surfaces. These technologies enable enhanced control, resolution, and scalability in microscale production.

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

Date, Time Monday, 7 July, 2025 / 10:50-12:00 (ICT, UTC +07:00)

Details Session Chairs : Dr. Sanghoon Ahn (Korea Institute of Machinery & Materials, Korea) & Prof. Shuhei Kodama (Tokyo City University, Japan)

Paper No.	Time	Title / Presenter & Authors
M1-FA1 Keynote	10:50-11:15 (25′)	Precision Measurements with Micrometer Resolution in Microscale Thermal-fluid Science ***Chih-Yung Huang** (National Tsing Hua University, Taiwan)
M1-FA2	11:15-11:30 (15′)	Investigation of Parameter Effects in Water-guided Laser Processing ***Sanghoon Ahn** (Korea Institute of Machinery & Materials, Korea) **Dohyun Kim** (Korea Institute of Machinery & Materials) **Soojin Choi** (Korea Institute of Machinery & Materials) **Philgong Choi** (Korea Institute of Machinery & Materials)
M1-FA3	11:30-11:45 (15′)	Laser-assisted Scanning Electrochemical Machining of Titanium Alloys for Micromachining ***Shuhei Kodama** (Tokyo City University, Japan) **Ibuki Okuma** (Tokyo University of Agriculture and Technology) **Wataru Natsu** (Tokyo University of Agriculture and Technology)
M1-FA4	11:45-12:00 (15′)	Scalable Manufacturing of CNT Embedded Hierarchical Surface for Piezo-electric Tactile Sensing ***Hyun Jun Ryu** (KAIST, Korea) **Sanha Kim** (KAIST) **Yoon Sick Eom** (KAIST) **Seounghee Yun** (KAIST) **Hyungmin Je** (KAIST)

[B] Green and Smart Materials and Processes

Introduction This session explores innovative advances in green and smart materials, highlighting sustainable manufacturing, nanocomposites, surface engineering, and 3D printing for enhanced sensing, energy storage, and environmental performance.

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

Date, Time Monday, 7 July, 2025 / 13:00-15:05 (ICT, UTC +07:00)

Details Session Chairs : Profs. Ji Ho Jeon (University of Connecticut, USA) & Ji-Hyeon Song (Dankook University, Korea)

Paper No.	Time	Title	Presenter & Authors
M2-FB1 Keynote	13:00-13:25 (25')	Advanced Functional Nanocomposites and their Applications in Physical/Chemical Sensing	***Seonghwan Kim** (University of Calgary, Canada)
M2-FB2 Keynote	13:25-13:50 (25')	Sustainable Manufacturing of Optical Metasurfaces for Imaging, Sensing and Display	***Junsuk Rho** (POSTECH, Korea)
M2-FB3	13:50-14:05 (15')	Synergistic Effects of Ultrasonic Cavitation and Electropolishing in Post-processing of Additively Manufactured 316L Stainless Steel via Selective Laser Melting	***Ji Ho Jeon** (University of Connecticut, USA) **Sung-Hoon Ahn** (Seoul National University) **Shreyes N. Melkote** (Georgia Institute of Technology)
M2-FB4	14:05-14:20 (15')	Hybrid Accelerometer-optical Measurements for Modal Analysis of 3D-printed Cantilevered Beams with Artificial Damage	***Jon Dewitt Dalisay** (University of the Philippines Diliman, Philippines) **Kyle Ryan Yunsay** (University of the Philippines Diliman) **Atticus Gabriel Cariño** (University of the Philippines Diliman)
M2-FB5	14:20-14:35 (15')	Fabrication of Superhydrophobic and Superhydrophilic Surfaces on Aluminum and Titanium using Laser Texturing and Green Post-processes	***Doo-Man Chun** (University of Ulsan, Korea) **Ngoc Giang Tran** (Phenikaa University) **Mohammad Imran Bappy** (University of Ulsan)
M2-FB6	14:35-14-50 (15')	Mass Production of Laser-induced Graphene Green Electronics for Energy Storage Applications	***Young-Jin Kim** (KAIST, Korea)
M2-FB7	14:50-15:05 (15')	Development of Fused Powder Extrusion 3D Printing Process	***Ji-Hyeon Song** (Dankook University, Korea) **Jeongmok Han** (Dankook University) **Hyeongjin Jo** (Dankook University) **Yujun Song** (Dankook University) **Donghoon Ga** (Dankook University) **Jung Hyun Shin** (Dankook University)

PRESM 2025 Program

[C] Energy Devices

Introduction Precision engineering plays a pivotal role in advancing the next generation of energy devices, enabling the fabrication of systems with enhanced performance, reliability, and efficiency. As the global pursuit of sustainability intensifies, low- and zero-carbon energy technologies are becoming increasingly vital. This session will delve into recent progress in hydrogen technology, solid-state batteries, and cutting-edge precision engineering techniques that support the transition to a zero-carbon society. Join us to explore how technological innovation is driving sustainable solutions for a cleaner energy future.

Organizer Prof. Suk Won Cha (Seoul National University, Korea)

Date, Time Monday, 7 July, 2025 / 15:20-16:40 (ICT, UTC +07:00)

Details Session Chairs : Profs. Suk Won Cha (Seoul National University, Korea) & Rojana Pornprasertsuk (Chulalongkorn University, Thailand)

Paper No.	Time	Title	Presenter & Authors
M3-FC1 Keynote	15:20-15:45 (25')	Charged 2D Confinement of a Lamellar Ion Exchange Membrane for Blue Energy Harvesting	***Hyung Gyu Park** (POSTECH, Korea) **Sangyeon Jo** (POSTECH) **Heechan Yang** (POSTECH) **Sangyeon Lee** (POSTECH)
M3-FC2 Keynote	15:45-16:10 (25')	Enhancing Electrochemical Performance of Perovskite Electrodes via Surface Modification for Solid Oxide Cells	***Pei-Chen Su** (Nanyang Technological University, Singapore)
M3-FC3	16:10-16:25 (15')	Upcycling Primary Battery Materials: Converting Spent Cells into Rechargeable Zinc-ion Energy Storage Systems	***Rojana Pornprasertsuk** (Chulalongkorn University, Thailand) **Jiaqian Qin** (Chulalongkorn University) **Jitti Kasemchainan** (Chulalongkorn University) **Soorathep Kheawhom** (Chulalongkorn University)
M3-FC4	16:25-16:40 (15')	Surface Modification of Electrodes by Plasma Enhanced Atomic Layer Deposition for Solid Oxide Cells	***Hyong June Kim** (POSTECH, Korea) **Jihwan An** (POSTECH) **Daehyun Kim** (Chung-Ang University) **Sung Eun Jo** (POSTECH) **Kyoungjae Ju** (POSTECH) **Haesun Park** (Chung-Ang University)

[D] Advanced Bio-health Technologies

Introduction The "Advanced Bio-health Technologies"session highlights cutting-edge developments in precision medicine, regenerative therapy, and digital healthcare. Special emphasis is placed on next-generation biomanufacturing and the engineering of complex physiological systems to advance future therapeutic and diagnostic platforms.

Organizer Prof. Hyun Wook Kang (UNIST, Korea)

Date, Time Tuseday, 8 July, 2025 / 09:00-10:50 (ICT, UTC +07:00)

Details Session Chairs : Profs. Hyun Wook Kang (UNIST, Korea) & Jennifer H. Shin (KAIST, Korea)

Paper No.	Time	Title	Presenter & Authors
T1-FD1 Keynote	09:00-09:25 (25')	Print Me an Organ. Why Are We Not There Yet?	***Chee Kai Chua** (Singapore University of Technology & Design, Singapore)
T1-FD2 Keynote	09:25-09:50 (25')	AI-based Cellular Force Mapping for Precision Medicine	***Shinji Deguchi** (The University of Osaka, Japan)
T1-FD3	09:50-10:05 (15')	Multi-scale Vascular Tissue Fabrication with Reinforced Bioinks Using Advanced Bioprinting Technologies	***Hee-Gyeong Yi** (Chonnam National University, Korea)
T1-FD4	10:05-10:20 (15')	Customizable Bioinks with Peptide Tagging for Tissue-specific Microenvironments	***Yeong-Jin Choi** (Korea Institute of Materials Science, Korea)
T1-FD5	10:20-10:35 (15')	Capillary-driven ISF Sampling via a 3D-printed Lattice Microneedle Array Patch	***Brian Lee** (Sungkyunkwan University, Korea) **Yeongjun Song** (Sungkyunkwan University)
T1-FD6	10:35-10:50 (15')	Antibacterial Surfaces Using Nanohole Structures: Bacteriostatic Effect on Staphylococcus Aureus	***Hee-Kyeong Kim** (Wonkwang University, Korea) **Hyun-Ha Park** (Wonkwang University) **Young-Sam Cho** (Wonkwang University)

PRESM 2025 Program

[E] Advanced Manufacturing Processes (1)

Introduction This session collectively addresses the cutting-edge advancements in advanced manufacturing processes, emphasizing the integration of AI for predictive control, the development of novel tools and techniques for ultra-precision machining of challenging materials, and innovative approaches to creating micro-scale features for next-generation electronics.

Organizer Dr. Tae-Gon Kim (Korea Institute of Industrial Technology, Korea)

Date, Time Tuseday, 8 July, 2025 / 13:00-14:20 (ICT, UTC +07:00)

Details Session Chairs : Dr. Tae-Gon Kim (Korea Institute of Industrial Technology, Korea) & Prof. Ming-Tsang Lee (National Tsing Hua University, Taiwan)

Paper No.	Time	Title	Presenter & Authors
T2-FE1 Keynote	13:00-13:25 (25')	Ultra-precision Milling of Hard and Brittle Materials with PCD/NPD Microtools	***Kazutoshi Katahira** (RIKEN, Japan)
T2-FE2 Keynote	13:25-13:50 (25')	AI-driven Prediction of Critical Depth of Cut in Single Crystal Sapphire Ultra-precision Machining	***Sangkee Min** (University of Wisconsin-Madison, USA) **Dae Nyoung Kim** (University of Wisconsin-Madison) **Suk Bum Kwon** (University of New Haven)
T2-FE3	13:50-14:05 (15')	Design and Manufacturing of a High-speed Motorized Spindle: Engineering Considerations and Insights	***Erhan Budak** (Sabanci University, Turkey) **Saif Ahmad Afridi** (Sabanci University) **Esra Yuksel** (Ideko) **Gilbert Rivera** (Kumoh National Institute of Technology) **Ozan Eroğlu** (Euroservo) **Seong-Wook Hong** (Kumoh National Institute of Technology)
T2-FE4	14:05-14:20 (15')	Laser Induced Carbonized Nanoporous Conductive Micro-via for Polymer-based Flexible Electronics	***Ming-Tsang Lee** (National Tsing Hua University, Taiwan) **Swami Siddharth** (Industrial Technology Research Institute)

[F] Advanced Manufacturing Processes (2)

Introduction Key advancements in advanced manufacturing, focusing on the integration of in-process sensing and machine learning for enhanced precision and predictive maintenance are presented in this session. It also highlights innovations in material processing through additive manufacturing and optimized forming techniques, alongside the crucial role of simulation and modeling in validating the performance of novel composite materials.

Organizer Prof. Sangkee Min (University of Wisconsin-Madison, USA)

Date, Time Tuseday, 8 July, 2025 / 14:35-16:00 (ICT, UTC +07:00)

Details Session Chairs : Profs. Sangkee Min (University of Wisconsin-Madison, USA) & Louis Angelo Danao (University of the Philippines, Philippines)

Paper No.	Time	Title	Presenter & Authors
T3-FF1 Keynote	14:35-15:00 (25')	Temperature Measurements for High-quality and High-precision Grinding	***Kazuhito Ohashi** (Okayama University, Japan)
T3-FF2	15:00-15:15 (15')	Flank Wear Prediction when Turning Low Alloy Pearlitic Steel using Machine Learning and FEM	***Patrick Kwon** (San Diego State University, USA) **Alejandro Tejada-Diaz** (San Diego State University) **John Kang** (San Diego State University)
T3-FF3	15:15-15:30 (15')	Highly Ductile Martensitic Stainless Steel Enabled by Metastable Austenite via Laser Powder Bed Fusion	***Min-Kyeom Kim** (Sungkyunkwan University, Korea) **Jonghwan Suhr** (Sungkyunkwan University) **Taehwan Kim** (Sungkyunkwan University) **Juwon Kim** (Sungkyunkwan University) **Taehoon Kim** (Sungkyunkwan University) **Seunghyun Kim** (Sungkyunkwan University)
T3-FF4	15:30-15:45 (15')	Increase in Formability of Redrawn Cylindrical Cup by Using Zoning Lubricant Technique	***Rudeemas Jankree** (Thai-Nichi Institute of Technology, Thailand) **Sutasn Thipprakmas** (King Mongkut's University of Technology Thonburi)
T3-FF5	15:45-16:00 (15')	Finite Element Model Validation of Abaca Fiber-reinforced Polymer Composite Beam under Flexural Load	***Louis Angelo Danao** (University of the Philippines, Philippines) **Glyndel Kate Falqueza** (University of the Philippines)

PRESM 2025 Program

[G] Intelligent Fab. Technology

Introduction These studies highlight innovations in intelligent fabrication, spanning semiconductor device optimization, advanced monitoring of plasma and flow dynamics, and smart material design. They also explore scalable 3D food printing and hybrid interface engineering. Together, they reflect the convergence of process integration, real-time diagnostics, and functional customization in next-generation fab technologies.

Organizer Prof. Sang Won Lee (Sungkyunkwan University, Korea)

Date, Time Wednesday, 9 July, 2025 / 10:00-11:50 (ICT, UTC +07:00)

Details Session Chairs : Profs. Moon Soo Bak & Hyung Mo Jeong (Sungkyunkwan University, Korea)

Paper No.	Time	Title	Presenter & Authors
W1-FG1 Keynote	10:00-10:25 (25')	Power Diode Development: Overcoming the VF-Err Trade-off through Novel Process Integration	***Doldet Tantraviwat** (Chiang Mai University, Thailand)
W1-FG2 Keynote	10:25-10:50 (25')	Intelligent Food Fabrication: From Personalized Nutrition Research to Scalable Innovation with 3D Printing	***Wassanai Wattanutchariya** (Chiang Mai University, Thailand)
W1-FG3	10:50-11:05 (15')	Flow Field Investigation in a Parallel Plate CVD Reactor with a Showerhead and Baffle	***Han Seo Ko** (Sungkyunkwan University, Korea) **Min Sang Yoo** (Sungkyunkwan University) **Ji Hong Chung** (Sungkyunkwan University) **Dong Kee Sohn** (Sungkyunkwan University)
W1-FG4	11:05-11:20 (15')	A Cost-effective Laser Absorption Technique for Diagnosing and Monitoring High-density Laser-induced Plasmas	***Moon Soo Bak** (Sungkyunkwan University, Korea)
W1-FG5	11:20-11:35 (15')	Design for Lattice Structure-based Interfaces of Metal-polymer Hybrid Structure	***Seong Je Park** (Nanyang Technological University, Singapore) **Seung Ki Moon** (Nanyang Technological University)
W1-FG6	11:35-11:50 (15')	Structural Distortion and Oxidation State Control of Metal Oxides for Semiconductor Gas Sensors	***Hyung Mo Jeong** (Sungkyunkwan University, Korea)

[H] Smart & Sustainable Manufacturing

Introduction The studies of this session collectively highlight the evolution of smart & sustainable manufacturing, integrating software-defined architectures for flexible Industry 4.0 production. They emphasize leveraging AI for enhanced quality control and utilizing life cycle assessment for both sustainable energy technologies and advanced material printing processes.

Organizer Prof. Sang Won Lee (Sungkyunkwan University, Korea)

Date, Time Wednesday, 9 July, 2025 / 13:50-15:00 (ICT, UTC +07:00)

Details Session Chairs : Profs. Sang Won Lee (Sungkyunkwan University, Korea) & Job Immanuel Encarnacion (University of the Philippines Diliman, Philippines)

Paper No.	Time	Title	Presenter & Authors
W2-FH1 Keynote	13:50-14:15 (25')	Software-defined X: Novel System Architecture for Flexible Manufacturing in Industry 4.0	***Seung Ki Moon** (Nanyang Technological University, Singapore) **Jongsuk Lee** (Nanyang Technological University) **Jungyeon Kim** (Nanyang Technological University)
W2-FH2	14:15-14:30 (15')	Life Cycle Assessment of Horizontal Axis Tidal Turbines Applicable to Less Energetic Currents in the Philippines	***Job Immanuel Encarnacion** (University of the Philippines Diliman, Philippines) **Kristia Samantha Tadina** (University of the Philippines Diliman) **Jonas Richard Villar** (University of the Philippines Diliman)
W2-FH3	14:30-14:45 (15')	Development of Vision AI-based Wafer Quality Inspection System	***Sang Won Lee** (Sungkyunkwan University, Korea) **Sukhee Lee** (Sungkyunkwan University)
W2-FH4	14:45-15:00 (15')	Jetting, Coating, and Drying: Integrated Development for Advanced Material Printing	***Jinkee Lee** (Sungkyunkwan University, Korea)

PRESM 2025 Program

[I] Autonomous Manufacturing in Machining

Introduction This session explores the latest advancements in autonomous manufacturing for machining, focusing on AI-driven automation, robotics, and digital twin technologies. Experts from academia and industry will discuss real-world applications, process optimization, and the future of smart machining.

Organizer Drs. Dong Yoon Lee (Korea Institute of Industrial Technology, Korea) & Chang-Ju Kim (Korea Institute of Machinery & Materials, Korea)

Date, Time Wednesday, 9 July, 2025 / 15:10-17:00 (ICT, UTC +07:00)

Details Session Chairs : Drs. Dong Yoon Lee (Korea Institute of Industrial Technology, Korea) & Chang-Ju Kim (Korea Institute of Machinery & Materials, Korea)

Paper No.	Time	Title	Presenter & Authors
W3-FI1 Keynote	15:10-15:35 (25')	Machining Process Monitoring and Fault Detection using Physics Informed Machine Learning towards Unsupervised Manufacturing	***Erhan Budak** (Sabanci University, Turkey)
W3-FI2 Keynote	15:35-16:00 (25')	Autonomous Machining Chip Recognition and Removal System	***Martin B.-G. Jun** (Purdue University, USA) **Changheon Han** (Purdue University) **Hojun Lee** (Purdue University) **Yuseop Sim** (Purdue University) **Jiho Lee** (Purdue University)
W3-FI3	16:00-16:15 (15')	Autonomous Manufacturing: Complete Intelligentization Beyond Complete Automation	***Dong Yoon Lee** (Korea Institute of Industrial Technology, Korea)
W3-FI4	16:15-16:30 (15')	Autonomous Machining Cell Using Machine Tool Digital Twins and Collaborative Robots	***Chang-Ju Kim** (Korea Institute of Machinery & Materials, Korea) **Seung Guk Baek** (Korea Institute of Machinery & Materials) **Sung Joon Kim** (Korea Institute of Machinery & Materials) **Gyuho Kim** (Korea Institute of Machinery & Materials) **Chan-Young Lee** (Korea Institute of Machinery & Materials)
W3-FI5	16:30-16:45 (15')	Utilizing Multi-view Images and Digital Twin for Autonomous Robotic Machine Tending in Machine Tools	***Huitaek Yun** (KAIST, Korea) **Pung Kyu Lee** (KAIST) **Younggeon Park** (KAIST) **Seongin Noh** (KAIST)
W3-FI6	16:45-17:00 (15')	Physics-informed Neural Network (PINN) and Hyper-realistic Digital Twin (3DGS) for Predictive Engineering System Assessment	***Jongseong Brad Choi** (The State University of New York, Korea)

[J] Robotics and Manufacturing

Introduction This session explores advancements in robotics and smart manufacturing, focusing on AI integration, autonomous systems, intelligent machines, and digital transformation for enhanced productivity, adaptability, and control in industrial applications.

