



# ASPEN2022

November 15 to 18, 2022  
Singapore

## Day 2 - 17<sup>th</sup> November 2022, Thursday

Time	Programme			
	Keynote 5	Keynote 6	Keynote 7	
	Auditorium	Lecture Room 1 @ L2	Lecture Room 2 @ L2	Lecture Room 5 @ L3
	Session Chair: Dr Wang Hao	Session Chair: Dr Liu Kui	Session Chair: Dr Sharon Nai	
09:00-09:40	<b>Keynote Session</b> An Application of Robotic Technologies to Flexible Endoscopic Interventions and Surgeries <b>Professor Daehie Hong</b>	<b>Keynote Session</b> Haptically-enabled Robotic Systems <b>Professor Saeid Nahavandi (Virtual)</b>	<b>Keynote Session</b> Development of a Low-cost Precision Magnetic Encoder – An Industrial and University Collaboration <b>Professor Sung, Cheng-Kuo</b>	
09:40-10:30	Poster Session @ Atrium			Industrial Talks @ Function Hall 1
10:30-10:45	Tea Break @ Atrium			
	Additive Manufacturing IV	Metrology / Optical Applications I	Micro/Nano Fabrication Process IV / MEMS-NEMS	Manufacturing Systems and Machine Tools
	Auditorium	Lecture Room 1 @ L2	Lecture Room 2 @ L2	Lecture Room 5 @ L3
	Session Chair: Dr Li Xiaopeng	Session Chair: Dr Shihua Wang	Session Chair: Dr Wei He	Session Chair: Dr Hao Li
10:45-11:00	A machine-learning assisted optimization approach and microstructure characterization method for laser powder bed fusion OR-01-0215 Invited Speaker <b>Dr Xiaopeng Li</b> <b>The University of New South Wales</b>	Measurement of Additively Manufactured Internal Surface Structure Using an X-ray Computed Tomography OR-11-0152 Invited Speaker <b>Dr Shihua Wang</b> <b>NMC, A*STAR</b>	Experiment and simulation on the nanobubble burst under high frequency ultrasonic signals <b>OR-18-0062</b> <b>Dr Wei He</b> <b>SIMTech, A*STAR</b>	Geometric Error Estimation and Compensation of Rotation Axis for Five-axis Machining Centers Using a Common Measuring Tool OR-09-0001 <b>Dr Toru Yamamoto</b> <b>National Institute of Technology, Oita College, Japan (Virtual)</b>
11:00-11:15			Fabrication of Flexible Coil on PDMS for MEMS-based Electromagnetic Membrane Actuator OR-12-0113 <b>Mr Chao Qi</b> <b>Tokyo Institute of Technology</b>	Simulation of Xyθ-Axes Servo Control for One Step Motion of Piezoelectric Walking Mechanism by Bang-Bang Control and PID Control OR-09-0016 <b>Mr Eiji Kusui</b> <b>Yokohama National University</b>
11:15-11:30	Additive Manufacturing of MoSi <sub>2</sub> and NbSi <sub>2</sub> Products for Ultrahigh-temperature Structural Materials OR-01-0181 Invited Speaker <b>Prof Koji Hagihara</b> <b>Nagoya Institute of Technology (Virtual)</b>	Galvo-Scanning Chromatic Confocal Microscopy for High-Speed 3-D Surface Measurement OR-11-0069 <b>Mr Yu-Feng Chou</b> <b>National Taiwan University</b>	Influence of Obstacle Section Shape on Electro-thermo-convection OR-12-0141 <b>Mr Mingdai Yang</b> <b>Yeungnam University</b>	Capillary Force Gripper with a Polygonal Nozzle for Pick & Place and Rotation of 1mm Objects OR-09-0017 <b>Ms Eri Fukuchi</b> <b>Yokohama National University</b>
11:30-11:45		A Cylindricity Measurement with Nanometric Uncertainty OR-11-0124 <b>Dr Saint-Clair Toguem Tagne</b> <b>Laboratoire Commun de Métrologie, Laboratoire National de Métrologie et d'Essais (LNE-CNAM)</b>	Application of Ultrasonic Nanocrystal Surface Modification to Improve Cavitation Corrosion Resistance of Nickel-aluminum Bronze OR-12-0318 <b>Mr Changliang Yao</b> <b>Korea Maritime and Ocean University</b>	Cutting of monocrystalline diamond tools using short pulse UV laser OR-14-0299 <b>Prof Akinori Yui / Mr Kakeru Koiso</b> <b>Kanagawa University</b>
