

June 28 (Wednesday)

3D Printing and Additive Manufacturing for Green Technology 1

Room 1 (2F, 201)

Chair : Dong-Gyu Ahn(Chosun University)

09:40-10:00	OP001	365	<p>Application status and development trend of binder jetting technology in foundry industry</p> <p>Guangkuo Ao(Shenyang Research Institute of Foundry), Jiahui Zhu(Shenyang Research Institute of Foundry), Ying Gao(Shenyang Research Institute of Foundry), Wei Ding(Shenyang Research Institute of Foundry)</p>
10:00-10:20	OP002	338	<p>Micro 3D Printing of Stimuli-Responsive Soft Materials</p> <p>Daehoon Han(Rutgers University), Chen Yang(Rutgers University), Howon Lee(Rutgers University)</p>
10:20-10:40	OP003	195	<p>3D Printing of Stretchable Tactile Sensors and Treads Using Recycled Tire Rubber for Health Monitoring of Tires</p> <p>Md. Omar Faruk Emon(The University of Akron), Faez Alkadi(The University of Akron), Jeongwoo Lee(The University of Akron), Jae-Won Choi(The University of Akron)</p>
10:50-11:20	Keynote Speaker 1		<p>Spray Deposition Technology and Equipment of 3D Printing for Low Melting Point Metal</p> <p>Zhongde Shan(China Academy of Machinery Science & Technology, China)</p>

Micro-Manufacturing Process 1			Room 2 (2F, 202)
Chair : Young-Bin Park (Ulsan National Institute of Science and Technology)			
09:00-09:20	OP004	253	<p>Inkjet Printing of Graphene/Titanium Dioxide (TiO₂) Photo-Electrodes for Dye-Sensitized Solar Cells (DSSCs)</p> <p>Chin-Tai Chen(National Kaohsiung University of Applied Sciences), Kuan-Chen Liu(National Kaohsiung University of Applied Sciences)</p>
09:20-09:40	OP005	162	<p>Periodic reduced graphene oxide patterning using femtosecond laser direct writing for optically tunable long period fiber grating</p> <p>Hyub Lee(Nanyang Technological University), Mun Ji Low(Nanyang Technological University), Chin Huat Joel Lim(Nanyang Technological University), Vadakke Matham Murukeshan(Nanyang Technological University), Young-Jin Kim(Nanyang Technological University)</p>
09:40-10:00	OP006	179	<p>Light Control for Aligning Micro Patterns on Transparent Film in Roll-to-Roll Printing Process</p> <p>HyungTae Kim(Korea Institute of Industrial Technology), Yoon Jae Moon(Korea Institute of Industrial Technology), Heuseok Kang(Korea Institute of Industrial Technology), Jun Young Hwang(Korea Institute of Industrial Technology), SeungTaek Kim(Korea Institute of Industrial Technology)</p>
10:00-10:20	OP007	343	<p>Effects of Experimental Conditions on the Plasma Pressure Measured by Photonic Doppler Velocimetry during Laser Shock Peening</p> <p>Inkyu Yeo(Gwangju Institute of Science and Technology), Sungho Jeong(Gwangju Institute of Science and Technology), Janghee Choi(Gwangju Institute of Science and Technology), Inseok Jang(Gwangju Institute of Science and Technology)</p>
10:20-10:40	OP008	289	<p>Fast Compositional Mapping of Solar Cell by Laser Spectroscopy Technique for Process Monitoring during Manufacturing</p> <p>Seok-Hee Lee(LG Electronics Inc.), Jung-Hwan In(Korea Photonics Technology Institute), Jang-Hee Choi(Gwangju Institute of Science and Technology), Seongho Jeong(Gwangju Institute of Science and Technology)</p>
10:50-11:20	Keynote Speaker 2		<p>A Study on the Thermally Assisted Hybrid Machining</p> <p>Choon-Man Lee(Changwon University, Korea)</p>

Smart Manufacturing Technologies			Room 3 (2F, 203)
Chair : Sung-Tae Hong(University of Ulsan)			
09:20-09:40	OP009	132	A study on the smart mod for the improvement of cooling efficiency and quality consistency Hong-Seok Park(University of Ulsan), Xuan-Phuong Dang(Nha Trang University)
09:40-10:00	OP010	096	Friction stir spot welding of ultra-high strength steel Hrishikesh Das(University of Ulsan), Mounarik Mondal(University of Ulsan), Sung-Tae Hong(University of Ulsan), Yeongseok Lim(Chonbuk National University), Kwang-jin Lee(Korea Institute of Industrial Technology)
10:00-10:20	OP011	030	Intermetallic evolution of Al-Si coated hot stamping steel during electrically assisted rapid heating Thi Kieu Anh Dinh(University of Ulsan), Sung-Tae Hong(University of Ulsan), Heung-Nam Han(Seoul National University), Moon-Jo Kim(Korea Institute of Industrial Technology)
10:20-10:40	OP012	077	Comparative Study of Electrically Assisted Brazing and Induction Brazing of Ferritic Stainless Steel using Nickel Based Filler Metal Viet Tien Luu(University of Ulsan), In-Hye Kim(University of Ulsan), Sung-Tae Hong(University of Ulsan), Hyun-Min Sung(Seoul National University), Heung Nam Han(Seoul National University)
10:50-11:20	Keynote Speaker 3		Elliptical Vibration Cutting - From Its Proposal to Recent Developments - Eiji Shamoto(Nagoya University, Japan)
Session chair : Jeong Seok Oh(Korea Institute of Machinery & Materials)			