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

Date, Time Thursday, 10 July, 2025 / 09:00-10:50 (ICT, UTC +07:00)

Details Session Chairs : Dr. Suk Young Chey (Seoul National University, Korea) & Prof. Sung-Hyuk Song (Dongguk University, Korea)

Paper No.	Time	Title	Presenter & Authors
H1-FJ1 Keynote	09:00-09:25 (25')	Non-traditional Machine Learning for Complex Manufacturing Systems	***Jay Lee** (University of Maryland College Park, USA)
H1-FJ2 Keynote	09:25-09:50 (25')	Intelligent Production Machines	***Daniel Zontar** (Fraunhofer IPT, Germany) **Christian Brecher** (Fraunhofer IPT)
H1-FJ3	09:50-10:05 (15')	Autonomous Robot Motion Planning with Adaptive Safe Set (ARMPASS)	***Martin B.-G. Jun** (Purdue University, USA) **Hojun Lee** (Purdue University) **Yuseop Sim** (Purdue University) **Changheon Han** (Purdue University) **Jiho Lee** (Purdue University)
H1-FJ4	10:05-10:20 (15')	Study on Improved Manipulator Control Method for Remote Inspection of Ropeway Facilities	***Jonghwan Baek** (Korea Institute of Robotics & Technology Convergence, Korea) **Jaeyoul Lee** (Korea Institute of Robotics & Technology Convergence) **WooHyeon Ahn** (Korea Institute of Robotics & Technology Convergence) **Myeongsu Jeong** (Korea Institute of Robotics & Technology Convergence) **GeunSu Song** (Korea Institute of Robotics & Technology Convergence)
H1-FJ5	10:20-10:35 (15')	Variable Stiffness Morphing Wheel for Overcoming Various Obstacles	***Sung-Hyuk Song** (Dongguk University, Korea)
H1-FJ6	10:35-10:50 (15')	Digital Transformation of SME with Robotics and Digital Twin Technologies: Efficiency and Agility	***Kyungjin Oh** (Taelim Industrial Co., Korea) **Won-Shik Chu** (Gyeongsang National University)

PRESM 2025 Program

[K] Automation, Measurement & Control

Introduction Advancements in automation, measurement, and control, focusing on enhancing precision through optical alignment techniques are discussed in this session. They explore robust strategies for motion control and vibration minimization under uncertainty, along with the development of data management systems for condition-based monitoring. Furthermore, the research emphasizes the critical role of CAE-driven simulation for durability testing in complex systems.

Organizer Prof. Hyeong-Joon Ahn (Soongsil University, Korea)

Date, Time Thursday, 10 July, 2025 / 13:00-14:10 (ICT, UTC +07:00)

Details Session Chairs : Profs. Hyeong-Joon Ahn (Soongsil University, Korea) & Jung Woo Sohn (Kumoh National Institute of Technology, Korea)

Paper No.	Time	Title	Presenter & Authors
H2-FK1 Keynote	13:00-13:25 (25')	Quasi-ray Tracing-based Precision Optical Alignment using Bessel Beam	***Daewook Kim** (The University of Arizona, USA)
H2-FK2	13:25-13:40 (15')	Design of Data Management System based on Architecture Framework for CBM+	***Youngmin Kim** (Chungnam National University, Korea) **Kwang Phil Park** (Chungnam National University) **Won-Joon Lee** (Hanwha Ocean Co., Ltd.)
H2-FK3	13:40-13:55 (15')	Trigonometric-based Motion Profile Optimization Strategy to Minimize Residual Vibration under Limited Time Conditions and System Uncertainties	***Dongwook Lee** (Kongju National University, Korea) **Chang-Wan Ha** (Kookmin University)
H2-FK4	13:55-14:10 (15')	Study on CAE Techniques for Deriving Single Component Durability Test Specification of Automotive Suspension Component	***Kyunghoon Jung** (Hyundai Motors Co., Korea) **Hoo Gwang Lee** (Hyundai Motors Co.) **Hong Ju Park** (Hyundai Motors Co.)

[L] AI in Design and Manufacturing

Introduction This session explores AI-driven innovations in design and manufacturing, highlighting smart data use, machine learning, anomaly detection, and robotics for enhanced automation, precision, and process optimization.

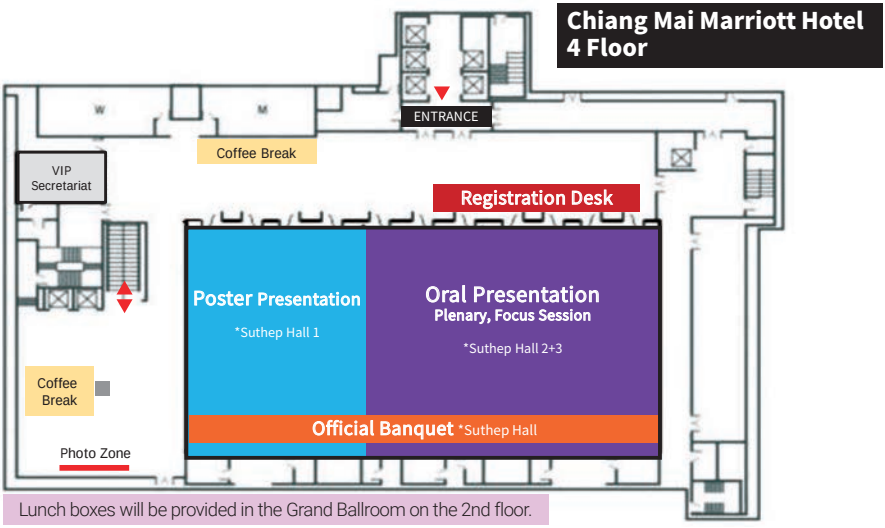
Organizer Prof. Sung-Hoon Ahn (Seoul National University, Korea)

Date, Time Thursday, 10 July, 2025 / 14:20-16:00 (ICT, UTC +07:00)

Details Session Chairs : Dr. Suk Young Chey (Seoul National University, Korea) & Prof. Hyungjung Kim (Konkuk University, Korea)

Paper No.	Time	Title	Presenter & Authors
H3-FL1 Keynote	14:20-14:45 (25')	Journey into Additive Manufacturing	***Patrick Kwon** (San Diego State University, USA)
H3-FL2	14:45-15:00 (15')	Artificial Intelligence-assisted Anomaly Detection of Fluid Connector Joints in Industrial Environments	***Chih-Hsing Chu** (National Tsing Hua University, Taiwan)
H3-FL3	15:00-15:15 (15')	A Transfer Learning Approach for Chatter Detection in Multi-posture Robot Machining	***Jihyun Lee** (University of Calgary, Canada) **Zhicong Rong** (University of Calgary) **Ali Khishtan** (University of Calgary)
H3-FL4	15:15-15:30 (15')	Development of a Touch-based Robotic System for Coke Oven Door Sealing	***JiWoong Han** (Korea Institute of Robotics & Technology Convergence, Korea) **Jaeyoul Lee** (Korea Institute of Robotics & Technology Convergence) **Jonghwan Baek** (Korea Institute of Robotics & Technology Convergence) **Seolha Kim** (Korea Institute of Robotics & Technology Convergence) **HyungJun Kim** (Korea Institute of Robotics & Technology Convergence) **Sungyeun Won** (POSCO Holdings) **Yongjoon Choi** (POSCO Holdings)
H3-FL5	15:30-15:45 (15')	Enabling Data-driven Manufacturing in SMEs: An Appropriate Smart Manufacturing Approach	***Hyungjung Kim** (Konkuk University, Korea) **Woo-Kyun Jung** (Hojeon Ltd.)
H3-FL6	15:45-16:00 (15')	A Constructed Fundamental Dataset for Graph Neural Network Training in Clamping Feature Recognition in Machining Processes	***Dong Min Kim** (Tech University of Korea, Korea)

Floor Plan



Lunch boxes will be provided in the Grand Ballroom on the 2nd floor.

Registration

The registration desk is located on the 4th floor of the Chiang Mai Marriott Hotel.

Category	On-site Registration
Date	from 20 May to 11 July, 2025
Regular	USD 730 / KRW 900,000
Student	USD 410 / KRW 500,000
Banquet	USD 65 / KRW 90,000

- Please check your registration with the participant's name at the Registration Desk.
- Registered participants can receive a name tag (*including lunch coupons), and a Welcome Kit with a USB (e-Proceedings) and a souvenir.
- A Banquet coupon is Provided to Regular participants and to the person who purchased the banquet coupon.
- On-site registration is available by **Cash (KRW & USD)** and ONLY for Non-presenter.
  ; Presenter should complete the Early-Registration.

Conference Information

Lunch

Date	Time	Place
Monday, 7 July – Thursday, 10 July, 4 days	11:50-13:30	Grand Ballroom (2F) in Chiang Mai Marriott Hotel

- A lunch box will be provided in the Grand Ballroom on the 2nd floor and should be exchanged for a lunch coupon.
- Lunch coupons cannot be exchanged for other dates.
- Additional purchase are available at the registration desk by **Cash (KRW & USD).**

Banquet

Thursday, 10 July, 17:30-19:30

- Place: Suthep Hall 2+3 (4F) in Chiang Mai Marriott Hotel
- Please submit the coupon for Banquet to staff when you enter the Suthep Hall 2+3 (4F).
- Additional purchase is available at the registration desk by cash (KRW & USD).

Awards & Farewell

Thursday, 10 July, 17:30-18:00

There will be an announcement of the PRESM2026 conference and closing remarks from the organizing committee in Suthep Hall 2+3 (4F). The Best Paper Award and Young Researcher Awards and KSPE 2025 Fellow will also be announced.

Technical Tour

Technical Tour of PRESM 2025 is planned to visit at NARIT (National Astronomical Research Institute of Thailand), Chiang Mai, Thailand.

Date/Time	Program
Friday, 11 July 09:00-16:00	※ Meeting Place: Main Entrance of the Chiang Mai Marriott Hotel
09:00-09:30	Chiang Mai Marriott Hotel ▶ NARIT
09:30-10:00	Lecture session on the operations of the NARIT
10:00-10:15	Optics Laboratory
10:15-11:00	Travel to the Advanced Innovation Operations Building
11:00-12:00	TSC Satellite Assembly and Testing Laboratory
12:00-12:30	Centre of Observatory Operations and Engineering Laboratory
12:30-14:00	Lunch at NARIT
14:00-	NARIT ▶ Chiang Mai International Airport ▶ Chiang Mai Marriott Hotel

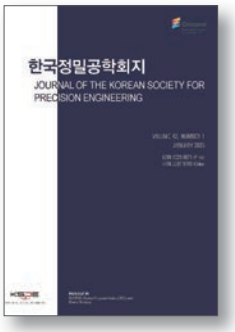
※ The maximum number of participants is limited and the cost is free.

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 3.6 (2024)
- International Journal of Precision Engineering and Manufacturing-Green Technology
  SCIE, SCOPUS / Impact Factor 5.6 (2024)
- International Journal of Precision Engineering and Manufacturing-Smart Technology



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 X 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: 14:00-16:00 Presentation Time: 16:50-17:50	Monday, 7 July Suthep Hall 1 (4F)
Poster II	Affixation Time: 14:00-16:00 Presentation Time: 16:10-17:10	Tuesday, 8 July Suthep Hall 1 (4F)
Poster III	Affixation Time: 14:00-16:00 Presentation Time: 17:00-18:00	Wednesday, 9 July Suthep Hall 1 (4F)

Presenter Notice

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

POSTER I

Monday, 8 July, 16:50-17:50

(Suthep Hall 1)

2. Machine Tools & Systems

PP2-001 A005 **Geometric Errors Identification and Compensation of Cradle-type Axis Using Multilateration Measurement**
Jun Lv (Shanghai Jiao Tong University)
Zhengchun Du (Shanghai Jiao Tong University)
Yukun Xiao (Shanghai Jiao Tong University)
Wentao He (Shanghai Jiao Tong University)
Guangyan Ge (Shanghai Jiao Tong University)

PP2-002 A015 **Weld Bead Recognition on Freeform Surface Using PointNet and Point Cloud Data**
Chia-Yuan Wu (National Cheng Kung University)
Chunhui Chung (National Cheng Kung University)
Hao-Lun Huang (Da Shiang Automation Co., Ltd.)

PP2-003 A023 **Correlation Analysis and Decision Tree-based Modeling of Chemical Vapor Deposition Process**
Chien-Yao Huang (National Applied Research Laboratories)
Chung-Ying Wang (National Applied Research Laboratories)
Hui-Jean Kuo (National Applied Research Laboratories)
Jung-Hsing Wang (National Applied Research Laboratories)

PP2-004 A051 **The Measurement and Compensation of Thermal Error in the Dressing of Grinding Wheels for Gear Profile Grinding Machine Tools**
Xuetao Wang (Shanghai Jiao Tong University)
Zhengchun Du (Shanghai Jiao Tong University)

PP2-005 A164 **Development of a DLP-based Magnetic Material Additive Manufacturing System**
Mijin Kim (Korea Institute of Machinery & Materials)
Pil-Ho Lee (Korea Institute of Machinery & Materials)
Dongwoon Shin (Korea Institute of Machinery & Materials)
Joon Phil Choi (Korea Institute of Machinery & Materials)
Taeho Ha (Korea Institute of Machinery & Materials)

PP2-006 A218 **A Study on Anomaly Detection Techniques for Wave Generator Bearing Life Analysis**
Sang-Wook Park (Korea Institute of Industrial Technology)
Jin-Seok Jang (Korea Institute of Industrial Technology)
Hong-In Won (Korea Institute of Industrial Technology)

PP2-007 A219 **A Study on Rotor Dynamics Modeling based on Modal Test for High-speed Motor Rotor-bearing Systems in Electric Vehicles**
Ji Min Hwang (Korea Institute of Industrial Technology)
Jin Seok Jang (Korea Institute of Industrial Technology)
Ji Wook Kim (Korea Institute of Industrial Technology)
Jun Hyun Jo (Korea Institute of Industrial Technology)
Dong Hyuk Kim (Korea Institute of Industrial Technology)
Dae Cheol Ko (Pusan National University)
Jong Wook Lee (Korea University of Technology and Education)

PP2-008 A254 **Self-identification of Geometric Error in CNC Turning Center Using a Novel Servo-based Tool-workpiece Contact Detection Method**
Taichi Kusatsugu (Nagoya University)
Kyungki Lee (Nagoya University)
Takehiro Hayasaka (Nagoya University)
Seiichi Uto (Nagoya University)
Eiji Shamoto (Nagoya University)

PP2-009 A261 **Tool Condition Monitoring based on Artificial Intelligence Model with Time-series Data Using Transfer Learning**
Kang Seok Kim (Pusan National University)
Hyo Jin Jung (SBC Linear Co.)
Deug Woo Lee (Pusan National University)

PP2-010 A297 **Multi-sensor based Tool Condition Monitoring and Machining Quality Evaluation in Titanium Alloy Milling Process**
SangHyeon Bae (Korea Institute of Industrial Technology)
SungRyul Kim (Korea Institute of Industrial Technology)
Jedoo Ryu (Korea Institute of Industrial Technology)
Young-Tae Cho (Changwon National University)

PP2-011 A334 **AI-driven Safety Monitoring Using CCTV for Hazard Assessment in Industrial Environments**
Jeong-Gon Kim (Korea Institute of Industrial Technology)
Jin-Seok Jang (Korea Institute of Industrial Technology)
Dae-Cheol Ko (Pusan National University)

POSTER I

PP2-012 A335 **Study on Identifying Machining Center Insert Length for Machining Process Analysis based on Cutting Tool Geometry**
Jun Hyun Jo (Korea Institute of Industrial Technology)
Jin Seok Jang (Korea Institute of Industrial Technology)
Ji Wook Kim (Korea Institute of Industrial Technology)

PP2-013 A371 **Development of Real-time Auxiliary Device Control for Energy Reduction in Machine Tools and Machine Learning-based Energy Consumption Prediction Technology**
Donghyuk Park (Korea Institute of Industrial Technology)
Jaehak Lee (Korea Institute of Industrial Technology)
Eunseok Nam (Korea Institute of Industrial Technology)

PP2-014 A428 **Development of the PLC and Sensor-based Integrated Monitoring System for Complex Grinding Processes**
Jae Hyeok Kim (Korea Institute of Industrial Technology)
Young Jae Choi (Korea Institute of Industrial Technology)

PP2-015 A434 **Transmission Error Improvement of Double Enveloping Worm Gear Reducer for Electric Turret Application**
Jong Bae Lee (Korea Institute of Machinery & Materials)
Back Ju Sung (Korea Institute of Machinery & Materials)
Do Sik Kim (Korea Institute of Machinery & Materials)
Joo Hong Lee (Korea Institute of Machinery & Materials)
Yong Seon Yun (KHANSTN)

PP2-016 A245 **CFD Simulation of Internal Flow Dynamics in CD-SEM Load-lock and Main Chambers**
ChunMuk Jo (Kangwon National University)
YoungHo Seo (Kangwon National University)
InSik Choi (Kangwon National University)
WoongKi Jang (Kangwon National University)
ByeongHee Kim (Kangwon National University)

PP2-017 A509 **IoT-based Intelligent Fixture Maintenance System**
Jinseob Shin (Kangwon National University)
Byeong Hee Kim (Kangwon National University)
Hobum Lee (Samchully Machinery Co., Ltd.)

