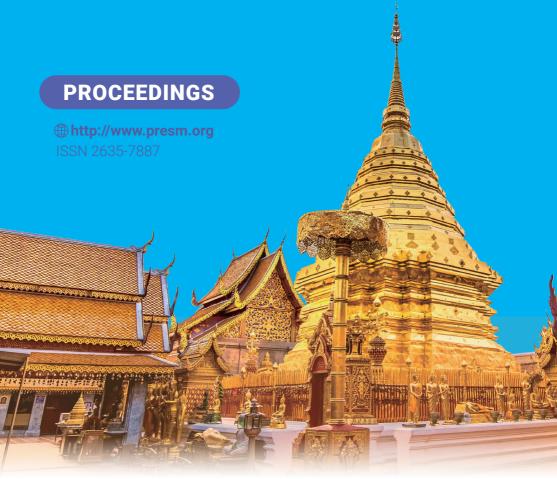




PRESM 2025 July 6 sun – 11 Fri, 2025 Chiang Mai Marriott Hotel, Chiang Mai, Thailand



Organizer



TCEB Thailand Convention & Exhibition Bureau (TCEB, Thailand)





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, coorganizing 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!

Chair of PRESM 2025

Prof. Sung-Hoon Ahn (Seoul National University), Korea President of Korean Society for Precision Engineering (KSPE)

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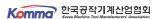












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PL3	Toward Sustainable Energy Storage: Biomass to Efficient Anodes for Next-gen Batteries *Thapanee Sarakonsri (Chiang Mai University, Thailand)

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M1-FA4	Scalable Manufacturing of CNT Embedded Hierarchical Surface for Piezo-electric Tactile Sensing	
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M2-FB2 Keynote	Sustainable Manufacturing of Optical Metasurfaces for Imaging, Sensing and Display *Junsuk Rho (POSTECH, Korea)
M2-FB3	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	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	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	Mass Production of Laser-induced Graphene Green Electronics for Energy Storage Applications *Young-Jin Kim (KAIST, Korea)
M2-FB7	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)

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	Heechan Yang (POSTECH)
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	*Pei-Chen Su (Nanyang Technological University, Singapore)
M3-FC3	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)
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	*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)

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	*Hee-Gyeong Yi (Chonnam National University, Korea)
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	*Yeong-Jin Choi (Korea Institute of Materials Science, Korea)
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	*Brian Lee (Sungkyunkwan University, Korea)
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Gun Hee Kim (Korea Institute of Industrial Technology)

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SeHan Son (Jungwon University)

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Yewon Choi (Korea Institute of Industrial Technology)

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ARa Jo (Korea Institute of Industrial Technology)

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Jong Kyu Park (Hwashin Co., Ltd.)

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Mijin Kim (Korea Institute of Machinery & Materials)

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Taeho Ha (Korea Institute of Machinery & Materials)

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Sang-Wook Park (Korea Institute of Industrial Technology)

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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)

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Taichi Kusatsugu (Nagoya University) Kyungki Lee (Nagoya University)

Takehiro Hayasaka (Nagoya University)

Seiichi Uto (Nagoya University)

Eiji Shamoto (Nagoya University)

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series Data Using Transfer Learning Kang Seok Kim (Pusan National University)

Hvo Jin Juna (SBC Linear Co.)

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SangHyeon Bae (Korea Institute of Industrial Technology)
SungRyul Kim (Korea Institute of Industrial Technology)

Jedoo Ryu (Korea Institute of Industrial Technology)

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Jeong-Gon Kim (Korea Institute of Industrial Technology)

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Jun Hyun Jo (Korea Institute of Industrial Technology)

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Donghyuk Park (Korea Institute of Industrial Technology)
Jaehak Lee (Korea Institute of Industrial Technology)
Eunseok Nam (Korea Institute of Industrial Technology)

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Jae Hyeok Kim (Korea Institute of Industrial Technology)
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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)

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WoongKi Jang (Kangwon National University)
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Jinseob Shin (Kangwon National University)
Byeong Hee Kim (Kangwon National University)
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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)

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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

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Joon-Soo Lee (Yonsei University)
Minjae Sung (Yonsei University)

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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)