Materials 1		Room 4 (2F, 204)	
Chair : Sangkee Min(University of Wisconsin-Madison)			
09:00-09:20	OP013	219	Development of CNF/ Flame-resistant Magnesium Alloy Composites by Stir Casting Gen Sasaki(Hiroshima University), Youqiang Yao(Hiroshima University), Kenjiro Sugio(Hiroshima University), Yongbum Choi(Hiroshima University)
09:20-09:40	OP014	381	Evaluation of Microstructures of Al-Si Casting Alloy by Using Image Mean Free Path Kenjiro Sugio(Hiroshima University), Gen Sasaki(Hiroshima University), Junji Tabata(Hiroshima Aluminum Industry CO., LTD.), Nobuyuki Fuyama(Hiroshima Prefectural Technology Research Institute)
09:40-10:00	OP015	015	Microstructural Characterization of Al-MWCNT-Fe₂O₃ Hybrid Metal Matrix Composites Vijay Santhiyagu Joseph(Jeonju University), Alexandre Tugirumubano(Jeonju University), Sun-Ho Go(Jeonju University), Jeong-Jin Lee(Jeonju University), Hyo-In Yoon(Jeonju University), Lee-Ku Kwac(Jeonju University), Hong-Gun Kim(Jeonju University)
10:00-10:20	OP016	140	A Study on the Aging Characteristics of the Tire Sidewall Rubber Byungwoo Moon(Sungkyunkwan University), Chang-Sung Seok(Sungkyunkwan University), Jae-Mean Koo(Sungkyunkwan University), Namgyu Jun(Sungkyunkwan University), Jongmin Lee(Sungkyunkwan University), Ui Seok Hong(Hyundai Motor Group), Min Kyeong Oh(Hyundai Motor Group)
10:20-10:40	OP017	213	Structure Control of VGCF/Aluminum Metal Matrix Composite Erlangga Hanggara(Hiroshima University), Kenjiro Sugio(Hiroshima University), Gen Sasaki(Hiroshima University), Yongbum Choi(Hiroshima University), Kazuhiro Matsugi(Hiroshima University)
10:50-11:20	Keynote Speaker 4		Controlling Micro-Scale Water Transport in PEM Fuel Cells Takemi Chikahisa (Hokkaido University, Japan)

3D Printing and Additive Manufacturing for Green Technology 2

Room 1 (2F, 201)

Chair : Hochan Kim(Andong University)

13:40-14:00	Invited Speaker 1		Damping-Induced Self-Recovery Phenomenon of Mechanical Systems Soo Jeon(University of Waterloo, Canada)
14:00-14:20	OP018	222	Design of a Three-dimensional Metal Printing System with a Volumetric Nozzle and Fabrication of Conductive Fine Patterns Yeongjun Kim(Hanyang University), Shin Jang(Hanyang University), Chang Woo Lee(Korea Institute of Machinery and Materials), Junhee Lee(Korea Institute of Machinery and Materials), Je Hoon Oh(Hanyang University)
14:20-14:40	OP019	252	Metal Fused Deposition Modeling with IR Based Close-Loop Control System Yi-Hung Chen(National Tsing Hua University), Hung-Yin Tsai(National Tsing Hua University)
14:40-15:00	OP020	197	Design and Experimental Study of a novel Metal 3D Printing Device Congze Fan(Tsinghua University), Zhongde Shan(China Academy of Machinery Science and Technology), Wenjuan Rong(China Academy of Machinery Science and Technology), Lining Yang(China Academy of Machinery Science and Technology), Shuo Yang(China Academy of Machinery Science and Technology)

Micro-Manufacturing Process 2

Room 2 (2F, 202)

Chair : Je Hoon Oh(Hanyang University)

13:40-14:00	Invited Speaker 2		Chatter Detection Method by using Observer - based Phase Shift Monitoring Yasuhiro Kakinuma(Keio University, Japan)
14:00-14:20	OP021	447	Fabrication of microfluidic structure based biosensor using roll-to-roll gravure printing. Sunglim Ko(Konkuk University)
14:20-14:40	OP022	322	Gap control system between a large-area mask and substrate for line-beam scan lithography ChangKyu Lee(Hanyang University), Da Yeon Lee(Hanyang University), Sang-Gil Ryu(Philoptics Co.,Ltd.), Je Hoon Oh(Hanyang University)
14:40-15:00	OP023	436	Flash light sintering of Cu nano/micro ink for warpage-free Cu electrode with high conductivity by substrate vacuum heating Chung-hyeon Ryu(Hanyang University), Sung-Jun Joo(Hanyang University), Hak-Sung Kim(Hanyang University)
15:00-15:20	OP024	158	Fabrication of Seamless Roll Mold Using Visually Tolerable Tiling Method Jihoon Lee(Kyungpook National University), Moon Kyu Kwak(Kyungpook National University)

13:40-14:00	Invited Speaker 3		Direct Laser Writing of Flexible/Stretchable Electronics using Femtosecond Laser Pulses Young-Jin Kim(Nanyang Technological University, Singapore)
Session chair : Jeong Seok Oh(Korea Institute of Machinery & Materials)			
CAE / Optimization			Room 3 (2F, 203)
Chair : Dae Wook Kim(University of Arizona)			
14:00-14:20	OP025	366	OPTIMIZATION OF 3D BRAIDED T-BEAM STRUCTURE DESIGN PARAMETERS FOR MINIMIZATION OF DELAMINATION Dong-Woo Lee(Changwon National University), Byung-Jin Park(Changwon National University), Jung-II Song(Changwon National University)
14:20-14:40	OP026	335	Thermal Comparison of Conventional and Conformal Cooling Channel Designs for a Non-Constant Thickness Screw Cap Eric Dimla(Universiti Teknologi Brunei), Josep Rull-Trinidad(IQS, Universitat Ram3n Llull), Guillermo Reyes(IQS, Universitat Ram3n Llull), Andres Amador Garcia-Granada(IQS, Universitat Ram3n Llull)
14:40-15:00	OP027	484	The hardening depth of a sprocket by the induction hardening analysis using co-simulation and comparison with the experiment results Jinkyu Choi(Gyeongsang National University), Seoksoon Lee(Gyeongsang National University), Seungmin Tak(Gyeongbuk Hybrid Technology Institute), Inseok Pack(Gyeongsang National University), Hanbin Kang(Gyeongsang National University), Inyoung Lee(Gyeongsang National University)
15:00-15:20	OP028	377	Continuity-Preserving Tool Path Optimization in 5-Axis Flank CNC Machining for Reducing Machining Errors Hsiang-Yun Chen(National Tsing Hua University), Chih-Hsing Chu(National Tsing Hua University)

