

Poster Presentation 1

July 12 (Friday) 13:45-14:45

1. Manufacturing Processes

Lobby (3F)

- PP001** 224 **Fabrication of Micro Pin Array of Graphite Carbon**
 Ui Seok Lee (Soongsil University), Bo Hyun Kim (Soongsil University), Yung Na (Soongsil University),
 Pyeong An Lee (Soongsil University)
- PP002** 249 **Prediction of Forming Forces in Incremental Sheet Forming with a Tool Dynamometer**
 Chai Hwan Kim (Kyungnam University), Jae Gwan Kang (Kyungnam University),
 Kyung Hee Koh (Kyungnam University)
- PP003** 068 **A Study on the Austenite Formation and Oxidation Resistance of AGI According to Aluminum Content**
 Dong Hyuk Kim (Korea Institute of Industrial Technology), Jong Hyoung Kim (Korea Institute of Industrial
 Technology), Si Geun Choi (Korea Institute of Industrial Technology), Jae Il Jeong (Korea Institute of Industrial
 Technology), Jae Won Kim (Korea Institute of Industrial Technology), Bok Seong Choe (Korea Institute of
 Industrial Technology), Jin Young Park (Korea Institute of Industrial Technology)
- PP004** 242 **Study of Durability of Superhydrophobic Coating on Polypropylene**
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- PP005** 071 **Effects of Substrate Preheating for Suppressing Crack Formation in Repairs Using Direct Energy
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 Wook Jin Oh (Korea Maritime and Ocean University), Do Sik Shim (Korea Maritime and Ocean University),
 Min Seob Kim (Korea Maritime and Ocean University), Yee Un Jeong (Korea Maritime and Ocean University),
 Ki Yong Lee (Korea Institute of Industrial Technology)
- PP006** 182 **The Study of Soldering-Resistance Characteristics of IN718 Manufactured by Direct Energy
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 Technology), Se Weon Choi (Korea Institute of Industrial Technology), Yu Mi Kim (Korea Institute of Industrial
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- PP007** 167 **Picosecond Laser Direct Fabrication of Micro Channel on Fused Silica**
 Hong Shen (Shanghai Jiao Tong University), Han Wang (Shanghai Jiao Tong University)
- PP008** 296 **The Effects of Magnetic Abrasive Finishing on Slot and Optimization Using Grey Relational Analysis**
 Jung-Hee Lee (Pukyong National University), Jae-Seob Kwak (Pukyong National University),
 Chul-Bae Son (Hanguk Precision Co., Ltd.)
- PP009** 010 **Study on Al Welding as Material of Cryogenic Fuel Propulsion Tank for Ship**
 Jaewoong Kim (Korea Institute of Industrial Technology), In-Ju Kim (Korea Institute of Industrial Technology),
 Jisun Kim (Korea Institute of Industrial Technology), Sungwook Kang (Korea Institute of Industrial Technology)

- PP010** 165 **Development of Hot Press Forming via Resistance Heating System to Improve Energy Efficiency by 80%**
Jeongsik Lim (SHIN YOUNG Co., Ltd.), Jaedong Cho (SHIN YOUNG Co., Ltd.),
Jongdock Seo (SHIN YOUNG Co., Ltd.), Seunghun Cha (Gyeongbuk Technopark)
- PP011** 322 **Bending Strength Dependency on Powder Particle Size in Binder Jetting Type Additive Manufacturing Process**
Jongyoul Lee (Korea Electronics Technology Institute), Kyoung Il Lee (Korea Electronics Technology Institute),
Jinkoog Shin (Korea Electronics Technology Institute), Sunghwak Park (Korea Electronics Technology Institute),
Jongsuk Won (Korea Electronics Technology Institute), Youngjun Ji (Korea Electronics Technology Institute)
- PP012** 493 **Development of Aluminium Thin Sheet Forming Process for Battery Cell Cover of Electric Vehicle**
Seongwon Lee (Korea Institute of Industrial Technology),
Jungmin Lee (Korea Institute of Industrial Technology), Gyuman Kim (CENTRAL)
- PP013** 008 **Investigation on Natural Convection Effects of Inert Gas Flow in Glass Fiber Drawing of Optical Fiber Manufacturing System**
Gia Ginelle Carandang (Kumoh National Institute of Technology),
Kyoungjin Kim (Kumoh National Institute of Technology)
- PP014** 234 **Tool Fracture Mechanism in Wet Milling of Ti-6Al-4V Alloy and LN2 Cryogenic Machining**
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- PP015** 274 **Application of Convolutional Neural Network for Effective Process Monitoring in Selective Laser Melting**
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Matthieu Museau (The Univ. Grenoble Alpes), Frederic Vignat (The Univ. Grenoble Alpes)
- PP017** 490 **Ball-Burnishing and UNSM Treatment for Ultrahigh Wearproof Characteristics of SUS316**
Young Uk Gil (Pusan National University), Sang Hu Park (Pusan National University),
Yeong Kwan Jo (Pusan National University), Jae Hyun Yu (Pusan National University),
Do Sik Shim (Korea Maritime and Ocean University), Young Sik Pyun (Sunmoon University)

- PP018** 453 **Tool Wear Analysis of CFRP Routing Tool Using Vision Based On-machine Measurement System**
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- PP019** 568 **A Study on the Processing Characteristics Following the Focus Alignment for Improving the Machinability of High Power Density Electron Beam**
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- PP022** 587 **An Experimental Investigation of Pre-Cryogenic Treated Titanium Alloys in Ultra-Precision Machining**
Wai Sze Yip (The Hong Kong Polytechnic University), Suet To (The Hong Kong Polytechnic University)
- PP023** 324 **Numerical Analysis of Welding Residual Stress Evolution During CTOD Specimen Preparation by Reverses Bending**
Sung Min Joo (Chosun University), Young Gon Kim (Korea Institute of Industrial Technology), Young Hyun Kim (Chosun University)
- PP024** 236 **A Study on Improvement of Heater Design by Heat Transfer Simulation of Press Tempering Mold**
Yonghan Yoon (Gyeongbuk Technopark), Jaesool Shim (Yeungnam University), Man-Ho Choi (CHUNG HO Heat Treatment)
- PP025** 144 **Evaluation of Tensile Shear Strength by Salt Spray Test on Dissimilar Welds of Aluminum Alloy and Galvannealed Steel**
Young Gon Kim (Korea Institute of Industrial Technology), Sung Min Joo (Chosun University), Young Hyun Kim (Korea Institute of Industrial Technology), Min Suk Oh (Chonbuk National University)
- PP026** 518 **Determination of the Stress-Strain Relation in Plain Strain Tensile Testing Using High-Speed Photography and Infra-Red (IR) Thermography**
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- PP027** 456 **Warping and Shrinkage of PA6/GF Composites by Microcellular Foam Injection Molding Process**
Chang-Seok Yun (Yonsei University), Sung Woon Cha (Yonsei University), Joo Seong Sohn (Yonsei University), Youngjae Ryu (Yonsei University), Kun Zhu (Yonsei University), Soo-hyun Cho (Yonsei University), Byeongkoo Park (JINWON Inc.)
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- PP029** 470 **Study on CMP Pad Profile Deformation According to Diamond Arrangement of Conditioning Discs**
Donghwan Lee (Pusan National University), Haedo Jeong (Pusan National University), Dasol Lee (Pusan National University), Seonho Jeong (Pusan National University), Hyoungjae Kim (Pusan National University), Hanchul Cho (Korea Institute of Industrial Technology)
- PP030** 563 **Evaluation of Tool Wear During Turning for Inconel 713C Using TiAlN Coated Insert Tool**
Geon Cheol Park (Yeungnam University), Tae Jo Ko (Yeungnam University), Rendi Kurniawan (Yeungnam University), KiMoon Park (Yeungnam University), MinChael Kim (Yeungnam University), Yeln Kwak (Yeungnam University), JongMin Lee (Yeungnam University), Zhen Yu (Yeungnam University), Chong Sung Park (Mirae Metal Tech Co., Ltd. Korea)
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- PP032** 533 **Electrochemical Oxidation Assisted Machining Using Conductive Tool**
Hyunho Jo (Yonsei University), Byung-Kwon Min (Yonsei University), Eunseok Nam (Korea Institute of Industrial Technology), Jaesang Park (Yonsei University), Myeong Gu Gang (Yonsei University), Gyuho Kim (Yonsei University)
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In Young Woo (Seoul National University of Science and Technology), Min-Young Lyu (Seoul National University of Science and Technology), Sun Chul Jin (Samyang Central R & D Center), Sun Hwan Cho (Samyang Central R & D Center)
- PP034** 561 **Welding Temperature Characteristic of Dissimilar Friction Stir Welding of Cast Aluminum and High Strength Steel under Lab Joint Method**
Jeong-hun Park (Pusan National University), Myungchang Kang (Pusan National University), Seonghwan Park (Pusan National University), Byeong-Jun Choi (Chasys Corporation, Ltd.)