PP2-018 A517 **Development of a Digital Twin-based Robot Utilization Solution to Improve the Productivity of Machine Tools**
Ki-hyeong Song (Korea Institute of Industrial Technology)
Jin-seok Kim (Korea Institute of Industrial Technology)
Sung-won Choo (Korea Institute of Industrial Technology)
Kyung-tae Nam (Korea Institute of Industrial Technology)

PP2-019 A551 **Estimation of the Squareness Error of the Shaft in the Hydrostatic Bearing Spindle**
Hyun Soo Kim (Korea Institute of Machinery & Materials)
Chun-Hong Park (Korea Institute of Machinery & Materials)
Gyungho Khim (Korea Institute of Machinery & Materials)
Jeong Seok Oh (Korea Institute of Machinery & Materials)

PP2-020 A564 **On-machine Measurement of Kinematic Errors in 5-axis Machine Tools Using 3D Laser Snapshot Sensor**
Hee-Min Shin (Yonsei University)
Byung-Kwon Min (Yonsei University)
SeungMin Jeong (DN Solutions)
Joon-Soo Lee (Yonsei University)
Minjae Sung (Yonsei University)

PP2-021 A565 **Machining Parameter Optimization for Energy Reduction in CNC Milling with Varying Material Removal Conditions**
Wontaek Song (Yonsei University)
Byung-Kwon Min (Yonsei University)
Hee-Min Shin (Yonsei University)
In-Wook Oh (Yonsei University)
Sangjin Maeng (Hongik University)

PP2-022 A566 **Online Machine Tools Collision Detection Algorithm Integrated with CNC**
Joon-Soo Lee (Yonsei University)
Byung-Kwon Min (Yonsei University)
Ji-Myeong Park (Yonsei University)
Sangwon Kang (Yonsei University)
Byoung-Seok Kim (Yonsei University)

POSTER I

PP2-023 A567 **FEA-based Evaluation of Volumetric Error in Machine Tools with Different Configurations under Ambient Temperature Fluctuations**
SeungMin Jeong (DN Solutions)
Byung-Kwon Min (Yonsei University)
Hee-Min Shin (Yonsei University)
Doyoung Kim (DN Solutions)
Changwon Oh (DN Solutions)
Changho Lee (DN Solutions)

PP2-024 A568 **Machining Process Planning Model based on Graph Transformer**
In-Wook Oh (Yonsei University)
Byung-Kwon Min (Yonsei University)
Sangwon Kang (Yonsei University)
Hee-Min Shin (Yonsei University)
Yeon-Jae Kim (Yonsei University)
Byoung-Seok Kim (Yonsei University)
Soon-Hong Hwang (Yonsei University)

PP2-025 A577 **Study on the Effect of Roller Profiles on the Characteristics of Crossed Roller Bearings**
Gilbert Rivera (Kumoh National Institute of Technology)
Seong-Wook Hong (Kumoh National Institute of Technology)
Jin-Hyeok Sa (Kumoh National Institute of Technology)
Dong-Hyeok Kim (Kumoh National Institute of Technology)

4. Materials & Design

PP4-001 A002 **Fatigue Life Analysis of Graphene-reinforced Next-generation Wind Turbine Blade using BEMT**
Jin-Rae Cho (Hongik University)
Hyoung Jin Kim (University College London)

PP4-002 A036 **CFD Analysis of Thermal Runaway Behavior in Battery Case with and without Flame Retardant Application**
HyunSoo Kim (Korea Institute of Industrial Technology)
SungWook Kang (Changwon National University)
TaeHoon Seo (Korea Institute of Industrial Technology)
YoungHyun Kim (Korea Institute of Industrial Technology)
ChangYeon Lee (DaeJoo Kores Co.)

PP4-003 A047 **Drop Weight Impact Analysis for Durability Validation of Electric Vehicle Battery Pack Case**
MinGoo Cho (Korea Institute of Industrial Technology)
JaeWoong Kim (Korea Institute of Industrial Technology)
Sung-Wook Kang (Changwon National University)
EulYong Ha (Korea Institute of Industrial Technology)
Jinsu Gim (Korea Institute of Industrial Technology)
ChangYeon Lee (DaeJoo Kores Co.)

PP4-004 A048 **Development of a Soft Gripper Featuring Dual-grasp Mechanisms**
Se Jin Park (Kangwon National University)
Yong-Jai Park (Kangwon National University)
Beom Geun Ki (Kangwon National University)
Geun Sik Cho (Kangwon National University)

PP4-005 A068 **A Systematic Approach to Extracting Design Requirements from the ASME Code for Product Manufacturing**
Junho Kim (Korea University)
Duhwan Mun (Korea University)

PP4-006 A076 **Rapid Analytical Modeling of Interior Permanent Magnet Synchronous Motor Using Radial Segmentation**
Ji Won Han (Yonsei University)
Jun Young Yoon (Yonsei University)
Jae Hyun Kim (Yonsei University)
Sang Won Jung (Yonsei University)

PP4-007 A078 **Structural Optimization of Flexures in a Deformable Mirror for Adaptive Optics**
Pilseong Kang (Korea Research Institute of Standards and Science)
Hyug-Gyo Rhee (Korea Research Institute of Standards and Science)
Jaehyun Lee (Korea Research Institute of Standards and Science)

PP4-008 A081 **Engineering Failure Characteristics in Dissimilar Material FDS Joints considering the Effects of Various Loading Angles**
DongGun Kim (Korea Institute of Industrial Technology)
JungHan Song (Korea Institute of Industrial Technology)
DooHyun Park (Korea Institute of Industrial Technology)
OhSuk Seo (Hwashin Co., Ltd.)
JongKyu Park (Hwashin Co., Ltd.)
MyoungGyu Lee (Seoul National University)

POSTER I

PP4-009 A099 **Fracture Prediction of High Strength Steel based on Local Strain**
JongBong Kim (Seoul National University of Science and Technology)
Hyunho Shin (Gangneung-Wonju National University)

PP4-010 A107 **Mechanical Behavior of Clavicle Bones Reinforced with Titanium Plates: FEM Analysis**
Youngkyun Son (Korea Institute of Industrial Technology)
Dong-hyun Kim (Korea Institute of Industrial Technology)
Sua Hong (Korea Institute of Industrial Technology)
Chan-Woo Lee (Korea Institute of Energy Research)

PP4-011 A134 **Thermal Analysis on Deformable Mirror for High Power Laser Applications**
Jaehyun Lee (Korea Research Institute of Standards and Science)
Hyug-Gyo Rhee (Korea Research Institute of Standards and Science)
Pilseong Kang (Korea Research Institute of Standards and Science)

PP4-012 A146 **Spark Plasma Sintering of Si_3N_4 for Ceramic Cutting Tools by Tailoring of Additive and Microstructure**
Jin Han Kim (Cheomdanlab Inc.)
Jeong Han Lee (Korea Institute of Industrial Technology)
Ha Jun Jang (Cheomdanlab Inc.)
In Ha Seo (Cheomdanlab Inc.)
Sin Young Park (Cheomdanlab Inc.)
Hyun Chul Ki (Korea Photonics Technology Institute)
Gun Ho An (Cheomdanlab Inc.)
Sung Bo Heo (Korea Institute of Industrial Technology)
Jun Ho Kim (Korea Institute of Industrial Technology)

PP4-013 A156 **Fatigue and Wear Behavior of Aerospace Bearing Material under Rolling Contact Fatigue Test**
Youngho Kim (Korea Institute of Industrial Technology)
Jaeil Jeong (Korea Institute of Industrial Technology)
Sigeun Choi (Korea Institute of Industrial Technology)
Hyojin Jung (SBC Linear Co.)

PP4-014 A158 **Tensile and Fatigue Properties of SEN6 Magnesium Alloy under Different Extrusion Conditions**
Sung Hyuk Park (Kyungpook National University)
Je Hyeong An (Kyungpook National University)
Ji-Yoon Lee (Kyungpook National University)
Hyung Jun Kim (Kyungpook National University)
Jun Ho Bae (Korea Institute of Materials Science)
Joung Sik Suh (Korea Institute of Materials Science)

PP4-015 A159 **Design of Linear Transverse Flux Machine with Bi-directional Silicon Steel Lamination**
Bo Min Kang (Yonsei University)
Jun Young Yoon (Yonsei University)
Kyujin Kang (Yonsei University)
Byung Wook Jeon (Yonsei University)
Kang Hee Lee (Yonsei University)
Ji Won Han (Yonsei University)

PP4-016 A185 **Sensitivity of Turbine Blade Temperature and Life to Incidence Angle Variation**
Junseok Yoon (Korea Institute of Materials Science)
Byunghui Kim (Pusan National University)
Young-Seok Oh (Korea Institute of Materials Science)

PP4-017 A189 **Artificial Neural Network Model to Predict Sensing Performance of Stretchable Piezoelectric Strain Sensors**
Yujun Song (Dankook University)
Ji-Hyeon Song (Dankook University)
Min-Jae Jo (Dankook University)

PP4-018 A217 **Study on Optimal Design Method for Lightweight Crawler Crane Lattice Boom Using MFBD Simulation**
Ji Su Jeong (Korea Institute of Industrial Technology)
Jin Seok Jang (Korea Institute of Industrial Technology)
Byeong Hak Kim (Korea Institute of Industrial Technology)
Dae Cheol Ko (Pusan National University)

PP4-019 A227 **Design Optimization of TPMS-based Airless Tires with Asymmetric Rolling Resistance**
Seoyoon Kim (Seoul National University of Science and Technology)
Keun Park (Seoul National University of Science and Technology)
Kyumin Lee (Seoul National University of Science and Technology)
Seo-hyeon Oh (The University of Akron)

PP4-020 A240 **Fatigue Life Prediction of Composite-steel Bonded Joints with Experimental Calibration Method**
Hee-Chan Song (Yonsei University)
Heoung-Jae Chun (Yonsei University)
Hyoseong An (SK On)
Young Bin Kim (Yonsei University)
Kyungsik Kim (Yonsei University)

POSTER I

PP4-021 A242 **Characteristics of Tin Dioxide Thin Films Grown on Quartz Substrates by Atomic Layer Deposition**
Yu-Wei Wu (National Pingtung University)
Wen-Jen Lee (National Pingtung University)

PP4-022 A247 **Comparative Analysis of Non-porous and Porous Structures for Enhanced Mechanical Performance Using Polymer-epoxy Composites**
Naye Jang (Changwon National University)
Young Tae Cho (Changwon National University)
Seo Rim Park (Changwon National University)
Heeok Kim (Changwon National University)

PP4-023 A276 **Modeling Relationship between Tempering Process-microstructure-property based on Deep Learning for Steel Material**
Jun Woo Kang (Korea Institute of Materials Science)
Seong-Hoon Kang (Korea Institute of Materials Science)
Hoheok Kim (Korea Institute of Materials Science)
Sang Hyun Oh (Korea Institute of Materials Science)
Young-Seok Oh (Korea Institute of Materials Science)
Junseok Yoon (Korea Institute of Materials Science)

PP4-024 A299 **Thermo-mechanical Performance Analysis with Coolant Inlet Hole Shape Changing of Gas Turbine Combustion Liner Internal Cooling System**
Heungsoo Park (Seoul National University of Science and Technology)
Nak-Kyun Cho (Seoul National University of Science and Technology)
Beom Seok Kim (Seoul National University of Science and Technology)
Dongha Shim (Seoul National University of Science and Technology)
Kyu Song (Korea Electronics-Machinery Convergence Technology Institute)

PP4-025 A306 **ANN-based Probabilistic Analysis Framework for 3D Printed Structural Components considering Manufacturing Uncertainties**
Jinmyeong Heo (Seoul National University of Science and Technology)
Nak-Kyun Cho (Seoul National University of Science and Technology)
Joohyeong Park (Seoul National University of Science and Technology)
Kyu Song (Korea Electronics-Machinery Convergence Technology Institute)
Dongha Shim (Seoul National University of Science and Technology)

PP4-026 A307 **Predicting Elastic Shakedown Limits of 90° Back-to-back Pipe Bends with Local Wall Thinning Using Neural Networks**
JooHyeong Park (Seoul National University of Science and Technology)
Nak-Kyun Cho (Seoul National University of Science and Technology)
Kyu Song (Korea Electronics-Machinery Convergence Technology Institute)
Dongha Shim (Seoul National University of Science and Technology)

PP4-027 A310 **Machine Learning Based Conversion Framework from Generative Design into Manufacturing Drawing**
Seokbeom Chun (KAIST)
Huitaek Yun (KAIST)
Younggeon Park (KAIST)
Yongbin Cho (KAIST)

PP4-028 A321 **Fabrication of Carbon Grid Structures by Carbonization of 3D Printed Parts for Fuel Cells**
HyunChul Kim (Kongju National University)
Duc Thinh Vuong (Kongju National University)
Eungki Lee (Kongju National University)

PP4-029 A324 **Development of a Quantitative Evaluation Method for Scratch Resistance of Polymeric Materials**
Byunghyun Kang (Korea University)
Byoung-Ho Choi (Korea University)

PP4-030 A329 **Carbon Fiber Based Resistive Heating Composite with 3D Printing Method**
Yun Jae Hwang (UNIST)
Hyung Wook Park (UNIST)

PP4-031 A330 **Bonder Head Design for Improved Flip Chip Bonding Precision**
AnMok Jeong (Korea Institute of Industrial Technology)
JaeHyun Park (Korea Institute of Industrial Technology)
YounSu Kang (Korea Institute of Industrial Technology)
JongUk An (Korea Institute of Industrial Technology)
HakJun Lee (Korea Institute of Industrial Technology)

PP4-032 A385 **Computational Methods for Assessing Bendability in the Flat-wire Winding Process for Axial Flux Permanent Magnet Motors**
Jong-Hwa Hong (Korea Institute of Materials Science)
Jinsu Kim (Korea Institute of Materials Science)
Yong-Nam Kwon (Korea Institute of Materials Science)
Eun Yoo Yoon (Korea Institute of Materials Science)

POSTER I

PP4-033 A395 **Analysis of Interlaminar Fracture Toughness of Composites of Pultrusion Spar Cap for Improving Reliability of Large Wind Turbine Blades**
Haksoo Kim (Kunsan National University)
Kiweon Kang (Kunsan National University)
Hakgeun Kim (Kunsan National University)
Yein Choi (Kunsan National University)
Seonghwan Eom (Kunsan National University)
Songhee Han (Kunsan National University)

PP4-034 A398 **Highly Efficient Photo-acid Generators for High-resolution Semiconductor Patterning**
Jun Choi (Korea Institute of Industrial Technology)

PP4-035 A408 **Machine-learning Estimation of Low-cycle Fatigue Behavior of Anisotropic Metals**
Taekyung Lee (Pusan National University)
Jinyeong Yu (Pusan National University)
Sung Hyuk Park (Kyungpook National University)

PP4-036 A435 **Tribological Behavior and Microstructural Evolution of As-cast FCD700 Ductile Cast Iron with Different Cu Contents**
Jaegu Choi (Korea Institute of Industrial Technology)
Seong-Ho Ha (Korea Institute of Industrial Technology)
Donghyuk Kim (Korea Institute of Industrial Technology)
Jaeil Jeong (Korea Institute of Industrial Technology)
Sang-Yun Shin (SBB TECH Co., Ltd.)

PP4-037 A436 **The Effects of Bismuth Addition on the Characteristics of Aluminum Alloys for Valve Body**
Gun Ho Ko (Seoul National University)
Sang Il Yoon (SAMKEE)
Jee Seok Choi (SAMKEE)
Jin Pyeong Kim (Korea Automotive Technology Institute)
Jong Chel Sim (INSUNG)
Mi Ryeong Ju (INSUNG)
Ho Seop Song (SAMKEE)
Young Taek Lim (Seoul National University)

PP4-038 A437 **Mechanical Behavior and Deformation Mechanisms of Hot-forged 304L Stainless Steel in Cryogenic Environments**
Gang Ho Lee (Korea Institute of Industrial Technology)
Byung Jun Kim (Korea Institute of Industrial Technology)
Tae Hyeon Hwang (Korea Institute of Industrial Technology)
DongHan Kim (Korea Institute of Industrial Technology)
Byoungkoo Kim (Korea Institute of Industrial Technology)

PP4-039 A438 **Influence of Heat Treatment on the Cryogenic Mechanical Behavior and Microstructure of Hot-forged High-manganese Steel**
Gang Ho Lee (Korea Institute of Industrial Technology)
Byoungkoo Kim (Korea Institute of Industrial Technology)
Tae Hyeon Hwang (Korea Institute of Industrial Technology)
GwangJoo Jang (Korea Institute of Industrial Technology)
Byung Jun Kim (Korea Institute of Industrial Technology)

PP4-040 A439 **Post-weld Heat Treatment Characteristics of Laser Welded Boron-containing Stainless Steel**
Joonghoon Kim (Korea Institute of Industrial Technology)
Byoungkoo Kim (Korea Institute of Industrial Technology)
Hyoung Chan Kim (Korea Institute of Industrial Technology)
Byung Jun Kim (Korea Institute of Industrial Technology)
Kyung Hwan Hwang (Korea Institute of Industrial Technology)

PP4-041 A440 **Formation of Fine-equiaxed Grains in Inconel 718 Deposited by Directed Energy Deposition via Zirconia Nano-powder Inoculation**
Jong Bae Jeon (Dong-A University)

PP4-042 A446 **Coordination-Regulated Li+ Transport in La@ZIF-8 for High-performance Quasi-solid Electrolytes**
Yini Chen (Yeungnam University)
Tae Jo Ko (Yeungnam University)
Shuang Li (Yeungnam University)

PP4-043 A449 **Evaluation of Homogeneity of Single-crystal Calcium Fluoride Optical Windows Using DUV Interferometry**
Jae-Hyuck Choi (Korea Research Institute of Standards and Science)
Hagyong Kihm (Korea Research Institute of Standards and Science)
Eunsil Jang (Korea Research Institute of Standards and Science)

POSTER I

PP4-044 A472 **Effect of Directly Introduced $Y_2Ti_2O_7$ Pyrochlore Oxides in Oxide Dispersion Strengthened Alloys for High Temperature Applications**
Yuhan Lu (Pukyong National University)
Sanghoon Noh (Pukyong National University)
Deasik Kim (Pukyong National University)
Tae Kyun Kim (Pukyong National University)
Myun Kim (Pukyong National University)
Junghee Lee (Pukyong National University)

PP4-045 A473 **Fabrication and Characterization of Oxide Dispersion Strengthened Tungsten Alloys for Fusion Reactor Applications**
Deasik Kim (Pukyong National University)
Sanghoon Noh (Pukyong National University)
Yuhan Lu (Pukyong National University)
Sejin Kim (Pukyong National University)
Myun Kim (Pukyong National University)
Junghee Lee (Pukyong National University)

PP4-046 A477 **Investigation of Adsorption Performance of CO_2 for RIS with Lattice Structure Using Fluid Structure Interaction Simulation**
JongChan Beom (Chosun University)
Dong-Gyu Ahn (Chosun University)
Gideon Mduma (Chosun University)
Hyeon Kim (Chosun University)

PP4-047 A478 **Bio-inspired Lattice Unit Cell Design for Enhanced Crash Energy Absorption**
Muh Arif Wisnuaji (POSTECH)
Anna Lee (POSTECH)

PP4-048 A493 **Thickness-accommodating Method for Multi-configurable Thick Origami with Bidirectional Folding**
Duwon Yang (POSTECH)
Anna Lee (POSTECH)

PP4-049 A508 **Flow Fluctuation Control via Zero-stiffness and Bulging Instabilities in Hyperelastic Shells**
Jinwoo Lee (POSTECH)
Anna Lee (POSTECH)
Keunhwan Park (Gachon University)

PP4-050 A514 **Synthesis and Performance Evaluation of Dual-doped $La_xNi_yMn_{2-(x+y)}O_3$/g-C_3N_4 Nanocomposites for Asymmetric Supercapacitor Applications**
Naveed Ullah (Kyungpook National University)
Gyu Man Kim (Kyungpook National University)
Haroon Khan (Kyungpook National University)
Asad Ullah (University of Engineering & Technology Mardan)

PP4-051 A515 **Modification of Naturally Derived Biomaterial for Enhanced Integration with Synthetic Polymer**
Min Ku Kim (Hanyang University)
Sang Jun Kim (Hanyang University)
Si Won Park (Hanyang University)
Jeong Woo Woo (Hanyang University)