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Joon-Soo Lee (Yonsei University)
Byung-Kwon Min (Yonsei University)
Ji-Myeong Park (Yonsei University)
Sangwon Kang (Yonsei University)
Byoung-Seok Kim (Yonsei University)

PP2-023 A567 FEA-based Evaluation of Volumetric Error in Machine Tools with Different

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Byung-Kwon Min (Yonsei University)
Hee-Min Shin (Yonsei University)
Doyoung Kim (DN Solutions)
Changwon Oh (DN Solutions)
Changho Lee (DN Solutions)

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In-Wook Oh (Yonsei University)
Byung-Kwon Min (Yonsei University)
Sangwon Kang (Yonsei University)
Hee-Min Shin (Yonsei University)
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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)

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Chien-Sheng Liu (National Cheng Kung University)

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Thien-Dinh Nguyen (Pukyong National University)
Young-Bok Kim (Pukyong National University)
Cao-Tri Dinh (Pukyong National University)
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Cao-Tri Dinh (Pukyong National University)
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Zi-Yi Yang (National Cheng Kung University)
Chunhui Chung (National Cheng Kung University)
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Chung-Ying Wang (National Applied Research Laboratories)

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Jin-Yu Shih (National Applied Research Laboratories)

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Juncheol Bae (Pusan National University)

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Hyo Geon Lee (Yonsei University)

Jun Young Yoon (Yonsei University)

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Jae Hyun Kim (Yonsei University)

Seonbin Lim (Yonsei University)

Youngjin Park (Yonsei University)

Onemook Kim (Yonsei University)

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Byong Hyuk Chon (Korea Research Institute of Standards and Science)
Hee Kyung Ahn (Korea Research Institute of Standards and Science)

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Nehemiah Joel Balozi (Sungkyunkwan University) Hyungpil Moon (Sungkyunkwan University) Jenipher Siriwa (Sungkyunkwan University) Eugene Auh (Sungkyunkwan University)

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Jenipher Siriwa (Sungkyunkwan University) Hyungpil Moon (Sungkyunkwan University) Nehemiah Balozi (Sungkyunkwan University) Eugene Auh (Sungkyunkwan University)

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Chang Hwan Kim (Yonsei University)
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Young-Sik Ghim (Korea Research Institute of Standards and Science)
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Hyug-Gyo Rhee (Korea Research Institute of Standards and Science)

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Dong Hyeon Park (Yonsei University)
Jun Young Yoon (Yonsei University)

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Yong Jung Lee (Korea University)
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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 Al-assisted Search for Industrial Components Using a Local Database and

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Sagi Amangeldi (Korea Institute of Industrial Technology)

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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)
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Hun Lee (Korea Automotive Technology Institute)

SunHong Park (Korea Automotive Technology Institute)

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Jisoo Oh (Chosun University)

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Seoyoon Lee (Chosun University)

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Ji-Wook Kim (Korea Institute of Industrial Technology)

Jin-Seok Jang (Korea Institute of Industrial Technology)

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Voice Coil Motor Moon Gu Lee (Ajou University)

Yong Ho Jeon (Ajou University)

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Youngjun Yuk (Korea Institute of Industrial Technology)

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Min Jun Kim (Korea Institute of Industrial Technology)

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Eun Jin Han (Kumoh National Institute of Technology)

Ki Youn Kwon (Kumoh National Institute of Technology)

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Dae Jin Jeong (Kumoh National Institute of Technology)
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Moonsik Kim (Kongju National University)

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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)

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Jae-Chul Lee (Korea Institute of Industrial Technology)
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Wooyoung Jang (Korea Intelligent Automotive Parts Promotion Institute)
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Kiju Kim (Korea Intelligent Automotive Parts Promotion Institute)
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Seongwook Jang (Chosun University)
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Jihun Kim (Korea University)
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MyungIn Jin (Korea University) Daehie Hong (Korea University)

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Hyung-Seop Shin (Andong National University) Sang Heon Lee (Andong National University) Michael De Leon (Andong National University)

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SangMun Kim (Andong National University)
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SangHeon Lee (Gyeongkuk National University) SangMun Kim (Gyeongkuk National University)