11:45-12:00	A Novel 2µm Fiber Laser Setup for Evaluating the Sintering Ability of Polymeric Powder for Selective Laser Sintering OR-01-0315 <b>Mr Eugene Kok</b> <b>SIMTech, A*STAR (Virtual)</b>	Surface Scratch Defect Detection of Titanium Spacer Ring in Hard Disk Based on Convolutional Neural Network OR-15-0038 <b>Prof Chao-Ching Ho</b> <b>National Taipei University of Technology</b>	A Method to Predict the Lithium-ion Battery Internal Temperature OR-12-0063 <b>Mr Xiaolong Leng</b> <b>Yeungnam University (Virtual)</b>	Development of a PC-based open-source control system for a hybrid polishing mechanism OR-09-170 <b>Mr Li Ze</b> <b>The Hong Kong Polytechnic University</b>
12:00-12:15	Correlation of In-Process Monitoring Data and Defects in X-ray CT for Direct Metal Laser Sintering OR-01-0214 <b>Dr Kin Keong Wong</b> <b>ARTC, A*STAR</b>	Coherent Extreme Ultraviolet Source using a Single Dielectric Nanostructure OR-15-0050 <b>Prof Seunghwi Han</b> <b>Chonnam National University</b>	Electronic Packaging Enhancement Engineered by Enhancing the Reliability via Rapid Cooling OR-12-0190 <b>Dr Seong Yeon Park</b> <b>KAIST (Virtual)</b>	Machine Learning Based Optimal Acceleration/deceleration Design for a 3-UPU type Parallel Kinematic Mechanism OR-09-0266 <b>Ms Ting-Yu Wang</b> <b>National Tsing Hua University</b>
12:15-12:30	Kerf-Taper-Angle Control and Additive Process for Formwork Laser Cutters OR-01-0274 <b>Mr Sol Chai</b> <b>Mechanical Engineering, Korea University, Republic of Korea</b>	Ultraviolet Harmonic Beam Control via Spatial Phase Modulation of Driving Wavelength OR-15-0119 <b>Mr Seungjai Won</b> <b>KAIST</b>	Research on Terahertz Detector Based on Graphene Nanoribbon and Micron Ribbon OR-12-0115 <b>Ms Shengmei He</b> <b>Xi an Jiaotong University (Virtual)</b>	Model-based Feed Rate Optimization for Cycle Time Reduction in Milling OR-09-0287 <b>Mr Jun Young Oh</b> <b>Chungnam National University</b>
12:30-12:45	Parameter Control in Selective Laser Sintering for Elastic Lattice Structures of Functionally Graded Seat Cushion OR-01-0225 <b>Mr Minkyu Seong</b> <b>Ulsan National Institute of Science and Technology</b>	A New Light-field Microscope System for High-resolution 3D Bio-imaging OR-15-0165 <b>Mr Reiji Yagi</b> <b>Shizuoka University</b>	Visualization of Graphene Mineral Oil Immersion Cooling for Electric Vehicle Battery Temperature Analysis OR-12-0011 <b>Mr Ya-Chi Ho</b> <b>Industrial Technology Research Institute (Virtual)</b>	Tool point FRF estimation on multipurpose spindle by compensation of contact parameter OR-09-0158 <b>Dr Jooho Hwang</b> <b>Korea Institute of Machinery and Materials (Virtual)</b>
12:45-13:00		Ultrafast Multi-focus Optical Tweezer based on a Digital Micromirror Device OR-15-0151 <b>Dr Shih-Chi Chen</b> <b>The Chinese University of Hong Kong</b>	Development of a novel multifunctional Abbé-free 12"-wafer measuring stage for semiconductor manufacturing OR-11-0126 <b>Mr Chen-Yu Liao</b> <b>National Taiwan University</b>	A Study on The Stability of the Rotor of the Cryogenic Centrifugal Pump OR-18-0207 <b>Prof Chae Sil Kim</b> <b>Changwon National University</b>
12:45-13:45	Lunch @ Function Hall 1 / Board Meeting @ Orchid Function Hall			





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	Additive Manufacturing V	Metrology / Optical Applications II	Surface Properties and Characterisation	Green and Bio/Medical Manufacturing
	Auditorium	Lecture Room 1 @ L2	Lecture Room 2 @ L2	Lecture Room 5 @ L3