- PP035** 056 **Investigation into High Temperature Tensile Property of Heat-Resisting Alloy Deposited by Laser Melting Process**
 Jongyoun Son (Chonnam National University), Dosik Shim (Korea Maritime and Ocean University), Hiseak Yoon (Chonnam National University), Kiyong Lee (Korea Institute of Industrial Technology)
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 Jung Sub Kim (Sungkyunkwan University), Sang Won Lee (Sungkyunkwan University), Jin Woo Kim (Sungkyunkwan University), Jiwoong Lee (Sungkyunkwan University), Inwoong Noh (Sungkyunkwan University)
- PP038** 418 **Control of Temperature Profile and Improvement of Polishing Uniformity by Controlling the Flow Rate of Multiple Spray Nozzles**
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- PP040** 061 **Abrasive Flow Machining of Burr Edge Formed by Two Holes Intersecting at Right Angle with Offset**
 Kwang Joon Kim (Korea University), Kwon-Hee Kim (Korea University), Young-Gwan Kim (Korea University)
- PP041** 041 **A Study on Manufacturing Process of Molded Multi-Layer Electronic Circuit by Screen Printing Method**
 Kyu Song (Korea Electronics-Machinery Convergence Technology Institute), Dongyoung Jang (Seoul National University of Science and Technology), Manjin Park (Korea Electronics-Machinery Convergence Technology Institute), Minyoung Park (Korea Electronics-Machinery Convergence Technology Institute), Jonghan Won (Korea Electronics-Machinery Convergence Technology Institute)
- PP042** 449 **Effects of Abrasive Size and Type on ABF Planarization for Advanced Packaging**
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- PP043** 458 **Thermal Analysis of Desktop FDM Liquefiers**
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- PP044** 390 **Microstructural Evolution and Mechanical Properties of Friction Stir Butt Welded Nickel Superalloy 825**
Mounarik Mondal (University of Ulsan), Sung-Tae Hong (University of Ulsan), Hrishikesh Das (University of Ulsan), Jiwoo Lee (Hanbat National University), Hoon-Hwe Cho (Hanbat National University)
- PP045** 149 **Development of Large SLA Printer with Floating Resin to Save Material Cost**
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- PP046** 337 **Effect of Forming Temperatures on Formation of Alpha-Case and Formability of Ti-6Al-4V Alloy Sheet**
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- PP047** 354 **Effects of Heat Treatments on the Mechanical Properties of Stainless Steel 630 Fabricated by Laser Melting Deposition**
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- PP049** 502 **Fundamental Study on CMP Conditioning System with Varying Contact Area**
Jungyu Son (Tongmyong University), Hyunseop Lee (Tongmyong University), Taekyoung Kim (Tongmyong University), Junyoung Seo (Tongmyong University)
- PP050** 330 **Binder Jetting Additive Manufacturing by Integrated Extractor Electrode Electrohydrodynamic Printing**
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- PP051** 612 **Electrochemical Machining using Direction Controllable Tool Electrode by External Magnetic Force**
Uksu Kim (Chosun University), Jeongwoo Park (Chosun University)
- PP052** 060 **Removal of Milling Burrs by Abrasive Flow Machining**
Younggwan Kim (Korea University), Kwonhee Kim (Korea University), Kwangjoon Kim (Korea University)
- PP053** 265 **Optimization of Injection Molding Process to Minimize Shrinkage of Microcellular-Foamed PA6/GF**
Youngjae Ryu (Yonsei University), Sung Woon Cha (Yonsei University), Joo Seong Sohn (Yonsei University), Chang Seok Yun (Yonsei University), Kun Zhu (Yonsei University), Byeongkoo Park (JINWON Inc.)

- PP054** 370 **Weld Quality Estimation of Resistance Spot Welding of 980MPa grade AHSS Using Convolution Neural Network**
 Munjin Kang (Korea Institute of Industrial Technology), Insung Hwang (Korea Institute of Industrial Technology), Sanggyu Choi (Inha University), Dongcheol Kim (Korea Institute of Industrial Technology)
- PP055** 040 **A New Heat Source Model to Simulate Multi-Pass Welding Process**
 Bo-Ram Lee (Mokpo National University), Ill-Soo Kim (Mokpo National University), Tae-Jong Yun (Mokpo National University), Won-Bin Oh (Mokpo National University), Gang Zhang (Mokpo National University), Bock-Hee Park (Mokpo National University), Ji-Yeon Shim (Korea Institute of Industrial Technology), Kyoung-Seo Ki (Mokpo National University)
- PP056** 028 **Material Property Estimation of Functionally Graded H13/Cu Structures fabricated by DMT**
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- PP057** 613 **Evaluation of Backing Plate for Micro-Friction Stir Welding with Welding Temperature**
 SeongHwan Park (Pusan National University), Myungchang Kang (Pusan National University), SooHyeong Park (Pusan National University)
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 Min Sook Yu (TOPnC Co., Ltd.), Dong Soo Kim (Hanbat National University), Mun Yong Song (TOPnC Co., Ltd.), Min Ha Kim (TOPnC Co., Ltd.)
- PP059** 624 **A Study on Partitioning Freeform Surface and Tool Selection Method for 3 axes CNC Machining**
 Van Quy Hoang (Haiphong University), Duc Toan Nguyen (Hanoi University of Science and Technology), Ngoc Tuyen Bui (Hanoi University of Science and Technology)
- PP060** 625 **Study on Cutting Force and Chip Shrinkage Coefficient during Thermal – assisted Machining by Induction Heating of SKD11 Steel**
 Thi-Bich Mac (Hanoi University of Science and Technology, Hung Yen University of Technology and Education), Duc-Toan Nguyen (Hanoi University of Science and Technology), Tien-Long Banh (Hanoi University of Science and Technology)
- PP061** 626 **Multi-Criteria Decision Making using Preferential Selection Index in Titanium based Die-Sinking PMEDM**
 Quang-Dung Le (Hung Yen University of Technology and Education), Huu-Phan Nguyen (Hanoi University of Industry), Tien-Long Banh (Hanoi University of Science and Technology), Duc-Toan Nguyen (Hanoi University of Science and Technology), Muthuramalingam T. (SRM Institute of Science and Technology), The-Thanh Luyen (Hanoi University of Industry), Quoc-Tuan Pham (Hanoi University of Science and Technology), Young-Suk Kim (Hanoi University of Science and Technology), Duc-Toan Nguyen (Hung Yen University of Technology and Education)

2. Machine Tools & Systems		Lobby (3F)
PP062	260	Hole Quality Analysis in Drilling of CFRP/Al Stack Using Longitudinal-Torsional Ultrasonic Assisted Drilling Anmok Jeong (Korea Institute of Industrial Technology), Cheolho Kim (Korea Institute of Industrial Technology), Seokwoo Lee (Korea Institute of Industrial Technology), Taegon Kim (Korea Institute of Industrial Technology), Hyoyoung Kim (Korea Institute of Industrial Technology), Jonguk An (Korea Institute of Industrial Technology)
PP063	336	Recurrent Neural Network-based Machine Fault Detection Algorithm Chang Nho Cho (Korea Electrotechnology Research Institute), Hong Ju Kim (Korea Electrotechnology Research Institute)
PP064	360	Design of Four-Legged Portable Machine Tool with Five-Axis Machining Chang-hyuk Lee (Korea Electrotechnology Research Institute), Hong-ju Kim (Korea Electrotechnology Research Institute), Yeong-sik Park (Korea Electrotechnology Research Institute)
PP065	264	Development of Two-Sided Multi-Point Press Technology for FCP Shape Implementation Kyeong Tae Jeong (Hanbat National University), Donghoon Lee (Hanbat National University), Young Ju Na (University of U1, Korea), Seunghyun Son (Kyung Hee University)
PP066	318	Development of a Rectifier System for Corrosion Protection and Anti-Corrosion Dongyoung Lee (Kongju National University), Youngjin Seo (Kongju National University), Seungik Son (Kongju National University), Han-Mo Park (Areum Technology), Chang-Yeon Park (Areum Technology)
PP067	300	Study on Fine Multi-Stage Vacuum Control Technology for Die-Casting of Complicated Shape Parts Jae Yong Lee (Korea Textile Machinery Convergence Research Institute), Gyu Hyun Bae (Korea Textile Machinery Convergence Research Institute), Jung Gil Kang (Shinhan Diecasting)
PP068	581	Ultrasonic Cleaning Effect According to Each Shape of Emission Surfaces in Water Jonguk An (Korea Institute of Industrial Technology), Cheolho Kim (Korea Institute of Industrial Technology), Hyoyoung Kim (Korea Institute of Industrial Technology), AnMok Jeong (Korea Institute of Industrial Technology)
PP069	315	Development of IoT Node based Wireless Sensor Network System in Textile Industry Chul Kim (Korea Institute of Industrial Technology), Yongju Cho (Korea Institute of Industrial Technology), Minjae Ko (Korea Institute of Industrial Technology)
PP070	593	A Research on the Surface Roughness of Inconel 713C Grade Materials Yein Kwak (Yeungnam University), Taejo Ko (Yeungnam University), Rendi Kurniawan (Yeungnam University), Kimoon Park (Yeungnam University), Chongsung Park (Mirae Metal Tech. Ltd.)