PP4-052 A525 **Structural Optimization of Spring Contact Connectors Using Full Factorial Design and Finite Element Analysis**
Minwook Park (Seoul National University of Science and Technology)
Seunghyun Lee (Seoul National University of Science and Technology)
Jung-sik Yoon (Seoul National University of Science and Technology)
In-Gyu Choi (Seoul National University of Science and Technology)
Wan-Jin Chung (Seoul National University of Science and Technology)
Chan-Whan Lee (Seoul National University of Science and Technology)

PP4-053 A526 **Fatigue Characteristics of Recycled Carbon Fiber Reinforced Plastic at Elevated Temperatures**
Sangjun Jeon (Nanyang Technological University)
Daejong Yang (Kongju National University)
Seung Ki Moon (Nanyang Technological University)
Young Shin Kim (Kongju National University)

PP4-054 A527 **Design of High-strength Dual Cure Resin for Digital Light Processing**
Hae-Jin Choi (Chung-Ang University)
Seungjae Han (Chung-Ang University)

PP4-055 A530 **Study on the Correlation between Process Conditions and Mechanical Properties of 3D Tow Insert Injection Molded Specimens**
Yongdae Kim (Korea Institute of Industrial Technology)
Jeongwon Lee (Korea Institute of Industrial Technology)
Sunghee Lee (Korea Institute of Industrial Technology)

POSTER I

PP4-056 A536 **Tensile Properties of Gadolinium Oxide Dispersion Strengthened Austenitic Stainless Steels for Neutron Absorbing Structural Components**
Sejin Kim (Pukyong National University)
Sanghoon Noh (Pukyong National University)
Deasik Kim (Pukyong National University)
Yuhan Lu (Pukyong National University)
Suk Hyun Sung (Pukyong National University)
Taegyun Kim (Pukyong National University)
Hyeon Gu Kwon (Pukyong National University)
Joo Hyeon Kim (Pukyong National University)

PP4-057 A537 **Effect of Composite Material Functionalized Surfaces on Copper Substrates in Enhancing Pool Boiling Heat Transfer**
Jhao-Yu Guo (Tamkang University)
Chi-Chun Wang (National Taiwan University of Science and Technology)
Yu-Lin Kuo (National Taiwan University of Science and Technology)

PP4-058 A539 **Fatigue Life Assessment of Hydrogen Pressure Vessels considering Crack Orientation and Pressure Variations**
Ha-Young Choi (Dongyang Mirae University)
Seunghyun Cho (Dongyang Mirae University)
Sung Kwang Byon (Dongyang Mirae University)

PP4-059 A540 **Autonomously Discovered Metamaterials with Tailored Near-zero Poisson's Ratio for Enhanced Interface Force in Nonlinear Soft Grippers**
BaekGyu Kim (Pusan National University)
Sang Min Park (Pusan National University)
Ji Gyo Park (Pusan National University)
Ho Kyoung Lee (Pusan National University)

PP4-060 A542 **Machine Learning-driven Inverse Design of Metamaterial Sensors for Tailoring Vibration Reduction and Signal Detection**
Jigyo Park (Pusan National University)
Sangmin Park (Pusan National University)
Baekgyu Kim (Pusan National University)
Dongwhi Choi (Kyung Hee University)
Seunghun Baek (Pusan National University)
Jinyeong Song (Pusan National University)

PP4-061 A547 **Deep Generative Model-based Optimization and Inverse Design of Ventilated Acoustic Metamaterials**
Sang Min Park (Pusan National University)
Keon Ko (Pusan National University)
Min Woo Cho (Pusan National University)

PP4-062 A554 **Prediction of Interface Morphologies in Copper-clad Aluminum Wires Using a Deep Learning-based Generative Framework**
Hyeon-Jun Kim (Korea Institute of Materials Science)
Young-Seok Oh (Korea Institute of Materials Science)
Seong-Hoon Kang (Korea Institute of Materials Science)
Junseok Yoon (Korea Institute of Materials Science)

PP4-063 A557 **Optimal Design of Strength for Helical Gear Used in Driving Module of Automatic Tapping Device**
Sungmin Moon (Gyeongsang National University)
Sungki Lyu (Gyeongsang National University)
Dongseok Oh (Gyeongsang National University)
Taehyun Kim (Gyeongsang National University)

PP4-064 A561 **Study on The Prediction Model for Friction and Noise Characteristics by Tire Tread Compound and Block using Friction Master Curve Modeling**
Yoon Jin Chang (Sungkyunkwan University)
Jonghwan Suhr (Sungkyunkwan University)
Hyeonyeol Cho (Sungkyunkwan University)
Uiseok Hong (Hyundai Motor Co.)
Bumyong Yoon (Hyundai Motor Co.)

PP4-065 A562 **Effect of Polyol Composition on the Long-term Durability of Urethane Rubber for Precision Electronic Applications**
Jae-Ryong Lee (Pusan National University)
PilHo Huh (Pusan National University)
Jin-Gyu Min (Pusan National University)
Won-Bin Lim (Pusan National University)
Ju-Hong Lee (Pusan National University)
Ha-Song Bong (Pusan National University)
Ji-Hong Bae (Pusan National University)

POSTER I

5. Micro/Nano Technology

PP5-001 A022 **Enhancing Direct-spun CNT Yarn for Artificial Muscles via Conductive Polymer Coating**
Shi Hyeong Kim (Korea Institute of Industrial Technology)

PP5-002 A032 **Design and Fabrication of Fresnel Zone Plate with an Enhanced Depth of Focus by Using a Direct Laser Lithography**
Hyug-Gyo Rhee (Korea Research Institute of Standards and Science)
Hieu Trung (Korea Research Institute of Standards and Science)
Young-Jin Kim (KAIST)
Young-sik Ghim (Korea Research Institute of Standards and Science)

PP5-003 A039 **Flexible Self-cleaning Janus Emitter-based Transparent Radiative Cooling for Enclosed Spaces**
Harit Keawmuang (POSTECH)
Junsuk Rho (POSTECH)
Junkyeong Park (POSTECH)
Hangyu Lim (Korea University)
Dongwoo Chae (Korea University)
Heon Lee (Korea University)

PP5-004 A064 **Simplified Method for Fabricating Superhydrophobic Surfaces with Water Vapor Condensation**
Jeong Han Kang (Dong-A University)
Sungho Lee (Dong-A University)
Sang Hee Lee (Dong-A University)
Hogeon Won (Dong-A University)

PP5-005 A102 **Thermal Characterization of a Molybdenum Thin Film Influenced by Rapid Thermal Annealing Using Laser-ultrasonic Technique**
Junhyung Lee (Chungnam National University)
Yun Young Kim (Chungnam National University)

PP5-006 A122 **The Effects of Ultrasonic Vibration during Laser Induced Deep Etching Process**
Hyeong Seok Song (Seoul National University of Science and Technology)
Min-soo Park (Seoul National University of Science and Technology)
Sung Wook Min (Hardram Co., Ltd.)
Seungmo Kim (Korea University of Technology and Education)

PP5-007 A123 **Synthesis and Analysis of PANI/MoS_2 for the Photocatalytic Degradation and Adsorption of Chromium (VI)**
Miyeon Shin (Jeonbuk National University)
Changho Yu (Jeonbuk National University)
Krishna Prasad Sharma (Jeonbuk National University)
Ganesh Prasad Awasthi (Jeonbuk National University)

PP5-008 A129 **Preparation of Upconversion Nanoparticles for Photodynamic and Photothermal Cancer Therapy**
Dae-Duk Kim (Seoul National University)
Voradanu Visetvichaporn (Seoul National University)
Na-Young Yu (Seoul National University)
Seung-Wook Kang (Seoul National University)
Ho-Sup Jung (Seoul National University)

PP5-009 A151 **Designing Magnetically-retrievable Depolymerization Catalysts for Waste PET**
Geon Dae Moon (Korea Institute of Industrial Technology)
Ho Jun Seo (Korea Institute of Industrial Technology)

PP5-010 A153 **Development of HA Composite Coating with Uniform and Controlled Degradation via Electrodeposition for Surface Modification of Magnesium Mini-plates**
Seo Yeon Lee (Jeonbuk National University)
Chan Hee Park (Jeonbuk National University)
Patrick M. Bacirhonde (Jeonbuk National University)
Joshua Lee (Jeonbuk National University)

PP5-011 A154 **Effect of Alkyl Chain Length on the Tribological Performance of Functionalized CNT Additives in PAO6 Base Oil**
Jaesang Yoo (Korea Institute of Industrial Technology)
Jong-Hyoung Kim (Korea Institute of Industrial Technology)
Myung-Hyun Kim (Korea Institute of Industrial Technology)

PP5-012 A161 **Thermally Switchable Shape Memory Polymer Dry Adhesive with Tunable Glass Transition Temperature**
Han Jun Park (Kyungpook National University)
Moon Kyu Kwak (Kyungpook National University)
Tae Hyun Kim (Kyungpook National University)
Ui Cheol Shin (Kyungpook National University)

POSTER I

PP5-013 A183 **Anthocyanin-loaded pH-responsive Nanofiber Membrane based on Polyvinyl Alcohol/Chitosan for Real-time Monitoring of Food Spoilage**
Bong-Kee Lee (Chonnam National University)
Faizan E Mustafa (Chonnam National University)
Shichen Li (Chonnam National University)

PP5-014 A205 **Multi-functional Pillar-patterned Surface for Osteoblast Differentiation and Anti-bacterial Effects**
Nae-Un Kang (Wonkwang University)
Young-Sam Cho (Wonkwang University)
Ga Hyun Kim (Wonkwang University)
Hee-Kyeong Kim (Wonkwang University)
Tae-Young Choi (Wonkwang University)
Young Yul Kim (Wonkwang University)
Hyun-Ha Park (Wonkwang University)

PP5-015 A213 **Plastic Flow Enhancement in the Fabrication of Groove-with-protrusion Structures by Ultrasonic Vibration-assisted Burnishing**
Asuka Otani (Keio University)
Jiwang Yan (Keio University)

PP5-016 A216 **Fabrication of Magnetic Swimmer Robots via Poisson Effect-assisted Replication Lithography**
Minsu Kim (Kyungpook National University)
Moon Kyu Kwak (Kyungpook National University)
Hanjun Park (Kyungpook National University)

PP5-017 A263 **Scalable Manufacturing of Precision Surface Structures via Hot Embossing on Porous Polymer Film**
Yoon Sick Eom (KAIST)
Sanha Kim (KAIST)
Hyun Jun Ryu (KAIST)
Joohyun Park (KAIST)

PP5-018 A277 **Super Black Coating on Aluminum Alloy for Enhancing Optical Performance of Star Sensors**
Geun Tak Yuk (Hanbat National University)
Jinsung Rho (Hanbat National University)
Jang Hyeon Kyeong (Hanbat National University)
Byeong Ryong Lee (Hanbat National University)
Thuy Kieu Troung (Hanbat National University)

PP5-019 A284 **Maskless Patterning of Electrical Layer on the Silicon Surface by Laser-driven Thin Film Deposition**
Junseok Heo (Chonnam National University)
Seunghwoi Han (Chonnam National University)
Davin Jeong (Chonnam National University)
Nagarajan Chinnapaiyan (Chonnam National University)
Chanwoong Wi (Chonnam National University)
Junwon Lee (Chonnam National University)
Jeongin Han (Chonnam National University)
Inseo Cho (Chonnam National University)
Soonwook Hong (Chonnam National University)

PP5-020 A285 **Simultaneous Laser-assisted Inkjet Printing for Improved Reliability of Silver Micro-lines**
Iseok Sim (Hanyang University)
Jun Young Hwang (Korea Institute of Industrial Technology)
Kwon Yong Shin (Korea Institute of Industrial Technology)
Heuiseok Kang (Korea Institute of Industrial Technology)
Sang-Ho Lee (Korea Institute of Industrial Technology)
Seung-Jae Moon (Hanyang University)

PP5-021 A311 **Ultrafast Laser Chemical Vapor Deposition (ULCVD) for 3D Conductive Carbon Patterning on Transparent Substrate**
Chanwoong Wi (Chonnam National University)
Seunghwoi Han (Chonnam National University)
Junseok Heo (Chonnam National University)
Nagarajan Chinnapaiyan (Chonnam National University)
Younggeun Lee (KAIST)
Young-Jin Kim (KAIST)

PP5-022 A344 **Development of High-performance PENG Device based on CNT Scaffold Functionalized with BTO-P(VDF-TrFE)**
Jongwon Park (Seoul National University of Science and Technology)
Jong G. Ok (Seoul National University of Science and Technology)
Kwangjun Kim (Seoul National University of Science and Technology)
Yongtae Kim (Seoul National University of Science and Technology)

POSTER I

PP5-023 A346 **Manufacturing Process of Unidirectional Nanoporous Membrane based on Vertically Aligned CNT Forest**
Kwangjun Kim (Seoul National University of Science and Technology)
Jong G. Ok (Seoul National University of Science and Technology)
Jongwon Park (Seoul National University of Science and Technology)
Minwook Kim (Seoul National University of Science and Technology)

PP5-024 A354 **Electropolishing of $AgIO_3$/Ag/PTFE/WO_3/W Single-electrode Concentric Circles Type Microneedle Type pH Sensor**
Kazuyoshi Tsuchiya (Tokai University)
Jyoti Jaiswal (Rajiv Gandhi University)
Ganesh Kumar Mani (KAIST)
Tadahiko Matsubara (Miyahara Co., Ltd.)
Keiji Matsubara (Miyahara Co., Ltd.)

PP5-025 A375 **Fabrication of a Polyglycolic Acid Porous Microneedle Array Patch Using Integrated Paper-based Cover via Nonsolvent Induced Phase Separation Method**
Taisei Kawamura (The University of Tokyo)
Beomjoon Kim (The University of Tokyo)
Jongho Park (The University of Tokyo)
Heyi Jing (The University of Tokyo)

PP5-026 A399 **Advanced Composite Materials for Soft Wearables**
Hoon Eui Jeong (UNIST)
Geonjun Choi (UNIST)
Jaeil Kim (UNIST)

PP5-027 A401 **Fabrication of Inverted Pyramid Structures for Microneedle Arrays via Diffuser Lithography**
Seok Hee Kang (Kyungpook National University)
Gyu Man Kim (Kyungpook National University)
Hye Jin Choi (Kyungpook National University)
Jin Ho Choi (KIFLEX Co., Ltd.)

PP5-028 A431 **Viscous Dissipation during the Cavity Formation Upon the Impact of a Water Droplet on an Oil Layer Above Water Pool**
Donghoon Lee (Sungkyunkwan University)
Jinkee Lee (Sungkyunkwan University)
Ildoo Kim (Konkuk University)

PP5-029 A432 **Fabrication of Flexible Sensor Platform based on Nanofibers**
Min Jae Seo (Kyungpook National University)
Young Hun Jeong (Kyungpook National University)
Seung Han Yang (Kyungpook National University)

PP5-030 A447 **Integration of Smart Adhesive and Triboelectric Nanogenerator for Enhanced Performances and Programmability**
Hee Jin Lee (UNIST)
Hoon Eui Jeong (UNIST)
Dong Kwan Kang (UNIST)
Junghwa Kang (UNIST)
Hyeonseok Song (UNIST)
Sang-woo Lee (UNIST)

PP5-031 A461 **Hierarchical PDMS/Lubricant Composite Coatings for Improved Corrosion Resistance of Aluminum Alloys in Marine Environments**
Sung-Jun Lee (Chosun University)
Chang-Lae Kim (Chosun University)

PP5-032 A464 **Development of Au-doped $MoSe_2$ Nanostructures for Efficient Dopamine Sensing Applications**
Rashmi Roy Karmakar (Rajiv Gandhi University)
Jyoti Jaiswal (Rajiv Gandhi University)
Kazuyoshi Tsuchiya (Rajiv Gandhi University)
Sanjeev Kumar (Rajiv Gandhi University)

PP5-033 A465 **Laser-based Micro/Nano Patterning on Metal Substrates**
Kyu Hyeon Kim (Kookmin University)
Bong Chul Kang (Kookmin University)
MinChang Choi (Kookmin University)
Hui Ae Park (Kookmin University)

PP5-034 A466 **Laser Patterning for Glass Side Interconnection**
Jeseong Lee (Kookmin University)
Bongchul Kang (Kookmin University)
Seung-Gab Kwon (Kookmin University)
Jongmun Choi (Kookmin University)

POSTER I

PP5-035 A467 **Laser-induced Additive Manufacturing of Combinatorial Functional Surface for Droplet Manipulation**
Jongmun Choi (Kookmin University)
Bongchul Kang (Kookmin University)
Sungjin Park (Kookmin University)
Jaesung Lee (Kookmin University)
Kyuhyun Kim (Kookmin University)

PP5-036 A482 **Enhancing Drug Ion Diffusion Using an Electrochemically Self-powered Iontophoresis**
Wonho Cho (Sungkyunkwan University)
Jinkee Lee (Sungkyunkwan University)
Somen Mondal (Sungkyunkwan University)
Anuj Chauhan (Colorado School of Mines)

PP5-037 A484 **Nonlinear Cut Meta Patch based on Multiscale Crack Trapping**
Dong Kwan Kang (UNIST)
Hoon Eui Jeong (UNIST)
Seongjin Park (UNIST)
Geonjun Choi (UNIST)
Jaeil Kim (UNIST)

PP5-038 A485 **High-performance Magnetic Composite Muscles for Soft Robotics Applications**
Hyukjoo Kwon (UNIST)
Hoon Eui Jeong (UNIST)
Somi Kim (UNIST)
Sang-Woo Lee (UNIST)
Dong Kwan Kang (UNIST)
Jaeil Kim (UNIST)

PP5-039 A492 **High-efficient Single Particle-in-droplet Encapsulation based on Particle Ordering by Inertial and Acoustic Forces**
Taewook Eom (Seoul National University of Science and Technology)
Younghak Cho (Seoul National University of Science and Technology)
Youngseo Cho (Seoul National University of Science and Technology)
Sangwook Lee (mCureX Co., Ltd.)

PP5-040 A496 **Selective Conductive Material Filling in Through Silicon Vias**
Junwon Lee (Chonnam National University)
Seunghwoi Han (Chonnam National University)
Junseok Heo (Chonnam National University)
Chanwoong Wi (Chonnam National University)
Jeongin Han (Chonnam National University)
Inseo Cho (Chonnam National University)

PP5-041 A501 **Wafer-scale Fabrication of Stretchable Anisotropic Conductive Films via Rapid Mechanical Rubbing-induced Microparticle Arrangement**
Hyunsu Kwak (POSTECH)
Anna Lee (POSTECH)
Seyun Chang (MiDAS H&T, Inc.)
Hyeji Park (MiDAS H&T, Inc.)
In-Yong Eom (MiDAS H&T, Inc.)
Jung-Woon Lee (MiDAS H&T, Inc.)