Materials 2

Room 4 (2F, 204)

Chair : Young Hun Jeong(Kyungpook National University)

14:00-14:20	OP029	043	<p>Shape Memory Alloy Wire Bundles For The Easy Scaling Of Force And Stroke Length</p> <p>Jongho Kim(Sungkyunkwan University), Ji-Hyeong Lee(Sungkyunkwan University), Dong-June Heo(Sungkyunkwan University), Haneol Lee(Sungkyunkwan University), Hugo Rodrigue(Sungkyunkwan University)</p>
14:20-14:40	OP030	264	<p>Reducing ice adhesion strength of aluminum using surface patterning</p> <p>Jaehyeon Jeon(Hanyang University), Dong Rip Kim(Hanyang University)</p>
14:40-15:00	OP031	049	<p>Heat sealed Film-based Inflatable Soft Pneumatic Bending Actuator</p> <p>JuCheol Jung(Sungkyunkwan University), Hugo Rodrigue(Sungkyunkwan University)</p>
15:00-15:20	OP032	125	<p>Experimental study for the prevention of push tappet bounce</p> <p>Byeung-Cheol An(Korea University of Science and Technology), Young-Bog Ham(Korea Institute of Machinery and Materials), Gi-Tae Lee(Korea Institute of Machinery and Materials), Jong-Dae Kim(Korea Institute of Machinery and Materials), Gooy-Nam Shin(Korea Institute of Machinery and Materials), So-Nam Yun(Korea Institute of Machinery and Materials), Jung-Ho Park(Korea Institute of Machinery and Materials)</p>

Machining/Forming 1			Room 1 (2F, 201)
Chair : Dong-Hyeon Kim(Seoul National University)			
15:40-16:00	OP033	458	Dielectric Planarization on Package Substrate using Non-Spherical Colloidal Silica Slurry Seonho Jeong(Pusan National University), Dasol Lee(Pusan National University), Jongwoo Lee(Pusan National University), Haedo Jeong(Pusan National University)
16:00-16:20	OP034	467	Identification of the system circuit parameters in the electromagnetic forming process Hyeonil Park(Korea Institute of Materials Science), Daeyong Kim(Korea Institute of Materials Science), Jinwoo Lee(Korea Institute of Materials Science), Se-Jong Kim(Korea Institute of Materials Science), Youngseon Lee(Korea Institute of Materials Science)
16:20-16:40	OP035	320	Study on die design with direct cooling to improve strength at the side area of product in hot stamping Seunghoon Cha(Gyeongbuktechnopark), Joonghui Kim(Gyeongbuktechnopark), Bumsik So(Gyeongbuktechnopark), Byungmin Kim(Pusan National University), Daecheol Ko(Pusan National University)
16:40-17:00	OP036	412	Suppression of Machining Vibration and Tool Breakage Using High Damping Alloy Collet Minsu Kim(Gwangju Institute of Science and Technology), Sun-Kyu Lee(Gwangju Institute of Science and Technology), Jongjae Kim(Gwangju Institute of Science and Technology)

Micro-Manufacturing Process 3

Room 2 (2F, 202)

Chair : Soo Jeon(University of Waterloo)

15:40-16:00	OP037	194	<p>The Analytical Approximation of Temperature Distributions Induced by a Large Pulsed Electron Beam Corresponding to Unique Absorption of Accelerated Electrons</p> <p>Jisoo Kim(Ulsan National Institute of Science and Technology), Hyung Wook Park(Ulsan National Institute of Science and Technology)</p>
16:00-16:20	OP038	318	<p>Mode shape and vibration experiments for a 1-axis stage</p> <p>Wooyeong Jang(Kookmin University), Jayil Jeong(Kookmin University), Younggeul Park(Kookmin University), Myoungyeon Park(Kookmin University), Jinseok Kim(Korea Institute of Industrial Technology), Heonjong Choi(Korea Institute of Industrial Technology), Eungoo Kang(Korea Institute of Industrial Technology)</p>
16:20-16:40	OP039	464	<p>Laser-induced growth sintering and its applications to one glass touch solution</p> <p>Bongchul Kang(Kumoh National Institute of Technology), Seokwoo Son(Korea Advanced Institute of Science and Technology), Jong Eun Park(Korea Advanced Institute of Science and Technology), Minyang Yang(Korea Advanced Institute of Science and Technology)</p>
16:40-17:00	OP040	163	<p>Photoreduction of graphene oxides using a femtosecond laser direct writing method</p> <p>Hyub Lee(Nanyang Technological University), Chin Huat Joel Lim(Nanyang Technological University), Mun Ji Low(Nanyang Technological University), Vadakke Matham Murukeshan(Nanyang Technological University), Young-Jin Kim(Nanyang Technological University)</p>