- PP071** 553 **A Study on Configuration of Monitoring and Analysis System for Machining Optimization**
 Young-Jae Choi (Korea Institute of Industrial Technology), Dong-Yoon Lee (Korea Institute of Industrial Technology),
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 Bo-Hyun Kim (Korea Institute of Industrial Technology)
- PP072** 305 **A Study on the Optimization of Induction Heater For Electric Vehicle**
 Byoung-Wook Jo (Hanbat National University), Ki-Chan Kim (Hanbat National University),
 Byeong-Chul Lee (Hanbat National University)
- PP073** 532 **Corner Error Limit Setting Method for Kinematic Curve Based Interpolator**
 Chan-Young Lee (Yonsei University), Byung-Kwon Min (Yonsei University)
- PP074** 570 **A Study on Slot Leakage Inductance Considered Saturation of WFSM for Electric Vehicle**
 Cheon-Ho Song (Hanbat National University), Ki-Chan Kim (Hanbat National University),
 Byoung-Wook Jo (Hanbat National University)
- PP075** 319 **Shift Shock of Interior Permanent Magnet Synchronous Motor with Multi-step Electromagnetic Transmission**
 Hong Sik Lim (Hanbat National University), Ki-Chan Kim (Hanbat National University),
 Do-Hyun Kim (Hanbat National University)
- PP076** 361 **Development of a Dual Servo Stage with a 5-DOF Measurement System and a 6-DOF Fine Positioning System for Motion Error Compensation**
 Hoon-Hee Lee (Kyungpook National University), Seung-Han Yang (Kyungpook National University),
 In-Seok Lee (Kyungpook National University), Sung-Hwan Kweon (Kyungpook National University),
 Kwang-Il Lee (Kyungil University), Jae-Chang Lee (Yeungnam University College)
- PP077** 334 **Fault Diagnosis and Life Prediction of Machining Center Using Raw Signal of Noise and Vibration**
 Ji Wook Kim (Korea Institute of Industrial Technology), Jin Seok Jang (Korea Institute of Industrial Technology),
 Jae Wook Lee (Korea Institute of Industrial Technology), Kun Woo Kim (Korea Institute of Industrial Technology),
 Ji Heon Kang (Korea Institute of Industrial Technology), Min Seok Yang (Korea Institute of Industrial Technology)
- PP078** 571 **A Study on Spot-Welding Quality Prediction Using Current and Voltage Signals for Various Welding Materials**
 Jiwoong Lee (Sungkyunkwan University), Sang Won Lee (Sungkyunkwan University),
 Sang Ik Jeong (Sungkyunkwan University), Jimin Lee (Sungkyunkwan University),
 Jun Ho Kim (Sungkyunkwan University), Hyun Suk Lee (Sungkyunkwan University)
- PP079** 535 **Development of the Operating Program for Heterogeneous Controller Compatibility of Display Equipment**
 Jong-Hyeok Yu (Soonchunhyang University), Kug-Weon Kim (Soonchunhyang University),
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- PP080** 371 **Analysis of Vibration Characteristics and Shape Optimization of Dental Prosthetic Machine**
Minseok Yang (Korea Institute of Industrial Technology), Jaewook Lee (Korea Institute of Industrial Technology),
Kunwoo Kim (Korea Institute of Industrial Technology), Jinseok Jang (Korea Institute of Industrial Technology),
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- PP081** 495 **Modeling Methodology for Dynamic Analysis of 5-Axis Precision Stage**
Myung Yeun Park (Kookmin University), Jayil Jeong (Kookmin University), Seojun Hong (Kookmin University)
- PP082** 529 **Structural Rigidity of Robot Machining Systems Depending on Machining Processes**
Seong Hyeon Kim (Yonsei University), Byung-Kwon Min (Yonsei University)
- PP083** 485 **The Prediction Model of Time Series Cutting Forces in End Milling Based on the Machine Learning Algorithm**
Hyein Kim (Korea Institute of Industrial Technology), Jeongin Koo (Korea Institute of Industrial Technology),
Dongil Kim (Chungnam National University)
- PP084** 605 **A Study on Development of Ultrasonic Slicer System for Food Cutting**
Bong Gu Lee (Yeungnam University College), Kang Eun Kim (Korea Institute of Industrial Technology),
Dong-Mok Lee (Korea Institute of Industrial Technology), Sang-il Choi (Pusan National University)
- PP085** 623 **An Application/Comparison Study on Graphical Method of Forming Limit Curve Estimation for DP590 Steel Sheets**
The Thanh Luyen (Hungyen University of Technology and Education),
Duc-Toan Nguyen (Hanoi University of Science and Technology),
Quoc-Tuan Pham (Hungyen University of Technology and Education),
Young-Suk Kim (Kyungpook National University)

3. Automation, Measurement & Control

Lobby (3F)

- PP086** 235 **Analysis on the Forward and Inverse Kinematics of a Four-Axis Transfer Robot with Parallelogram Mechanism**
 Daesun Hong (Changwon National University), Ilhwan Park (Changwon National University), Ara Go (Changwon National University)
- PP087** 209 **Development of Noise Robust Sensor Using IR Proximity for Measuring Piano Key Movement**
 Eun Ho Kim (Korea Institute of Industrial Technology)
- PP088** 054 **A Study of Robot Hand with Similar Movements to Human Hand**
 Hyo-chan Kwon (Korea University), Kwon-hee Kim (Korea University), Doo-hyun Cho (Korea University)
- PP089** 577 **Optimization Automation for Predicting R&H Performance of CTBA Vehicles**
 Jayil Jeong (Kookmin University), Myung Yeun Park (Kookmin University), Yunsik Shin (Kookmin University)
- PP090** 113 **Static Water Contact Angle Measurement on Rhombohedral Pattern Fabricated Using Three-Dimensional Elliptical Vibration Texturing (3D-EVT)**
 Rendi Kurniawan (Yeungnam University), Tae Jo Ko (Yeungnam University), Saood Ali (Yeungnam University)
- PP091** 078 **Effect of Ultrasonic Energy and Transmission Coefficient in Air-Propane Gas Space**
 Kwonse Kim (Mississippi State University), Seokyeon Im (Tongmyong University), Wonjun Seo (Tongmyong University)
- PP092** 016 **Positioning Error Constraining Super-Twisting Control for the Ball-Screw Driven Precise Motion Device with a Nonlinear Disturbance Observer**
 Seong Ik Han (Dongguk University)
- PP093** 343 **Modeling of the Adaptive Threshold Curve Considering the Wave Attenuation**
 Seung Jin Chang (Hanbat National University), Gyeong Hak Lee (Hanbat National University)
- PP094** 197 **Performance Evaluation Method for Human Detection for Disaster Robot**
 Seung-Hun Kim (Korea Electronics Technology Institute), Jae-Man Lee (Korea Electronics Technology Institute)
- PP095** 409 **Inspection of Machined Metal Surfaces using Image Processing**
 Daegwon Koh (Gwangju Institute of Science and Technology), Sun-Kyu Lee (Gwangju Institute of Science and Technology), Dinuka Ravimal (Gwangju Institute of Science and Technology), Hanul Kim (Gwangju Institute of Science and Technology)

Poster Presentation 1

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- PP096** 419 **Development of Multiple Actuator Driven Fin for Undulatory Locomotion**
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Hyeong Ryool Park (Gyeongsang National University), Sung-Hoon Ahn (Seoul National University)
- PP097** 228 **Simple Approach of Kinematical Mapping Using Sphere Least Squares on a Disaster-responding Special Purpose Equipment with Master-slave System**
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Young Cha (Korea Institute of Industrial Technology)
- PP098** 227 **Development of Hardware-In-the-Loop Simulator for a Telescopic Boom of All-terrain Crane Using Fuzzy-PID**
Youngtaek Cha (Korea Institute of Industrial Technology), Sungjoon Choi (Korea Institute of Industrial Technology)
- PP099** 353 **A Finger-like Mechanism Actuated by Torsional SMA Actuators and a SMA Spring**
Youngshik Kim (Hanbat National University), Taesoo Jang (Hanbat National University),
Buhyun Shin (Hanbat National University), Bongjo Ryu (Hanbat National University)
- PP100** 015 **Compensation for Non-Linearity of Digital Devices in Phase-Shifting Deflectometry**
Young-Sik Ghim (Korea Research Institute of Standards and Science),
Man The Nguyen (Korea Research Institute of Standards and Science),
Hyug-Gyo Rhee (Korea Research Institute of Standards and Science)
- PP101** 204 **Implementation of Tool Condition Wireless Monitoring System in Milling Process Using MEMS Accelerometer**
Byeong Hee Tae (Kangwon National University), Byeong Hee Kim (Kangwon National University),
Yong Tae Kim (Kangwon National University), Hyung Jin Kim (Kangwon National University),
Young Ho Seo (Kangwon National University)
- PP102** 328 **Improvement of Cornering Characteristic Using 4 In-Wheel Motor**
Byongsung Kim (Korea University), Daehie Hong (Korea University)
- PP103** 207 **A Study on Bearing Fault Detection Using Convolution Neural Network**
Dong Wook Kim (Kangwon National University), Byeong Hee Kim (Kangwon National University),
Eun Sung Lee (Kangwon National University), Hyung Jin Kim (Kangwon National University),
Young Ho Seo (Kangwon National University)
- PP104** 042 **The Prediction and Control of the Grasp Point for a Multi-Jointed Robot's Gripper Using FCN of Deep Learning with Multi-Image Input**
Dongyun Kim (Seoul National University of Science and Technology),
Guihyung Lee (Seoul National University of Science and Technology)

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- PP105** 195 **A Study on the Speed Control of Collaborative Robot for Collision Avoidance and Productivity**
 Hye-Yeon Ryu (Pukyong National University), Kyung-Chang Lee (Pukyong National University),
 Hyun-Hee Kim (Pukyong National University)
- PP106** 196 **A Fully Portable Pneumatic Ankle Foot Orthosis (AFO) for Drop-foot Correction**
 Sangjoon Kim (Korea Advanced Institute of Science and Technology),
 Jung Kim (Korea Advanced Institute of Science and Technology),
 Handdeut Chang (Korea Advanced Institute of Science and Technology),
 Junghoon Park (Korea Advanced Institute of Science and Technology)
- PP107** 345 **A Novel Method to Assess the Synergy of Stroke Patients Based on a Gate Cycle**
 Jung Hwan Lim (Konkuk University), Hoeryong Jung (Konkuk University)
- PP108** 193 **Implementation of Gait Pattern Monitoring System Using WiFi-Embedded Smart Shoes**
 KiMin Jeong (Pukyong National University), KyungChang Lee (Pukyong National University),
 HyunHee Kim (Pukyong National University)
- PP109** 066 **Comparison of Conventional Image Processing Method and Deep Learning Method in Driving Autonomous Mobile Robot**
 Kyuho Sim (Seoul National University of Science and Technology),
 Guihyung Lee (Seoul National University of Science and Technology)
- PP110** 382 **Vehicle Wheel Alignment Using Laser Module**
 Min Ji Kim (Dong-A University), Seong Han Kim (Dong-A University), Dong Whan Lee (Dong-A University),
 Jong Tae Woo (Dong-A University)
- PP111** 198 **Adaptive Measurement Strategy for Electrical Impedance Tomography (EIT)-based Tactile Sensor with Grid-like Internal Electrodes**
 Kyungseo Park (Korea Advanced Institute of Science and Technology), Jung Kim (Korea Advanced Institute of Science and Technology),
 Hyosang Lee (Max Planck Institute for Intelligent System), Wondong Kim (Korea Advanced Institute of Science and Technology),
 Min Jin Yang (Korea Advanced Institute of Science and Technology)
- PP112** 572 **Measurement of 5-DOF Spindle Error Motion Using Fourier Model Based Multi-Probe Error Separation**
 Sang-Woo Baek (Hanyang University), Nahm-Gyoo Cho (Hanyang University), In-Oh Hwang (Hanyang University)
- PP113** 218 **Control of a Lower Limb Exoskeleton Based on Torque Estimation Using sEMG and Interaction Force Sensor**
 Seulki Kyeong (Korea Advanced Institute of Science and Technology), Jung Kim (Korea Advanced Institute of Science and Technology),
 Wonseok Shin (Korea Advanced Institute of Science and Technology),
 Ung Heo (Korea Advanced Institute of Science and Technology)

