

Program at a glance

Monday, November 28th

14:00	14:00-17:00	Registration desk open at Nara Prefecture Convention Center (NPCC)
19:00	17:00-19:00	Welcome reception at DMG MORI Nara Product and Development Center (PDC) (Bus transportation NPCC-PDC is provided from 15:45 to 17:15)

Tuesday, November 29th

8:30	Registration desk open					
9:30	Opening speech (Hall A+B 1F)					
9:50	Plenary speech 1 (Hall A+B 1F)					
10:40	Plenary speech 2 (Hall A+B 1F)					
11:30	Lunch					
	Room 1 (201 2F)	Room 2 (202 2F)	Room 3 (203 2F)	Room 4 (204 2F)	Room 5 (205 2F)	Room 6 (Hall A+B 1F)
	B2: Advanced grinding technologies 1	A1: Digital design and manufacturing systems 1	C1: Advanced machine tools and elements 1	D1: Nano-scale measurements and calibrations 1	A4: CAD/CAM technologies 1	G1: Bio-medical engineering and applications
12:40			C080	C061		
12:55	C017	C129	C146	C260	C016	C079
13:10	C237	C057	C200	C154	C073	C076
13:25	C035	C015	C183	C125	C131	C241
13:40	C281	C290	C050	C097	C190	C286
13:55	C285	C291	C213	C065	C238	C288
14:10	Coffee break					
14:30	Poster presentation (Hall C)					
15:30	Coffee break					
	B2: Advanced grinding technologies 2	A1: Digital design and manufacturing systems 2	C1: Advanced machine tools and elements 2	D1: Nano-scale measurements and calibrations 2	A4: CAD/CAM technologies 2	B1: Advanced cutting technologies 1
15:50	C204	C223	C029	C095	C150	C011
16:05	C270	C234	C124	C186	C242	C064
16:20	C267	C236	C159	C170	C311	C093
16:35	C283	C062	C149	C117	C282	C027
16:50		C052	C206	C153	C306	C089
17:05			C301	C116		C122

Wednesday, November 30th

8:30	Registration desk open					
	Room 1 (201 2F)	Room 2 (202 2F)	Room 3 (203 2F)	Room 4 (204 2F)	Room 5 (205 2F)	Room 6 (Hall A+B 1F)
	B4: Nano-scale surface finishings 1	A3: Advanced system design and applications 1	C1: Advanced machine tools and elements 3	B5: Non-traditional machinings and additive manufacturings 1	D5: Advanced 3 dimensional digital processings 1	B1: Advanced cutting technologies 2
9:00		C006	C096	C071		C166
9:15	C056	C217	C142	C110	C012	C218
9:30	C083	C049	C189	C138	C043	C013
9:45	C114	C208	C194	C216	C167	C307
10:00	C173	C266	C300	C264	C169	C277
10:15	C292	C188	C215	C271	C171	C147
10:30	Coffee break					
	B4: Nano-scale surface finishings 2	A3: Advanced system design and applications 2	C1: Advanced machine tools and elements 4	B5: Non-traditional machinings and additive manufacturings 2	D5: Advanced 3 dimensional digital processings 2	B1: Advanced cutting technologies 3
10:50	C074	C197	C021	C106	C060	C219
11:05	C177	C245	C025	C108	C145	C246
11:20	C214	C041	C202	C120	C155	C088
11:35	C229	C248	C212	C034	C175	C187
11:50	C312	C256	C315	C109	C240	C232
12:05				C158		C038
12:20	Lunch					
	D3: Mechano photonics engineering and optical applications	A2: Life cycle and smart engineering	B7: Advanced die/molding and polymer processing 1	B5: Non-traditional machinings and additive manufacturings 3	D4: Advanced image processings and applications	B1: Advanced cutting technologies 4
13:20	C077		C022		C033	C133
13:35	C082	C151	C028	C130	C136	C067
13:50	C098	C051	C068	C140	C221	C250
14:05	C103	C185	C107	C032	C247	C078
14:20	C118	C160	C180	C268	C273	C207
14:35	C191	C075	C184	C121	C252	C066
14:50	C262	C026			C309	C030
15:05	Coffee break					
15:20	Plenary speech 3 (Hall A+B 1F)					
16:10	Plenary speech 4 (Hall A+B 1F)					
17:00	Bus transportation from NCC to Hotel Nikko Nara					
18:30	Banquet (Hotel Nikko Nara)					

Thursday, December 1st

Registration desk open						
	Room 1 (201 2F)	Room 2 (202 2F)	Room 3 (203 2F)	Room 4 (204 2F)	Room 5 (205 2F)	
8:30	C2: Micro systems and machine elements 1	B6: Energy beam processings 1	C3: Robotics and mechatronics 1	B5: Non-traditional machinings and additive manufacturings 4	H1: MEMS/NEMS	
9:00		C047		C144		
9:15	C007	C053	C008	C224		
9:30	C045	C090	C009	C235	C134	
9:45	C046	C099	C314	C265	C102	
10:00	C063	C308	C031	C211	C253	
10:15		C168	C042	C299		
10:30	Coffee break					
	C2: Micro systems and machine elements 2	B6: Energy beam processings 2	C3: Robotics and mechatronics 2	B5: Non-traditional machinings and additive manufacturings 5	F2: Micro fabrications for functional surfaces 1	
10:50		C044	C058	C101	C059	
11:05	C112	C178	C104	C205	C094	
11:20	C201	C199	C111	C274	C128	
11:35	C233	C303	C135	C302	C152	
11:50	C269	C148		C305	C210	
12:05						
12:20	Lunch					
	F1: Advanced surface processings 1	B3: Micro/Nano machining and figurings 1	C3: Robotics and mechatronics 3	B5: Non-traditional machinings and additive manufacturings 6	F2: Micro fabrications for functional surfaces 2	
13:35	C157	C141	C164	C037	C072	
13:50	C203	C161	C196	C069	C091	
14:05	C156	C222	C209	C113	C193	
14:20	C172	C225	C226	C105	C195	
14:35	C179	C228	C227	C123		
14:50	Coffee break					
	F1: Advanced surface processings 2	B3: Micro/Nano machining and figurings 2	C3: Robotics and mechatronics 4	D2: Surface metrologies of nano-scale structures	F2: Micro fabrications for functional surfaces 3	
15:10	C084	C018	C014	C220	C054	
15:25	C126	C055	C259	C081	C257	
15:40	C137	C198	C261	C174	C263	
15:55	C020	C255	C275	C182	C280	
16:10		C313	C258			

A1 Digital design and manufacturing systems

Room2 (202 2F)

Tuesday, November 29th

12:55 - 14:10

Chair: Haruhiko Suwa (Setsunan University)

- 12:55 **C129** A Study on Computer Aided Process Planning for Fixed Workpieces on a 5-Axis Controlled Machine Tool
K. Akisue, K. Nakamoto
- 13:10 **C057** Estimation of production process for sheet metal parts of machine tools and its process improvement with a laser welding robot.
Y. Yamaguchi, T. Hirogaki, E. Aoyama
- 13:25 **C015** Shape optimization on tooth root profile of bevel gears for reducing the bending stress
Z. Ren, Z. Fang, T. Kizaki, A. Hayashi, H. Takeshima, K. Shimosaka, T. Nagata, K. Tomiyama, N. Sugita
- 13:40 **C290** Developing a Customer-Producer-Interaction System for One-of-a-Kind Product
L. Kutari, S. Ura
- 13:55 **C291** Developing big data analytics to optimize cutting conditions of machining operations
S. Fattahi, S. Ura, A. Ghosh