PP5-042 A518 **Multi-functional Cotton via Multistep Processing for Wearable Platforms**
Min Ku Kim (Hanyang University)
Jeong Woo Woo (Hanyang University)
Sang Jun Kim (Hanyang University)
Si Won Park (Hanyang University)

PP5-043 A519 **Fabrication of Wearable Sensor Substrate based on Nanofibers**
Hui Jae Kim (Kyungpook National University)
Young Hun Jeong (Kyungpook National University)

PP5-044 A546 **Omnidirectional Conductive Fabrics Enabling Stretchable Wearable Electronics**
Ho Kyoung Lee (Pusan National University)
Sang Min Park (Pusan National University)
Jin Yeong Song (Pusan National University)
Baek Gyu Kim (Pusan National University)
Ji Gyo Park (Pusan National University)

POSTER I

Special Session - 4. Innovative Design and Integrated Manufacturing

SP4-001 A043 **3-dimensional Acoustic Ranging (3DAR) based Human-robot and Robot-robot Interaction in Audible and Inaudible Frequency**
Semin Ahn (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Jae-Hoon Kim (Seoul National University)
Jun Heo (Seoul National University)

SP4-002 A045 **Method for Manufacturing Freestanding Carbon Nanotube Thin Films**
Wonjin Kim (Seoul National University)
Sung-Hoon Ahn (Seoul National University)

SP4-003 A055 **Performance Analysis of Robotics Simulators for On-device Digital Twin and AI Integration**
Hwancheol Kang (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Kisu Ok (Seoul National University)
Sunghoon Bae (Seoul National University)
Cheonghwa Lee (Seoul National University)

SP4-004 A067 **A Remotely Tunable Band Pass Filter for Machine Condition Monitoring**
Guyeop Jung (Seoul National University)
Sung-Hoon Ahn (Seoul National University)

SP4-005 A104 **Inaudible LLM-based Communication System for Robot-to-robot Interaction**
Stefan Kind (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Semin Ahn (Seoul National University)
Hwancheol Kang (Seoul National University)

SP4-006 A172 **IoT Enabled Multi-tracking Textile Sensor Based Smart Sportswear for Real-time Quantitative and Qualitative Health Monitoring and Activity Tracking**
Roque Sando Vilanculo (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Jennifer Callanga (Seoul National University)

SP4-007 A175 **Design Optimization and Performance Analysis of Stitch Patterns, Ply Arrangement, and Coating Materials for Conductive Yarn-based Strain Sensors**
Jennifer Callanga (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Roque Sando Vilanculo (Seoul National University)

SP4-008 A269 **Design of a Spherical Pin-array Gripper for Adaptive Tool Manipulation and Grasping of Irregularly-shaped Objects**
Hyeongwon Kim (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Jun Heo (Seoul National University)

SP4-009 A314 **Three-fingered Ionic Polymer-metal Composite (IPMC) Micro Soft Gripper with Laser-patterned Independent Actuation**
Soohyun Lim (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Wonjin Kim (Seoul National University)
Sangrul Kim (Seoul National University)

SP4-010 A444 **Experimental and Numerical Study on Multi-PCM Floor Heating Panel**
Jungwoo Park (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Suhwan Jeong (Seoul National University)
Wonjin Kim (Seoul National University)

SP4-011 A451 **Additive Manufacturing and Optimization of Long Discontinuous Fiber Reinforced Composites**
Cheonghwa Lee (University of Connecticut)
Ji Ho Jeon (University of Connecticut)
Akshay Zaveri (University of Connecticut)
Hyunsu Lee (University of Connecticut)
Minhajul Islam (University of Connecticut)
Jaeyoul Lee (Korea Institute of Robotics & Technology Convergence)
Sung-Hoon Ahn (Seoul National University)

SP4-012 A591 **Impact Response and Repairability of Fiber-reinforced Vitrimer Composites**
Jun Young Choi (Seoul National University)
Ji Ho Jeon (University of Connecticut)
Sung-Hoon Ahn (Seoul National University)

POSTER II

Tuesday, 8 July 16:10-17:10

(Suthep Hall 1)

1. Manufacturing Processes

PP1-001 A003 **Study on Fatigue Strength of Solution-treated 3D Additive Manufactured Maraging Steel by Application of Surface Crack Harmless Technology**
Ji-min Yun (Pukyong National University)
Ki Woo Nam (Pukyong National University)
Kwon-Hoo Kim (Pukyong National University)

PP1-002 A006 **Milling Stability Prediction of Vpvh Tools Using Third-order Full-discretization Method**
Yukun Xiao (Shanghai Jiao Tong University)
Zhengchun Du (Shanghai Jiao Tong University)
Guangyan Ge (Shanghai Jiao Tong University)
Xiaobing Feng (Shanghai Jiao Tong University)

PP1-003 A017 **Machining Feature Recognition Using YOLO11-seg and Sectional Composite Images**
Jen Hsiang Tsai (National Cheng Kung University)
Chunhui Chung (National Cheng Kung University)

PP1-004 A018 **Parameter Study of Power and Energy Consumption in Straight Turning**
Chia-Ling Hsieh (National Cheng Kung University)
Chunhui Chung (National Cheng Kung University)
Sangkee Min (University of Wisconsin-Madison)

PP1-005 A019 **Energy Consumption and Property Optimization in Laser Powder Bed Fusion of Fe-50 wt% Ni Permalloys**
Chi-Chun Chen (National Cheng Kung University)
Chunhui Chung (National Cheng Kung University)
Tsung-Wei Chang (National Cheng Kung University)
Mi-Ching Tsai (National Cheng Kung University)

PP1-006 A020 **Regenerating Electrospun Cellulose Acetate Nanofibers for Rod-like Nanocellulose Hydrogels**
Joon Yeon Moon (Jeonbuk National University)
Chan Hee Park (Jeonbuk National University)
Joshua Lee (Jeonbuk National University)

PP1-007 A028 **Characteristic of Solvent For Jetting Properties in Binder Jetting 3D Printing**
Mina Bae (Korea Institute of Industrial Technology)
Jae Ho Baek (Korea Institute of Industrial Technology)
Tran Thi Yen (Korea Institute of Industrial Technology)
Yang Do Kim (Pusan National University)
Hyungtae Cho (Kyung Hee University)

PP1-008 A030 **Development of an On-build Plate Milling Process for Improving Post-processing Workability in Metal Additive Manufacturing**
Min Ji Ham (Korea Institute of Industrial Technology)
In Yong Moon (Korea Institute of Industrial Technology)
Bo Hyun Kim (Soongsil University)

PP1-009 A034 **Evaluation of Microstructure and Mechanical Properties of SUS430-10 Cu Alloy Fabricated by PM-HIP Process at Different Sintering Temperatures**
Hyun-Su Kang (Korea Institute of Industrial Technology)
Taeg Woo Lee (Korea Institute of Industrial Technology)
Gun Hee Kim (Korea Institute of Industrial Technology)
Won Rae Kim (Korea Institute of Industrial Technology)
Kwang Choon Lee (MTA)
Hyuk-Su Han (Sungkyunkwan University)
Hyung Giun Kim (Korea Institute of Industrial Technology)

PP1-010 A044 **Optimization of Textile Dyeing Processes Using Digital Twin Technology**
Hee Dong Lee (Korea Institute of Industrial Technology)

PP1-011 A049 **Study on Chemical Composition Changes in Outputs Produced by the WAAM (Wire Arc Additive Manufacturing) Process Applied to Ti-6Al-4V Alloy**
Myung Pyo Hong (Korea Institute of Industrial Technology)

PP1-012 A050 **Evaluation of Welding Shoe Geometry on the Mechanical Performance of HDPE Joints for Marine and Industrial Applications**
Chung Woo Lee (Korea Institute of Industrial Technology)
Jisun Kim (Korea Institute of Industrial Technology)
Suseong Woo (Korea Institute of Industrial Technology)
Chungryong Kim (Korea Marine Equipment Research Institute)
Hongkyu Park (Korea Marine Equipment Research Institute)
Yonghwan Kwon (Korea Maritime Transportation Safety Authority)
Changjun An (Jeonnam Technopark)
Inju Kim (Korea Institute of Industrial Technology)

POSTER II

PP1-013 A069 **Parameter Optimization of Coaxial Magnetic Gear for Cogging Torque Design**
Kang Hee Lee (Yonsei University)
Jun Young Yoon (Yonsei University)
Jae Hyun Kim (Yonsei University)
Hyeong Min Yoon (Yonsei University)
Jong Min Sung (Yonsei University)
Jun Hui Park (Yonsei University)
Hyo Geon Lee (Yonsei University)
Eun Kyu Kim (Yonsei University)
Jae Woo Jung (Yonsei University)
Bo Min Kang (Yonsei University)
Byung Wook Jeon (Yonsei University)

PP1-014 A070 **A Study on Tension-based Compensation Method in Roll-to-roll Systems**
Junyoung Yun (Konkuk University)
Changwoo Lee (Konkuk University)
Sangbin Lee (Konkuk University)
Mingi Kim (Konkuk University)

PP1-015 A071 **Analysis of Delamination Mechanism and Deformation Behavior of Enamel Coated Rectangular Wire for Continuous Winding**
Myeong-Sik Jeong (Korea Institute of Industrial Technology)
Ji Seop An (Korea Institute of Industrial Technology)
You Jin Jo (Korea Institute of Industrial Technology)
A Ra Jo (Korea Institute of Industrial Technology)
Sun Kwang Hwang (Korea Institute of Industrial Technology)
Kun Woo Gu (Korea Automotive Technology Institute)
Chul Yong Bae (Korea Automotive Technology Institute)

PP1-016 A072 **A Novel Approach to Enhance the Performance of Roll-to-roll Winding Processes**
Jaehyun Noh (Konkuk University)
Changwoo Lee (Konkuk University)
Sangyoon Lee (Konkuk University)
Chanwoo Kim (Konkuk University)

PP1-017 A091 **Study on Rotor Dynamics for the Development of a 600 kW 33,000 RPM Ultra-high Speed Motor**
GyuYoung Lee (KNR Systems)
SangMoo Lee (KNR Systems)
SeDoo Oh (Korea Automotive Technology Institute)
JungHun Choi (Hyundai Motor Group)

PP1-018 A093 **Rotary Straightening of Fine Medical Wires**
Yuan-Ting Lo (National Tsing Hua University)
Albert Shih (University of Michigan)
Chun-Wei Liu (National Tsing Hua University)
Violet Chou (KT Medical Inc.)

PP1-019 A094 **Compensation Method for Perpendicularity Enhancement of Cylinder Thrust Surfaces of Engine based on Anti-deformation**
Yuqi Zhou (Shanghai Jiao Tong University)
Zhengchun Du (Shanghai Jiao Tong University)
Yukun Xiao (Shanghai Jiao Tong University)
Guangyan Ge (Shanghai Jiao Tong University)

PP1-020 A106 **Development and Evaluation of a Polymeric Binding Material for Binder Jet 3D Printing of Stainless Steel Powder**
Tran Thi Yen (Korea Institute of Industrial Technology)
Jae Ho Baek (Korea Institute of Industrial Technology)
Min A Bae (Korea Institute of Industrial Technology)
Jaewon Lee (Hanyang University)

PP1-021 A108 **Development of a Mechanical Property Map for Isolated Environments Using Limited Steel Alloys: Applications in Additive Manufacturing**
Jeong-rim Lee (Korea Institute of Industrial Technology)
Dong-Hyun Kim (Korea Institute of Industrial Technology)
Van Loi Tran (Korea Institute of Industrial Technology)
Dong-Hyun Kim (Korea Institute of Industrial Technology)

PP1-022 A109 **Process Improvement to Optical Reflector Form Accuracy**
Hwan Ho Maeng (Hanbat National University)
Geon Hee Kim (Hanbat National University)
Hoo Cheon Lee (Hanbat National University)
Joong Kyu Ham (Hanbat National University)
Jin Yong Heo (Hanbat National University)
Seong Hyeon Park (Hanbat National University)

PP1-023 A112 **Process Optimization and Correlation Analysis of Mechanical Properties and Microstructure in AISI 4130 Low-alloy Steel Fabricated by Laser Powder Bed Fusion**
Dong-hyun Kim (Korea Institute of Industrial Technology)
Dong-Hyun Kim (Korea Institute of Industrial Technology)
Van Loi Tran (Korea Institute of Industrial Technology)
Jeong-rim Lee (Korea Institute of Industrial Technology)
Ji-hwan Choi (Korea Institute of Industrial Technology)

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PP1-024 A113 **A Multi-modal Data Integration Framework for Smart Manufacturing: Enhanced Surface Inspection Using Confocal Sensor and 2D Vision**
Jinsu Ha (Korea Institute of Industrial Technology)
Jinseok Jang (Korea Institute of Industrial Technology)
Jiwoo Hong (Korea Institute of Industrial Technology)
Soobin Han (Korea Institute of Industrial Technology)
Jiwook Kim (Korea Institute of Industrial Technology)
Changyoung Choi (Korea Institute of Industrial Technology)
Dongyong Park (Korea Institute of Industrial Technology)

PP1-025 A115 **Effect of LPBF Process Parameters and Post-heat Treatment Conditions on the Mechanical Properties and Microstructure of Maraging Steel 1.2709**
Van Loi Tran (Korea Institute of Industrial Technology)
Dong-Hyun Kim (Korea Institute of Industrial Technology)
Jeong-Rim Lee (Korea Institute of Industrial Technology)
Dong-Hyun Kim (Korea Institute of Industrial Technology)
Jihwan Choi (Korea Institute of Industrial Technology)

PP1-026 A119 **Nano-micro Pattern Machinability based on Orthogonal Cutting**
Joong Kyu Ham (Hanbat National University)
Geon Hee Kim (Hanbat National University)
Hwan Ho Maeng (Hanbat National University)
Seong Hyeon Park (Hanbat National University)
Jin Yong Heo (Hanbat National University)
Hoo Cheon Lee (Hanbat National University)
Young Durk Park (Hanbat National University)
Seo Hyun Kim (Hanbat National University)

PP1-027 A132 **Effect of Alloying Element Addition on Wear Resistance Improvement of Gray Cast Iron**
Soo Bin Han (Korea Institute of Industrial Technology)
Hyejin Song (Korea Institute of Industrial Technology)
Jiwoo Hong (Korea Institute of Industrial Technology)
Yong Jae Cho (Korea Institute of Industrial Technology)
Jin Seok Jang (Korea Institute of Industrial Technology)
Donghyuk Kim (Korea Institute of Industrial Technology)
Chang Young Choi (Korea Institute of Industrial Technology)
Yu Hyun Jung (Korea Institute of Industrial Technology)
Hojin Lee (Korea Institute of Industrial Technology)
Dongyong Park (Korea Institute of Industrial Technology)
Inho Choo (Valeo Pyeong Hwa Metals)

PP1-028 A136 **Additive Manufacturing of Magnetic Materials for High-performance 3D-printed Motors**
Taeho Ha (Korea Institute of Machinery & Materials)
Jun Phil Choi (Korea Institute of Machinery & Materials)
Dongwon Shin (Korea Institute of Machinery & Materials)
Min-kyo Jung (Korea Institute of Machinery & Materials)
Yongrae Kim (Korea Institute of Machinery & Materials)
Pil-Ho Lee (Korea Institute of Machinery & Materials)
Segon Heo (Korea Institute of Machinery & Materials)
Changwoo Lee (Korea Institute of Machinery & Materials)

PP1-029 A138 **The Effect of Laser Structuring on Hot-press Joined Metal-polymer Cross Tension Joints**
Suk Young Chey (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Sungjin Hong (Seoul National University)
Do Hoi Kim (Hyundai Motor Group)

PP1-030 A142 **Enhancing Silicon Wafer Dicing Quality through Radial Ultrasonic Vibration: A Study on Brittle-to-ductile Transition**
Tae Jo Ko (Yeungnam University)
Hanwei Teng (Yeungnam University)
Shuo Chen (Yeungnam University)

PP1-031 A143 **Grayscale 3D Printing of Ferromagnetic Composite Materials**
Hyeokbae Kwon (Inha University)
Hyun-Taek Lee (Inha University)
Dowoon Kim (Inha University)
Seungho Park (Inha University)

PP1-032 A152 **Stretch Bending Springback Prediction in Thin Metal Wires**
Chien-Yin Wang (National Tsing Hua University)
Albert Shih (University of Michigan)
Zhen-Min Fan (National Tsing Hua University)
Chun-Wei Liu (National Tsing Hua University)
Violet Chou (KT Medical Inc.)

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PP1-033 A162 **Monitoring System for Tool Failure Detection in Straight Line Saw (SLS) Process Using Sensor Based Analysis**
Mi Ru Kim (Korea Institute of Industrial Technology)
Hwi Hyup Kim (Korea Institute of Industrial Technology)
Jae Wook Hwang (Distribution and Manufacturing for Aerospace)
Yoon Chul Jung (Distribution and Manufacturing for Aerospace)

PP1-034 A170 **AI-based Mechanical Properties Prediction of Sintering-aging Combined Effect in Metal-material Extrusion**
JungYeon Kim (Nanyang Technological University)
Seung Ki Moon (Nanyang Technological University)
SangJun Jeon (Nanyang Technological University)
Ara Go (Kongju National University)
Joon Phill Choi (Korea Institute of Machinery & Materials)
Daejong Yang (Kongju National University)

PP1-035 A177 **Design Complexity-driven Optimization of Production Efficiency and Scheduling for Metal-polymer Hybrid Structures in Additive Manufacturing**
Jongsuk Lee (Nanyang Technological University)
Seung Ki Moon (Nanyang Technological University)
Seong Je Park (Nanyang Technological University)
Joon Phil Choi (Korea Institute of Machinery & Materials)
Sangjun Jeon (Nanyang Technological University)
Jungyeon Kim (Nanyang Technological University)

PP1-036 A198 **Numerical Investigation of Angularity Tolerance in Bolt Insertion for CFRP/ Aluminum Stack Holes**
Tae-Gon Kim (Korea Institute of Industrial Technology)
Pardeep Pankaj (Washington State University)
Chris Mickell (Washington State University)
Dave Kim (Washington State University)
Seok-Woo Lee (Korea Institute of Industrial Technology)

PP1-037 A201 **Quantitative Evaluation of Dehydration Efficiency in the Pulp Molding Process**
Jae Hyuk Choi (Gwangju University)
Mijin Kim (Gwangju University)
Jongmin Oh (Gwangju University)

PP1-038 A204 **Electrically Assisted Rapid Heat Treatment on Electrically Assisted Solid-state Spot Joint of Aluminum A365-T6 Cast Alloy**
Van Cong Phan (University of Ulsan)
Sung-Tae Hong (University of Ulsan)
Su Hyeon Choo (University of Ulsan)
Tu-Anh Bui-Thi (University of Ulsan)
Thanh Thuong Do (University of Ulsan)
Ji Hoon Jeon (University of Ulsan)
Changjoo Lee (Hyundai Motor Co.)
Ki Seok Nam (Hyundai Motor Co.)

PP1-039 A206 **Electrically assisted Solid-state Spot Joining of Dissimilar SGACUD Steel and Aluminum 6451 Alloy**
SuHyeon Choo (University of Ulsan)
SungTae Hong (University of Ulsan)
VanCong Phan (University of Ulsan)
JaeYong Yang (University of Ulsan)
Changjoo Lee (Hyundai Motor Co.)
KiSeok Nam (Hyundai Motor Co.)