Electroactive Polymer (Organized)			Room 3 (2F, 203)
Chair : Sang-Youn Kim(Korea University of Technology and Education)			
15:40-16:00	OP041	242	Graphene Oxide Blended in Cellulose Nanocrystal Composite for Humidity Sensor Abdullahil Kafy(Inha University), Hyun Chan Kim(Inha University), MD Imrul Reza Shishir(Inha University), Jin Mo Kang(Inha University), Jaehwan Kim(Inha University)
16:00-16:20	OP042	386	Fully Flexible Haptic Actuator based on Eco-friendly PVC Plastisol Won-Hyeong Park(Korea University of Technology and Education), Eun-Jae Shin(Korea University of Technology and Education), Sang-Youn Kim(Korea University of Technology and Education)
16:20-16:40	OP043	393	Graphene-CNT-Ni Nanostructures-based High-Performance Ionic Artificial Muscles Jaehwan Kim(Korea Advanced Institute of Science and Technology), Il-Kwon Oh(Korea Advanced Institute of Science and Technology)
16:40-17:00	OP044	371	Multi-layer dielectric elastomer actuator with modulus-gradient for flexible tactile interface Seongcheol Mun(Electronics and Telecommunications Research Institute), Sungryul Yun(Electronics and Telecommunications Research Institute), Ki-Uk Kyung(Electronics and Telecommunications Research Institute)

Materials 3

Room 4 (2F, 204)

Chair : Hugo Rodrigue (Sungkyunkwan University)

15:40-16:00	OP045	506	<p>Application of TRIZ to the Development of Effective Protector Pads</p> <p>Chulho Yang(Oklahoma State University), Junyoung Park(Kumoh National Institute of Technology), Dongchan Lee(FRTechnology), Young Chang(Oklahoma State University)</p>
16:00-16:20	OP046	029	<p>Study of wettability of laser-ablated metallic surfaces under low-temperature annealing</p> <p>Chi-Vinh Ngo(University of Ulsan), Doo-Man Chun(University of Ulsan)</p>
16:20-16:40	OP047	100	<p>An Eco Friendly Novel Metal Matrix Nano Composite Friction Surfacing Of Titanium Alloy</p> <p>ESTHER ISSAC(Coimbatore Institution of Technology), MURUGAN NATARAJAN(COIMBATORE INSTITUTE OF TECHNOLOGY), AMOS JAYARAJ(MAHENDRA INSTITUTE OF TECHNOLOGY), Vijay Santhiyagu Joseph(Jeonju University)</p>
16:40-17:00	OP048	347	<p>Experimental study of pre-shearing cropping process of steel bars</p> <p>Chengliang Hu(Shanghai Jiaotong University), Lunqiang Chen(Shanghai Jiaotong University), Zhen Zhao(Shanghai Jiaotong University), Jiwei Li(Shanghai Jiaotong University), Zhongming Li(Ningbo SiJin Machinery Co. Ltd)</p>

June 29 (Thursday)

Machining/Forming 2		Room 1 (2F, 201)
Chair : Hyunseop Lee(Tongmyong University)		
09:00-09:20	OP049	415
Study on the cast process of large size spherical titanium alloy parts of ships Ping Yan(Shenyang Research institute of foundry), Yafei Ren(Shenyang Research institute of foundry), Youwei Zhang(Shenyang Research institute of foundry), Shibing Liu(Shenyang Research institute of foundry), Jun Zhao(Shenyang Research institute of foundry)		
09:20-09:40	OP050	437
Study on Investment Casting Mold of TiAl Alloy Youwei Zhang(shenyang research institute of foundry), Chunling Bao(shenyang research institute of foundry), Zhiyong Zhang(shenyang research institute of foundry), Shibing Liu(shenyang research institute of foundry), Jun Zhao(shenyang research institute of foundry)		
09:40-10:00	OP051	146
Experimental Investigation on the Flow Properties of Sand Granules in the Process of Sand Mold Printing Zhi Guo(China Academy of Machinery Science & Technology, Tsinghua University), Zhongde Shan(China Academy of Machinery Science & Technology), Dong Du(Tsinghua University), Mengmeng Zhao(China Academy of Machinery Science & Technology), Milan Zhang(China Academy of Machinery Science & Technology)		
10:00-10:20	OP052	155
Effect of Composite Casting Process and Molding Materials on the Performance and Precision of Iron Castings Limin LIU(China Academy of Machinery Science and Technology), Zhongde SHAN(China Academy of Machinery Science and Technology), Dun LAN(China Academy of Machinery Science and Technology), Feng LIU(China Academy of Machinery Science and Technology)		
10:20-10:40	OP053	156
Research on Method for Near-net Forming of Sand Mold with Digital Flexible Extrusion Technology Shuai ZHANG(China Academy of Machinery Science and Technology), Zhongde SHAN(China Academy of Machinery Science and Technology), Zhaoxian GU(China Academy of Machinery Science and Technology)		
10:50-11:20	Keynote Speaker 5	
Sustainable Printing of Nano and Microscale Sensors and Electronics Ahmed A. Busanina(Northeastern University, USA)		

Design and Product Application Technology 1 (Organized)

Room 2 (2F, 202)

Chair : Geon Hee Kim(Korea Basic Science Institute)

09:40-10:00	OP054	490	Modal Surface Reconstruction for High Resolution Freeform Deflectometry Maham Aftab(University of Arizona), Logan Graves(University of Arizona), Dae Wook Kim(University of Arizona)
10:00-10:20	OP055	245	High-speed figure inspection of an off-axis aspheric mirror based on the phase-measuring deflectometry Sangwon Hyun(Korea Basic Science Institute), I-Jong Kim(Korea Basic Science Institute), Seung-Hyun Kim(Korea Basic Science Institute), Byeong-Joon Jeong(Korea Basic Science Institute), Min-Woo Jeon(Korea Basic Science Institute), Geon-Hee Kim(Korea Basic Science Institute)
10:20-10:40	OP056	191	Design of Vibration Assisted Polishing System for Silicon Carbide Mincheol Kim(Seoul National University), Dong-Ryul Kim(Seoul National University), Thomas J. Y. Kim(Seoul National University), Dong-Hyeon Kim(Seoul National University), Won-Shik Chu(Seoul National University), Sung-Hoon Ahn(Seoul National University)
10:50-11:20	Keynote Speaker 6		Design of Wide Spectral Range Multiphoton Laser Scanning Microscopy System Young-Sik Kim(University of Arizona, USA)