15:50 - 17:05

Chair: Eiichi Aoyama (Doshisha University)

- 15:50 **C223** Design method for thermal devices utilizing orthotropic material based on simultaneous optimization of topology and material orientation
K. Tsuruta, T. Kondoh, S. Nishiwaki, K. Izui, K. Furuta
- 16:05 **C234** Parametric generative design of shell-infill structures based on topology optimization and genetic algorithm
Y. Takamori, K. Wano, K. Furuta, K. Izui, S. Nishiwaki
- 16:20 **C236** Simultaneous Structural and Fiber Orientation Optimization Method for Anisotropic Material
K. Furuta, Y. Fujimoto, T. Kondoh, K. Izui, S. Nishiwaki
- 16:35 **C062** Proposal of an additional convergence condition in topology optimization to ensure robustness to machining errors
A. Otsuka, Y. Miyake, F. Nagata
- 16:50 **C052** Simultaneous optimization of tool allocation and machine scheduling in parallel-type FMS
M. Douno, H. Suwa

A2 Life cycle and smart engineering

Room2 (202 2F)

Wednesday, November 30th

13:35 - 15:05

Chair: Yusuke Kishita (The University of Tokyo)

- 13:35 **C151** Toward building a circular economy of second-life lithium-ion batteries for electric vehicles
Y. Kishita, F. Tao, C. Scheller, S. Blömeke, Y. Umeda, C. Herrmann, T. Spengler
- 13:50 **C051** Supporting Development of Digital Solutions for Manufacturing Systems Based on 'Digital Triplet' concept
S. Shimmori, A. Itou, Y. Hama, Y. Umeda
- 14:05 **C185** Energy measurement of machine tools compliant with energy saving standards ISO14955 and JISB0955
Y. Omoto
- 14:20 **C160** Assessment of Specific Energy Consumption toward Energy-Aware Operations in CNC Machining
H. Suwa, T. Samukawa, K. Shimomoto
- 14:35 **C075** Driving Performance of Natural Fiber Bevel Gears Made of Only Bamboo Fibers Extracted with a Machining Center
N. Miyachi, T. Hirogaki, E. Aoyama, M. Nakagawa, H. Nobe
- 14:50 **C026** Investigation of molding conditions for self-adhesive products using bamboo fibers extracted with a machining center based on in situ monitoring of temperature and pressure in mold die
K. Tanaka, D. Tauchi, T. Hirogaki, E. Aoyama, H. Nobe

A3 Advanced system design and applications

Room2 (202 2F)

Wednesday, November 30th

09:00 - 10:30

Chair: Koji Iwamura (Osaka Metropolitan University)

- 09:00 **C006** Study on VR validation system for stereo camera with display and conversion lenses
M. Nakagawa, H. Yamamoto, T. Takahashi, K. Saneyoshi
- 09:15 **C217** Improvement of production scheduling method with robust optimization approach considering operation time variation and production efficiency
D. Nagata, T. Kaihara, N. Fujii, D. Kokuryo, T. Umeda, H. Mizuhara
- 09:30 **C049** Performance test and backward motion suppression of a walking type piezoelectric actuator
H. Yun, D. Kong, M. Aoyagi
- 09:45 **C208** Basic trial on integrated planning method of production scheduling and AGV route planning with Lagrangian decomposition and coordination approach
H. Ohmoto, T. Kaihara, N. Fujii, D. Kokuryo
- 10:00 **C266** Developing an analysis simulator of a supply chain considering overtime and inventory costs
H. Aoki, A. Tsumaya
- 10:15 **C188** A Proposal of Profit Allocation Mechanism with Combinatorial Double Auction for CrowdSourced Manufacturing
K. Kurimoto, T. Kaihara, D. Kokuryo, N. Fujii

10:50 - 12:05

Chair: Toshiya Kaihara (Kobe University)

- 10:50 **C197** Demand Forecast and Inventory Simulation Based on VAR Model Using POS Data of Bread in Supermarkets
K. Iwamura, I. Doe, N. Sugimura, E. Morinaga, N. Hirabayashi, Y. Kinoshita, K. Kimura
- 11:05 **C245** Concept production process model in creative design
R. Masumura, Y. Tsutsui, K. Yokoi, S. Alfarisi, H. Wang, Y. Shimomura
- 11:20 **C041** Development of an anomaly prediction model using Monte Carlo dropout in LSTM
K. Fukuda, T. Oshida, T. Murakoshi, L. Zhou, H. Ojima, K. Kaneko, T. Onuki, J. Shimizu
- 11:35 **C248** A typology of design hypotheses to improve design quality
T. Kawano, Y. Tsutsui, Y. Mitake, S. Alfarisi, H. Wang, Y. Shimomura
- 11:50 **C256** A method of product-service system configuration support based on a multi-objective optimisation approach
S. Tsuji, Y. Inagaki, Y. Mitake, S. Alfarisi, H. Wang, Y. Shimomura

A4 CAD/CAM technologies

Room5 (205 2F)

Tuesday, November 29th

12:55 - 14:10

Chair: Jun'ichi Kaneko (Saitama University)

- 12:55 **C016** Development of Painting Thickness Simulator For Industrial Robot
A. Sudiar, N. Asakawa, K. Takasugi
- 13:10 **C073** Development of additive manufacturing simulator using Vatti clipping
K. Utsu, K. Takasugi, N. Asakawa
- 13:25 **C131** Data-Mining of Radius Endmill Tool Catalog Information Based on Machine Learning Methods
R. Miyajima, T. Hirogaki, E. Aoyama
- 13:40 **C190** Application of clustering techniques for the reuse of conversational machining programs
C. Janot
- 13:55 **C238** Cutting Temperature Simulation in End-milling Operation for Tool Wear Prediction
R. Matsumura, I. Nishida, K. Shirase

15:50 - 17:05

Keikgo Takasugi (Kanazawa University)

- 15:50 **C150** Development of Tool Path Interpolation Method for Five-Axis Controlled Machining with Barrel Tools
T. Ueyama, K. Morishige
- 16:05 **C242** Various Daubechies Wavelets for Compressing Z-map Models
N. Umezu, M. Inui
- 16:20 **C311** Geometric simulation of 5-axis milling without using cutter swept volume
S. Iuchi, M. Inui, N. Umezu
- 16:35 **C282** Feature Recognition from B-rep Models for Finite Element Meshing using Graph Neural Network
R. Moriya, S. Kanai, H. Date, T. Taichi, H. Takashima
- 16:50 **C306** Optimization of machine tool motion for finish machining process of turbine blade considering geometric failure on polygon data of workpiece shape
J. Kaneko, Y. Hanada, T. Abe

B1 Advanced cutting technologies

Room6 (Hall A+B 1F)

Tuesday, November 29th

15:50 - 17:20

Chair: Hiroyuki Sasahara (Tokyo University of Agriculture and Technology)

- 15:50 **C011** Coupled Simulation between Machine Tool Dynamics and Cutting Forces based on Time Domain Cutting Force Model
Y. Igarashi, R. Sato, K. Shirase
- 16:05 **C064** Decision method of search ranges for a randomized algorithm in order to suppress chatter vibration
Y. Kimura, H. Narita
- 16:20 **C093** Machining error prediction based on voxel model in peripheral milling of low-rigidity workpiece
K. Kaneko, J. Shimizu, K. Shirase
- 16:35 **C027** Cutting Mark Control on Machined Curve Surface by Ball-Nose Endmill with a Five-Axis-Controlled Machine Tool.
Y. Katsutani, T. Hirogaki, E. Aoyama
- 16:50 **C089** Bayesian network model for predicting possible causes of machining defects
H. Mori, G. Sato, D. Kono
- 17:05 **C122** Anisotropy of Cutting Process in Milling of Rolled Titanium Alloy with Single Crystal Diamond End Mill
S. Tamura, Z. Zhou, T. Matsumura