Poster Presentation 1

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- PP114** 420 **The Development of U-Turn Path Planning of Autonomous Vehicle Using Clothoid Curve**
Suyoung Choi (Korea University), Daehie Hong (Korea University),
Sanghoon Lee (Doowon Technical University College)
- PP115** 423 **Experimental Investigation of Mechanical-Hydrostatic Continuously Variable Transmission**
Bao Tri Diep (Industrial University of Ho Chi Minh City), Thanh Danh LE (Industrial University of Ho Chi Minh City),
Van Nguyen Ho (Food Industrial University of Ho Chi Minh City)
- PP116** 541 **Relative Stabilization of Dual-Comb with an External Rapid Tuning Acousto-Optics Modulator**
Tiendung Vu (Inje University), Joohyung Lee (Seoul National University of Science and Technology)
- PP117** 272 **Studying the Resistance of the Autonomous Underwater Vehicle's Hull Having Flexible Solar Wing using Computational Fluid Dynamics**
Tuan Nguyen Van (Phenikaa University, Hanoi University of Science and Technology),
Phong Dinh Van (Hanoi University of Science and Technology),
Hung Nguyen Chi (Hanoi University of Science and Technology),
Phuong Hoang The (Hanoi University of Science and Technology),
Sone Akira (Kyoto Institute of Technology)
- PP118** 018 **A Semi Active Control for a VTOL Aircraft Landing Gear with Magnetorheological Damper**
Viet Luong Quoc (Korea Aerospace University), Hwang Jai Hyuk (Korea Aerospace University)
- PP119** 203 **Prediction of Drill Breakage Using Infrared Sensor**
Yoosu Kang (Kangwon National University), Byeong Hee Kim (Kangwon National University),
Min Jae Jeong (Kangwon National University), Hyung Jin Kim (Kangwon National University),
Sang Woo Lee (Kangwon National University), Young Ho Seo (Kangwon National University)
- PP120** 344 **Autonomous Grasping Orientation Control Using a Wrist-mounted Camera for a Real-time Tele-manipulation System**
Yunjoo Kim (Korea Advanced Institute of Science and Technology),
Jung Kim (Korea Advanced Institute of Science and Technology),
Hyunky Park (Korea Advanced Institute of Science and Technology),
Woojong Kim (Korea Advanced Institute of Science and Technology)
- PP121** 269 **Automation System Design for Plastic Recycling Machine**
Loc Phan (Vietnamese German University), Khanh Nguyen (Vietnamese German University),
Zarni Lynn (Vietnamese German University), Ho Hin Hein (Vietnamese German University)
- PP122** 622 **Improving the Depth Accuracy and Assessment of Microsoft Kinect v2 Towards a Usage for Mechanical Part Modelling**
Van-Bien Bui (Hai Phong University, Hanoi University of Technology and Science),
Tien-Long Banh (Hanoi University of Technology and Science),
Duc-Toan Nguyen (Hanoi University of Technology and Science)

4. Materials & Design-1

Lobby (3F)

- PP123** 314 **Development of a Metal-Hydride Actuation System Controlling by Heating-Cooling Cycle for a Rehabilitation System**
 Mi Yeon Shin (Chonbuk National University), Chang Ho Yu (Chonbuk National University),
 Woo Suk Chong (CAMTIC), Sung Hoon Kim (Wonkwang University)
- PP124** 468 **Study on the Effect of Penetrator Shape on Penetration Using Finite Cavity Pressure Method**
 Chang-Whan Lee (Seoul National University of Science and Technology),
 Jong-Bong Kim (Seoul National University of Science and Technology),
 Yo-han Yu (Agency for Defense Development)
- PP125** 550 **Development of Paint Estimating Software for the Pipe Support of Ship and Offshore Structures Using 3D CAD Models**
 Doo Yeoun Cho (Mokpo National University), Eun Se Lee (Deahan Shipbuilding Industry),
 Hye Yeong Cho (Mokpo National University), Geum Ju Lee (Mokpo National University),
 Jeong Wook Yang (Mokpo National University), Min Lee (SM Software Co., Ltd.),
 Yong Suk Park (Hyundai Samho Heavy Industries Co., Ltd.)
- PP126** 338 **A Study on the Analysis of Elastic Rubber Mount for Ship Electronic Equipment System**
 GyuHyun Bae (Korea Textile Machinery Convergence Research Institute),
 Jae Yong Lee (Korea Textile Machinery Convergence Research Institute),
 Jang Hyun Lee (NSV Co., Ltd.), Jung Ho Lee (NSV Co., Ltd.), Han Sam Kim (NSV Co., Ltd.),
 Chae-Dong Lee (Daeyang Electric Co., Ltd.), You Jong Seo (Daeyang Electric Co., Ltd.)
- PP127** 133 **A Study on Remanufacturing of Cylinder Block and Head Using Hot Spray Technology**
 Hyunseok Song (Korea Automotive Technology Institute), Youngho Jeon (Ajou University),
 Dohyun Jung (Korea Automotive Technology Institute), Sungju Yoo (Korea Automotive Technology Institute)
- PP128** 429 **A Design of Electromagnetic Chuck Using a New Type Yoke for Switching the Magnetic Circuit**
 Hyun-Soo Kim (Korea Institute of Machinery and Materials),
 Seong-Kook Ro (Korea Institute of Machinery and Materials),
 Sung-Cheul Lee (Korea Institute of Machinery and Materials)
- PP129** 166 **Development of Conductive Heating Technology for Hot Stamping Process**
 Jaedong Cho (SHIN YOUNG Co., Ltd.), Jeongsik Lim (SHIN YOUNG Co., Ltd.),
 Jongdock Seo (SHIN YOUNG Co., Ltd.), Yonghun Choi (Dawonsys Co., Ltd.)
- PP130** 573 **3D Printing Auxetic Structures for Enhancing Crash Performances**
 Jonghun Yoon (Hanyang University), Sung-Jun Park (Korea National University of Transportation),
 Dong-sik Chae (International St. Mary's Hospital, Catholic Kwandong University College of Medicine)

- PP131** 270 **Non-Dimensional Equation of Motion with Slope Discontinuity in ANCF**
Kunwoo Kim (Korea Institute of Industrial Technology),
Jinseok Jang (Korea Institute of Industrial Technology),
Jooyoung Oh (Korea Institute of Industrial Technology),
Jaewook Lee (Korea Institute of Industrial Technology),
Jiheon Kang (Korea Institute of Industrial Technology),
Jiwook Kim (Korea Institute of Industrial Technology),
Minseok Yang (Korea Institute of Industrial Technology)
- PP132** 045 **Measurement of Wall Motion of a Stenotic Channel Simulating Atherosclerotic Artery Using a Sonomicrometry**
Kyeihan Rhee (Myongji University),
Je Hyun Kim (Myongji University),
Yong Woo Cho (Myongji University),
Pengersorn Chhai (Myongji University)
- PP133** 435 **Effect of CaCO₃ on the Mechanical Properties of Poly(Ethylene Terephthalate)/ Polypropylene Blends**
Nga Pham Thi Hong (University of Technology and Education Ho Chi Minh City)
- PP134** 340 **Development of CCTV Temperature Maintenance System Using Thermo-syphon Principle**
Kwi Young Park (Korea University),
Jong Ug Jeon (Korea University),
Jae Woong Han (Korea University),
Chang Hyun Beak (Korea University),
Sang San Lee (LJ TECH Co., Ltd.)
- PP246** 313 **Finite Element Analysis of Suture Anchor Design and Primary Fixation Strength**
Soo-Won Chae (Korea University),
Ju-Yong Kang (Korea University),
Soung-Yon Kim (Korea University)

Organized Session 7 (Precision Machinery and Related Materials)

Lobby (2F)

- OS086** 312 **Comparative Analysis of Laser Cladding Using White Metal**
 Chan Kyu Kim (Changwon National University),
 Young Tae Cho (Changwon National University),
 Won Pyo Kim (Changwon National University),
 Do Yeong Moon (Changwon National University)
- OS087** 478 **Effects of Processing Path on Mechanical Properties in Ultrasonic Nanocrystal Surface Modification Technology**
 Chanjin Kim (Korea Maritime and Ocean University),
 Dosik Shim (Korea Maritime and Ocean University),
 Minseob Kim (Korea Maritime and Ocean University),
 Yeongkwan Jo (Pusan National University),
 Sanghu Park (Pusan National University)
- OS088** 454 **Applications of Nano Imprint Process for Smart Window Panel**
 Do Hyeog Kim (Changwon National University),
 Young Tae Cho (Changwon National University),
 Ki Beom Park (Changwon National University)
- OS089** 496 **Application of Contact Arc Metal Cutting Process for Underwater Manufacturing**
 Do Yeong Mun (Changwon National University),
 Young Tae Cho (Changwon National University),
 Ill-woo Moon (Hanto Cutting System)
- OS090** 116 **A Study on the Structural Analysis of the Special Chuck for Ball Screw Nut Grinding Machining**
 Ho-In Jeong (Changwon National University),
 Choon-Man Lee (Changwon National University)
- OS091** 212 **A Basic Study on the Thermal Analysis of a Spindle of Hybrid Machine Tool Based on 3D Printing**
 Kangwook Kim (Changwon National University),
 Choon-Man Lee (Changwon National University)
- OS092** 213 **A Basic Study on the Thermal Deformation of a Plasma Torch for Plasma Assisted Machining**
 Seong-Gyu Kim (Changwon National University),
 Choon-Man Lee (Changwon National University),
 In-Jae Lee (Changwon National University)