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Seongin Noh (KAIST) Huitaek Yun (KAIST) Pung Kyu Lee (KAIST)

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Woocheol Shin (Korea University)
Daehie Hong (Korea University)
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Kyung Ho Yang (Soongsil University) Hyeong-Joon Ahn (Soongsil University)

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Jangwon Lee (Korea University)
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Dayeon Yang (Korea Institute of Industrial Technology)
Chanyoung Ju (Korea Institute of Industrial Technology)
Tea Hoon Seo (Korea Institute of Industrial Technology)
Soon Ho Kim (Korea Institute of Industrial Technology)
Minmo Koo (Korea Institute of Industrial Technology)
Jaewoong Kim (Korea Institute of Industrial Technology)

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Chae-Wook Jeon (Dong-Eui University) Seung-Ho Ok (Dong-Eui University) Joo-Hwan Park (Dong-Eui University)

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Youngkyoung Ji (Tech University of Korea)
Hyo-Young Kim (Tech University of Korea)
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Yang Zhao (Pukyong National University)

Kyung-Chang Lee (Pukyong National University)

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Myoung-Won Kim (Pukyong National University) Kyung-Chang Lee (Pukyong National University) Ji-Hyun Jung (Pukyong National University) Jae-Hun Jang (Pukyong National University)

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Sungjong Kwak (Kunsan National University)

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Dong-Youn Shin (Pukyong National University)

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Euichul Jeong (Korea Institute of Industrial Technology)

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Min Gi Cho (Korea Institute of Industrial Technology)

Jung Woo Cho (Korea Institute of Industrial Technology)

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PP3-062 A460 Development of Temperature Monitoring System for Solvent Evaporation Process in Chamber

Jinhyuk Lee (PILETA Co., Ltd.)

Sangseok Ahn (PILETA Co., Ltd.)

Donghoon Yoo (PILETA Co., Ltd.)

Kiduek Min (PILETA Co., Ltd.)

Heonyoung Kim (PILETA Co., Ltd.)

Mukyung Seo (PILETA Co., Ltd.)

Hyunsun Choi (PILETA Co., Ltd.)

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Sanghyun Lee (Korea Maritime and Ocean University)
Seonghyeon Kim (Gyeongsang National University)

Hojin Kim (Dongseo University)

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Jaehyun Park (Korea Institute of Industrial Technology)
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Jaemin Lee (Korea Testing Laboratory)
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Daewon Kim (Daegu Gyeongbuk Institute of Science and Technology)
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)
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Jaeseong Lee (Daegu Gyeongbuk Institute of Science and Technology)
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Eun Ho Kim (Korea Institute of Industrial Technology) Bo Seong Kim (Korea Institute of Industrial Technology)

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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

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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

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MinGoo Cho (Korea Institute of Industrial Technology)

JaeWoong Kim (Korea Institute of Industrial Technology)

Sung-Wook Kang (Changwon National University)
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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)

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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

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Ji Won Han (Yonsei University)
Jun Young Yoon (Yonsei University)
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Sang Won Jung (Yonsei University)

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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)

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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)

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Sua Hong (Korea Institute of Industrial Technology)
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Jaehyun Lee (Korea Research Institute of Standards and Science)
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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)

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Hyojin Jung (SBC Linear Co.)

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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)

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Kang Hee Lee (Yonsei University)

Ji Won Han (Yonsei University)

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Min-Jae Jo (Dankook University)

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Jin Seok Jang (Korea Institute of Industrial Technology)

Byeong Hak Kim (Korea Institute of Industrial Technology)

Dae Cheol Ko (Pusan National University)

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Kyumin Lee (Seoul National University of Science and Technology)

Seo-hyeon Oh (The University of Akron)

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Hee-Chan Song (Yonsei University)
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Hyoseong An (SK On)

Young Bin Kim (Yonsei University) Kyungsik Kim (Yonsei University)

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Seo Rim Park (Changwon National University)
Heeok Kim (Changwon National University)

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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)

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 $\textbf{Heungsoo Park} \ (\textbf{Seoul National University of Science and Technology})$

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)

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Joohyeong Park (Seoul National University of Science and Technology)

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Dongha Shim (Seoul National University of Science and Technology)