Wednesday, November 30th

09:00 - 10:30

Chair: Naohiko Sugita (The University of Tokyo)

- 09:00 **C166** Estimation method of cutting forces and abnormal vibrations by using frequency separation of acceleration sensor signals
J. Kouguchi, H. Yoshioka
- 09:15 **C218** High efficient machining condition prediction model by machine learning of real and simulated cutting data
K. Kawai, N. Irino, H. Mizuyama, A. Matsubara, N. Suzuki, Y. Imabeppu, Y. Shinba
- 09:30 **C013** Cutting performance of cBN ball-nose end mill with burnishing face in finishing of hardened die steel
M. Okada, R. Fujii, H. Watanabe, M. Nikawa
- 09:45 **C307** Estimation of hardness and residual stress on the end milled surface by linear regression model
H. Fujii, Y. Takahashi, R. Yano, N. Suzuki, Y. Yamada, Y. Imabeppu, N. Irino
- 10:00 **C277** Development of multi-layer PVD coating film with high-temperature lubricity and heat resistance and their application to cutting tools
A. Hosokawa, T. Uno, T. Koyano, T. Furumoto, Y. Hashimoto
- 10:15 **C147** Wear Characteristics in Cutting Titanium Alloy with Micro bubble Coolant
I. Takemoto, M. Yoshida, R. Kito, Y. Azuma, T. Miyamoto

10:50 - 12:20

Chair: Norikazu Suzuki (Chuo University)

- 10:50 **C219** Evaluation of tribological properties of surface textures generated by ultrasonic vibration cutting
K. Takashima, A. Sakurada, K. Hara, D. Kono, H. Taura, N. Tsuji, H. Isobe
- 11:05 **C246** Suppression of regenerative chatter vibration orthogonal to cutting feed direction by Low Frequency Vibration-cutting
Y. Kamada, H. Sasahara
- 11:20 **C088** The effect of chip velocity fluctuations on tool temperature
M. Nomura, H. Douma
- 11:35 **C187** Observation of the built up edges in the region of generating the finished surface
Y. Kuroda, . Sekiya, K. Shimatani, R. Tanaka, . Yamada
- 11:50 **C232** A novel methodology to investigate the influence of built-up layer on the stress state in the primary shear zone during cutting using particle image velocimetry analysis
X. Song, K. Suzuki, W. He, T. Ihara
- 12:05 **C038** Smart machining approach for turning Ti-6Al-4V through Ultra fine bubble injected sustainable lubricant
K. Wickramasinghe, H. Sasahara

13:20 - 15:05

Chair: Takashi Matsumura (Tokyo Denki University)

- 13:20 **C133** Cutting oil absorption to the small diameter drilling hole
A. Shimura, Y. Matsubayashi, T. Sato, S. Hayasaka, M. Uchiyama
- 13:35 **C067** Reduction of Drilling Force on Reverse Finishing of Aluminum Alloys
Y. Ochi, M. Usui, H. Sasahara
- 13:50 **C250** Investigation of Wear Behavior Considering Critical Rotational Speed in Ultrasonic Vibration-Assisted Drilling
N. Tsuji, K. Takashima, A. Sakurada, K. Hara, K. Miyawaki, H. Isobe
- 14:05 **C078** Investigation of the change in the chip shape of cast iron over a wide range of cutting speeds
J. Shinozuka, Y. Noguchi
- 14:20 **C207** Study on subsurface deformed layer based on temperature measurement in gear skiving
S. Irako, Z. Ren, T. Kizaki, Z. Fang, N. Sugita, Y. Feng, T. Nagata, K. Tomiyama
- 14:35 **C066** Cutting property of a low-rigidity urethane rubber in room temperature using a razor blade
J. Shinozuka
- 14:50 **C030** Influence of Blade Edge Shape on Cutting Force in Surgical Oscillating Saw Blade
H. Wang, U. Satake, T. Enomoto

B2 Advanced grinding technologies

Room1 (201 2F)

Tuesday, November 29th

12:55 - 14:10

Chair: Shinya Morita (Tokyo Denki University)

- 12:55 **C017** Quantitative Evaluation of Ceramics Grinding Wheel Surface Topography in Creep Feed Grinding
M. Fujimoto, M. Fujita
- 13:10 **C237** Effect of Grinding Wheel Tooth Thickness on Grinding Force Distributions in Face Grinding of Cemented Carbide with Constant Processing Efficiency
T. Fujiwara, R. Komatsubara, S. Horiguchi, T. Onishi, H. Kodama, K. Ohashi, T. Maeda
- 13:25 **C035** Performance of single-pole grindable thermocouples for temperature measurements of Ti-6Al-4V
Y. Wu, A. Iwasaki, H. Kawashima, W. Lin
- 13:40 **C281** Study on the chatter vibration focused on vibration mode of workpiece system in cylindrical plunge grinding
Y. Takami, H. Kodama, K. Ohashi
- 13:55 **C285** Estimation of grinding stock of workpiece during plunge grinding process
T. Onishi, H. Shimotsu, Y. Murata, M. Sakakura, K. Ohashi

15:50 - 16:50

Chair: Kazuhito Ohashi (Okayama University)

- 15:50 **C204** Experimental investigation on micro-grooving characteristics of sapphire using polycrystalline diamond radial end mills
K. Takishima, K. Katahira, S. Morita
- 16:05 **C270** Grinding Wheel Condition Monitoring using Acoustic Airborne Signals and Machine Learning
A. Gharaei, T. Wahl, V. Ostad ali akbari, M. Kuffa, K. Wegener
- 16:20 **C267** Wear reduction in continuous generating grinding of milling tools with CBN-grinding worms
B. Denkena, B. Bergmann, P. Wolters
- 16:35 **C283** Automated Detection of Visible Grinding Burn in Rail Grinding using Cameras and Machine Learning
T. Wahl, A. Gharaei, T. Thalmann, M. Kuffa, K. Wegener

B3 Micro/Nano machining and figurings

Room2 (202 2F)

Thursday, December 1st

13:35 - 14:50

Chair: Hirofumi Suzuki (Chubu University)

- 13:35 **C141** Development of a Femtosecond Laser CAM System for Processing High-Precision Three-Dimensional Shapes
H. Kawakami, M. Ueda, H. Aoyama, K. Yamazaki
- 13:50 **C161** Cutting of Microgrooves on Ferrous Metal by Using Laser-Processed cBN Tool
D. Kitagawa, T. Meshram, J. Yan
- 14:05 **C222** Micro-pocket Machining of Stainless Steels by Femtosecond Pulsed Laser Using Two-step Fluence
Y. Ogawa, H. Aoyama, K. Yamazaki
- 14:20 **C225** Submicron-scale figure correction of Wolter mirror mandrel with nano-scale surface roughness using plasma chemical vaporization machining
K. Suba, Y. Yamamoto, K. Kawai, K. Arima, R. Maruyama, H. Hayashida, K. Soyama, K. Yamamura
- 14:35 **C228** Understanding of Residual Stress and Subsurface Damage by 2-Step Machining of Single Crystal Sapphire
A. Nagaraj, S. Min