PP1-040 A208 **Development of Manufacturing Process for Carbon Fiber Surface-reinforced Magnesium Alloy**
Yukihiko Kakuda (Hiroshima University)
Yongbum Choi (Hiroshima University)
Kazuhiro Matsugi (Hiroshima University)
Yuudai Aokusa (Kyushu University)

PP1-041 A211 **Wetting Behavior of Superhydrophobic Aluminum Surface Prepared by Grinding and Subsequent Treatments**
Nguyen Quang Chien Do (University of Ulsan)
Doo-Man Chun (University of Ulsan)

PP1-042 A215 **Magnetic Properties Related with Microstructure of Laser-melted Soft Magnetic Composites (Ni-Fe-Mo) by Process Optimization**
ChihHsiang Chang (National Cheng Kung University)
ChingYuan Ho (National Cheng Kung University)
ChunHui Chung (National Cheng Kung University)

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PP1-043 A222 **Simultaneous Joining and Forging of Dissimilar Aluminum Alloys by Electrically Assisted Closed-die Forging**
Thanh Thuong Do (University of Ulsan)
Sung-Tae Hong (University of Ulsan)
Tu-Anh Bui-Thi (University of Ulsan)
Jang Hyun Bae (Korea Institute of Industrial Technology)
Moon-Jo Kim (Korea Institute of Industrial Technology)

PP1-044 A223 **Formability of Aluminum Alloy 6061-T6 at Subzero Temperatures**
Yixing Zhao (University of Ulsan)
Sung-Tae Hong (University of Ulsan)
Jeong-Hwan Moon (University of Ulsan)
Min-Seong Kim (University of Ulsan)
Meiling Geng (University of Ulsan)
Lihong Cai (Changzhou Institute of Technology)
Jinwoo Lee (University of Ulsan)

PP1-045 A224 **Electropulsing-solution Treatment of Al-Zn-Mg-Cu Alloys**
Meiling Geng (University of Ulsan)
Sung-Tae Hong (University of Ulsan)
Yixing Zhao (University of Ulsan)

PP1-046 A226 **A Case Study on Fault Type Classification and Action Prediction Using Unstructured Text Data from Automotive Parts Manufacturers**
MinJae Ko (Korea Institute of Industrial Technology)
Yongju Cho (Korea Institute of Industrial Technology)

PP1-047 A229 **Fatigue Characteristics of Functionally Graded Materials Fabricated Using the Directed Energy Deposition Process**
Yongho Jeon (Ajou University)
Young-Man Choi (Ajou University)
Moon Gu Lee (Ajou University)

PP1-048 A235 **Development of Physical Property Prediction Algorithms for Cemented Carbide Tool Materials according to Process Conditions**
Chung Woo Lee (Korea Institute of Industrial Technology)
Jisun Kim (Korea Institute of Industrial Technology)
Suseong Woo (Korea Institute of Industrial Technology)

PP1-049 A236 **Study on Deriving the Optimal Runner Shape of an Automotive Console Box Using Casting Analysis**
SeokBae Lee (Korea Testing & Research Institute)
HongYeol Cho (Korea Testing & Research Institute)
DongYeol Wee (Korea Testing & Research Institute)

PP1-050 A238 **Finite Element Analysis of High-Speed Laser Wire Patterning for High-resolution MicroLED Displays**
Ji-Woo Kim (Korea Institute of Industrial Technology)
Jong-Su Kim (Korea Institute of Industrial Technology)
Dong-Won Lee (Korea Institute of Industrial Technology)

PP1-051 A241 **Enhancing Sim2Real Transfer: A Surrogate Approach for Robot Policy Evaluation via Simulation and Real-world Experiments**
Subin Im (Sungkyunkwan University)
Jaeseon Lee (Korea Institute of Industrial Technology)

PP1-052 A489 **Development of Workpiece Recognition AI Model Using Simulation-based Data Generation**
Soonhwan Kwon (Kangwon National University)
Byeonghee Kim (Kangwon National University)
Dae-you Park (HWACHEON Machine Tool Co., Ltd.)

PP1-053 A253 **3D Printing of Axial Flux Motor Stators Using Custom-made PA12/Fe Composite Filaments**
Taemin Kim (KAIST)
Sanha Kim (KAIST)
Hyeongmin Je (KAIST)
Kangyeon Kim (KAIST)
Hyejoon Jun (KAIST)
Jikang Kong (KAIST)
Minyoung Choi (KAIST)
Hyoungsoo Kim (KAIST)
Minkyun Noh (KAIST)

PP1-054 A256 **Semantic Segmentation-based Real-time Monitoring System for Uniform Fiber Production in Coaxial Electrospinning**
Yeong-Seo Kim (Pusan National University)
Suk-Hee Park (Pusan National University)
Kyung Lim Oh (Pusan National University)
Myung Kyu Jin (Pusan National University)

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PP1-062 A295 **Fabrication of Miniaturized Eddy Current Sensor Embedded in Thin Magneto-rheological Elastomer Film**
Joohyun Park (KAIST)
Sanha Kim (KAIST)
Hyun Jun Ryu (KAIST)
Seong Jae Kim (KAIST)
Dongjin Kim (Jmicro Inc.)
Seung Seob Lee (KAIST)
Haewon Park (KAIST)

PP1-063 A298 **Real-time Prediction of Remaining Tool Life Using Accelerometer Signals and an XGBoost-MLP Ensemble Model**
Mingyu Jeong (Jeonbuk National University)
Shihyoung Ryu (Jeonbuk National University)

PP1-064 A300 **Development of Prediction Methods for Residual Stress and Strain in Welding Using Additive Manufacturing Simulation Technique**
Jun Beom Kim (Seoul National University of Science and Technology)
Nak-kyun Cho (Seoul National University of Science and Technology)
Kyu Song (Korea Electronics-Machinery Convergence Technology Institute)
Dongha Shim (Seoul National University of Science and Technology)

PP1-065 A301 **Limit Load Analyses of Pipe Bend Structures considering Effects of Tube Bending Process**
Dongwon Lee (Seoul National University of Science and Technology)
Nak-Kyun Cho (Seoul National University of Science and Technology)
Dongha Shim (Seoul National University of Science and Technology)
Kyu Song (Korea Electronics-Machinery Convergence Technology Institute)

PP1-066 A303 **An AAS-based Edge Platform for Digital Twin and Predictive Maintenance in Smart Manufacturing**
TaeGyeom Bae (Seoul National University of Science and Technology)
JuYeon Lee (Seoul National University of Science and Technology)

PP1-067 A305 **Evaluation of Electrolytic In-process Dressing (ELID) on CVD-SiC for the Large-aperture Optical Reflector**
Su-Yeon Han (Gyeongsang National University)
Tae-Soo Kwak (Gyeongsang National University)
Seung-Min Lee (Gyeongsang National University)

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PP1-068 A312 **Reinforcement Learning-based Path Planning for Optimizing Robotic Motion and Geometric Quality in the WAAM Process**
Jeong Min An (Seoul National University of Science and Technology)
Ju Yeon Lee (Seoul National University of Science and Technology)
Duck Bong Kim (Tennessee Tech University)

PP1-069 A315 **WAAM-based Fabrication and Mechanical Evaluation of Chromium-molybdenum Steel Forging Dies**
Woo Jin Jeong (Changwon National University)
Young Tae Cho (Changwon National University)
Jeong Woo Jin (Changwon National University)
Hwi Jun Son (Changwon National University)
Chang Jong Kim (Changwon National University)
Ki Beom Park (Changwon National University)
Sang Min Kim (PK Valve & Engineering)
Ho Il Park (PK Valve & Engineering)
Jin Won Kim (PK Valve & Engineering)

PP1-070 A319 **Influence of Material Thickness and Welding Current on Fatigue Fracture in Cross Fillet TIG Welded Joints**
Kwan Woo Ko (Changwon National University)
Young Tae Cho (Changwon National University)
Hwa Young Oh (LG Electronics Co., Ltd.)

PP1-071 A322 **A study on Influence of Cutting Parameters on Geometric Errors in Two-sided Machining of Large Rib Parts**
Min Suk Park (Korea Institute of Industrial Technology)
Hoon-Hee Lee (Korea Institute of Industrial Technology)
Wang Ho Yun (Korea Institute of Industrial Technology)
Ho Young Bang (Korea Institute of Industrial Technology)
Mi Ru Kim (Korea Institute of Industrial Technology)
Hyun Sung Yoon (Gyeongnam Technopark)

PP1-072 A325 **Performance Evaluation of Non-contact On-machine Measurement Using a Laser Scanner and Distance Sensor**
Hoyoung Bang (Korea Institute of Industrial Technology)
Hoon-Hee Lee (Korea Institute of Industrial Technology)
Wangho Yun (Korea Institute of Industrial Technology)
Minsuk Park (Korea Institute of Industrial Technology)

PP1-073 A336 **Finite Element Analysis and Life Prediction of a Three-row Crowned Roller Bearing for a Large Wind Turbine**
JunPyo Hong (Jungwon University)
JongHun Kang (Jungwon University)
SeHan Son (Jungwon University)
YoungJun An (Jungwon University)
HyeonSeung Jin (Jungwon University)
JaeHyun Lee (CS Bearing)
JaeYeon Choi (CS Bearing)
Waryong Dong (CS Bearing)

PP1-074 A342 **Development of High-resolution Additive Manufacturing Technology Using Low Heat Input Laser-arc Hybrid WAAM Process**
In Soo Jo (Changwon National University)
Young Tae Cho (Changwon National University)
Chang Jong Kim (Changwon National University)

PP1-075 A343 **Workpiece Model for Digital Twin Applications of Cutting Processes based on Octree and Distance Fields**
Hyun-Joon Kim (Kyungpook National University)
Segon Heo (Korea Institute of Machinery & Materials)

PP1-076 A345 **FE Analysis of Induction Heating Process of Raceway for Wind Turbine Bearing**
Yeongjun An (Jungwon University)
Jonghun Kang (Jungwon University)
Sehan Son (Jungwon University)
Junpyo Hong (Jungwon University)
Hyeonseung Jin (Jungwon University)
Jaehyun Lee (CS Bearing)
Jaeyeon Choi (CS Bearing)
Jungwoo Song (Korea Institute of Materials Science)
Waryong Dong (CS Bearing)

PP1-077 A348 **Multistage Drawing FE Analysis of Al/Cu Bimetallic Composite**
SeHan Son (Jungwon University)
JongHun Kang (Jungwon University)
JunPyo Hong (Jungwon University)
YoungJun An (Jungwon University)
HyeonSeung Jin (Jungwon University)
JungWu Song (Korea Institute of Materials Science)
Jungsub Park (3A)

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PP1-078 A349 **A Study on Manufacturing Technology for Lightweight Automotive Undercovers with Recyclable PET FELT**
Eui-Chul Jung (Korea Institute of Industrial Technology)
Sung-Hee Lee (Korea Institute of Industrial Technology)
Yong-Dae Kim (Korea Institute of Industrial Technology)
Jeong-Won Lee (Korea Institute of Industrial Technology)
Chul-Kyu Yang (SPL Co., Ltd.)
June-Hee Lee (SPL Co., Ltd.)

PP1-079 A352 **Real-time Digital Twin-based Compensation of Deposited Geometry in the DED Process**
Segon Heo (Korea Institute of Machinery & Materials)
Hyun-Joon Kim (Kyungpook National University)
Taeho Ha (Korea Institute of Machinery & Materials)
Min-Kyo Jung (Korea Institute of Machinery & Materials)

PP1-080 A355 **Superior Corrosion Resistance of In-situ Synthesized Cu-Al Alloy via Directed Energy Deposition**
Changliang Yao (Korea Maritime and Ocean University)
Dosik Shim (Korea Maritime and Ocean University)
Kwangyong Shin (Korea Institute of Industrial Technology)

PP1-081 A279 **Development and Evaluation of Trimodal Silver Paste for High-frequency EMI Shielding Films with a Focus on Flexibility, Durability, and Shielding Characteristics**
Hyun Jin Nam (Korea Electronics Technology Institute)
Se-Hoon Park (Korea Electronics Technology Institute)
Seonwoo Kim (Korea Electronics Technology Institute)
Soobin Park (Korea Electronics Technology Institute)

6. Bio & Health

PP6-001 A092 **A Magnetically Steerable Guidewire Tip Equipped with a String of Permanent Magnets**
Xiao Dong (Daegu Gyeongbuk Institute of Science and Technology)
Hongsoo Choi (Daegu Gyeongbuk Institute of Science and Technology)

PP6-002 A125 **Vibration-insensitive Full-field Optical Coherence Tomography for in Situ Biomedical Imaging**
Woo June Choi (Chung-Ang University)
Jun Ki Kim (University of Ulsan)
Jaeyoung Kim (Korea University)

PP6-003 A133 **AI-based Non-invasive Technology for Skin Disease Diagnosis and Analysis**
Jaeyoung Kim (Korea University)
Woojune Choi (Chung-Ang University)
Junki Kim (University of Ulsan)

PP6-004 A163 **A Smart Anticolitic Peptide with Inflammation Responsiveness**
Yunjin Jung (Pusan National University)
Sanghyun Ju (Pusan National University)
Chankyu Kang (Pusan National University)

PP6-005 A168 **Development of a 3D-printed Human Head Simulator for Bone Conduction Transmission Experiment**
Woonhoe Goo (Sogang University)
Namkeun Kim (Sogang University)
Daeun Jeong (Sogang University)
Jongyeon Woon (Sogang University)
Seohyun Lee (Sogang University)

PP6-006 A203 **Multi-axis Ankle Stiffness Modeling and Adaptive Exosuit Anchor Optimization for Individual Rotation Alignment**
Hyun Seong Shin (Sogang University)
Namkeun Kim (Sogang University)
Andrea Marzotto (Sogang University)
Jongwoo Lim (KAIST)

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PP6-007 A212 **Residual Attention Network-based Prediction of the Ability to Process Sensory Input and Generate Corresponding Motor Responses for Postural Control**
Seungheon Chae (Sungkyunkwan University)
Ahnryul Choi (Chungbuk National University)
Jung Mee Park (University of Ulsan)
Kyung-Ah Kim (Chungbuk National University)

PP6-008 A248 **Development of a Hydrophobic Metal Mesh for Cell Spheroid Fabrication**
Jun-Kyu Kang (Wonkwang University)
So-Jung Gwak (Wonkwang University)
Seung-Jae Lee (Wonkwang University)
Dukhyun Choi (ECORENEW Inc.)

PP6-009 A265 **Protocatechuic Acid Derivatives Alleviate Hair Loss through Anti-inflammatory Effects in HaCaT Cells**
Jaehoon Cho (Korea Institute of Industrial Technology)
Wooshik Shin (Korea Institute of Industrial Technology)
Se Won Bae (Jeju National University)
Kyoung-Jin Jang (Sejong University)

PP6-010 A280 **Effectiveness of Robot Assistance in Patient Repositioning: Measuring Physical Stress in Caregivers**
Kyeong-Hee Choi (Korea Institute of Industrial Technology)
Jae-Soo Hong (Korea Institute of Industrial Technology)
Jeong-Bae Ko (Korea Institute of Industrial Technology)
Duk-Young Jung (Kyung Hee University)
Hyeri Shin (Kyung Hee University)

PP6-011 A291 **Using the Margin of Stability to Quantify Dynamic Balance during Turning Gait**
Young-Hwee Lee (Korea Institute of Industrial Technology)
Jae-Soo Hong (Korea Institute of Industrial Technology)
Jeong-Bae Ko (Korea Institute of Industrial Technology)
Min-Jae Joung (Gyeongbuk Technopark)

PP6-012 A323 **Application of Surface Roughness to Analyze the Effects of Contaminants on Crustacean Exoskeleton Surfaces**
Seung-Min Lee (Gyeongsang National University)
Tae-Soo Kwak (Gyeongsang National University)
Ihn-Sil Kwak (Chonnam National University)
Su-Yeon Han (Gyeongsang National University)

PP6-013 A389 **Development of an Early Cognitive Decline Screening Device with a Biomarker-based AI Model**
Wooseop Kim (NEUBREZE Inc.)
Wonhoe Gu (NEUBREZE Inc.)
Younghoon Jung (NEUBREZE Inc.)

PP6-014 A404 **Development of a 3D Nanofibrous Microwell to Enhance Organoid Uniformity and Maturity**
Dong Sung Kim (POSTECH)
Dohui Kim (POSTECH)
Hyeonji Lim (UNIST)
Jaeseung Youn (POSTECH)
Tae-Eun Park (UNIST)

PP6-015 A417 **Usability Evaluation of a Rehabilitation Exercise Program Using an AI-based Motion Analysis System for Spinal Cord Injury**
Jung Hwan Kim (Ewha Womans University & Medical Center Mokdong Hospital)
HyunJong Lee (National Rehabilitation Center)
Jun Pil Shin (National Rehabilitation Center)
Jae Hak Kim (National Rehabilitation Center)

PP6-016 A419 **Development of Protocatechuic Acid Derivatives as Skin-whitening Agents: Inhibition of Melanin Biosynthesis in Melanoma Cells**
Se Won Bae (Jeju National University)
Jaehoon Cho (Korea Institute of Industrial Technology)

PP6-017 A430 **An Analysis of Multimaterial Preset Extrusion Bioprinting Using Computational Fluid Dynamics**
Songwan Jin (Tech University of Korea)
Jae-Hun Kim (Tech University of Korea)
Sujin Kim (Tech University of Korea)
Won-Soo Yun (Tech University of Korea)
Jin-Hyung Shim (Tech University of Korea)

PP6-018 A433 **A Pilot Study on the Effectiveness of Ultrasound-guided Electroacupuncture Therapy**
Sungyun Park (Dongguk University)
SeungUg Hong (Dongguk University)

PP6-019 A456 **Bio-printing of functional vascular graft for rapid vascularization**
Hyun-Wook Kang (UNIST)
Jeonghyun Son (UNIST)
Won Ha (UNIST)

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PP6-020 A483 **Construction of a Fibrotic Tumor Model with Enhanced Barrier Function via Core-shell Bioprinting and Stepwise Stiffness Modulation**
Seok-Hyeon Lee (Pusan National University)
Byoung Soo Kim (Pusan National University)

PP6-021 A486 **Development of a Lightweight and Backdrivable Knee Exoskeleton**
Seungtae Park (University of Science and Technology)
Bummo Ahn (University of Science and Technology)
Jihun Kang (University of Science and Technology)
Wonseok Shin (Korea Institute of Industrial Technology)
Suncheol Kwon (University of Science and Technology)

PP6-022 A491 **Engineering Bioprinted Skin Patch Consisting of Vascularized Spheroids for Accelerating Wound Healing**
Minjun Ahn (Pusan National University)
Byoung Soo Kim (Pusan National University)
Gyu-Tae Park (Pusan National University School of Medicine)
Jae-Ho Kim (Pusan National University School of Medicine)

PP6-023 A497 **Embedded 3D Printing of Patient-specific Functional PDMS for Biomedical Applications**
Jae-Seong Lee (Pusan National University)
Byoung Soo Kim (Pusan National University)
Minjun Ahn (Pusan National University)

7. New and Renewable Energy

PP7-001 A031 **Evaluation of Heat Transfer Analysis Results for a Vehicle PVT System with Composite Materials under Driving Conditions**
Eulyong Ha (Korea Institute of Industrial Technology)
Jaewoong Kim (Korea Institute of Industrial Technology)
Jaesam Sim (Korea Institute of Industrial Technology)
Taehoon Seo (Korea Institute of Industrial Technology)
Chanyoung Ju (Korea Institute of Industrial Technology)
Younghyun Kim (Korea Institute of Industrial Technology)

PP7-002 A052 **Uncertainty Quantification for the Cracked Gas Diffusion Layer on Mass Transport Properties with Lattice Boltzmann Method**
Khanh-Hoan Nguyen (University of Ulsan)
Kyoungsik Chang (University of Ulsan)