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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)

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Seokbeom Chun (KAIST)

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Younggeon Park (KAIST)

Yongbin Cho (KAIST)

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Byunghyun Kang (Korea University)

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Yun Jae Hwang (UNIST) Hyung Wook Park (UNIST)

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AnMok Jeong (Korea Institute of Industrial Technology)
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YounSu Kang (Korea Institute of Industrial Technology)
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HakJun Lee (Korea Institute of Industrial Technology)

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Yein Choi (Kunsan National University)
Seonghwan Eom (Kunsan National University)
Songhee Han (Kunsan National University)

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Jun Choi (Korea Institute of Industrial Technology)

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Taekyung Lee (Pusan National University)
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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.)

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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 Rveona 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

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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)

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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)

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Yini Chen (Yeungnam University)

Tae Jo Ko (Yeungnam University)

Shuang Li (Yeungnam University)

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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)

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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)

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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)

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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

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Anna Lee (POSTECH)

PP4-048 A493 Thickness-accommodating Method for Multi-configurable Thick Origami with

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Anna Lee (POSTECH)

PP4-049 A508 Flow Fluctuation Control via Zero-stiffness and Bulging Instabilities in

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Jinwoo Lee (POSTECH) Anna Lee (POSTECH)

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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

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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)

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Daejong Yang (Kongju National University)

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Young Shin Kim (Kongju National University)

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Hae-Jin Choi (Chung-Ang University) Seungiae Han (Chung-Ang University)

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Yongdae Kim (Korea Institute of Industrial Technology)

Jeongwon Lee (Korea Institute of Industrial Technology)

Sunghee Lee (Korea Institute of Industrial Technology)

PP4-056 A536 Tensile Properties of Gadolinium Oxide Dispersion Strengthened Austenitic

Stainless Steels for Neutron Absorbing Structural Components

Sejin Kim (Pukyong National University)

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Yuhan Lu (Pukyong National University)

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Joo Hyeon Kim (Pukyong National University)

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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)

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PP4-059 A540 Autonomously Discovered Metamaterials with Tailored Near-zero Poisson's

Ratio for Enhanced Interface Force in Nonlinear Soft Grippers

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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

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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

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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

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Sungmin Moon (Gyeongsang National University)

Sungki Lyu (Gyeongsang National University)

Dongseok Oh (Gyeongsang National University)

Taehvun Kim (Gveongsang National University)

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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)

5. Micro/Nano Technology

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Coating

Shi Hyeong Kim (Korea Institute of Industrial Technology)

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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

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Jeong Han Kang (Dong-A University) Sungho Lee (Dong-A University) Sang Hee Lee (Dong-A University)

Hogeon Won (Dong-A University)

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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.)
Seunamo Kim (Korea University of Technology and Education)

PP5-007 A123 Synthesis and Analysis of PANI/MoS₂ 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

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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

 ${\bf Seo\ Yeon\ Lee}\ ({\bf Jeonbuk\ National\ University})$

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 PA06 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)

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)

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 AgIO₃/Ag/PTFE/WO₃/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 MoSe₂ 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)

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)

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 Al-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

Hyun Seong Shin (Sogang University) Namkeun Kim (Sogang University) Andrea Marzotto (Sogang University)

for Individual Rotation Alignment

Jongwoo Lim (KAIST)

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)

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 Al 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 Al-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)

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)

Granta Park (Pusan National University School

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)

 ${\bf Jaesam\,Sim}\ ({\bf Korea\ Institute\ of\ Industrial\ Technology})$

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 Laver 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)

Woniona Yu (Kvuna 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)

PP7-008 A239

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)

Gyeong Wort Will (Darkook Onliversity)

Nanocoating for High-performance Vanadium Redox Flow Batteries

Surface Modification of Graphite Felt Electrodes with Titanium Oxynitride

inanocoating for migri-performance variation redox flow batterie

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 Yeona Juna (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_{3.5} Nano-functional Interlayer in Solid Oxide Electrolysis Cells

Juhwan Lee (POSTECH)

Jihwan An (POSTECH)

Hyongjune Kim (POSTECH)

Kyoungiae 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)

Fugiang 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)

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 Matsuqi (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

1. Railway Engineering

SP1-001 A009 Dynamic Characteristics Analysis of the Developed Digital Automatic Coupler

for Freight Wagon through Driving Field Tests

Jeong Hwan Choi (Korea Testing Laboratory)

Hae Young Ji (Korea Testing Laboratory)

Jae Won Lee (Korea Testing Laboratory)

Ji-won Jin (Korea Testing Laboratory)

JaiHyun Kim (Korea Railroad Co.)