15:10 - 16:25

Chair: Yan Jiwang (Keio University)

- 15:10 **C018** Evaluation of silver precipitation phenomena in glass
M. Kono, H. Kawamura, S. Matsusaka, S. Itoh, H. Hidai
- 15:25 **C055** Study of fine groove machining using PCD(Poly-crystalline diamond) blade tool
H. Konishi, T. Fujita, Y. Izumi, K. Watanabe, D. Yanagida, H. Minami, J. Watanabe
- 15:40 **C198** Optimization of modification conditions used in plasma assisted polishing for improving the material removal rate of Gallium nitride
T. Tao, R. Sun, K. Arima, K. Kawai, K. Yamamura
- 15:55 **C255** Fully automated serial sectioning observation system using ultrasonic elliptical vibration cutting and electrolytic etching for additively manufactured metals
S. Kawasaki, N. Yamashita, S. Morita, H. Yokota
- 16:10 **C313** Ultraprecision cutting of Ni-P plated mold for X-ray mirror using oblique cutting
S. Higuchi, H. Suzuki, H. Awaki, S. Morita, T. Nakagawa

B4 Nano-scale surface finishings

Room1 (201 2F)

Wednesday, November 30th

09:15 - 10:30

Chair: Syuhei Kurokawa (Kyushu University)

- 09:15 **C056** Study of polishing mechanism by chemical properties of polishing pad in oxide Chemical-Mechanical Planarization
T. Ito, T. Fujita, H. Hiyama, Y. Wada, N. Handa
- 09:30 **C083** Experimental and Modelling study of the Removal Mechanism of Detached Nanoparticles in the Spin Rinse Process
N. Handa, H. Hiyama, Y. Wada, H. Yasuda
- 09:45 **C114** Evaluation of a Quartz Transducer Ultrasonic Cleaning Method for the Removal and Frequency Dependence of Polystyrene Latex Particles.
R. Takagi, T. Hikita, Y. Honda, T. Mori, Y. Ichino, Y. Seike
- 10:00 **C173** Possibilities of Various Spray Cleaning Methods in Post-CMP Cleaning
Y. Seike
- 10:15 **C292** Removal Phenomenon Observation on Activated Fluid Flow for Cleaning Sub-100nm Particles on a Silica Glass Substrate Surface by Evanescent Microscopy
P. Khajornrungruang, Y. Terayama, H. Fujishima, S. Hamada, Y. Wada, H. Hiyama

10:50 - 12:05

Chair: Hirokuni Hiyama (Ebara Corporation)

- 10:50 **C074** Novel polishing process based on photo-rheological fluids
Y. Nishizaki, A. Beaucamp
- 11:05 **C177** Optimization of Ultra-precision Machining of PMMA using Genetic Algorithm based on Surrogate Models
C. Weng, W. Lin, Y. Cheng, C. Liu
- 11:20 **C214** Electrochemical mechanical polishing using solid polymer electrolyte
J. Murata, K. Hayama, A. Tsuji
- 11:35 **C229** Elucidation of plasma-assisted polishing mechanism through evaluating the adhesion force between diamond abrasive and AlN wafer
R. Sun, T. Tao, K. Kawai, K. Arima, K. Yamamura
- 11:50 **C312** Atomically Smooth Single-Crystal Lithium Niobate Surface Planarized By Catalyst-Referred Etching Method
P. Bui, D. Toh, M. Kanaoka, H. Okada, K. Yamauchi, Y. Sano

B5 Non-traditional machinings and additive manufacturings

Room4 (204 2F)

Wednesday, November 30th

09:00 - 10:30

Chair: Atsushi Ezura (Sanjo City University)

- 09:00 **C071** Investigation of influences of material resistivity in EDM using LC pulse generator
L. Jiang, M. Kunieda
- 09:15 **C110** Simulation of surface topography in EDM based on thermo-hydraulic coupling model
Q. Li, X. Yang
- 09:30 **C138** Fluid structure interaction simulation of wire vibration caused by discharge reaction force in WEDM
W. Gu, M. Kunieda, W. Zhao
- 09:45 **C216** Improvement in EDM Characteristics for Internal Space Shape Using Revolution Ball Electrode by Servo Control of Rotation Speed
K. Fujieda, A. Yamaguchi, A. Okada
- 10:00 **C264** Temperature Measurement of Wire Electrode during Wire Electrical Discharge Machining Using Two-color Pyrometer with Optical Fiber
T. Hinata, T. Koyano, A. Hosokawa, T. Furumoto, Y. Hashimoto, M. Yamaguchi, S. Abe
- 10:15 **C271** Effects of Voltage Pulse Conditions on Electrochemical Machining of Cemented Carbide
T. Koyano, T. Hokin, A. Hosokawa, T. Furumoto, Y. Hashimoto, M. Yamaguchi, S. Abe

10:50 - 12:20

Chair: Tomohiro Koyano (Kanazawa University)

- 10:50 **C106** Electrochemical machining using the circulation of electrolyte in the electrode to prevent the scattering of electrolyte
K. Matsuzawa, R. Hashimoto, R. Soya, M. Uchiyama
- 11:05 **C108** Effect of tip shape of pipe electrode on accuracy in electrochemical machining of deep cooling holes
K. Otani, M. Sakamoto, S. Kodama, W. Natsu
- 11:20 **C120** Study on machining characteristics of titanium alloys in scanning ECM with electrolyte suction tool
T. Inadama, S. Kodama, W. Natsu
- 11:35 **C034** Investigation of the processing phenomena in femtosecond laser drilling of zirconia ceramic
Y. Zhang, Y. Ito, H. Sun, N. Sugita
- 11:50 **C109** Local copper precipitation with ultrashort-pulsed laser ablation in copper sulfate solution
R. Yabuuchi, S. Kodama, G. Miyaji, W. Natsu
- 12:05 **C158** Feasibility study of the effect of support structures on part accuracy in additive manufacturing
H. Narahara, S. Mitsui, Y. Kunitatsu, H. Taguchi, H. Koresawa

13:35 - 15:05

Chair: Wataru Natsu (Tokyo University of Agriculture and Technology)

- 13:35 **C130** Effect of laser wet remelting on surface roughness and tribology behavior of maraging steel built by powder bed fusion
A. Ezura, S. Abe, T. Furumoto, J. Sakamoto
- 13:50 **C140** Effective removal of support structures constructed by PBF process using gyro finishing
K. Yamaya, Y. Hashimoto, T. Furumoto, M. Yamaguchi, T. Koyano, A. Ezura, A. Hosokawa
- 14:05 **C032** Development of high-performance CVD diamond coated cutting tools using ultra-short pulse laser grinding
X. Liu, N. Hida, S. Maegawa, F. Itoigawa
- 14:20 **C268** Study on localized material removal on a hard material surface by a controllable peeling of nano-particle (PNP) process
T. Permpatdechakul, P. Khajornrungruang, K. Suzuki, D. Goto, S. Kutomi
- 14:35 **C121** Surface finishing method for micro channel-cut crystal X-ray monochromator using plasma chemical vaporization machining with wire electrode
S. Matsumura, I. Ogasahara, T. Osaka, I. Inoue, K. Yamauchi, M. Yabashi, Y. Sano

Thursday, December 1st

09:00 - 10:30

Chair: Ryo Koike (Keio University)