Hybrid Manufacturing			Room 3 (2F, 203)
Chair : Sungho Jeong(Gwangju Institute of Science and Technology)			
09:00-09:20	OP057	317	Development of a novel ECMP process with ionized slurry supply system Dasol Lee(Pusan National University), Haedo Jeong(Pusan National University), Hyunseop Lee(Tongmyong University), Seonho Jeong(Pusan National University), Jongwoo Lee(Pusan National University)
09:20-09:40	OP058	434	Effect of the consolidation temperature on the mechanical properties of self-reinforced polypropylene composites Do Hyoung Kim(Hanyang University), Yeon-Taek Hwang(Hanyang University), So-Young Kang(Hanyang University), Hak-Sung Kim(Hanyang University)
09:40-10:00	OP059	435	Non-destructive evaluation of the weld line in injection molding using terahertz time-domain spectroscopy Gyung-Hwan Oh(Hanyang University), Ji-Hye Jeong(Coway Co. Ltd), Sung-hyeon Park(Hanyang University), Hak-sung Kim(Hanyang University)
10:00-10:20	OP060	200	Study on optical characterization and manufacture of micro random pattern using indentation machining Je-Ryung Lee(Korea Institute of Machinery and Materials), Hwi Kim(Korea University), Seung Hwan Moon(Korea Institute of Machinery and Materials), Tae-Jin Je(Korea Institute of Machinery and Materials), Doo-Sun Choi(Korea Institute of Machinery and Materials), Jee-Hong Min(LMS), Young-Il Kim(LMS), Eun-chaee Jeon(Korea Institute of Machinery and Materials)
10:20-10:40	OP061	089	Control of Thin Film Porosity in Nano Particle Deposition System using Novel Laser Sintering Process Ji-Hyeon Song(Seoul National University), Hyun-Taek Lee(Seoul National University), Min-Soo Kim(Seoul National University), Yan Wang(Georgia Institute of Technology), Sung-Hoon Ahn(Seoul National University)
10:50-11:20	Keynote Speaker 7		Measurement Technologies for Precision Manufacturing of Large-area Microoptics Wei Gao(Tohoku University, Japan)

Innovative Forming 1 (Organized)			Room 4 (2F, 204)
Chair : Myoung-Gyu Lee(Korea University)			
09:00-09:20	OP062	031	Radial Basis Functional Model of Multi-point Dieless Forming Process for Springback Reduction and Compensation Misganaw Abebe Baye(Pusan National University), Ji-Woo Park(Pusan National University), Jeong Kim(Pusan National University), Beom-Soo Kang(Pusan National University)
09:20-09:40	OP063	406	Experimental evaluation of ductile fracture criterion under strain path change Chanyang Kim(Korea University), Wooram Noh(Korea University), Junghan Song(Korea Institute of Industrial Technology), Myoung-Gyu Lee(Korea University)
09:40-10:00	OP064	325	Optimal Design in Electric Upsetting Parameters of Heat-resistant Alloy to Achieve Grain Refinement and Uniform Distribution Le Zhang(Chongqing University), Chao An(Chongqing University), Zhen-yu Zou(Chongqing University), Jia Pan(Chongqing University), Guo-zheng Quan(Chongqing University)
10:00-10:20	OP065	104	Structural lay-up optimization of CFRP B-pillar reinforcement Byeong-Jin Min(Pusan National University), Jeong-Min Lee(Pusan National University), Byung-Min Kim(Pusan National University), Yong-Sik Kim(Hwashin tech), Dae-Cheol Ko(Pusan National University)
10:20-10:40	Invited Speaker 4		Numerical Analysis of Dynamic Characteristics of Wet Friction Temperature Fields Le Li(Beijing Information Science & Technology University, China)
10:50-11:20	Invited Speaker 5		Enabling Lighter Vehicle Structures Nan Li(Imperial College London, UK)

13:20-13:50	Keynote Speaker 8	Modular Robotic Platforms: Innovation, Design, and Case Studies from Service Robotics to Industrial Applications Jongwon Kim(Seoul Nat'l. University, Korea)		Session Chair : Hyeong-Joon Ahn(Soongsil University)
13:50-14:10	Invited Speaker 9	Wafer-Scale Hyperlens for High-Throughput Biological Imaging Junsuk Rho(POSTECH)		Session Chair : Hyeong-Joon Ahn(Soongsil University)
Precision Machinery and Related Materials (Organized)				Room 1 (2F, 201)
Chair : Changwoo Lee(Changwon National University)				
14:10-14:30	OP066	231	Fault detection for bearing defect using Learned classifier Byeonghui Park(Changwon National University), Changwoo Lee(Changwon National University)	
14:30-14:50	OP067	113	THERMAL SENSOR LOCATION OPTIMIZATION FOR MACHINE ERROR COMPENSATION Zhengchun Du(Shanghai Jiao Tong University), Hongfu Hou(Shanghai Jiao Tong University), Jianguo Yang(Shanghai Jiao Tong University)	
14:50-15:10	OP068	328	System identification of an air-bearing linear motor motion stage with passive RFC (reaction force compensation) Kim-Duc Hoang(Soongsil University), Hyeong-Joon AHN(Soongsil University)	
15:10-15:30	OP069	420	Development and Improvement Effect of Hydraulic Tube Expansion Machine in APR1400 RVI Myung Hyun Kim(Changwon National University), Seung Hang Shin(Changwon National University), Yoon Gyo Jung(Changwon National University), Jong Hyoung Kim(Korea Institute of Industrial Technology), Si Geun Choi(Kyungpook National University), Young Tae Cho(Changwon National University)	