	Session Chair: Dr Gim Song Soh	Session Chair: Prof Ki-Nam Joo	Session Chair: Dr Aprilia Aprilia	Session Chair: Prof Changjin Huang
13:45-14:00	Additive Manufacturing of Titanium Aluminides for Aircraft Engine Applications OR-01-0242 Invited Speaker <b>Prof Hiroyuki Yasuda</b> <b>Osaka University</b> (Virtual)	A Compact Differential Heterodyne Laser Interferometer Without Periodic Errors OR-11-0055 <b>Prof Ki-Nam Joo</b> <b>Chosun University</b>	Surface Residual Stress Tailoring of 420 Martensitic Stainless Steel by Laser Shock Peening OR-17-0071 <b>Dr Aprilia Aprilia</b> <b>Nanyang Technological University</b>	Biodegradable Mesh Sheets as a Treatment Device for Acute Type A Aortic Dissection Equipped with North American Porcupine-Inspired Microneedle for Removal Prevention OR-03-0022 <b>Mr Taiga Asami</b> <b>Kindai University</b>
14:00-14:15		Reduction of Spherical Aberration Measurement Error in High Numerical Aperture Spherical Test with Synthetic Aperture Fizeau Interferometry OR-11-0125 <b>Mr Toshiki Kumagai</b> <b>Olympus Corporation</b> (Virtual)	Microstructure Refinement of Cast High-si Al Alloy via Laser Remelting OR-17-0076 <b>Mr Yongjing Yang</b> <b>Nanyang Technological University</b>	Development of a microfluidic chip for early and rapid detection of multiple dengue serotypes OR-03-0082 <b>Dr Cong Zhi Leon Chan</b> <b>SIMTech, A*STAR</b>
14:15-14:30	Fin Design for Passive Cooling in Screw Extrusion Additive Manufacturing (SEAM) OR-01-0036 <b>Mr Yash Mittal</b> <b>IIT Bombay</b> (Virtual)	High Precision Interferometric Measurement of Freeform Surfaces From The Well-Defined Sub-Aperture Surface Profiles OR-11-0201 <b>Dr Sangwon Hyun</b> <b>Korea Basic Science Institute</b>	Towards Optimization of Vibratory Manufacturing Process in Aerospace Industry OR-17-0221 <b>Mr Abhay Gopinath</b> <b>National University of Singapore /Rolls-Royce Singapore Pte Ltd</b>	The Effect of Ultrasonic Vibration on Cutting Process of Soft Composite Material OR-03-0240 <b>Mr Takumi Kamei</b> <b>Tokyo Institute of Technology</b>
14:30-14:45	Spatial and Geometrical-based Microstructure in Components Fabricated by Electron Beam Powder Bed Fusion OR-01-0128 <b>Dr Pan Wang</b> <b>SIMTech, A*STAR</b>	Parametric Point-spread-function Model Optimization for Microscopic Image Super-Resolution OR-11-0211 <b>Mr Wei Yun Lee</b> <b>National Taiwan University</b>	Controlling Droplet Shape and Water Repellency by Micro-Structured Precision Surface OR-17-0114 <b>Mr Koshi Umezawa</b> <b>Institute of National Colleges of Technology, Tokyo College</b>	Inkjet Printing-Facilitated Micropatterned Multicellular Structure Generation OR-03-0272 <b>Prof Changjin Huang</b> <b>Nanyang Technological University</b>
14:45-15:00	Powder Reusability of Ti-48Al-2Cr-2Nb Intermetallic in Electron Beam Powder Bed Fusion Process OR-01-0129 <b>Mr Wai Jack Sin</b> <b>SIMTech, A*STAR</b>	Radial Shearing Interferometer for Reconstruction of Wavefront by Fringe Modeling OR-11-0246 <b>Mr Huy Vu</b> <b>Seoul National University of Science and Technology</b>	Effect of Surface Properties on Sealing Performance of Liquid Gasket OR-17-0130 <b>Mr Yuki Saikachi</b> <b>Institute of National Colleges of Technology, Tokyo College</b>	Green Laser-Induced-Graphene (LIG) Electronics by Direct Laser Writing on Wooden Materials OR-06-0070 <b>Mr Han Ku Nam</b> <b>KAIST</b>