- 09:00 **C144** Analysis of the influences of different Tool Postures on the Machinability of WAAM Inconel 718
G. Quadra vieira dos santos, J. Kaneko, T. Abe
- 09:15 **C224** Alternation sequence planning and process time estimation for hybrid additive and subtractive manufacturing
A. Nishiyama, T. Kataoka, S. Kayashima, N. Sumi, T. Hashimoto, T. Abe, J. Kaneko
- 09:30 **C235** Improvement of joint strength of wire and arc additive manufactured titanium and aluminum dissimilar alloys
H. Nagamatsu, K. Nakajima, M. Usui, T. Abe, H. Sasahara
- 09:45 **C265** Influence of cooling temperature on CuSn alloy by wire and arc additive manufacturing with pure copper mold
K. Okabe, N. Katagiri, T. Hanai, M. Kubota, T. Abe, J. Kaneko
- 10:00 **C211** Effect of electrode rotation speed on material deposition stability in WAAM with a rotary TIG torch
M. Kawabata, T. Sasaki, K. Wada, S. Kanemaru, Y. Nomura, H. Sasahara
- 10:15 **C299** Study on the fracture phenomenon at the time of separation of the support material in the powder bed fusion method
K. Matsuda, H. Narahara, H. Koresawa, K. Nakamura

10:50 - 12:05

Chair: Tatsuaki Furumoto (Kanazawa University)

- 10:50 **C101** An investigation of the effect of cooling rate on mechanical properties in directed energy deposition
Y. Hirono, T. Mori, H. Kawakami, D. Kono
- 11:05 **C205** Development of an Additive Printing System by Slant Direct Drive Parallel Mechanism
R. Tawara, C. Tanuma, Y. Tanaka
- 11:20 **C274** Design and manufacturing of an abrasive layer with specifically adjusted microporosity using Laser Powder Bed Fusion
B. Denkena, V. Suntharakumaran, B. Bergmann, C. Tenbrock, A. Born, M. Wilckens
- 11:35 **C302** Investigation of the layer height stability in multi-axis DMD process
S. Egorov, F. Soffel, K. Wegener
- 11:50 **C305** Effect of stiffness and heat transition of supports on thermal distortion of workpieces in selective laser melting
D. Kono, Y. Kuroiwa, M. Shimoyama, I. Yamaji, Y. Oda

13:35 - 14:50

Chair: Takeyuki Abe (Saitama University)

- 13:35 **C037** Evaluation on compression and impact characteristics in foam metals fabricated in directed energy deposition
Y. Ikeda, R. Koike, Y. Kakinuma, T. Mori, Y. Hirono
- 13:50 **C069** Gas flow analysis for improving multi-jet nozzle design in directed energy deposition
Y. Fujiwara, R. Koike, Y. Kakinuma, K. Yamazaki, T. Mori, Y. Hirono
- 14:05 **C113** Development of Modeling Method Maintaining Optimum Stand-off Distance for High Accuracy and Efficiency Molding in Directed Energy Deposition
E. Okamoto, H. Aoyama, M. Ueda, K. Yamazaki
- 14:20 **C105** Effect of Processing Conditions on the Mechanical Properties of Snap-Fit in Additive Manufacturing
H. Taguchi, Y. Kunimatsu, H. Narahara
- 14:35 **C123** Investigation of Mechanical Property Values of 3D Printer Prototype Parts in Snap-Fits
Y. Kunimatsu, H. Narahara, H. Koresawa, H. Taguchi

B6 Energy beam processings

Room2 (202 2F)

Thursday, December 1st

09:00 - 10:30

Chair: Hirofumi HIDAI (Chiba University)

- 09:00 **C047** Improvement of Anodic Oxide Film Characteristics of Al-Cu Alloy by Large-area Electron Beam
I. Miyamoto, T. Shinonaga, A. Okada
- 09:15 **C053** The Evaluation of Al 5183 built by Wire-Laser Metal 3D Printer
D. Morita, Y. Tanihara, N. Shinohara, S. Takushima, S. Uozumi, N. Sumi, T. Hashimoto, R. Morita, T. Yuzawa
- 09:30 **C090** Fundamental Study on Laser Forming of Carbon Fiber Reinforced Thermoplastic Sheet with Low Surface Damage by Using Pulsed CO₂ Laser
R. Kitada, R. Watanabe, Y. Okamoto, A. Okada, S. Kizaki
- 09:45 **C099** Influence of Focusing Position on Micro-grooving of Metal Surface by High-speed Scanning of Angled CW Laser Irradiation
R. Saito, Y. Okamoto, A. Okada, T. Sakai
- 10:00 **C308** Laser-induced periodic surface structures generation on single-crystal 4H-SiC by femtosecond pulsed infrared laser irradiation
T. Meshram, J. Yan
- 10:15 **C168** High-speed observation of damage generation process in sapphire during ultrashort pulse laser drilling
H. Sun, Y. Ito, G. Ren, J. Hattori, K. Nagato, N. Sugita

10:50 - 12:05

Chair: Yasuhiro Okamoto (Okayama University)

- 10:50 **C044** Optimal Control of Laser Irradiation Time for Cu-Direct Via Hole Drilling of Mult-Layer Printed Wiring Boards Based on Monitoring Method with a High-Speed Camera
T. Fujimoto, T. Hirogaki, E. Aoyama
- 11:05 **C178** Investigation of femtosecond laser induced plasma filament in transparent dielectrics
G. Ren, Y. Ito, H. Sun, T. Koike, N. Sugita
- 11:20 **C199** Pulse duration dependence of spatiotemporal evolution of plasma channel produced by an ultrashort laser pulse
T. Koike, Y. Ito, R. Yoshizaki, G. Ren, N. Sugita
- 11:35 **C303** Curved hole drilling in silica glass by fiber fuse with a scanned laser beam
K. Miyakoda, K. Sunayama, K. Sakamoto, H. Hidai, S. Matsusaka
- 11:50 **C148** Extending maximum working distance in water-jet guided laser processing
R. Washio, S. Masuda, S. Masui, S. Kadoya, M. Michihata, S. Takahashi

B7 Advanced die/molding and polymer processing
Room3 (203 2F)

Wednesday, November 30th

13:20 - 15:05

Chair: Hiroyuki Narahara (Kyushu Institute of Technology)

- 13:20 **C022** Linear prediction of die casting mold temperature based on machine learning method
K. Mu, M. Nikawa, M. Yamashita
- 13:35 **C028** Shallow Forming of Sheet Metal by Impulsive Water Pressure
M. Yamashita, T. Hobo, N. Minowa, M. Nikawa
- 13:50 **C068** Development of press molding method for CFRP preform using a 3Dprinter
Y. Nishimura, T. Ikari, E. Yilmaz, H. Tanaka
- 14:05 **C107** Joining performance promotion by polymer flow modifier in injection molded metal-polymer direct joining
S. Wang, F. Kimura, E. Yamaguchi, Y. Ito, Y. Suzuki, Y. Kajihara
- 14:20 **C180** Process optimization in induction heating direct joining of CFRTP and steel
W. Chen, F. Kimura, Y. Kajihara
- 14:35 **C184** Direct observation of surface expansion and its influence on adhesion force at die-workpiece interface in metal forming
X. Lin, T. Sugihara, T. Enomoto

C1 Advanced machine tools and elements

Room3 (203 2F)

Tuesday, November 29th

12:40 - 14:10

Chair: Ryuta SATO (Nagoya University)