Design and Product Application Technology 2 (Organized)

Room 2 (2F, 202)

Chair : Geon Hee Kim(Korea Basic Science Institute)

13:20-13:40	Invited Speaker 6		Development of Ultraprecision Processing and Inspection System for the Freeform Optical Devices and & Modules I Jong Kim(Korea Basic Science Institute, Korea)
13:40-14:00	OP070	316	Design of ultra precision processed off-axis TMA based freeform optical system KIBEOM AHN(Korea Institute of Ocean Science and Technology), Seongick CHO(Korea Institute of Ocean Science and Technology), Eunsong OH(Korea Institute of Ocean Science and Technology), Seon-yeong Jeong(Korea Institute of Ocean Science and Technology), Young Je Park(Korea Institute of Ocean Science and Technology)
14:00-14:20	OP071	300	Study on Plasma Assisted SiC machining Technology Yong Sup CHOI(National Fusion Research Institute), Kang IL Lee(National Fusion Research Institute), Dong Chan Seok(National Fusion Research Institute), Seung Ryul You(National Fusion Research Institute)
14:20-14:40	OP072	272	Dry Etching of Sintered SiC by Atmospheric Pressure Plasma Jet Dong Chan Seok(National Fusion Research Institute), Seungryul Yoo(National Fusion Research Institute), Yong Ho Jung(National Fusion Research Institute)
14:40-15:00	OP073	249	Freeform surface measurement using low coherence interferometry Kye-Sung Lee(Korea Basic Science Institute), Minwoo Jeon(Korea Basic Science Institute), Byeong Joon Jeong(Korea Basic Science Institute), Hyunseok Bang(Korea Basic Science Institute), Injoo Yeo(Korea Basic Science Institute), Ki Soo Chang(Korea Basic Science Institute), Dong Uk Kim(Korea Basic Science Institute), Jiyong Bae(Korea Basic Science Institute), Kihwan Nam(Korea Basic Science Institute), Hyun Huh(Korea Basic Science Institute), Deokhee Kang(Korea Basic Science Institute), Geonhee Kim(Korea Basic Science Institute)
15:00-15:20	OP074	202	Far-field plasmonic lens for a microscopy Seunghyun KIM(Korea Basic Science Institute), IJong KIM(Korea Basic Science Institute), Sangwon Hyun(Korea Basic Science Institute), Geonhee KIM(Korea Basic Science Institute)

Product Design		Room 3 (2F, 203)
Chair : Keun Park(Seoul National University of Science and Technology)		
13:20-13:40	Invited Speaker 7	Soft Artificial Skin Sensors and Muscle Actuators for Future Soft Robots Yong-Lae Park(Seoul National University)
13:40-14:00	OP075 136	The study of integration of robust design and green design into product development Tsai Chi Kuo(Chung Yuan Christian University), Sora Wang(Chung Yuan Christian University)
14:00-14:20	OP076 051	Development of Multisupport Gantry system for Robot used with AWJ VIMALESH ANNADURAI(Pusan National University), JUNG HWAN AHN(Pusan National University)
14:20-14:40	OP077 326	Development of Target Robot Platform for Vehicle Accident Reproduce Yeonggeol Park(Kookmin University), Myoungyeon Park(Kookmin University), Wooyoung Jang(Kookmin University), Jayil Jeong(Kookmin University)

Innovative Forming 2 (Organized)		Room 4 (2F, 204)
Chair : Taewan Ku(Pusan National University)		
13:20-13:40	Invited Speaker 8	Influence Factors of Non-Uniform Phase Transformation in Hot Stamping Process of Ultra-High-Strength Steel Sheet Guozheng Quan(Chongqing University)
13:40-14:00	OP078 212	Tensile Deformation of Laser Welded Dual-Phase Steel Sheets Yong Chan Hur(Pusan National University), Ji Hoon Kim(Pusan National University), Jaebong Jung(Pusan National University), Byung Min Kim(Pusan National University), Daeyong Kim(Korea Institute of Materials Science), Myoung-Gyu Lee(Korea University), Chung Yun Kang(Pusan National University)
14:00-14:20	OP079 168	Wear Calculation Model Considering the Effect of Porosity and Wear Properties of Vehicle Wet Shifting Clutch Friction Disc Le Li(Beijing Information Science and Technology University), Xi Chen(Beijing Information Science and Technology University), Liyong Wang(Beijing Information Science and Technology University)
14:20-14:40	OP080 079	Numerical Prediction of Flow Stress on Fiber Metal Laminates using Artificial Neural Network Eu-Tteum Park(Pusan National University), Jeong Kim(Pusan National University), Beom-Soo Kang(Pusan National University), Woo-Jin Song(Pusan National University)
14:40-15:00	OP081 017	A simplified finite element method for prediction of longitudinal curvature in flexibly-reconfigurable roll forming process Hadi Ghiabakloo(Pusan National University), Jeong Kim(Pusan National University), Beom-Soo Kang(Pusan National University)
15:00-15:20	OP082 098	Effect of drawing force reduction on shape drawing process through two dies in tandem Jeong Hun Kim(Pusan National University), Dae Cheol Ko(Pusan National University), Byung Mim Kim(Pusan National University)
15:20-15:40	OP083 408	Inverse Identification of Flow Stress Behavior in Laser Welded Dual Phase Steels Jae-Min Lee(Korea University), Wooram Noh(Korea University), Ji Hoon Kim(Pusan National University), Myoung-Gyu Lee(Korea University)

June 30 (Friday)

Energy 1

Room 1 (2F, 201)

Chair : Ikwhang Chang(Wonkwang University)