- OS093** 451 **Comparison of Oleophobicity between Re-entrant and Pillar Structure**
Su Hyun Choi (Changwon National University),
Young Tae Cho (Changwon National University),
Seon Jun Kim (Changwon National University),
Woo Young Kim (Changwon National University),
Youn Hee Park (Changwon National University)
- OS094** 494 **Numerical Studies of Fluidic Flow and Thermal Response of 3D Lattice Structures for Efficient Catalytic Substrates**
Wonpyo Kim (Changwon National University),
Young Tae Cho (Changwon National University),
Seok Kim (Massachusetts Institute of Technology),
Nicholas Xuanlai Fang (Massachusetts Institute of Technology)
- OS095** 486 **Shape Morphing by Partial Curing with Composition Control of Dye and HDDA**
Woo Young Kim (Changwon National University),
Young Tae Cho (Changwon National University),
Seon Jun Kim (Changwon National University),
Su Hyun Choi (Changwon National University)
- OS096** 102 **A Basic Study on the Copper Pipe Forming Analysis According to Center Position of a Joint Mandrel**
Yea Jin Yang (Changwon National University),
Choon-man Lee (Changwon National University)

Poster Presentation 2

July 12 (Friday) 16:30-17:30

4. Materials & Design-2

Lobby (3F)

- PP135** 190 **Characteristics of Geopolymer-Polyurethane Sponge Composite**
Sang-Jin Lee (Mokpo National University)
- PP136** 117 **Analysis of Wettability and Surface Free Energy of Engine Oils**
Sangmin Lee (Donggeui University), Unyoung Ko (Donggeui University), In-Woong Lyo (Hyundai Motor Group), Jeong-Uk An (Hyundai Motor Group), Hongwook Lee (Hyundai Motor Group)
- PP137** 611 **Optimum Sound Absorption Design of Composite Structure Nonwoven for Fender-liner in Vehicle Exterior Parts**
Seong Jin Cho (Korea Textile Machinery Convergence Research Institute), In-Sung Lee (Korea Textile Machinery Convergence Research Institute), Jun Hyeok Heo (Korea Textile Machinery Convergence Research Institute), Tae Hyeon Oh (Korea Textile Machinery Convergence Research Institute), Un-Hwan Park (Korea Textile Machinery Convergence Research Institute), Chang Seok Park (Wonpung Mulsan Co., Ltd.)
- PP138** 261 **Design Optimization of Rear Floor Assembly with CFRP to Meet Stiffness and Strength**
Seunghoon Cha (Gyeongbuk Technopark), Bumsik So (Gyeongbuk Technopark), Joonghee Kim (Gyeongbuk Technopark)
- PP139** 136 **Light-Weight Design of Automotive Shock Tower Mounting Bracket by Using Computer Aided Engineering**
Si Tae Won (Seoul National University of Science and Technology), Kee Joo Kim (Tongmyong University)
- PP140** 564 **Enhancement of Mechanical Properties and Extrudability of Magnesium Alloys Using Artificial Cooling System**
Sung Hyuk Park (Kyungpook National University), Sang-Hoon Kim (Kyungpook National University), Ha Sik Kim (Korea Institute of Materials Science)
- PP141** 607 **The Gearbox Design for High Precision Thread Whirling Head**
Kim Dong Seon (Gyeongsang National University), Jeon Min Hyong (Gyeongsang National University), Qin Zhen (Gyeongsang National University), Cho Jae Ung (Kongju National University), Jeon Namsul (Guemhwa Tech LDT)
- PP142** 358 **Determination of Specimen Shape for Accurate Measurement of Tensile Properties Using SHTB Apparatus**
Yo-Han Yoo (Agency for Defense Development), Jong-Bong Kim (Seoul National University of Science and Technology), Khac-Ha Nguyen (Seoul National University of Science and Technology), Hyeon Jun Jung (Seoul National University of Science and Technology), Taek Jin Jang (Seoul National University of Science and Technology), Chang-Whan Lee (Seoul National University of Science and Technology), Hyunho Shin (Gangneung-Wonju National University)

Poster Presentation 2

- PP143** 033 **Pressure Deviation Analysis of Pressurized Roller System for Superhydrophobic Surface Fabrication**
Yousung Kang (Ajou University), Yongho Jeon (Ajou University), Changho Jung (Ajou University),
Moon G. Lee (Ajou University), Seung-Jun Lee (Seowon University)
- PP144** 175 **A Study on Design of the Reduction for Small Electric Vehicle Due to the Change of Gear Module**
Beom Seop Gwak (Gyeongsang National University), Chul Ki Song (Gyeongsang National University),
Seong Hoon Kim (Gyeongsang National University), Jae Gu Lee (SEONGHWA Co., Ltd.), Jae Bok Yoo (REO Co., Ltd.)
- PP145** 120 **Robust Design of Flame for Battery Exchange Typed Electric Motorcycle**
Dahae Yu (Hansung University), Sang-Hyun Kim (Hansung University), Jungwoo Park (Hansung University),
Nadan Cho (Hansung University), Gaeun Kim (Hansung University), Jimin Lee (Hansung University),
Dayul Na (Hansung University), Kwanghyun Rho (Hansung University), Jaesang Lee (JAESANG Electronic Co. Ltd)
- PP146** 058 **True Stress-Strain Curve of Pure Silver over a Large Strain Range**
Doo Hyun Cho (Korea University), Kwon-Hee Kim (Korea University),
Jung-Hoon Kim (Korea University), Hyo Chan Kwon (Korea University)
- PP147** 590 **Structural Stability of High-temperature Butterfly Valve Using Interaction Analysis**
Eunah Jeong (Donggeui University), Insoo Son (Donggeui University), Sangpill Lee (Donggeui University)
- PP148** 258 **Pressure Assisted Solid State Sintering Process of Tungsten Materials and Their Characterization**
Hui-seong Hong (Donggeui University), Sang-pill Lee (Donggeui University),
Jin-Kyoung Lee (Donggeui University), In-soo Son (Donggeui University),
Moon-hee Lee (Donggeui Institute of Technology), Jong-ho Lee (Donggeui Institute of Technology)
- PP149** 155 **Highly Sensitive and Flexible Ionic Thermocouple Array Based on Ionic Seebeck Effect**
Jei Gyeong Jeon (Inha University), Tae June Kang (Inha University), Hyeongjun Kim (Inha University),
Ju Hyeon Kim (Inha University), Ju Hwan Lee (Inha University)
- PP150** 181 **Structural Analysis of Hat-Type Structures with Different Composites for Lightweight Materials**
Jiheon Kang (Korea Institute of Industrial Technology), Jaewook Lee (Korea Institute of Industrial Technology),
Kunwoo Kim (Korea Institute of Industrial Technology), Jinseok Jang (Korea Institute of Industrial Technology),
Jiwook Kim (Korea Institute of Industrial Technology), Minseok Yang (Korea Institute of Industrial Technology)
- PP151** 095 **3D Printed Fluidic Channel for Rapid and Uniform Cooling of Injection Molding**
Ju Yeon Park (Chonnam National University), Hyun Wook Kang (Chonnam National University),
Na Kyong Kim (Chonnam National University), Dong Hee Kang (Chonnam National University)
- PP152** 051 **Energy Absorption of Rectangular Tubes with Perforations in Dynamic Axial Crush**
Jung-Hoon Kim (Korea University), Kwon-Hee Kim (Korea University),
Chang-Hee Cho (Gyeonggi College of Science and Technology), Seon-Ung Choi (Korea University)

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- PP153** 105 **Research on Result of Sapphire CMP After Lap-Grinding Process**
 Junyoung Seo (Tongmyong University), Hyunseop Lee (Tongmyong University),
 Taekyoung Kim (Tongmyong University), Jungyu Son (Tongmyong University)
- PP154** 245 **Effect of Counter Material on Tribological Characteristics of Cobalt-Chromium-Molybdenum Alloy**
 Ngoc-Phat Huynh (University of Ulsan), Koo-Hyun Chung (University of Ulsan), Mi Na Jeong (University of Ulsan)
- PP155** 326 **Fabrication of In-Site TiC Particles Dispersed Ti Matrix Composite**
 Ning Wang (Hiroshima University), Yongbun Choi (Hiroshima University), Siran Chen (Hiroshima University),
 Kentaro Ohe (Hiroshima University), Kazuhiro Matsugi (Hiroshima University), Xingang Liu (Yanshan University)
- PP156** 081 **A Study on Indented Crash Box for Enhanced Energy Absorption or Weight Reduction for Automobiles**
 Seon-Ung Choi (Korea University), Kwon-Hee Kim (Korea University), Jung-Hoon Kim (Korea University)
- PP157** 316 **A Study on the Weight Reduction of Floor Panel for Automobile Bodies**
 Seon-Ung Choi (Korea University), Kwon-Hee Kim (Korea University), Jung-Hoon Kim (Korea University)
- PP158** 323 **Buckling Strength on Duplex Stainless Steel Tubular Column under Axial Compression**
 Sungsoo Kim (Hanbat National University), TaeSoo Kim (Hanbat National University),
 Bokyung Hwang (Hanbat National University), JeongYeon Kim (Hanbat National University)
- PP159** 501 **Effect of Metal-Support Interaction on Catalytic Performance of Co-Based Catalysts for Production of High-Calorific Synthetic Natural Gas**
 Tae Young Kim (Kyungpook National University), Jae Chang Kim (Kyungpook National University), Seong Bin Jo
 (Kyungpook National University), Chul Ho Lee (Kyungpook National University), Suk-Hwan Kang (Institute for
 Advanced Engineering), Joon Woo Kim (Research Institute of Industrial Science & Technology),
 Moon Jeong (Construction Engineering Service Co.), Soo Chool Lee (Kyungpook National University)
- PP160** 137 **Design of Foot Part Damping Structure for the Riding Comfort of Lightweight Electric-Kickboards**
 Tae Han Park (Seoul National University of Science and Technology), Si Tae Won (Seoul National University of
 Science and Technology), HanSu Kim (Seoul National University of Science and Technology)
- PP161** 247 **Efficiency Analysis of Mechanical Component Friction**
 Tae-Hyeong Kim (Yonsei University), Dae-Eun Kim (Yonsei University)
- PP162** 104 **Effect of Hydrogen Peroxide on Machining Results in Abrasive Fluidized CMP**
 Taekyoung Kim (Tongmyong University), Hyunseop Lee (Tongmyong University),
 Junyoung Seo (Tongmyong University), Jungyu Son (Tongmyong University)
- PP163** 424 **Static Analysis of Low Frequency Isolation Model Using Pneumatic Cylinder with Auxiliary Chamber**
 Ngoc Yen Phuong Vo (University of Technology and Education Ho Chi Minh City),
 Thanh Danh LE (Industrial University of Ho Chi Minh City)