- 12:40 **C080** An Estimation Approach to Circular Cutter Path Trajectory Error of Machining Center Produced by Linear Acceleration /Deceleration Processing
H. Qiu, T. Yamaguchi, Y. Huang
- 12:55 **C146** Real-time interpolation of complex machining toolpaths with drive limits and vibration avoidance
S. Tajima, B. Sencer, H. Yoshioka
- 13:10 **C200** High-speed, high-accuracy and low-vibration machining of polygonal shapes by NC parameter adjustment based on design of experiments
K. Okada, T. Otsuki, H. Sasahara
- 13:25 **C183** A method for examining defects in machined surface utilizing surface model and NC servo data
H. Kaneko, G. Sato
- 13:40 **C050** A Study on Cutting Resistance Estimation by Monitoring Machine Tool Spindle Current
R. Ikeda, Y. Morimoto, A. Hayashi
- 13:55 **C213** Tool fracture monitoring by spindle-integrated force measurement system
Y. Yamada, H. Boujnah, Y. Imabeppu, N. Irino

15:50 - 17:20

Chair: Yoshitaka Morimoto & Akio Hayashi (Kanazawa Institute of Technology)

- 15:50 **C029** Design of Helical Gear with Small Number of Teeth and Its Ball-Nose milling with a Four-Axis-Controlled Machine Tool
X. Wang, T. Hirogaki, E. Aoyama, M. Saito, T. Yamamoto
- 16:05 **C124** Evaluation method of machining area for non-orthogonal five-axis machine tools
N. Wakai, K. Takasugi, N. Asakawa
- 16:20 **C159** Possibility of figure 8-shaped test for 5-axis machining center
S. Kajino, Y. Ihara
- 16:35 **C149** Novel drag finishing machine for less variation in finishing speed
A. Kutsuna, Y. Hashimoto, T. Furumoto, M. Yamaguchi, T. Koyano, A. Ezura, T. Kawahara, A. Sekiya, A. Hosokawa
- 16:50 **C206** Development of a light weight machining feed mechanism with high dynamic rigidity using polymer composite materials
R. Nomura, T. Kizaki, S. Tanaka, L. Jiahui, N. Sugita
- 17:05 **C301** Sensing chuck for thin-walled workpieces
B. Denkena, H. Klemme, E. Wnendt, M. Meier

Wednesday, November 30th

09:00 - 10:30

Chair: Hidetake Tanaka (Sophia University)

- 09:00 **C096** Static Characteristics of Active Controlled Water Lubricated Hydrostatic Thrust Bearings
H. Ueda, S. Hosoi, K. Jinguji, M. Miyatake, S. Yoshimoto
- 09:15 **C142** Effect of sliding surface lubricating oil on the friction characteristics of slide guides
I. Oshita, T. Sumida, A. Matsubara
- 09:30 **C189** Study on stress distribution variation near contact surface in sliding of contact asperities
S. Saito, D. Kono, H. Isobe
- 09:45 **C194** Fundamental analysis on thermal characteristics of micro-positioning system using piezo element for micro-milling spindle
S. Wakiya, Y. Nakagawa, J. Kusuyama, Y. Nakao
- 10:00 **C300** Optimal selection of tool-holder combination for enhanced stability boundaries in milling
V. Ostad ali akbari, Y. Mohammadi, A. Gharaei, M. Kuffa, K. Wegener
- 10:15 **C215** Development of a Model-based Machine Tool Simulator
T. Fujita, S. Uozumi, Y. Isoda, K. Tonoike, M. Ihara

10:50 - 12:05

Chair: Hayato Yoshioka (The University of Tokyo)

- 10:50 **C021** Thermal characteristics of newly developed spindle shaft by using high thermal conductivity material
S. Kajikawa, S. Morita, H. Usuki
- 11:05 **C025** Experimental investigation of volumetric thermal deformation induced by the ambient temperature change of a machine tool
K. Mori, M. Shimoike
- 11:20 **C202** High-Speed High-Accuracy Thermal Displacement Measurement of Machine Tools Using Optical Frequency Comb Ranging
S. Tanaka, T. Kizaki, A. Arimoto, N. Hashimoto, S. Irako, Y. Teshima, K. Iijima, T. Uwano, N. Sugita
- 11:35 **C212** Thermal Compensation of a Swiss-type Lathe
P. Kaftan, J. Mayr, K. Wegener
- 11:50 **C315** The impact of self-learning thermal error compensation models on the accuracy of 4-axis thermal test pieces
N. Zimmermann, S. Lang, J. Mayr, K. Wegener

C2 Micro systems and machine elements

Room1 (201 2F)

Thursday, December 1st

09:15 - 10:15

Chair: Yuichi Nakazato (Nippon Institute of Technology)

09:15 **C007** Miniaturized hexapod mobile-robot with 6-leg mechanism for inspecting infrastructure facilities

A. Matsuura, M. Mizukami, N. Hanajima, Y. Fujihira

09:30 **C045** New shape coated microneedle array for medical application

H. Takei, S. Matsushima, K. Kawabata, T. Ito, R. Mizuguchi, T. Hikima, H. Tsubaki, M. Hara, Y. Tashiro, T. Oniki, M. Matsuo

09:45 **C046** Impulse-drive Capsule for Medical Inspection

K. Koizumi, K. Iwasita, T. Ito, S. Murakami, T. Kimura, K. Karasawa, C. Katsuta, A. Tanaka, H. Kutsumi

10:00 **C063** Development of On-Machine System for Measurement of Workpiece Substrate Properties and Topography

Y. Iwao, A. Pratap, M. Ritou, A. Beaucamp

11:05 - 12:05

Chair: Masato Mizukami (Muroran Institute of Technology)

11:05 **C112** Evaluation of dynamic stiffness of the spindle system using Receptance Coupling method.

K. Yokohara, S. Yamato, A. Matsubara

11:20 **C201** Room temperature H₂ gas sensing properties of optimal Pt-draped vertical VO_x porous thin films for early hazard detection of lithium-ion battery system

J. Jaiswal, K. Tsuchiya

11:35 **C233** Simulation of Inter-track Interference in Magnetic Signal Detection for Higher Accuracy of Magnetic Encoders

C. Murayama, H. Aoyama, K. Yamazaki

11:50 **C269** Positioning Properties of Fine Feed Table for Non-contact Support with Squeezed-air Effect

Y. Tamaru, T. Ushijima, H. Shimizu

C3 Robotics and mechatronics

Room3 (203 2F)

Thursday, December 1st

09:15 - 10:30

Chair: Toshiki Hirogaki (Doshisha University)

09:15 **C008** Stiffness Analysis of a 3-UPU Type Parallel Kinematic Mechanism with Considerations of Joint and Link Compliance
Y. Lee, Y. Chiu, C. Hsieh, I. Lee, C. Sung

09:30 **C009** Balancing Design and Optimization of a 3-UPU Type Parallel Kinematic Manipulator with Variable-Length Links
C. Hsiang, Y. Chiu, T. Wang, W. Chen, C. Sung

09:45 **C314** An intelligent polishing technology for fiber reinforced plastics (FPR) material based on an industrial robot and the 3D laser profiler
B. Yang, P. Yang

10:00 **C031** Identification of novel six-axis robot kinematic model with angular positioning deviations by R-Test
T. Cui, S. Ibaraki

10:15 **C042** Spatial calibration method for industrial robot based on measurement of double-ball rotary structure and contact sensors
K. Luo, P. Yang

10:50 - 12:05

Chair: Akihiro Torii (Aichi Institute of Technology)