09:00-09:20	OP084	170	<p>Fabrication of (Li/Na)₂CO₃ electrolyte impregnated components for molten carbonate fuel cells</p> <p>Chang-Whan LEE(Seoul National University of Science and Technology), Sung-Joo LEE(Seoul National University of Science and Technology), Mihui LEE(Korea Institute of Science and Technology), Min-Goo KANG(Korea Institute of Science and Technology), Hyung-Chul HAM(Korea Institute of Science and Technology), Sung-Pil YOON(Korea Institute of Science and Technology)</p>
09:20-09:40	OP085	414	<p>Enhanced thermal stability of metal electrode on ridge-valley nanostructured SDC interlayer for low-temperature solid oxide fuel cell</p> <p>Hyong June Kim(Seoul National University of Science and Technology), Jihwan An(Seoul National University of Science and Technology)</p>
09:40-10:00	OP086	282	<p>Analysis of current collecting layer with lattice structure on large area cathode for thin film solid oxide fuel cell based on simulation</p> <p>Yusung Kim(Seoul National University), Suk Won Cha(Seoul National University), Yeageun Lee(Seoul National University), Wonjong Yu(Seoul National University), Sanghoon Lee(Seoul National University), Chunhua Zheng(Chinese Academy of Sciences)</p>
10:00-10:20	OP087	410	<p>Enhancing Thermal-Stability of Metal Electrodes with a Sputtered Gadolinia-Doped Ceria Over-Layer for Low-Temperature Solid Oxide Fuel Cells</p> <p>Seongkook Oh(Seoul National University of Science and Technology), Jihwan An(Seoul National University of Science and Technology), Soonwook Hong(Hanyang University), Hyongjune Kim(Seoul National University of Science and Technology), Young-Beom Kim(Hanyang University)</p>

Machinery 1			Room 2 (2F, 202)
Chair : Doo-Man Chun(University of Ulsan)			
09:00-09:20	OP088	233	A Bio Inspired Control Strategy for An Electromechanical Braking System Changwon Kim(Korea Institute of Machinery and Materials), Joonho Seo(Korea Institute of Machinery and Materials), Ohwon Kwon(Korea Institute of Machinery and Materials), Dongkyu Lee(Korea Institute of Machinery and Materials)
09:20-09:40	OP089	226	Modeling and Simulation of Launch and Recovery System for a Tow-fish in Consideration of Sea State Jin-Il Kang(Korea Maritime and Ocean University), Sung-Won Jo(Korea Maritime and Ocean University), Joo-No Sur(Korea Maritime and Ocean University), Hyeung-Sik Choi(Korea Maritime and Ocean University), Seo-Kang Kim(Korea Maritime and Ocean University)
09:40-10:00	OP090	324	Component Sizing for PHEV Powertrain with Gear Ratio Optimization Changbeom Kang(Seoul National University), Changhee Song(Seoul National University), Donghwan Sung(Seoul National University), SukWon Cha(Seoul National University), Chunhua Zheng(Shenzhen Institutes of Advanced Technology)
10:00-10:20	OP091	225	Active Heave Compensation Control and Experiment for Offshore Crane Ji-Youn Oh(Korea Maritime and Ocean University), Hyeung-Sik Choi(Korea Maritime and Ocean University), Sang-Ki Jeong(Korea Maritime and Ocean University), Seo-Kang Kim(Korea Maritime and Ocean University), Joon-Young Kim(Korea Maritime and Ocean University), Sang-Ki Lee(Tech Flower Co. Ltd.,)

Prediction and Monitoring			Room 3 (2F, 203)
Chair : Won-Shik Chu(Seoul National University)			
09:00-09:20	OP092	221	<p>Simple and precise LVDT-based in-situ bolt tension monitoring system for truck wheel nuts</p> <p>Shin Jang(Hanyang University), Samgon Lee(Hanyang University), Moo Woong Choi(Hyundai Motor Company), Kwang Whi Na(Hyundai Motor Company), Je Hoon Oh(Hanyang University)</p>
09:20-09:40	OP093	457	<p>A machine-based power consumption model for machine tools</p> <p>Hae-Sung Yoon(University of Wisconsin-Madison), Eshank Singh(University of Wisconsin-Madison), Sangkee Min(University of Wisconsin-Madison)</p>
09:40-10:00	OP094	014	<p>Single Breath Analysis Using Multi-Gas Sensors For Respiratory Diseases</p> <p>Dongkyu Lee(Korea Institute of Machinery and Materials), Myunghwan Lee(Kyungpook National University), Ohwon Kwon(Korea Institute of Machinery and Materials), Kang-Ho Lee(Korea Institute of Machinery and Materials), Sinwon Kang(Kyungpook National University)</p>
10:00-10:20	OP095	254	<p>Prediction of potential rupture areas of cerebral aneurysms using computational fluid dynamics</p> <p>Hyojae Jeon(Hanyang University), Ji Hun Choi(Hanyang University), Yong Bae Kim(Yonsei University, Gangnam Severance Hospital), Kwang-Chun Cho(Yonsei University, Gangnam Severance Hospital), Je Hoon Oh(Hanyang University)</p>