PP7-003 A073 **Sustainable Fuel Alternatives: Evaluating Waste Fry Oil Biodiesel in Diesel Engines with ANN Modeling**
Dowan Cha (Korea National Defense University)
Adhirath Mandal (Graphic Era Deemed to be University)
Siddhant Thapliyal (Graphic Era Deemed to be University)
Mansi Sharma (Graphic Era Deemed to be University)
Rachan Karmakar (Graphic Era Deemed to be University)

PP7-004 A079 **Numerical Studies of the Cathode Patterned Gas Diffusion Layer for Performance Enhancement of Polymer Electrolyte Membrane Fuel Cells**
Dong Kun Song (Dankook University)
Gu Young Cho (Dankook University)
Gyeong Won Min (Dankook University)
Do Yeong Jung (Dankook University)
Ji Woong Jeon (Dankook University)
Seoung Jai Bai (Dankook University)
Sang Hoon Lee (University of California San Diego)

PP7-005 A100 **Performance Stabilization of Reformate-fueled, Low-temperature Solid Oxide Fuel Cells with Ni-SDC Thin-film Anode by Water Bubbling**
Sanghoon Ji (Korea Institute of Civil Engineering and Building Technology)
Weonjae Kim (Korea Institute of Civil Engineering and Building Technology)
Nari Park (Korea Institute of Civil Engineering and Building Technology)
Mi-Seon Kim (University of Science and Technology)
Taeyoung Kim (Seoul National University of Science and Technology)
Jihwan An (POSTECH)
Gu Young Cho (Dankook University)
Wonjong Yu (Kyung Hee University)

PP7-006 A111 **Numerical Investigations of Mass Transport Improvement Techniques of Flow Channels for PEMFCs**
Do Yeong Jung (Dankook University)
Gu Young Cho (Dankook University)
Dong Kun Song (Dankook University)
Namwook Kim (Hanyang University)
Jonghyun Son (Stanford University)

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PP7-007 A149 **Evaluation of the Electrochemical Properties of LT-SOFCs with PrOx Capping Layer**
Jiwoong Jeon (Dankook University)
Gu Young Cho (Dankook University)
Ki Won Hong (Dankook University)
Dong Kun Song (Dankook University)
Seng Heon Lee (Dankook University)
Byung Gyu Kang (Dankook University)
Do Yeong Jung (Dankook University)
Gyeong Won Min (Dankook University)

PP7-008 A239 **Surface Modification of Graphite Felt Electrodes with Titanium Oxynitride Nanocoating for High-performance Vanadium Redox Flow Batteries**
Wei-Lun Lee (National Pingtung University)
Wen-Jen Lee (National Pingtung University)

PP7-009 A294 **Numerical Analysis of Mass Transport in PEMFCs with Linearly Varying Channel Depth in Parallel Flow Fields**
Dong Kun Song (Dankook University)
Gu Young Cho (Dankook University)
Jun Geon Park (Dankook University)
Do Yeong Jung (Dankook University)
Hyeon Do Han (Dankook University)
Jonghyun Son (Stanford University)

PP7-010 A302 **Performance Estimation of a Solar-driven Thermoelectric Generation System with Radiative Cooling under Various Climatic Conditions**
Yongsik Ham (Kongju National University)
Joong Bae Kim (Kongju National University)
Junyong Seo (Kongju National University)
Dongwoo Yoo (Kongju National University)
Jinsung Rho (Hanbat National University)
Wonhyung Lee (Kumoh National Institute of Technology)

PP7-011 A308 **Mechanical Property Evaluation of Eco-friendly Basalt Fiber Composites according to Various Lamination Methods**
Byungwook Jeon (Kunsan National University)
Kiweon Kang (Kunsan National University)
Hakgeun Kim (Kunsan National University)
Sangil Lee (Kunsan National University)
Woojin Kim (Kunsan National University)

PP7-012 A320 **Investigation of Performance Differences in a 3-bed Adsorption Refrigeration System under Different Operating Modes**
Kyungjin Bae (Korea Institute of Industrial Technology)
Ohkyung Kwon (Korea Institute of Industrial Technology)

PP7-013 A356 **$La_{0.6}Sr_{0.4}Co_{0.4}Fe_{0.6}O_{3-\delta}$ Nano-functional Interlayer in Solid Oxide Electrolysis Cells**
Juhwan Lee (POSTECH)
Jihwan An (POSTECH)
Hyongjune Kim (POSTECH)
Kyoungjae Ju (POSTECH)
Hojun Yoo (Dankook University)
Sungeun Jo (POSTECH)
Hyunmin Kim (POSTECH)
Geonwoo Park (Seoul National University of Science and Technology)
Geongu Han (Seoul National University of Science and Technology)
Woojin Park (POSTECH)
Guyoung Cho (Dankook University)

PP7-014 A358 **Radiative Cooling Performance Evaluation with Precise Solar Irradiance Consideration**
Joong Bae Kim (Kongju National University)
Jaehyun Lim (Kongju National University)

PP7-015 A407 **Understanding of Effective Passivators for Achieving High-quality Perovskite Films and Optoelectronic Devices**
Sung Heum Park (Pukyong National University)
Fuqiang Li (Pukyong National University)
Fengwu Liu (Pukyong National University)
Haichang Xia (Pukyong National University)
Jung Hyun Jeong (Pukyong National University)
Byung Chun Choi (Pukyong National University)
Sung Yong Seo (Pukyong National University)

PP7-016 A459 **Design of a Generator with Complex Geometry Fabricated via Additive Manufacturing**
Pin-Hao Liao (National Cheng Kung University)
Mi-Ching Tsai (National Cheng Kung University)

POSTER II

PP7-017 A471 **Scalable Ni-P Composite Porous Electrodes for Efficient Alkaline Water Splitting**
Byeong Chan Choi (Korea Institute of Industrial Technology)
Hyoung Chan Kim (Korea Institute of Industrial Technology)
Byoungkoo Kim (Korea Institute of Industrial Technology)

PP7-018 A500 **Improving Water Management with Nature Inspired Flow Channel in Polymer Electrolyte Membrane Fuel Cell**
Sung Yong Jung (Chosun University)
Ji Yeon Kim (Chosun University)

PP7-019 A534 **Fabrication of Lithium Metal Foil via Melt-casting, Extrusion, and Cold Rolling for Application as an Anode in All-solid-state Batteries**
Sangwoo Kim (Korea Institute of Industrial Technology)
Dongeung Kim (Korea Institute of Industrial Technology)

8. Sustainable Technology

PP8-001 A084 **Development of Dissimilar Materials Joining Technology Using Ultrasonic Application**
Koki Matsuo (Hiroshima University)
Yongbum Choi (Hiroshima University)
Kazuhiro Matsugi (Hiroshima University)

PP8-002 A309 **Improving Autonomous Driving in Bad Weather Using Cycle GAN**
Jonghwan Lee (Kumoh National Institute of Technology)
Min Nam (Kumoh National Institute of Technology)

PP8-003 A381 **Development of a Testbed and Predictive Algorithms for Hybrid Micro-pin Reliability in Semiconductor Test Sockets**
Juhun Lee (Tech University of Korea)
Hyo-Young Kim (Tech University of Korea)
Sujin Jeong (Tech University of Korea)
YoungKyuong Ji (Tech University of Korea)
Kihyun Kim (Tech University of Korea)

PP8-004 A513 **3D-printable Silicone Reinforced with Naturally Derived Polymer for Customizable Biomedical Devices**
Min Ku Kim (Hanyang University)
Si Won Park (Hanyang University)
Jeong Woo Woo (Hanyang University)
Sang Jun Kim (Hanyang University)

PP8-005 A521 **Three-dimensional Printed Architectures for Highly Deformable and Efficient Energy Harvesting Surfaces**
Phillip Lee (Korea Institute of Science and Technology)

Special Session - 3. e-Chem Meditronic Systems

SP3-001 A402 **Polymeric Conductive Adhesive-based Ultrathin Epidermal Electrodes for Long-term Monitoring of Electrophysiological Signals**
Tae-il Kim (Sungkyunkwan University)

SP3-002 A405 **Rapid Sol-flame Process for Enhanced Surface and Electronic Properties of Transition Metal-based Oxide Electrodes in Photoelectrochemical Water Splitting**
Jung Kyu Kim (Sungkyunkwan University)

SP3-003 A427 **Core-shell Structured Catalysts with a Superior Thermal Stability for Dry Reforming of Methane**
Jong Wook Bae (Sungkyunkwan University)
Jae Hyeon Kwon (Sungkyunkwan University)

SP3-004 A529 **Engineered Extracellular Vesicles for Targeted Therapy of Acute Kidney Injury**
Jae Hyung Park (Sungkyunkwan University)
So Hee Kim (Sungkyunkwan University)
Chan Ho Kim (Sungkyunkwan University)

SP3-005 A563 **Charge-directed Nanocellulose Assembly for Sustainable Interface Catalysis**
Jin Woong Kim (Sungkyunkwan University)
Jaewon Shin (Sungkyunkwan University)
Bokgi Seo (Sungkyunkwan University)
Kyoungho Choi (Sungkyunkwan University)

POSTER III

Wednesday, 9 July 17:00-18:00

(Suthep Hall 1)

1. Manufacturing Processes

PP1-082 A357 **AutomationML-based AMR Task Scenario Design for CNC Integration**
Dong Yoon Lee (Korea Institute of Industrial Technology)
Yeong-Deuk Kim (DeeTem)

PP1-083 A363 **Friction Stir Welding of Cast Aluminum for Automotive Structures**
Ji Hoon Jeon (University of Ulsan)
Sung Tae Hong (University of Ulsan)
Van Cong Phan (University of Ulsan)
Chang Joo Lee (Hyundai Motor Co.)
Ki Seok Nam (Hyundai Motor Co.)

PP1-084 A372 **Effects of Process Parameters in Ti-6Al-4V Components Fabricated by Wire Arc Additive Manufacturing**
SungHo Heo (BEES, Inc.)
JiHoon Shin (BEES, Inc.)
JinHyung Kim (BEES, Inc.)
OSung Yoon (BEES, Inc.)
InSub Song (BEES, Inc.)
HeeSung Ahn (BEES, Inc.)

PP1-085 A373 **Evaluation of Weldability Depending on Storage Conditions of Welding Rods in the HDPE Welding Process**
Suseong Woo (Korea Institute of Industrial Technology)
Jisun Kim (Korea Institute of Industrial Technology)
Chungwoo Lee (Korea Institute of Industrial Technology)
JaeHwan Lee (Korea Institute of Industrial Technology)

PP1-086 A379 **Wear Behavior of TiO_2 Pack Cementation Coated Layer on Inconel 718 Built by Directed Energy Deposition**
Ju-Won Yoon (Korea Maritime and Ocean University)
Do-Sik Shim (Korea Maritime and Ocean University)
Sung-Tae Kim (KST Plant Co., Ltd.)
Dong-Hun Ha (Korea Maritime and Ocean University)
Kwang-Yong Shin (Korea Institute of Industrial Technology)
Ki-Yong Lee (Korea Institute of Industrial Technology)

PP1-087 A383 **Optimizing Process Parameters Using Machine Learning and Finite Element Analysis to Enhance Dimensional Accuracy in Robot-based Large Object Additive Manufacturing**
Hongll Kim (UNIST)
Namhun Kim (UNIST)
Adrian Matias ChungBaek (UNIST)

PP1-088 A391 **Electrochemical Deep-hole Drilling Using a Chained Ball Magnet Electrode**
Shihyoung Ryu (Jeonbuk National University)
Seungzoon Kim (Jeonbuk National University)
Mingyu Jeong (Jeonbuk National University)

PP1-089 A392 **Experimental Study of Micro Grinding of Soda Lime Glass Using Polycrystalline Diamond Tool**
Bo Hyun Kim (Soongsil University)
Jae Yeon Kim (Soongsil University)

PP1-090 A414 **Processing Metallic GDLs for PEMFCs via Nanosecond and Femtosecond Laser Micro-perforation**
Dawit Musse Yasin (Kongju National University)
Dongkyoung Lee (Kongju National University)
Seungeun Baek (Kongju National University)
Myeongho Park (Kongju National University)

PP1-091 A420 **Orange Peel Prevention in Deep Drawing Process by Using Multi Draw Radius Technique**
Kijima Ryu (Nippon Institute of Technology)
Sutasn Thipprakmas (King Mongkut's University of Technology Thonburi)
Masahiko Jin (Nippon Institute of Technology)

PP1-092 A422 **Study on the Improvement of Wear Performance in Lubricated Environments through Surface Texturing by Directed Energy Deposition**
Hyo-Jeong Kang (Korea Maritime and Ocean University)
Do-Sik Shim (Korea Maritime and Ocean University)
Hye-Yeon Seol (Korea Maritime and Ocean University)
Gwang-Yong Shin (Korea Institute of Industrial Technology)
Ki-Yong Lee (Korea Institute of Industrial Technology)

POSTER III

PP1-093 A423 **Acoustic Recognition Bridging of Expert Intuition and Digital Systems for Enhanced Machining**
Dong-Hyeon Jo (Gyeongsang National University)
Su-Jin Kim (Gyeongsang National University)
Su-Been Park (Gyeongsang National University)
Jun-Hyeong Park (Gyeongsang National University)
Gyu-Min Kim (Gyeongsang National University)
Junghwan Kook (Gyeongsang National University)

PP1-094 A424 **Powder Flow Characteristics of Alumina and Brass Nozzle Tips in Directed Energy Deposition Process**
Hong Seok Kim (Pusan National University)
Sanghu Park (Pusan National University)

PP1-095 A441 **A Study on Robotic Arm-based Hybrid Manufacturing Process Combining Electrical Discharge Machining and Drilling**
Su Yeon Kim (Kyungpook National University)
Gyu Man Kim (Kyungpook National University)
Min Chul Shin (Kyungpook National University)
Hui Jin Park (Kyungpook National University)
Hak Yi (Kyungpook National University)

PP1-096 A442 **Additive Manufacturing Technology for the Fabrication of Catalyst Supports for Exhaust Gas Purification**
Myung Pyo Hong (Korea Institute of Industrial Technology)

PP1-097 A443 **A Study on the Automation Model of Food Service Facilities Using Digital Twin-based Cooking Simulation**
Hae Yong Yun (Korea Institute of Robotics & Technology Convergence)

PP1-098 A448 **Study on Estimation of Sample Size for Bayesian Zero-failure Reliability Testing of Machinery Parts Following Weibull Distribution**
Jaesool Shim (Yeungnam University)
Yonghan Yoon (Hybrid Technology Research Institute)
Min-Sik Yang (SL Co.)
Young-Wung Kim (Wens)
Migyung Cho (Tongmyong University)
Cheol-Ho Bai (Yeungnam University)

PP1-099 A450 **Manufacturing of Pressure Vessels Using Composite Residual Stress Method for Improving Fatigue Life**
Jong-Beom Park (Ilshin Autoclave)

PP1-100 A454 **Optimization of Process Parameters for Minimizing Torsion and Bending Deformations in the Extrusion Process of Vehicle Seat Rails**
Jong Won Kim (Yeungnam University)
Jin Ho Kim (Yeungnam University)
Hyung Jun Kim (Yeungnam University)
Yu Chang Won (Yeungnam University)

PP1-101 A458 **Investigation into Fatigue Characteristics of Cu-brazed Ultra-thin Stainless-steel Plates**
Melkamu Tadesse Getachew (Pusan National University)
Sang-Hu Park (Pusan National University)
Hongseok Kim (Pusan National University)

PP1-102 A463 **Analysis of Changes in Laser Ablation of Lithium Iron Phosphate according to the Changes in Relative Humidity**
Myeong Ho Park (Kongju National University)
Dongkyoung Lee (Kongju National University)
Dawit Musse Yasin (Kongju National University)

PP1-103 A474 **Study on Hole Drilling in Aluminium Nitride Using Ultrashort Pulsed Laser**
Seungeun Baek (Kongju National University)
Dongkyoung Lee (Kongju National University)
Dongkyu Kim (Kongju National University)
Bai Cui (University of Nebraska-Lincoln)

PP1-104 A480 **Analysis of Machining-induced Heat Generation Characteristics during Post-processing of Material Extrusion-based Additive Manufacturing**
Yunseok Lee (Korea Institute of Industrial Technology)
Jungsoo Nam (Korea Institute of Industrial Technology)
Hyungjin Cho (Korea Institute of Industrial Technology)
Kyeongeun Song (Korea Institute of Industrial Technology)
NamKyu Lee (Yonsei University)

PP1-105 A481 **In-situ Multimodal Monitoring and Anomaly Detection in Additive Manufacturing Processes**
Yewon Choi (Korea Institute of Industrial Technology)
Jungsoo Nam (Korea Institute of Industrial Technology)
Hangyeol Ru (Korea Institute of Industrial Technology)
Min Ku Kim (Hanyang University)
Seok-Woo Lee (Korea Institute of Industrial Technology)

POSTER III

PP1-106 A487 **Post-heat Treatment Strategies for Improving DED-manufactured Inconel 718: A Focus on Microstructure and Mechanical Properties**
Yoon Sun Lee (Korea Institute of Industrial Technology)
Da Hye Kim (Korea Institute of Industrial Technology)

PP1-107 A488 **Composite Surface Roughness Parameter for Characterizing Contact Evolution in CMP**
Jongmin Jeong (Pusan National University)
Haedo Jeong (Pusan National University)
Yeongil Shin (Pusan National University)

PP1-108 A490 **A Study on the Design of a Monitoring System for Die Micro-damage in Multi-stage Cold Forging Process**
ARa Jo (Korea Institute of Industrial Technology)
SunKwang Hwang (Korea Institute of Industrial Technology)
NaKyung Lee (Korea Institute of Industrial Technology)
OhDong Kwon (Solution Lab Co., Ltd.)
WoonHak Lee (SJF Co., Ltd.)
MyeongSik Jeong (Korea Institute of Industrial Technology)

PP1-109 A498 **Precise Robotic Drilling by Enhancing Friction Force of the Pressure Foot**
Taehwa Hong (Korea Institute of Industrial Technology)
Seong Hyeon Kim (Korea Institute of Industrial Technology)
Hyeong Gu Kim (Korea Institute of Industrial Technology)
Seok-Woo Lee (Korea Institute of Industrial Technology)

PP1-110 A502 **Design and Characterization of Thin-walled Ti-6Al-4V Microthrusters Fabricated Laser Powder Bed Fusion**
Jeongrak Lee (POSTECH)
Anna Lee (POSTECH)
Junghoon Lee (POSTECH)
Rae Eon Kim (POSTECH)
Seonghyeon Kim (POSTECH)

PP1-111 A520 **Surface Treatments of Ausenitic Stainless-steel for Adhesive Bonding using Glass Frit**
Jihong Hwang (Seoul National University of Science and Technology)
Min Seob Shin (Seoul National University of Science and Technology)
SeokJae Hong (Seoul National University of Science and Technology)
Muhammad Abu Hurairah (Seoul National University of Science and Technology)

PP1-112 A531 **A Reinforcement Learning Algorithm for a Flexible Flow Shop Scheduling Problem with Autonomous Mobile Robot**
Hong Jin Jeong (VMS Solutions)
Jun Kim (Changwon National University)

PP1-113 A532 **Development of a Simulation Model for an Electric Vehicle Lower Arm**
Yong Jae Lee (Korea Institute of Industrial Technology)
Ho-jin Lee (Korea Institute of Industrial Technology)
Jong Kyu Park (Hwashin Co., Ltd.)
Hyeon Jun Choi (Hwashin Co., Ltd.)
Myoung Jae Lee (Hwashin Co., Ltd.)