SP1-002 A027 A Study on the Suitability Verification of the Lower Articulation for Low-floor

Frams

Jaewon Lee (Korea Testing laboratory)

Ji-Won Jin (Korea Testing laboratory)

Jeonghwan Choi (Korea Testing laboratory)

Haeyoung Ji (Korea Testing laboratory)

Nogeon Jung (Korea Testing laboratory)

Dahoon Ahn (Seoul National University of Science and Technology)

SP1-003 A085 Development of a Platform Screen Doors Testbed for Responding to the

International Standardization

Sungho Yun (Korea Railroad Research Institute)

Jae-Chul Kim (Korea Railroad Research Institute)

Hyeong Uk Mun (Korea Railroad Research Institute)

Yongseok Kim (Korea Railroad Research Institute)

Jai-Kyun Mok (Korea Railroad Research Institute)

SP1-004 A096 Experimental Study of Thermal Runaway Propagation Characteristics in LTO

Battery Module

Minji Jung (Korea Railroad Research Institute)

Sungho Yun (Korea Railroad Research Institute)

Kang-Won Lee (Korea Railroad Research Institute)

Jai-Kyun Mok (Korea Railroad Research Institute)

SP1-005 A097 A Study on Establishment of National Technical Standard for the Traction Lithium-ion Battery Installing on Rolling-stock Kang Won Lee (Korea Railroad Research Institute) Sung Ho Yun (Korea Railroad Research Institute) Jai Kyun Mok (Korea Railroad Research Institute) **SP1-006** A105 Installations of Passenger Behavior Detection System in Railway Vehicles Won-Hee Park (Korea Railroad Research Institute) **SP1-007** A148 A Study on Performance Verification Test for Derailment Detector of Railway Vehicle Young-Sam Ham (Korea Railroad Research Institute) Dong-Hyung Lee (Korea Railroad Research Institute) **SP1-008** A169 Feasibility Study of Machine Learning Techniques Applicability for Railway Derailment Analysis Jaehoon Lim (Korea Railroad Research Institute) Hyunkyu Jun (Korea Railroad Research Institute) Sungho Yun (Korea Railroad Research Institute) Jae-Chul Kim (Korea Railroad Research Institute) **SP1-009** A179 Review on the Derailment Criteria for Railway in Korea Sungho Yun (Korea Railroad Research Institute) Jae-Chul Kim (Korea Railroad Research Institute) Hyunkyu Jun (Korea Railroad Research Institute) **SP1-010** A186 Real-time Fault Diagnosis Method for Railway Vehicle Dampers based on **Damping Force and Velocity Measurement** Kyung Ho Moon (Korea Railroad Research Institute) Hyun Moo Hur (Korea Railroad Research Institute) **SP1-011** A187 Accurate Measurement of Airborne Wear Particle Number Concentrations Generated from Wheel-rail Contact at Different Surface Roughness under Water Application Conditions HyunWook Lee (Korea Railroad Research Institute) WooTae Jung (Korea Railroad Research Institute) **SP1-012** A188 Fatigue Test and Finite Element Analysis for Damage Evaluation of High-speed Railway Wheels Jung-Won Seo (Korea Railroad Research Institute) Seok-Jin Kwon (Korea Railroad Research Institute) Young-Sam Ham (Korea Railroad Research Institute)

SP1-013 A266 Development of a Heating Mold to Improve the Production Efficiency of Interior Composite Panels for Railway Vehicles

Juyeop Park (Korea Railroad Research Institute)

Donghoon Kang (Korea Railroad Research Institute)

Young-Sam Ham (Korea Railroad Research Institute)

SP1-014 A275 Influence of Inner Diameter Variation on Contact Pressure and Fatigue Life in Interference-fitted Hollow Shafts