Poster Presentation 2

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- PP164** 268 **Study of Fabrication Process for Superhydrophobic Glass Surface**
The Hung Dinh (University of Ulsan), Doo-Man Chun (University of Ulsan)
- PP165** 259 **Characteristics of the Tribological Properties of Carbon-based Films**
YouJin Min (Yonsei University), Dae-Eun Kim (Yonsei University), Oleksiy V. Penkov (Yonsei University)
- PP166** 616 **A Study on Vibration Analysis for Air Guide in Vehicles**
Tae-Jong Yun (Mokpo National University), Ill-Soo Kim (Mokpo National University), Bo-Ram Lee (Mokpo National University), Won-Bin Oh (Mokpo National University), Byeol Lim (Mokpo National University)
- PP167** 097 **A Study of Fracture Characteristic Due to the Generation of Notch Hole Near the Adhesive Interface**
Jae-Won Kim (Kongju National University), Jae-Ung Cho (Kongju National University),
Sung-Ki Lyu (Gyeongsang National University), Seong S. Cheon (Kongju National University)
- PP168** 098 **A Study on Fracture Behavior of the Tapered Double Cantilever Beam of Nonhomogeneous Material Bonded with Adhesive**
Jung-Ho Lee (Kongju National University), Jae-Ung Cho (Kongju National University),
Sung-Ki Lyu (Gyeongsang National University), Seong S. Cheon (Kongju National University)
- PP169** 443 **Numerical and Experimental Study on the Dynamic Characteristics of Polymer Materials**
Bong-Jo Ryu (Hanbat National University), Youngshik Kim (Hanbat National University),
Buhyun Shin (Hanbat National University), Jeahun Jung (Hanbat National University)
- PP170** 206 **Characterization of Functional Film Coated on the Glass Substrate for PV Module According to the Thickness**
Wonseok Choi (Hanbat National University), Ma Minh Trang (Hanbat National University), Chiwon Choi (Hanbat National University),
Seung Cheol Yoo (Hanbat National University), Youngdal Kim (Hanbat National University)
- PP171** 619 **Determining Ideal Strength and Electronic Properties of Ge/Si Core-shell Nanowires**
Thanh Vuong Van (Ha Noi University of Science and Technology),
Hung Nguyen Tuan (Tohoku University), Quang Tran The (Ha Noi University of Science and Technology),
Truong Do Van (Ha Noi University of Science and Technology)
- PP172** 627 **Study on Forging Process for Weight Reduction of Wheel Bearing HUB with Dissimilar Materials**
Heechan Shim (ILJIN GLOBAL Co.), Seonho Lee (ILJIN GLOBAL Co.), Inha Lee (ILJIN GLOBAL Co.)

5. Micro/Nano Technology

Lobby (3F)

- PP173** 600 **Handheld, Flexible and User-Friendly Van de Graaff-based Miniature Tribo-Electrospinning Device**
Dohee Lee (Chonbuk National University), Cheolsang Kim (Chonbuk National University), Serim Jang (Chonbuk National University)
- PP174** 437 **Simulation and Experimental Study on Shear Thickening Polishing of Gear Surfaces**
Duc Nam Nguyen (Industrial University of Ho Chi Minh City)
- PP175** 596 **Plasmonics-based Nanopatterning Technology and Its Application in Optoelectronics**
Eung-Sug Lee (Korea Institute of Machinery and Materials), Jun-Hyuk Choi (Korea Institute of Machinery and Materials), Jihye Lee (Korea Institute of Machinery and Materials), Dae-Guen Choi (Korea Institute of Machinery and Materials), Junho Jeong (Korea Institute of Machinery and Materials)
- PP176** 299 **Jet-Circulating Electrodeposition Using Micro Electrode Nozzle**
Haan Kim (Dongyang Mirae University), Chong Nam Chu (Seoul National University)
- PP177** 508 **Deep Electrochemical Etching Using a Laser-Patterned Copper Layer**
Hong Shik Shin (Korea National University of Transportation)
- PP178** 091 **Method of Fabrication of an Array of DOEs by Using a Direct Laser Lithographic System**
Hyug-Gyo Rhee (Korea Research Institute of Standards and Science), Young-Sik Ghim (Korea Research Institute of Standards and Science), Young-Gwang Kim (Korea Research Institute of Standards and Science)
- PP179** 199 **Roll-to-Roll Nanoimprinting of Ultrafine Patterns on Al Foil Using Femtosecond Laser Nanostructured Stainless Steel Stampers**
Seokkwan Hong (Korea Institute of Industrial Technology), Jeongjin Kang (Korea Institute of Industrial Technology), Taek Yong Hwang (Korea Institute of Industrial Technology), Moonwoo La (Korea Institute of Industrial Technology), Jeongho Hwang (Korea Institute of Industrial Technology)
- PP180** 483 **Fabrication of the Vertical Array of WO₃ Nanorods with Design-Based Ordering for Photochemical Water Splitting**
Jihye Lee (Korea Institute of Machinery and Materials), Ho Young Lee (Korea Institute of Machinery & Materials), Joo-Yun Jung (Korea Institute of Machinery & Materials), Jun-Hyuk Choi (Korea Institute of Machinery & Materials)
- PP181** 384 **UV Nanosecond Laser Processing of Soda-Lime Glass**
Joonghan Shin (Kongju National University), Kimoon Nam (Kongju National University), SeungGu Kang (Kongju National University), Dongkyoung Lee (Kongju National University)

- PP182** 226 **Plasmon-Enhanced Infrared Spectroscopy Based on Metamaterial Absorber with Vertical Nanogap**
Joo-Yun Jung (Korea Institute of Machinery and Materials),
Jun-Hyuk Choi (Korea Institute of Machinery & Materials),
Jihye Lee (Korea Institute of Machinery & Materials),
Jun-Ho Jeong (Korea Institute of Machinery & Materials)
- PP183** 143 **Robust Detector of Multiple-Lane Patterns on Printed Devices for Laser Ablation**
Jun Young Hwang (Korea Institute of Industrial Technology), HyungTae Kim (Korea Institute of Industrial Technology),
Yoon Jae Moon (Korea Institute of Industrial Technology), Heuseok Kang (Korea Institute of Industrial Technology)
- PP184** 444 **Fabrication and Evaluation of a Drag-Force Type Flowmeter for Wide Range Measurement**
Sang Hoon Lee (Seoul National University of Science and Technology),
Ju Ho Cha (Seoul National University of Science and Technology),
Kyung Ju Kim (Seoul National University of Science and Technology),
Yong U Lim (Seoul National University of Science and Technology)
- PP185** 219 **Development and Investigation of Cu-Ag composite by Planetary Milling**
Sangwoo Kim (Korea Institute of Industrial Technology), Myung Sik Choi (Hanyang University)
- PP186** 238 **Development of a Portable Electrospinning System for Biomedical Applications**
Seong J. Cho (Chungnam National University)
- PP187** 037 **Fabrication of Magnetic Microneedles (MMNs) Array Containing Iron Oxide Nanoparticles (IONs) Through Micropatterned Mold**
Seung-Jun Lee (Seowon University), Jin-Chul Kim (Kangwon National University)
- PP188** 141 **Conductive Pattern Fabrication on Heat-sensitive Substrate**
Won Seok Chang (Korea Institute of Machinery and Materials),
Seok Young Ji (Korea Institute of Machinery and Materials)
- PP189** 118 **High-Precision Continuous Nanopatterning Based on Uniaxial Piezo Actuator Vibration**
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- PP191** 348 **The Flexibility and Electrical Properties of Carbon Nanowall Transferred on Plasma-Treated Porous Polyimide Substrate**
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- PP196** 210 **Development and Analysis of a Flexible Surface Electromyography (sEMG) Sensor**
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 Jirou Feng (Korea Advanced Institute of Science and Technology)
- PP197** 329 **Catalyst-decorated CNT Heater System for VOCs Decomposition**
 Kibeom Kwon (Korea Institute of Industrial Technology),
 Hyeonjin Eom (Korea Institute of Industrial Technology),
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 Soyoung Han (Myongji University), Yong Tae Park (Myongji University),
 Hyun A Cho (Myongji University), Dongseob Kim (Korea Institute of Industrial Technology)

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Jonghyun Ju (Chung-Ang University)