PP1-114 A549 **The Effect of Two-stage Processes on Low-temperature Nitrocarburizing**
Sung Bo Heo (Korea Institute of Industrial Technology)
Jun-Ho Kim (Korea Institute of Industrial Technology)
Hyun Jin Kim (Korea Institute of Industrial Technology)
In-Wook Park (Korea Institute of Industrial Technology)

PP1-115 A555 **Machine Learning Assisted Prediction of Stress-strain Curves in Injection-molded Polyamide-6 Composite Parts**
Tae Hwan Kim (Sungkyunkwan University)
Jong Hwan Suhr (Sungkyunkwan University)
Ung Hyeon Cho (Sungkyunkwan University)
Jin Woo Jang (Sungkyunkwan University)
Min-Kyeom Kim (Sungkyunkwan University)
Tae Hoon Oh (Sungkyunkwan University)
Ju Won Kim (Sungkyunkwan University)
Sang Won Lee (Sungkyunkwan University)

PP1-116 A558 **Optimization of Dry-electrochemical Polishing with Integrated Statistics and Machine Learning considering Pulse Power Conditions**
Seong Ung Kwak (Kunsan National University)
Jeong Woo Park (Chosun University)

PP1-117 A559 **Magnetic Field-assisted Digital Lighting Processing for Tailored Composite Microstructures**
Seung Hyun Kim (Sungkyunkwan University)
Jong Hwan Suhr (Sungkyunkwan University)
Jin Woo Jang (Sungkyunkwan University)
Tae Hoon Oh (Sungkyunkwan University)
Min-Kyeom Kim (Sungkyunkwan University)

POSTER III

PP1-118 A574 **Study on Decarburization and Mechanical Properties of Ultra-low Carbon Steel by Improving the Lower Vessel of RH Degasser**
Ji-Min Yun (Pukyong National University)
Ki-Woo Nam (Pukyong National University)
Ki-Hang Shin (Pukyong National University)
Ji-Min Yun (Pukyong National University)
Kwon-Hoo Kim (Pukyong National University)

PP1-119 A584 **Friction-assisted Solid-state Lap Joining of Dissimilar Metal Tubes**
Jae Yong Yang (University of Ulsan)
Sung Tae Hong (University of Ulsan)
Yoo Ju Kang (Ulys Labs.)

3. Automation, Measurement & Control

PP3-001 A008 **Design of a Measurement System for the Radius of Curvature, Thickness, and Refractive Index of Spherical Transparent Materials**
Chien-Sheng Liu (National Cheng Kung University)
Yi-Chi Li (National Cheng Kung University)

PP3-002 A010 **Design and Performance Evaluation of a Firefighting Flying Robot**
Thien-Dinh Nguyen (Pukyong National University)
Young-Bok Kim (Pukyong National University)
Cao-Tri Dinh (Pukyong National University)
Thinh Huynh (Pukyong National University)

PP3-003 A011 **Experimental Study on Altitude Motion Control of an Aerial Robot Powered by Water-jet**
Cao-Tri Dinh (Pukyong National University)
Young-Bok Kim (Pukyong National University)
Thien-Dinh Nguyen (Pukyong National University)
Thinh Huynh (Pukyong National University)

PP3-004 A016 **3D Reconstruction of Weld Bead Profiles Using Binocular Vision**
Zi-Yi Yang (National Cheng Kung University)
Chunhui Chung (National Cheng Kung University)
Hao Lun Huang (Da Shiang Automation Co., Ltd.)

PP3-005 A024 **Advanced Optimization Algorithms for Raman Spectral Quality Control in Chemical Vapor Deposition**
Chung-Ying Wang (National Applied Research Laboratories)
Chien-Yao Huang (National Applied Research Laboratories)
Chen-Yu Lin (National Applied Research Laboratories)
Jin-Yu Shih (National Applied Research Laboratories)

PP3-006 A025 **Deep-learning Based Normalizing One-frame Phase Demodulation Method for Real-time Interferometric Measurement**
Juncheol Bae (Pusan National University)
Yangjin Kim (Pusan National University)
Hyeockjun Suh (Pusan National University)
Hwan Kim (Pusan National University)
Jurim Jeon (Pusan National University)

PP3-007 A038 **A Novel Gripper Design for Efficient Handling of Curved Cylindrical Objects in Automated Processes**
SeongHyeon Won (Korea University)
Daehie Hong (Korea University)
Yongjung Lee (Korea University)
Chanwoo Kim (Korea University)

PP3-008 A040 **Hardware Measurement-based Modeling and Simulation of Fast Steering Mirror with Hysteresis and Coupled Dynamics**
Hyo Geon Lee (Yonsei University)
Jun Young Yoon (Yonsei University)
Sang Won Jung (Yonsei University)
Jae Woo Jung (Yonsei University)
Jae Hyun Kim (Yonsei University)
Seonbin Lim (Yonsei University)
Youngjin Park (Yonsei University)
Onemook Kim (Yonsei University)
Jaehyun Lim (Yonsei University)
Kijun Seong (LIG Nex1)
Daehee Lim (LIG Nex1)
Minjae Ko (LIG Nex1)
No-Cheol Park (Yonsei University)

PP3-009 A042 **Flicker-free LED Driver Design for Fourier Ptychographic Microscopy**
Byong Hyuk Chon (Korea Research Institute of Standards and Science)
Hee Kyung Ahn (Korea Research Institute of Standards and Science)

POSTER III

PP3-010 A053 **Detection of Gas Leakage from Pipeline Sound Data Using Variational Autoencoder**
Nehemiah Joel Balozi (Sungkyunkwan University)
Hyungpil Moon (Sungkyunkwan University)
Jenipher Siriwa (Sungkyunkwan University)
Eugene Auh (Sungkyunkwan University)

PP3-011 A054 **Anomaly Detection in Industrial Pipelines Using Thermal and RGB Images**
Jenipher Siriwa (Sungkyunkwan University)
Hyungpil Moon (Sungkyunkwan University)
Nehemiah Balozi (Sungkyunkwan University)
Eugene Auh (Sungkyunkwan University)

PP3-012 A074 **Gain-scheduled Feedforward-feedback Control for Reducing Lateral Acceleration and Jerk of Vehicle during Lane Changing Maneuver**
Chang Hwan Kim (Yonsei University)
Jun Young Yoon (Yonsei University)
Jung Ki Lee (Yonsei University)
Hong Sun Jang (Yonsei University)
Junmin Wang (The University of Texas at Austin)

PP3-013 A080 **Dynamic Deflectometry for Real-time 3D Surface Measurement**
Young-Sik Ghim (Korea Research Institute of Standards and Science)
Manh The Nguyen (Korea Research Institute of Standards and Science)
Hyug-Gyo Rhee (Korea Research Institute of Standards and Science)

PP3-014 A082 **Design and Analysis of Stiffness-tunable 2-DOF XY Stage with Enhanced Force Density**
Dong Hyeon Park (Yonsei University)
Jun Young Yoon (Yonsei University)
Sang Won Jung (Yonsei University)

PP3-015 A083 **Vision-based Contact Detection Method for ERCP Cannulation**
Yong Jung Lee (Korea University)
Daehie Hong (Korea University)
SeongHyeon Won (Korea University)
Woocheol Shin (Korea University)

PP3-016 A087 **Affordance-based Object Grasping Pose Estimation with Active Learning**
KwangEun Ko (Korea Institute of Industrial Technology)
Dongbum Pyo (Korea Institute of Industrial Technology)
Jaehyun Kang (Korea Institute of Industrial Technology)
KwangHee Lee (Korea Institute of Industrial Technology)
SangJun Lee (Korea Institute of Industrial Technology)

PP3-017 A114 **AI-assisted Search for Industrial Components Using a Local Database and Large Language Models**
Sagi Amangeldi (Korea Institute of Industrial Technology)
Dong-Hyun Kim (Korea Institute of Industrial Technology)
Sungbum Park (Korea Institute of Industrial Technology)
Jeonghong Ha (Korea Institute of Industrial Technology)
Yungkeun Kwon (University of Ulsan)

PP3-018 A117 **High Numerical Aperture Spherical Concave Mirror (NA 0.92) Testing Using a Computer-generated Hologram**
Ma. Angela Lourdes B. Lequiron (University of Science and Technology)
Hagyong Kihm (Korea Research Institute of Standards and Science)
Jae-Hyuck Choi (Korea Research Institute of Standards and Science)
Eunsil Jang (Korea Research Institute of Standards and Science)
Ho-Soon Yang (Korea Research Institute of Standards and Science)

PP3-019 A120 **Development of Mixed Reality ViLS-based HMI Evaluation Platform for Automated Vehicle**
Hun Lee (Korea Automotive Technology Institute)
SunHong Park (Korea Automotive Technology Institute)
YoungDal Oh (Korea Automotive Technology Institute)
DongHan Lee (Korea Automotive Technology Institute)
MoonSik Kim (Kongju National University)

PP3-020 A130 **Areal Chromatic Confocal Sensor**
Jisoo Oh (Chosun University)
Ki-Nam Joo (Chosun University)

PP3-021 A131 **Possibility of Spectral Interferometer for Evaluating an Optical Spectrometer**
Seoyoon Lee (Chosun University)
Ki-Nam Joo (Chosun University)

POSTER III

PP3-027 A166 **Interference Check Method for Ship Block Welding Using Robot Swept Shape**
Dae Jin Jeong (Kumoh National Institute of Technology)
Ki Youn Kwon (Kumoh National Institute of Technology)
Sang Woo Kim (Kumoh National Institute of Technology)
Eun Jin Han (Kumoh National Institute of Technology)
Se Yeon Gong (Kumoh National Institute of Technology)

PP3-028 A191 **A Study on the Effective Factor of the TOR (Take-over Request) Algorithm for Autonomous Vehicles through Vehicle to Infrastructure Communication and Real-road Field Operational Tests**
Dong Whan Lee (Korea Automotive Technology Institute)
Seong-Jin Kwon (Yeungnam University)
Tae Lim Kim (Korea Automotive Technology Institute)
Jae Ung Choi (Korea Automotive Technology Institute)

PP3-029 A192 **A 3D Scanner and Manipulator-based Environmental Recognition Method for Teleoperated Live-line Maintenance on Overhead Distribution Lines**
Siheon Jeong (Hanyang University)
Ki-Yong Oh (Hanyang University)

PP3-030 A193 **Optimization of an Indoor Positioning System for Automated Valet Parking Systems Using Front and Rear Cameras with Fiducial Marks**
Youngwoo Lee (Hyunbo Co.)
Moonsik Kim (Kongju National University)
Dongjun Kim (Hyunbo Co.)
Yujung Jung (Hyunbo Co.)
Donghee Yi (Hyunbo Co.)

PP3-031 A194 **Mobile Robotic System for Complex Welding Tasks**
Van-Tung Ha (University of Ulsan)
Jaeyoul Lee (Korea Institute of Robotics & Technology Convergence)
Sung-Ho Hong (Korea Institute of Robotics & Technology Convergence)
Han-Gyeol Kim (Korea Institute of Robotics & Technology Convergence)
Chang-Hee Lee (Korea Institute of Robotics & Technology Convergence)
Jin-Ho Suh (Pukyong National University)

PP3-032 A196 **Development of a Fire Safety System for Large-area Compressed Hydrogen Storage Devices**
Jae-Chul Lee (Korea Institute of Industrial Technology)
WooSeok Jeong (Korea Institute of Industrial Technology)
Tae-Sung Shin (Korea Institute of Industrial Technology)

POSTER III

PP3-033 A228 **Development of a 2-DOF Steerable Knife for Endoscopic Surgery**
ChanWoo Kim (Korea University)
Daehie Hong (Korea University)
SeongHyeon Won (Korea University)
JaeYoun Kim (Korea University)

PP3-034 A230 **Generating Abnormal Images to Address Data Scarcity in the Finishing Mill Process**
Taehan Lee (POSTECH)
Sang Woo Kim (POSTECH)
Jong Pil Yun (Korea Institute of Industrial Technology)

PP3-035 A232 **A 3D Perception Sensor based on Multiple Ultrasonic MEMS Microphones for Vehicle Applications**
Dong-Hee Yi (Hyunbo Co.)
Suk Chan Kim (Pusan National University)
Dong-Jun Kim (Hyunbo Co.)
Youngwoo Lee (Hyunbo Co.)
Yu Hwan Lee (Hyunbo Co.)
Seung Min Jo (Hyunbo Co.)

PP3-036 A233 **High Resolution White Light Scanning Interferometry Using Structured Illumination**
Minseo Cho (Chosun University)
Ki-Nam Joo (Chosun University)

PP3-037 A244 **Adaptive Exploration-return Strategy for Time-constrained Robotic Exploration**
Seohyeon Jeon (Sejong University)
Seonghan Kim (Sejong University)
Hanbee Jung (Sejong University)

PP3-038 A249 **Development of Complex Driving Scenarios for CAV Safety Testing**
Wooyoung Jang (Korea Intelligent Automotive Parts Promotion Institute)
Taehee Lee (Korea Intelligent Automotive Parts Promotion Institute)
Hakju Lee (Korea Intelligent Automotive Parts Promotion Institute)
Kiju Kim (Korea Intelligent Automotive Parts Promotion Institute)
Byungchul Kim (Dong-A University)
Sungjin Kim (Dong-A University)

PP3-039 A251 **Lateral Shearing Interferometry for the Surface Metrology of Large Optical Systems**
Seongwook Jang (Chosun University)
Ki-Nam Joo (Chosun University)

PP3-040 A252 **3D Object Detection Optimization through Depth Estimation-based Point Cloud Interpolation**
Dongjun Kim (Sejong University)
Seonghan Kim (Sejong University)
Yongjun Moon (Sejong University)

PP3-041 A255 **Applying Geometric Fitting Methods for Geometric Error Measurement and Precision Compensation in Five-axis Machine Tools**
Ting-Hua Zhang (National Taiwan University)
Meng-Shiun Tsai (National Taiwan University)
Chih-Yao Liu (National Taiwan University)
Zheng-Wei Jian (National Taiwan University)
Chien-Kuan Liu (National Taiwan University)
Chien-Yao Huang (National Center for Instrumentation Research)

PP3-042 A259 **Global Pose Estimation of a Motor Grader Blade through Kinematics and IMU Fusion**
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Sangseok Ahn (PILETA Co., Ltd.)
Donghoon Yoo (PILETA Co., Ltd.)
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Seungtaek Kim (Korea Institute of Industrial Technology)

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Seonghun Lee (Daegu Gyeongbuk Institute of Science and Technology)
Taesang Park (Daegu Gyeongbuk Institute of Science and Technology)
Choongpyo Jeong (Daegu Gyeongbuk Institute of Science and Technology)
Jaeseong Lee (Daegu Gyeongbuk Institute of Science and Technology)
Gwangmin Park (Daegu Gyeongbuk Institute of Science and Technology)

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Chan Woo Lee (Korea Railroad Research Institute)

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정밀가공 Precision Manufacturing Processes
정밀측정 Precision Measurements
로봇제어자동화 Robotics, Control and Automation
스마트생산시스템 Smart Manufacturing System
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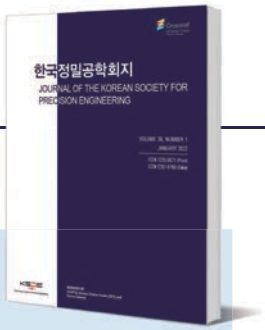

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IJPEM-ST

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- Big Data Analytics and Informatics
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- Manufacturings System
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- Machine Tools
- Nano/Micro Technology
- Bio Health
- Additive Manufacturing

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TOPIC

2023: Robots for Manufacturing Processes and Systems
2024: Semi Conductor Manufacturing
2025: IJPEM 25th Anniversary Special Issue
2026: Humanoid Robots and Physical AI and for Manufacturing

IJPEM-GT

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INTRODUCTION

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2. Published paper after selected outstanding paper of International Conference
3. Awards of the most downloaded and cited paper

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- Energy Saving and Waste Reduction in Manufacturing Processes
- Manufacturing of New and Renewable Energy Devices
- Design and Manufacturing of Green Products
- Materials for Green Manufacturing
- Management and Policy for Sustainable Manufacturing

SPECIAL ISSUE

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2017: 4D Printing
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2019: Energy Harvesting
2020: Green Smart Manufacturing
2021: Soft and Green Manufacturing and Applications
2022: Green Manufacturing Coping with Climate Change and Pandemics
2023: NetZero, Achievable by Manufacturing?
2024: Advanced Manufacturing for ESG
2025: Autonomous Manufacturing with Green Technology
2026: Autonomous Manufacturing for Sustainable Industry

INTERNATIONAL JOURNAL OF PRECISION ENGINEERING AND MANUFACTURING

About IJPEM

IJPEM is published by the Korean Society for Precision Engineering with Springer. The journal has a history of 26 years and aims to disseminate relevant fundamental and applied research works of high quality to the international precision and manufacturing engineering community. The journal is indexed in SCIE (Impact factor 3.6) and downloaded more than 148,000 times a year around the world

Topics of the Special Issue cover novel research contributions of precision engineering and manufacturing - theories and applications in the field of

Humanoid Robots and Physical AI for Manufacturing

The potential focus areas to be covered in this Special Issue include, but are not limited to:

- Embodied AI for factory-level decision making and control
- Humanoid robots for precision manipulation and tool use
- AI-based learning from human demonstrations in industrial tasks
- Perception and action integration in complex factory environments
- Dexterous manipulation with vision and tactile feedback for contact-rich tasks
- Safe and adaptive human-humanoid collaboration
- Integrating physical AI with digital twin, mixed reality, and large language model (LLM)
- Applications of physical AI in flexible and modular manufacturing systems
- Design, modeling, and control of anthropomorphic mechanisms
- Deployment strategies of humanoid robots in legacy factory systems
- Case studies and real-world demonstrations of humanoid systems in production

Guest editors

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Autonomous Manufacturing for Sustainable Industry

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- Cyber-Physical Production Systems for Sustainable Manufacturing
- Green Robotics and Intelligent Control in Smart Manufacturing
- Sensing, Monitoring and Diagnostics for Green Manufacturing
- Integration of AI in Manufacturing

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Submission Procedures

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5. Micro/Nano Technology
6. Bio & Health
7. New and Renewable Energy
8. Sustainable Technology

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February 2(Mon), 2026

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March 31(Tue), 2026

Deadline for Early Registration/ Presenter Registration:
May 1(Fri), 2026

Full Paper Submission (Optional):
May 1(Fri), 2026

Participating Journals

1. International Journal of Precision Engineering and Manufacturing (IJPEM)
   ***SCIE, SCOPUS / Impact Factor 3.6 (2024), Q1**
2. International Journal of Precision Engineering and Manufacturing-Green Technology (IJPEM-GT)
   ***SCIE, SCOPUS / Impact Factor 5.6 (2024), Q1**
3. International Journal of Precision Engineering and Manufacturing-Smart Technology (IJPEM-ST)
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