15:00-15:15	Quenching and Partitioning Treatment of a Low-carbon Martensitic Stainless Steel Fabricated by Selective Laser Melting OR-01-0155 <b>Mr Ziyang Duan</b> <b>Sungkyunkwan University</b>	Optical Depth Measurement for Microgrooves: A Self-interferometry Method Based on Near-field Polarization Analysis OR-15-0084 <b>Mr Yizhao Guan</b> <b>The University of Tokyo</b>	Effect Analysis of The Resolution of Non-Ideal Surface Models for Mechanical Contact Simulations OR-17-0164 <b>Mr Akimasa Otsuka</b> <b>Sanyo-Onoda City University</b>	Electroplating of Black Nickel: Bath Age and its Effect on Coating Quality OR-06-0112 <b>Mr Teo Zhi Hao Aaron</b> <b>SIMTech, A*STAR</b>
15:15-15:30	Thermal Characteristics of Additively-Manufactured Metamaterial Structures in Air Flow Condition OR-01-0176 <b>Mr Jonghwan No</b> <b>Sungkyunkwan University / Samsung Electronics Co., Ltd.</b>	High-stable Mode-locked Fiber Lasers for Absolute Distance Measurement Based 3D-coordinate Positioning OR-15-0276 <b>Prof JooHyung Lee</b> <b>Seoul National University of Science and Technology</b>	Effect of $\beta$ -Ti on Surface Integrity in Slot Micro-milling Multiphase Titanium Alloy Ti6Al4V OR-17-0085 <b>Mr Yabo Zhang</b> <b>Harbin Institute of Technology</b>	Eco-Friendly Direct Synthesis and Micro-Patterning of Copper on Flexible Transparent Substrates OR-06-0089 <b>Mr Swami Siddharth</b> <b>National Tsing Hua University</b>
15:30-15:45	Wire Arc Additive Manufacturing Stepper Optimization based on Varying-Ratio Flat-Top Overlapping Model OR-01-0247 <b>Dr Gim Song Soh</b> <b>Singapore University of Technology and Design</b>	High Accuracy Alignment of X-Ray CT Volume with CAD Data using Feature Vectors OR-05-0288 <b>Mr Mahiro Endo</b> <b>Tokyo Metropolitan University</b>	Recent Development of Laser Microprocessing for Silicon Substrate OR-17-0261 <b>Dr Li Xinxin</b> <b>Beihang University</b> (Virtual)	Effectively and Selectively Sealant Removal Using CO2 Laser OR-15-0238 <b>Dr Hao Li</b> <b>SIMTech, A*STAR</b>
15:45-16:00	<b>Tea Break @ Atrium</b>			






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	Additive Manufacturing VI	Metrology / Optical Applications III	Additive Manufacturing VII	Other Related Topics
	Auditorium	Lecture Room 1 @ L2	Lecture Room 2 @ L2	Lecture Room 5 @ L3
	Session Chair: Dr Chaolin Tan	Session Chair: Dr Chew Beng Soh	Session Chair: Dr Shibo Liu	Session Chair: Prof Jitendra P. Khatait
16:00-16:15	Additive manufacturing of Ti and Ti alloys: Recent progress towards strong, tough Ti materials with better functionality and lower cost Invited Speaker <b>Prof Ming Yan</b> Southern University of Science and Technology (Unknown)	Advances in Structural Coloration Induced by Integrated Hierarchical Surface Structures Fabricated by Elliptical Vibration Texturing OR-15-0233 Invited Speaker <b>Dr Ping Guo</b> Northwestern University	Development of an Inherent Strain based System for calculating deformation of SLM Parts OR-01-0073 <b>Prof Hong-Seok Park</b> Ulsan University	Mobility Analysis under Kinematic Constraints Invited Speaker <b>Prof Jitendra P. Khatait</b> Indian Institute of Technology Delhi
16:15-16:30			Semi-Supervised Learning OR-08-0270 <b>Mr Zhaoyu Ma</b> SIMTech, A*STAR	
16:30-16:45	Additive Manufacturing of Spatially Configurable Heterostructured Materials OR-01-0144 <b>Dr Chaolin Tan</b> SIMTech, A*STAR	Optimization Strategy of Camera Calibration for Close Range Photogrammetry OR-11-0121 <b>Dr Louis-Ferdinand Lafon</b> Laboratoire Commun de Métrologie (LCM), Laboratoire National de Métrologie et d'Essais (LNE)	Manufacturing Capability Study for Porous 316L Large Disks by BinderJet Printing Or-01-0025 <b>Dr Zhang Su Xia</b> SIMTech, A*STAR	Investigation of Acoustic Emission under Scratch Motion OR-18-0166 <b>Mr Jae-Ho Han</b> Yonsei University