Dong Hyung Lee (Korea Railroad Research Institute) Jung Won Seo (Korea Railroad Research Institute)

Young-Sam Ham (Korea Railroad Research Institute) Chan Woo Lee (Korea Railroad Research Institute)

SP1-015 A400 Finite Element Analysis of Wheel/rail Contact Stress considering the Tread

Profile of the Wheel and the Inclination of the Rail Byeong Choon Goo (Korea Railroad Research Institute) Seok-Jin Kwon (Korea Railroad Research Institute)

SP1-016 A469 Two-stage Multi-objective Optimization of High-speed Train Nose Shape for

Aerodynamic Drag, Micro-pressure Wave, and Crosswind Stability

Su-Hwan Yun (Korea Railroad Research Institute) Min-Ho Kwak (Korea Railroad Research Institute)

Hyung-Min Kang (Dongyang Mirae University)

Won-Hee Park (Korea Railroad Research Institute)

Tae-Soo Kwon (Korea Railroad Research Institute)

SP1-017 A470 Performance Analysis of Indoor Drone Navigation Using UWB-based 3D A* Path Planning Algorithm

Je-Seuna Yeon (Cheonaiu University)

Jung-Ho Moon (Cheongju University)

Byeong-Ju Kim (Cheongju University)

Su-Hwan Yun (Korea Railroad Research Institute)

SP1-018 A506 A Simulation Study on UWB-based Localization for Multi-vehicle Systems in **GNSS-denied Fire Scenarios**

Tae-Hyeon Joe (Chungbuk National University)

Sung-Tae Moon (Chungbuk National University)

Gwang-Ho Park (Chungbuk National University)

Su-Hwan Yun (Korea Railroad Research Institute)

SP1-019 A550 Improving Aerodynamic Efficiency of Railway Cooling Fan Impeller Blades at Low Reynolds Numbers

Seungwon Kim (Cheongju University)
Chankyu Son (Cheongju University)
Hyojun Kim (Cheongju University)

Su-Hwan Yun (Korea Railroad Research Institute)

2. Multidisciplinary Research & Mechatronics for Aero/Defense Applications

SP2-001 A121 Optimization of Electrospray Deposition and Thermal Treatment of Silver

Nanoparticles for High-performance SERS Substrates

Minseok Kim (Kumoh National Institute of Technology)

SP2-002 A197 Intelligent Robotic Arm Manipulation

Yeongmin Kim (Kumoh National Institute of Technology) **Jungwoo Sohn** (Kumoh National Institute of Technology)

SP2-003 A199 Model Predictive Control Approach of Active Suspension Systems for

Optimized Ride Comfort and Stability

Jeongmo Kim (Kumoh National Institute of Technology) **Jungwoo Sohn** (Kumoh National Institute of Technology)

SP2-004 A288 Growth Direction Control of Micro Pillars Fabricated by Laser-assisted

Electrospinning

Ji-Su Park (Kumoh National Institute of Technology)
Gil-Yong Lee (Kumoh National Institute of Technology)
Min-Hyeong Lee (Kumoh National Institute of Technology)
Seung-Hyeon Choi (Kumoh National Institute of Technology)
Yoo-Rim An (Kumoh National Institute of Technology)

SP2-005 A289 Direct Writing of Microheater Integrated with Temperature Sensor by In-situ Laser Sintering

Min-Hyeong Lee (Kumoh National Institute of Technology)
Gil-Yong Lee (Kumoh National Institute of Technology)
Seung-Hyeon Choi (Kumoh National Institute of Technology)
Ji-Su Park (Kumoh National Institute of Technology)
Jae-Wook Yu (Kumoh National Institute of Technology)

Sang-Min Lee (Kumoh National Institute of Technology)

SP2-006 A290 Performance Evaluation of a Pressure Sensor based on Conductive Thin Film Fabricated by Selective Laser Sintering

Seung-Hyeon Choi (Kumoh National Institute of Technology)

Gil-Yong Lee (Kumoh National Institute of Technology)

Min-Hyeong Lee (Kumoh National Institute of Technology)

Ji-Su Park (Kumoh National Institute of Technology)