Materials 4		Room 4 (2F, 204)	
Chair : Sung Ki Lyu(Gyeongsang National University)			
09:00-09:20	OP096	493	<p>Impact and Damage Monitoring Ability of Self-sensing Carbon-fiber-reinforced Plastic (CFRP) Structures</p> <p>Hyung Doh Roh(Ulsan National Institute of Science and Technology), Young-Bin Park(Ulsan National Institute of Science and Technology)</p>
09:20-09:40	OP097	042	<p>Evaluation on Mechanical Characteristics and Changes in Microstructure of NCF 3015 Alloy according to High Temperature Degradation</p> <p>JAEGU CHOI(Sungkyunkwan University), CHANGSUNG SEOK(Sungkyunkwan University), JAEMEAN KOO(Sungkyunkwan University), SOO PARK(Sungkyunkwan University), SUKWOON HONG(Sungkyunkwan University), DUKHYUN NAM(Hyundai-Kia Motors Company), GAYEON KIM(Hyundai-Kia Motors Company)</p>
09:40-10:00	OP098	174	<p>Rational fabrication of Fe₂O₃ nanorods g-C₃N₄ heterostructures via thermal evaporation for water splitting application</p> <p>Suhee Kang(Hanyang University), Rajendra Charandeo Pawar(Hanyang University), Joonyoung Jang(Hanyang University), Caroline Sunyong Lee(Hanyang University)</p>
10:00-10:20	OP099	056	<p>An Experimental Study on a Superhydrophobic Dry Patching Substrate using Polyimide</p> <p>Syed Asad Ali Zaidi(Korea Institute of Machinery and Materials), Yongjin Kim(Korea Institute of Machinery and Materials), Joon Yub Song(Korea Institute of Machinery and Materials)</p>

Energy 2		Room 1 (2F, 201)	
Chair : Jihwan An(Seoul National University of Science and Technology)			
10:40-11:00	OP100	302	Polyethyleneimine Modified Carbon Cloth Anode for Self-Pumping Glucose Oxidase Fuel Cells Jhang-Han Wang(National Chung Hsing University), Li-Zhen Huang(National Chung Hsing University), Hsiharng Yang(National Chung Hsing University)
11:00-11:20	OP101	102	EXPERIMENTAL ANALYSIS ON THE PERFORMANCE OF VANADIUM REDOX FLOW BATTERY BASED ON THE TAFEL CONSTANT AND EXCHANGE CURRENT DENSITY Jungmyoung Kim(Changwon National University), Heesung Park(Changwon National University)
11:20-11:40	OP102	171	Microstructure control of NiO-based ion storage layer using various sized NiO particles to evaluate electrochromic performance Dahyun Choi(Hanyang University), Minji Lee(Hanyang University), Hyungsub Kim(Hanyang University), Doo-Man Chun(University of Ulsan), Wonshik Chu(Seoul National University), Sung-Hoon Ahn(Seoul National University), Caroline Sunyong Lee(Hanyang University)
11:40-12:00	OP103	026	Electrochemical Performance of Supercapacitor Prepared by Dry Spray Coating Mohaned Mohammed Mahmoud Mohammed(University of Ulsan), Mohammad Nur E Alam Al Nasim(University of Ulsan), Won-Shik Chu(Seoul National University), Caroline Sunyong Lee(Hanyang University), Doo-Man Chun(University of Ulsan)

Machinery 2		Room 2 (2F, 202)	
Chair : Jeongdai Jo(Korea Institute of Machinery and Materials)			
10:40-11:00	OP104	027	Effect of Aging on Gas Tungsten Arc welded Nickel Based Superalloy Inconel 718 Ravi G(Coimbatore Institution of Technology), Murugan N(Coimbatore Institution of Technology)
11:00-11:20	OP105	224	Study on an Attitude Reference System for Underwater Robot for Observation of Ocean Environments Sang-Ki Jeong(Korea Maritime and Ocean University), Hyeung-Sik Choi(Korea Maritime and Ocean University), Dae-Hyeong Ji(Korea Maritime and Ocean University), DongWook Jung(Korea Maritime and Ocean University), Joon-Young Kim(Korea Maritime and Ocean University)
11:20-11:40	OP106	061	Cu₂O/ZnO Nanorods Array Heterostructure Fabrication and their application for Photoelectrochemical water splitting Sunil Babu Eadi(Kumoh National Institute of Technology), Sengeragchaa Bolortuya(Kumoh National Institute of Technology), Min Ji Hong(Kumoh National Institute of Technology), Sunghyun Park(Kumoh National Institute of Technology), Yong Sik Kim(Kumoh National Institute of Technology), Hee Jin Kim(Kumoh National Institute of Technology), Sungjin Kim(Kumoh National Institute of Technology)
11:40-12:00	OP107	152	Study on Process Monitoring of Elliptical Vibration Cutting by Utilizing Internal Data in Ultrasonic Elliptical Vibration Device Hongjin Jung(Nagoya University), Takehiro Hayasaka(Nagoya University), Eiji Shamoto(Nagoya University)

Re-Manufacturing / Tribology			Room 3 (2F, 203)
Chair : Dae-Eun Kim(Yonsei University)			
10:40-11:00	OP108	055	Tribological Behavior of Carbon Based Coatings Adapted to Lubricant-free Forming Conditions Jennifer Tenner(Institute of Manufacturing Technology), Kolja Andreas(Institute of Manufacturing Technology), Rong Zhao(Institute of Engineering Design), Stephan Tremmel(Institute of Engineering Design), Tom Häfner(Institute of Photonic Technologies), Michael Schmidt(Institute of Photonic Technologies), Marion Merklein(Institute of Manufacturing Technology)
11:00-11:20	OP109	341	Tribological Performance of WS₂ Composite Film Shu-Sheng Xu(Yonsei University), Li-Jun Weng(Chinese Academy of Sciences), Dae-Eun Kim(Yonsei University)
11:20-11:40	OP110	340	Effect of Water Lubrication on Tribological Properties of Carbon Based Coating Hye-Gyun Kim(Yonsei University), Jong-Kuk Kim(Korea Institute of Materials Science), Young-Jun Jang(Korea Institute of Materials Science), Dae-Eun Kim(Yonsei University)
11:40-12:00	OP111	068	Combine Remanufacturing and Purchasing Systems in a Reverse Logistics Environment Yufang Chiu(Chung Yuan Christian University), Yingpei Lin(Chung Yuan Christian University)