10:50 **C058** Novel model for autonomous collaboration between cooperative robot and power assist lifter and its parameter identification
H. Hanai, M. Ozawa, T. Hirogaki, E. Aoyama

11:05 **C104** Development of Power assist glove for hand grasping with light and flexible actuator
H. Ishisaki, K. Tabata, T. Tsuji, . Seki, T. Hiramitsu

11:20 **C111** Investigation of Novel Algorithm for Inverse Kinematic Solution 6-DOF Manipulators Passing Through the Vicinity of Singular Points using a Neural Network
D. Kato, N. Maeda, A. Takeuchi, T. Hirogaki, E. Aoyama

11:35 **C135** High-speed robot for coating inspection of suspended box-shaped objects
K. Uda, H. Seki, T. Tsuji, T. Hiramitsu

13:35 - 14:50

Chair: Naoki Asakawa (Kanazawa University)

- 13:35 **C164** Estimation of the reaction force generated by the collision of parts in remote-assembly simulation using ray-casting method
A. Hori, Y. Watanabe, H. Hiraoka
- 13:50 **C196** The self-traveling robot for workpiece loading into a machine tool consisting of an industrial truck and a collaborative robot.
H. Nagasue, R. Maeda, H. Tanaka
- 14:05 **C209** Verification of the effect on output of the air-cylinder type artificial muscle in a circular bending
Y. Miyake, T. Hiramitsu, H. Seki, T. Tsuji
- 14:20 **C226** Development of Friction-Controllable Grasping Surface Using Electro-Adhesive Gel
H. Miura, H. Anzai, K. Sakurai, A. Nagatsuma, T. Aoyama, Y. Kakinuma
- 14:35 **C227** Development of a simple human-cooperative transportation system based on tactile information
D. Matsuura, K. Kiyomoto, T. Kobayashi

15:10 - 16:25

Chair: Daisuke Matsuura (Tokyo Institute of Technology)

- 15:10 **C014** Two-dimensional self-localization using sensor-fusion of mobile robot for inspecting underground infrastructure facilities
T. Kosakai, Y. Kataoka, Y. Ebina, M. Mizukami, S. Mochizuki
- 15:25 **C259** Electric power and levitation height of levitation actuator
R. Kawai, H. Takashima, A. Torii, S. Mototani, K. Doki
- 15:40 **C261** Communication of a microrobot using QR code
H. Takashima, A. Torii, S. Mototani, K. Doki
- 15:55 **C275** External Shape Control of a Spatial Hyper Redundant Robot Composed of Serially Connected Parallel Mechanism Units
Q. Zhu, N. Iwatsuki
- 16:10 **C258** Robot position measurement system using image processing
Y. Matsuda, H. Takashima, A. Torii, S. Mototani, K. Doki

D1 Nano-scale measurements and calibrations

Room4 (204 2F)

Tuesday, November 29th

12:40 - 14:10

Chair: Satoru Takahashi (The University of Tokyo)

- 12:40 **C061** Development of an optical head for measurement of the pitch deviation of a scale grating
Y. Shimizu, L. Quan, W. Gao
- 12:55 **C260** Development of a small telescope for the purpose of laser communication in outer space
O. Kirino, H. Nakagawa, H. Shinonaga, K. Kiyohara
- 13:10 **C154** Periodic Surface Topography Measurement by Broadband Optical Frequency Comb Scattering Spectroscopy
S. Itakura, T. Uenohara, Y. Mizutani, Y. Takaya
- 13:25 **C125** Nanoscale heat analysis with a dual-probe type passive near-field microscope
Y. Nagai, H. Nakajima, R. Sakuma, K. Lin, F. Kimura, Y. Kajihara
- 13:40 **C097** Three-dimensional measurement of a micro-hole by a microprobing system with method of local surface interaction force detection
M. Aruga, S. Ito, T. Tomioka, K. Matsumoto, K. Kamiya
- 13:55 **C065** Measurement of number-weighted particle size distribution for poly-dispersed particles using nanoparticle chip
J. Zhu, T. Hayashi, S. Kurokawa

15:50 - 17:20

Chair: Terutake Hayashi (Kyushu University)

- 15:50 **C095** The passive analysis of the thermally excited evanescent waves on SiC and GaN
R. Sakuma, K. Lin, F. Kimura, Y. Kajihara
- 16:05 **C186** Image Processing Aspect of Transverse Shift Measurement in the Spin Hall Effect of Light (SHEL) Ellipsometry
N. Zahra, Y. Mizutani, T. Uenohara, Y. Takaya
- 16:20 **C170** Autofluorescence signal detection from sidewall surface for 3-dimensional measurement
K. Kawami, S. Kadoya, M. Michihata, S. Takahashi
- 16:35 **C117** Super-resolution microscope with Ghost Imaging using quantum entangled photon pairs
M. Yoshioka, Y. Mizutani, S. Kataoka, K. Ienaka, T. Uenohara, Y. Takaya
- 16:50 **C153** Concept of Controlling Rotational Reference Point for Dimensional Inner Shape Measurement Using Dual Period Grating
S. Fujimura, S. Kadoya, M. Michihata, S. Takahashi
- 17:05 **C116** In-process measurement of processing depth in laser ablation using a photonic nanojet
M. Yasuda, T. Uenohara, Y. Mizutani, Y. Takaya

D2 Surface metrologies of nano-scale structures

Room4 (204 2F)

Thursday, December 1st

15:10 - 16:10

Chair: So Ito (Toyama Prefectural University)

- 15:10 **C220** Measurement of Areal Surface Topography using Laser-scanning Confocal Microscope with Tilted Focal Plane
T. Obu, S. Hara, N. Takahashi
- 15:25 **C081** Detection of photoelectrons from noble metal catalysts at the bottoms of Si grooves after metal-assisted chemical etching
T. Higashi, K. Kawai, K. Yamamura, K. Arima
- 15:40 **C174** Development of optical measurement method for laser-processed multiscale structure based on stitching of phase response from various incidence angles
H. Goto, T. Fugono, S. Masui, S. Kadoya, M. Michihata, S. Takahashi
- 15:55 **C182** Formation and Characterization of Nanotrenches along Step Edges of a Flattened Si Surface by Self-assembled Processes in Solutions
K. Arima, Z. Ma, S. Masumoto, K. Kawai, K. Yamamura

D3 Mechano photonics engineering and optical applications

Room1 (201 2F)

Wednesday, November 30

13:20 - 15:05

Chair: Yukitoshi Otani (Utsunomiya University)

- 13:20 **C077** Evaluation of a free spectral range of an etalon for a reference of an alignment monitor
T. Kume, T. Mibe, M. Michihata, S. Takahashi
- 13:35 **C082** Nanoscale temperature mapping of operating CVD graphene device by passive near-field optical microscopy
K. Lin, M. shinomiya, R. Sakuma, Y. Kajihara
- 13:50 **C098** Mid-infrared (LWIR) passive spectroscopic imaging with an uncooled microbolometer array sensor for non-invasive blood glucose sensors
I. Ishimaru, T. Kitazaki, Y. Morimoto, S. Yamashita, S. Tahara, D. Anabuki, K. Wada, A. Nishiyama
- 14:05 **C103** Development of Residual Stress Evaluation System Inside Resin Using Terahertz Waves
A. Tanaka, F. Kimura, S. Saito, I. Yoshida, Y. Kajihara
- 14:20 **C118** Study on Surface marker for 3D position Detection based on Optical scattering principle
H. Huang, D. Kono
- 14:35 **C191** Development of an ultraprecise X-ray deformable mirror based on a single-crystal piezoelectric element
K. Uematsu, T. Inoue, S. Nakabayashi, Y. Kohmura, M. Yabashi, S. Matsuyama
- 14:50 **C262** Exposure method using intensity-modulated light for resolution enhancement in Talbot lithography
K. Kawakami, Y. Mizutani, N. Ura, Y. Shi, T. Uenohara, Y. Makiura, Y. Takaya