16:45-17:00	The Influence of Laser Surface Remelting (LSR) on the Surface Morphology and in vitro Cell Viability of Additively Manufactured 316L Stainless Steel Bone Plate OR-03-0163 <b>Dr Wenhe Feng</b> SIMTech, A*STAR	High-speed Multi-Line Structured-light 3-D Scanning System for Accurate Surface Profilometry OR-15-0111 <b>Mr Bo-Han Huang</b> National Taiwan University	Mechanical Performance of ER70S-6 Low-Carbon Steel Fabricated by Wire Arc Additive Manufacturing OR-01-0075 <b>Dr Shibo Liu</b> SIMTech, A*STAR	A Study on The Stability of the Rotor of the Cryogenic Centrifugal Pump OR-18-0207 <b>Prof Chae Sil Kim</b> Changwon National University
17:00-17:15	The Effect of Hot Forging on the Mechanical Properties of Additive Manufactured 7075 Aluminium Preform through Crack Closure OR-01-0087 <b>Dr Cedric Kai Soon Fong</b> A*STAR SIMTech	LIDAR-based Automated 3D Inspection System for Corrugated Surface Defects OR-15-0143 <b>Mr Chaoyu Dong</b> SIMTech, A*STAR	Vapour Smoothing Process to Improve Surface Finish of FDM 3D Printed Ultem Components OR-01-0049 <b>Dr Zhou Sha</b> SIMTech, A*STAR	A Heteropolar Bearingless Slice Motor with PM-free Rotor for Disposable Centrifugal Blood Pump OR-02-0109 <b>Mr Zeqiang He</b> Tokyo Institute of Technology
17:15-17:30	Manufacturing of meso-fluidic devices for life science application using biocompatible MJF process OR-01-0289 <b>Dr Vishwesh Dikshit</b> Nanyang Technological University	Roll to Roll Fabrication of Synthesized Light Conversion Film OR-15-0146 <b>Dr Chew Beng Soh</b> Singapore Institute of Technology	Effect of Nozzle Orientation on Accuracy of Formed Objects in FFF Process of Additive Manufacturing with Dual-Arm Robot OR-01-0098 <b>Mr Kosuke Kurokawa</b> Meiji University	A Mixed Reality Platform for Online Motion Planning of Mobile Robots via Hololens 2 OR-18-0303 <b>Ms Pattaraorn Yu</b> Singapore University of Technology and Design
17:30-17:45	Dual dispersive interferometric probe system for measuring double-sided film structures OR-11-0077 <b>Dr Joonho You</b> Korea Society for Precision Engineering	Accurate All-round 3D Measurement from Trinocular 360-degree Stereo Cameras via Geometric Optimization of Image Texture and Color OR-02-0232 <b>Mr Takumi Hamada</b> Chuo University	Enhancement of Printing Resolution and Scalability Using a Flexible Support Platform Fused Deposition Modeling (FDM) OR-01-0237 <b>Mr Seungjae Lee</b> Ulsan National Institute of Science and Technology	Study on Manufacture Approach of Optical Freeform Surfaces by Performance Constraint OR-18-0160 <b>Dr Xianlei Liu</b> Tianjin University (Virtual)
17:45-18:00	Materials Extrusion for Dense Ceramic Additive Manufacturing with Sol-gel Al <sub>2</sub> O <sub>3</sub> Feedstock OR-01-0079 <b>Dr Jong Wan Ko</b> Korea Institute of Industrial Technology	High Precision Distance Measurement Based on External Cavity with Dual Periodic Grating OR-11-0117 <b>Mr Shuhei Goda</b> The University of Tokyo (Virtual)	An Analysis and Optimization of Surface Quality in Post-processing of 3D Printed surfaces Using Fluid Jet Polishing OR-14-0298 <b>Mr Lai Ting Ho</b> The Hong Kong Polytechnic University (Virtual)	Optimal Allocation of Random Grouped Assembly for Three-Dimensional Precision OR-18-0310 <b>Prof Jhy-Cherng Tsai</b> National Chung-Hsing University (Virtual)
19:00-22:00	<b>Banquet Dinner (off-site)</b>			