Se-Young Jeon (Kumoh National Institute of Technology)

SP2-007 A296 In-situ Height Control of Dispensing System for Large-area Conductive

Patterning
Jae-Wook Yu (Kumoh National Institute of Technology)

Gil-Yong Lee (Kumoh National Institute of Technology)

Min-Hyeong Lee (Kumoh National Institute of Technology)

Ji-Su Park (Kumoh National Institute of Technology)

Seung-Hyeon Choi (Kumoh National Institute of Technology)

SP2-008 A495 7-DOF Manipulator Operational Process for Autonomous Remote Inspection of Ropeway Facilities

Hyunbin Park (Kumoh National Institute of Technology)

Baeksuk Chu (Kumoh National Institute of Technology)

Chan Min Woo (Kumoh National Institute of Technology)

Jeonghun Jang (Kumoh National Institute of Technology)

Eunchong Seong (Kumoh National Institute of Technology)

SP2-009 A499 ANN-based Water Jet Trajectory Prediction with Segmented Curve Fitting

Geonho Yim (Kumoh National Institute of Technology)

Baeksuk Chu (Kumoh National Institute of Technology)

Youngiun Lee (Kumoh National Institute of Technology)

Seunghyeok Kim (Kumoh National Institute of Technology)

SP2-010 A507 LSTM-based Real-time Pressure Prediction Model Using Insole Sensors

Minseong Kim (Kumoh National Institute of Technology)

Baeksuk Chu (Kumoh National Institute of Technology)

Eunchong Sung (Kumoh National Institute of Technology)

Taegon Yu (Kumoh National Institute of Technology)

SP2-011 A510 Locomotion Performance Experiments of a Mode-transformable Wheeled Quadruped Robot for Versatile Terrain Adaptability

Beomseok Kim (Kumoh National Institute of Technology)

Baeksuk Chu (Kumoh National Institute of Technology)

Hyunbin Park (Kumoh National Institute of Technology)

Junyeop Jung (Kumoh National Institute of Technology)

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)

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

 $\textbf{Wonjin Kim} \ (\textbf{Seoul National University})$

Sung-Hoon Ahn (Seoul National University)

SP4-003 A055 Performance Analysis of Robotics Simulators for On-device Digital Twin and Al Integration

Hwancheol Kang (Seoul National University)
Sung-Hoon Ahn (Seoul National University)
Kisu Ok (Seoul National University)
Sunghoon Bae (Seoul National University)

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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)

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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)

5. Human-centered Convergence Mechanical Solution

SP5-001 A014 CFD Simulation of Oil-water Phase Separation with a Focus on Temperature

Effects

Dong-Hyun Kim (Sungkyunkwan University) Youn-Jea Kim (Sungkyunkwan University)

SP5-002 A544 Time-dependent Mechanical Performance Evaluation of TPU-ZnO Composite

3D Printed Parts

Nang Shwe Htike (Sungkyunkwan University) Sang Won Lee (Sungkyunkwan University) Hyewon Shin (Sungkyunkwan University)

SP5-003 A545 Development of a Defect Pattern Extraction for Wafer Defect Maps Using DBSCAN-DFS

Sukhee Lee (Sungkyunkwan University)
Sang Won Lee (Sungkyunkwan University)

SP5-004 A552 Fabrication of TPU-CNT Composite Thermoelectric Filament and EMI Shielding

Film using 3D Printer

Jihun Lee (Sungkyunkwan University) Kyungwho Choi (Sungkyunkwan University) Dukhyun Choi (Sungkyunkwan University)

SP5-005 A553 Self-adaptable TENG/EMG Hybrid Harvesting System by the Rotational Force of

a Vehicle Axle

Seongmin Na (Sungkyunkwan University) Dukhyun Choi (Sungkyunkwan University) Kyungwho Choi (Sungkyunkwan University)

SP5-006 A582 Bio-inspired Stretchable Microneedle Array Patch for Overcoming Mechanical

Mismatch between Soft Substrate and Hard Microneedles

Jongchan Lee (Sungkyunkwan University) Sangyul Baik (Sungkyunkwan University) Youngjun Song (Sungkyunkwan University) Yonghyun Cho (Sungkyunkwan University)