6. New and Renewable Energy

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- PP206** 436 **Annealing Effect on Electrochemical Performance of Al-Air Battery**
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- PP207** 583 **A Roller-Bearing Structured Self-Powered Angle Measurement Sensor Based on Triboelectric Nanogenerator**
Jungho Choe (Korea University), Jaehwa Jeong (Korea University), Seong Gu Kang (Korea University), Young-Man Choi (Ajou University)
- PP208** 480 **Energy Storage System with BSPC Converter and Low Voltage Battery**
Jungmin Kwon (Hanbat National University)
- PP209** 450 **Development of a Group of Single Axis Solar Trackers for Solar Power Plant**
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- PP210** 556 **Utilization of Energy Storage System for Frequency Regulation Considering Power System Condition**
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- PP211** 150 **Thickness Determination of a Solid Oxide Fuel Cell Blocking Layer Deposited by Atomic Layer Deposition Considering the Non-Uniform Surface Geometry of Porous Substrate**
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- PP212** 434 **Rational Design of Cost-Effective Pt Thin-Film Cathode Capped by Atomic Layer Deposition of Alumina for Low-Temperature Solid Oxide Fuel Cells**
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- PP213** 386 **Membrane-Electrode Assembly with Ultra-Low Pt by Sputtering for Passive Direct Methanol Fuel Cells**
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- PP217** 233 **Analysis of Solar Power Generation with Various PV Surface Temperature Algorithms Used for Building Applications**
Dong Eun Jung (Hanbat National University), Sung Lok Do (Hanbat National University),
Gyuhwan Yeom (Hanbat National University)
- PP218** 241 **Reflection Coefficients of a Model for Gas Turbine Combustor Burning Synthetic Natural Gas**
Gyuseong Youn (Hanbat National University), Sunglok Do (Hanbat National University),
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- PP219** 129 **Enhanced Triboelectric Performance of Porous Graphene-PDMS Nanocomposite Multilayers**
Habtamu Gebeyehu Menge (Myongji University), Yong Tae Park (Myongji University),
Jin Ok Kim (Myongji University), Dukhyun Choi (Kyung Hee University),
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Hyung-Jun Park (Dong-A University), Seung-Ho Han (Dong-A University),
Hye-Won Han (Dong-A University), Hyo-Rim Kang (Dong-A University),
Ga-Eun Kim (Dong-A University), Hae-Seong Hwang (Dong-A University)
- PP222** 158 **Stretchable and Flip-Flop Designed Thermo-Electrochemical Array Cells for the Use of Wearable Body Heat Harvester**
Jae Yun Baek (Inha University), Tae June Kang (Inha University),
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 Jung-Hwan Kim (Hanbat National University), Seungmin Jung (Hanbat National University),
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 Jae Yun Baek (Inha University)
- PP225** 164 **Hybrid Thermo-Electrochemical Cells Inserting Piezoelectric Cantilever**
 Jun Ho Lee (Inha University), Tae June Kang (Inha University), Ju Hwan Lee (Inha University),
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 Kyeongmi Kim (Hanbat National University), Dongsoo Kim (Hanbat National University),
 Chanyong Lee (Konkuk University), Hyunah Lee (Hanbat National University),
 Iji Kim (Hanbat National University), Yongseok Jun (Konkuk University)
- PP228** 099 **An Experimental Study on the Manufacturing Process and Evaluation of Transparent Conductive Film Type Organic Photovoltaic Module**
 Hyunah Lee (Hanbat National University), Dong Soo Kim (Hanbat National University),
 Kyeongmi Kim (Hanbat National University), I Ji Kim (Hanbat National University),
 Yong Sik Kim (Hanbat National University), Yujin Ju (Hanbat National University)
- PP229** 151 **Definition and Classification of BiPV System in Korea**
 Hyomun Lee (Hanbat National University), Jongho Yoon (Hanbat National University),
 Minjoo Choi (Hanbat National University), Daehwan Shin (Hanbat National University),
 Tulga Otgonkhishig (Hanbat National University)
- PP230** 237 **Fully Solution-Processed Perovskite Solar Cells Fabricated by Lamination Method**
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- PP231** 342 **Microfabrication of the Graphene-Doped PEDOT: PSS Films for Organic Solar Cells**
 Zhe-Hao Zhang (National Kaohsiung University of Science and Technology),
 Chin-Tai Chen (National Kaohsiung University of Science and Technology)

7. Sustainable Technology

Lobby (3F)

- PP232** 110 **Examination of Precision of Temperature Control of Experimental Chamber for Heat Pump Test**
Jongryeol Kim (Tongmyong University)
- PP233** 176 **Fundamental Study of Adsorption System for Cooling and Freshwater Generation**
JungGil Lee (Korea Institute of Industrial Technology),
Ohkyung Kwon (Korea Institute of Industrial Technology),
Seong-Yong Woo (Hanyang University),
Kyungjin Bae (Korea Institute of Industrial Technology),
Young-Deuk Kim (Hanyang University)
- PP234** 059 **Design of Service Platform for Monitoring of Physiological Signal of the Elderly in Rural Residents**
Kyong Kim (Chungbuk Provincial University),
Seong-Hyun Kim (Chungbuk Provincial University),
Tae-Won Kim (Chungbuk Provincial University),
Jeongah Seol (Chungbuk Provincial University)
- PP235** 174 **Expansion Characteristic Investigation on the U-Tubes for Adsorption Chiller**
Kyungjin Bae (Korea Institute of Industrial Technology),
Ohkyung Kwon (Korea Institute of Industrial Technology),
Ting Chen (Korea University of Science and Technology),
Junggil Lee (Korea Institute of Industrial Technology)
- PP236** 106 **The Effect of Stent Porosity on Fatigue Life of Stent Structure Deployed on Cerebral Aneurysm**
Sang-Min Byon (Dong-A University), Youngseog Lee (Chung-Ang University),
Gee-Dong Lee (Dong-A University), Younghoon Noh (Chung-Ang University)
- PP237** 297 **Increasing Rehabilitation Performance with Smart-Bar and Smart Device**
Sungyun Park (Dongguk University), Junyoung Park (Dongguk University),
Bumsun Kwon (Dongguk University)
- PP238** 229 **Development of HVAC System for a Container for the Mushroom Cultivation**
Tae-Soo Kwak (Gyeongnam National University of Science and Technology),
Ihn-Sil Kwak (Chonnam National University), Chang-su Ha (SIT Co., Ltd.)
- PP239** 127 **Automatic Visual Guidance for Lesion Marking in Endoscopic Procedure and Its Effectiveness Validation**
Hansoul Kim (Korea Advanced Institute of Science and Technology),
Dong-Soo Kwon (Korea Advanced Institute of Science and Technology),
Byeng Il Bae (Korea Advanced Institute of Science and Technology),
Joonhwan Kim (Korea Advanced Institute of Science and Technology)

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- PP240** 168 **Evaluation on Energy Benefits from an Advanced Control Method for the Radiant Floor Heating System**
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Dong Eun Jung (Hanbat National University), Hyoungchul Kang (SungHan Co., Ltd.)
- PP241** 484 **Evaluation of Degradation Effect on Mechanical Properties of Hydroxyl-terminated Polybutadiene (HTPB)**
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Sung Wook Moon (Korea University)
- PP242** 339 **Analysis of the Correlation Between Motion Analysis Sensors for the Movement of Human Body**
Jaesoo Hong (Korea Institute of Industrial Technology),
Chang Ki Lee (Korea Institute of Industrial Technology),
Dong Hyun Kim (Yonsei University)
- PP243** 157 **Highly Stretchable Gel Type Low-grade Thermal Energy Harvester**
Ju Hyeon Kim (Inha University), Tae June Kang (Inha University)
- PP244** 580 **Development of Eyeglass Type Skin Beauty Device with Integrated LED Optical Module and Universal Design**
Mi Yeon Shin (Chonbuk National University), Chang Ho Yu (Chonbuk National University),
Sang Yong Park (UNINNO Inc.), Il Doo Son (UNINNO Inc.)
- PP245** 075 **Inverse Dynamics Study of the Effects of Squat Exercise on Scoliosis Correction**
Woong Cho (Korea University), Kwon-Hee Kim (Korea University),
Tae-Soo Bae (Chungwoon University)

Organized Session 1 (Additive Manufacturing)

Lobby (2F)

- OS013** 006 **Addition of Functionality of Trimming Molds Using 6-Axis Hybrid Metal 3D Printing Machine Tool**
Dong-Mok Lee (Maxrotec Co., Ltd.), Chang-Kyu Moon (Maxrotec Co., Ltd.),
Kyu-Choul Choi (Maxrotec Co., Ltd.), Jin-Ho Do (Maxrotec Co., Ltd.),
Kang-Hyun Ye (Maxrotec Co., Ltd.)
- OS014** 043 **3D Printable Pressure Sensor with MWCNTs**
Haeyong Yun (Korea Institute of Robot Convergence),
Hochan Kim (Andong National University),
Inhwan Lee (Chungbuk National University)
- OS015** 030 **3D Bio-Point Printing with In Situ Formation of Cell Spheroids**
Hyun-Wook Kang (Ulsan National Institute of Science and Technology),
Seunggyu Jeon (Ulsan National Institute of Science and Technology),
Jun-Ho Heo (Ulsan National Institute of Science and Technology)
- OS016** 446 **A Study on the Development of Trimming Dies Using Additive Manufacturing for 1500MPa Car-Body Parts**
Sungjin Park (SHIN YOUNG Co., Ltd.),
Suwan Park (SHIN YOUNG Co., Ltd.),
Jongdock Seo (SHIN YOUNG Co., Ltd.),
Myungpyo Hong (Korea Institute of Industrial Technology),
Seunghun Cha (Gyeongbuk Technopark)
- OS017** 280 **Investigation on Microstructure and Mechanical Behavior of Hastelloy X Obtained by Direct Energy Deposition (DED) Process**
Yoon Sun Lee (Korea Institute of Industrial Technology),
Ji Hyun Sung (Korea Institute of Industrial Technology),
Da Hye Kim (Korea Institute of Industrial Technology),
Kyoung Je Cha (Korea Institute of Industrial Technology),
Young Joo Kim (KEPCO Plant Service and Engineering Co., Ltd.),
Ki Hyun Cho (KEPCO Plant Service and Engineering Co., Ltd.),
Nak Jeom Kim (KEPCO Plant Service and Engineering Co., Ltd.)
- OS018** 427 **Evaluation of Mechanical Characteristic of HWS Tool Steel by Directed Energy Deposition**
Gyeongyun Baek (Chonnam National University),
Dosik Shim (Korea Maritime and Ocean University),
Gwangyong Shin (Korea Institute of Industrial Technology),
Kiyong Lee (Korea Institute of Industrial Technology)

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- OS019** 401 **Changes in Microstructure and Mechanical Property of Hastelloy X Alloy Deposited by Powder Bed Fusion Process**
 Jee-Eun Jang (Korea Institute of Industrial Technology),
 Da Hye Kim (Korea Institute of Industrial Technology),
 Woosung Kim (Korea Institute of Industrial Technology),
 Ji-Hyun Sung (Korea Institute of Industrial Technology),
 Hojin Lee (Korea Institute of Industrial Technology),
 Yoon-sun Lee (Korea Institute of Industrial Technology)
- OS020** 465 **Design and Additive Manufacturing of Wearable Toothbrush**
 Jeonghee You (Seoul National University of Science and Technology),
 Keun Park (Seoul National University of Science and Technology),
 Jae-Eun Kim (Seoul National University of Science and Technology),
 Suk Ji (Ajou University)
- OS021** 243 **Development of Injection Mould Core with Conformal Cooling Channel for Pottery Shaped Thick-Wall Container Using Direct Metal Tooling (DMT)**
 Ji Su Han (Korea Institute of Industrial Technology),
 Kyoung Je Cha (Korea Institute of Industrial Technology),
 Min Gyu Lee (Korea Institute of Industrial Technology),
 Yoon Sun Lee (Korea Institute of Industrial Technology),
 Da Hye Kim (Korea Institute of Industrial Technology),
 Ji Hyun Sung (Korea Institute of Industrial Technology)
- OS022** 489 **Deformation Behavior of Lattice Structures Fabricated by DLP 3D Printing**
 Jung-Hwan Park (Seoul National University of Science and Technology),
 Keun Park (Seoul National University of Science and Technology)
- OS023** 119 **Effect of Ultrasonic Nanocrystal Surface Modification on Wear-Resistance of High-Speed Tool Steel deposited by Direct Energy Deposition**
 Minseob Kim (Korea Maritime and Ocean University),
 Dosik Shim (Korea Maritime and Ocean University),
 Wookjin Oh (Korea Maritime and Ocean University)
- OS024** 049 **A Study on Development of Residual Stress Reduction Technique in Additive Manufacturing Using DED Technology**
 Myung-Pyo Hong (Korea Institute of Industrial Technology),
 Ji-Hyun Sung (Korea Institute of Industrial Technology),
 Woo-Sung Kim (Korea Institute of Industrial Technology),
 Min-Gyu Lee (Korea Institute of Industrial Technology),
 Jong-dock Seo (SHIN YOUNG Industry Co., Ltd.),
 Sung-Jin Park (SHIN YOUNG Industry Co., Ltd.)

Organized Session 3 (Railway Engineering)

Lobby (2F)

- OS034** 542 **Design and Test Evaluation of Non-Contact Detection System for Detection of Welding Defects in Bogie Frame of Railway Vehicle**
Chanwoo Lee (Korea Railroad Research Institute)
- OS035** 177 **Load History Measurement of Carbody and Bogie Interface of Railway Vehicle**
Jungwon Seo (Korea Railroad Research Institute),
Seokjin Kwon (Korea Railroad Research Institute),
Chanwoo Lee (Korea Railroad Research Institute),
Youngsam Ham (Korea Railroad Research Institute)
- OS036** 430 **Railway Bogie Monitoring System based on Battery and Wireless**
Seok-Jin Kwon (Korea Railroad Research Institute)
- OS037** 124 **Development of Ultra-Fine Dust Removing Railway Vehicle – Dust Removal Efficiency Evaluation for Cyclone Filter and Electrostatic Precipitation System**
Wootae Jeong (Korea Railroad Research Institute),
Jisun Shin (Korea University of Science and Technology),
Dahae Jeong (Korea University of Science and Technology)
- OS038** 007 **Running Safety Test to Prove the Maximum Speed Performance of KTX-Sancheon**
Young-Sam Ham (Korea Railroad Research Institute),
Dong-Hyong Lee (Korea Railroad Research Institute)

Organized Session 4

(Development of Freeform Optics Manufacturing Process and Measurement System)

Lobby (2F)

- OS043** 395 **Analysis of Ultrasonic Fabrication Results and Comparison of Surface Roughness of Stainless Steel**
Geon Hee Kim (Korea Basic Science Institute), Byeongjoon Jeong (Korea Basic Science Institute),
Hwan-Jin Choi (Korea Basic Science Institute)
- OS044** 215 **Development of Stitching Interferometer Using Fizeau Interferometer for X-ray Mirror Measurement**
Jangwoo Kim (Pohang Accelerator Laboratory), Hyo-Yun Kim (Pohang Accelerator Laboratory),
Jun Lim (Pohang Accelerator Laboratory), Jong Hyun Kim (Pohang Accelerator Laboratory),
Seungyu Rah (Pohang Accelerator Laboratory)
- OS045** 169 **Development of the Freeform Optics Measurement System Based on Sub-Aperture Stitching Interferometry**
Sangwon Hyun (Korea Basic Science Institute), I-Jong Kim (Korea Basic Science Institute),
Soonkyu Je (Korea Basic Science Institute), Junkyu Park (Korea Basic Science Institute),
Geon-Hee Kim (Korea Basic Science Institute)
- OS046** 031 **Development of Lens-in-Lens Optical Device**
Soonkyu Je (Korea Basic Science Institute), Geonhee Kim (Korea Basic Science Institute)
- OS047** 032 **Etching Profile Change of SiC Substrate by a Single DBD Filament Plasma**
Dong Chan Seok (National Fusion Research Institute), Yong Ho Jung (National Fusion Research Institute),
Kan Il Lee (National Fusion Research Institute), Seungryul Yoo (National Fusion Research Institute),
Yong Sup Choi (National Fusion Research Institute)
- OS048** 090 **Development of Atomic Layer Etching Polishing Technology for SiC**
Kang Il Lee (National Fusion Research Institute), Yong Sup Choi (National Fusion Research Institute),
Soo UK Jang (National Fusion Research Institute)
- OS049** 172 **Post-Process Machining of 3D Printed Product by Using 5DOF Robot**
Wonkyun Lee (Chungnam National University), Jaeyoon Shim (Gwangju Institute of Science and Technology),
Namhyun Kim (Chungnam National University), Daejin Oh (Chungnam National University),
Serim Hong (Chungnam National University)
- OS105** 309 **Effect of CO₂ Laser and Ultrasonic Vibration on Material Removal of Silicon Carbide Polishing**
Dong-Ryul Kim (Seoul National University), Sung-Hoon Ahn (Seoul National University),
Mincheol Kim (Seoul National University), Pablo Abrego (Seoul National University),
Sang Min Bang (Seoul National University), Dong-Hyeon Kim (Seoul National University),
Geon-Hee Kim (Korea Basic Science Institute)

Organized Session 5 (Innovative Forming)

Lobby (2F)

- OS058** 438 **Short Stroke Control Model for Improving Width Precision at Head and Tail of Slab in Hot Vertical-Horizontal Rolling Process**
Sung-Cheol Park (Korea Maritime and Ocean University),
Kyung-Hun Lee (Korea Maritime and Ocean University),
Byung-Min Kim (Pusan National University),
Jun-Bae Jeon (Pusan National University)
- OS059** 325 **Study on Wire Drawing Process for 30 μ m Fine Rhodium Wire**
Sang-Kon Lee (Korea Institute of Industrial Technology),
In-Kyu Lee (Korea Institute of Industrial Technology),
Sung-Yun Lee (Korea Institute of Industrial Technology),
Dae Hye Kim (Korea Institute of Industrial Technology),
Sun-Kwang Hwang (Korea Institute of Industrial Technology),
Yong-Jae Cho (Korea Institute of Industrial Technology),
Myeong-Sik Jeong (Korea Institute of Industrial Technology)
- OS060** 103 **Comparative Study on Tensile Properties of Fiber Metal Laminate Manufactured by Microwave-Based Curing Process**
Eu-Tteum Park (Pusan National University), Woojin Song (Pusan National University),
Youngheon Lee (Pusan National University), Jeong Kim (Pusan National University),
Beom-Soo Kim (Pusan National University)
- OS061** 052 **Dimensional Stability in Hot Stamping Process by Local Blank Heating**
Jaehong Kim (Pusan National University), Byung-Min Kim (Pusan National University)
- OS062** 086 **Evaluation of Friction Characteristics in Deformation Type of Cold Forging and Its Application**
Jeong-Hun Kim (Pusan National University), Byung-Min Kim (Pusan National University),
Tai-Kyu Lee (Valeo Electrical Systems Korea), Byung-Ho Ko (Valeo Electrical Systems Korea)
- OS063** 551 **Fluid Analysis on Optimal Parameters Affecting Post-Injection Behavior of Self-Focusing Micro-Waterjet**
Cheongyeol Gwak (Pusan National University), Bosung Shin (Pusan National University),
Danhee Yun (Pusan National University), Yongwon Ma (Pusan National University),
Junhan Park (Pusan National University), Dongbin You (Pusan National University)