D4 Advanced image processings and applications

Room5 (205 2F)

Wednesday, November 30th

13:20 - 15:05

Chair: Takashi Komuro (Saitama University)

- 13:20 **C033** Inverse Analysis and Suppression of Chatter Vibrations during Side Milling based on Two-dimensional Discrete Fourier Transform of the Chatter Mark Image
N. Ozaki, T. Taniguchi, T. Hirogaki, E. Aoyama
- 13:35 **C136** Distance detection of multiple objects by using stereovision based on Interframe Difference Algorithm
Y. Yabuta, S. Kanda
- 13:50 **C221** Vectorization of Contours of Hand Written Letters for Character Mosaic Generation
Y. Bai, N. Umezu
- 14:05 **C247** Stereo-camera system for measuring position and orientation of a positioning stage using a precise ceramic calibration board
H. Nagai, R. Ogawa, A. Mizutani, H. Kikuta
- 14:20 **C273** Automatic characterization of WEDM single craters through CNN based object detection
E. Gonzalez sanchez, D. Saccardo, P. Borges esteves, M. Kuffa, K. Wegener
- 14:35 **C252** Improved mirror ball projection for more accurate merging of multiple camera outputs
W. Artsimovich
- 14:50 **C309** The detection of chip winding to tools and tool breakage by projection images.
K. Kanto, M. Matsuhira, A. Shigekane

D5 Advanced 3-dimensional digital processings
Room5 (205 2F)

Wednesday, November 30th

09:15 - 10:30

Chair: Hiroaki Date (Hokkaido University)

09:15 **C012** Many-to-many Matching based on Geometric Descriptors for Designing Mutually Deformable Assemblies
H. Shibuya, Y. Nagai

09:30 **C043** Improvement of Height Map Reconstruction for White Light Interferometry Measurement by using Centroid Method with Convolutional Neural Network
T. Watanabe, Y. Ohtake, T. Yatagawa, H. Suzuki, S. Sasaki, M. Kon

09:45 **C167** Leaf reconstruction based on Gaussian mixture model from point clouds of leaf boundaries and veins
Y. Nagai, H. Tanaya

10:00 **C169** Voxel by voxel reconstruction of 3D CT images by FDK- approximated neural network model
S. Wang, Y. Ohtake, T. Yatagawa, H. Suzuki

10:15 **C171** An effective parts segmentation method for large volume assembly CT data
H. Takahashi, Y. Ohtake, T. Yatagawa, H. Suzuki, K. Akai, H. Wada, R. Deguchi, H. Matsuura

10:50 - 12:05

Chair: Yukie Nagai (Tokyo Metropolitan University)

10:50 **C060** Detection of Multiscale Deterioration from Point-Clouds of Furnace Walls
T. Aoki, E. Yamamoto, H. Masuda

11:05 **C145** Point Cloud Template Matching for Inspection of Engineering Products
Y. Ji, Y. Ohtake, T. Yatagawa, H. Suzuki, Y. Eda, Y. Tsumura, S. Takanezawa

11:20 **C155** Improving Multi-sensor Point Cloud Fusion via Color Information and Point Cloud Partitioning
S. Yan, S. pathak, K. Umeda

11:35 **C175** Efficient and Precise Approximated Object Model Generation for Optimal View Planning for SfM-MVS
G. Yoshida, S. Kanai, H. Date

11:50 **C240** Error ellipsoidal model estimation for TLS point clouds and its application to point cloud registration
S. Yokomori, H. Date, S. Kanai, Y. Moribe

F1 Advanced surface processings

Room1 (201 2F)

Thursday, December 1st

13:35 - 14:50

Chair: Hiroaki Kakiuchi (Osaka University)

- 13:35 **C157** Damage-free processing of narrow-gap channel-cut crystal X-ray monochromators using atmospheric-pressure plasma with a wire electrode
I. Ogasahara, S. Matsumura, T. Osaka, K. Yamauchi, M. Yabashi, Y. Sano
- 13:50 **C203** High-speed etching of gallium nitride substrate using atmospheric-pressure plasma with hydrogen gas
G. Nakaue, T. Sai, D. Toh, K. Yamauchi, Y. Sano
- 14:05 **C156** Characterization of ordered arrays of Ag nanoparticles fabricated on thermally annealed vicinal c-plane (0 0 0 1) sapphire
M. Yadav, S. Aravindan, P. Rao
- 14:20 **C172** Mechanical Reliability of Reactively Alloyed B-NiAl Film for Crack-less Instantaneous Bonding
D. Yasugi, K. Kodama, M. Naito, S. Miyake, T. Namazu
- 14:35 **C179** Nine Point Bending Test Technique for Evaluating the Sintered Silver Die Degradation
K. Wakamoto, T. Otsuka, K. Nakahara, T. Namazu

15:10 - 16:10

Chair: Yoshifumi Suzaki (Kagawa University)

- 15:10 **C084** Synthesis of nitrogen-containing carbon using MVP with different gas mixture
M. Ohira, I. Tanaka, Y. Harada
- 15:25 **C126** Tribological properties of CN_x and Si-CN_x films deposited by IBAD
I. Tanaka, K. Shirota, Y. Harada
- 15:40 **C137** Deposition of TiC film by microwave sheath-voltage combination plasma
Y. Ushiro, I. Tanaka, Y. Harada, T. Ogisu
- 15:55 **C020** Study on the Formation of Silicon Films from Organosilicon Precursor using Atmospheric-Pressure Very High-Frequency Plasma
A. Hamzens, K. Kitamura, H. Ohmi, H. Kakiuchi

F2 Micro fabrications for functional surfaces

Room5 (205 2F)

Thursday, December 1st

10:50 - 12:05

Chair: Masahiko Yoshino (Tokyo Institute of Technology)

- 10:50 **C059** Microfluidic Device of White Blood Cell Elimination for Capturing Circulating Tumor Cells
M. Hayase, A. Murata, R. Takahashi, S. Ogawa
- 11:05 **C094** Fabrication of functional surface using water jet guided laser processing
M. Osawa, S. Masuda, S. Masui, S. Kadoya, M. Michihata, S. Takahashi
- 11:20 **C128** Fabrication of Curved Laser-Induced Periodic Surface Structure Along Created Microgrooves by Ultraprecision Cutting
K. Oike, S. Kodama, K. Nakamoto
- 11:35 **C152** Effect of dopant concentration on femtosecond pulsed laser processing characteristics of yttria-stabilized zirconia
Y. Yamamuro, T. Shimoyama, J. Yan
- 11:50 **C210** Control of Resist Cross-sectional Shapes using 150 kV Electron Beam Lithography and Novel Scanning Method
T. Sugihara, A. Kaneko

13:35 - 14:35

Chair: Masanori Hayase (Tokyo University of Science)

- 13:35 **C072** Verification of the effectiveness of DSB tool in increasing the strength of thin plate material parts
H. Yamazaki, J. Zhu, T. Tanaka
- 13:50 **C091** Boundary Lubricity of Metal Surfaces Textured by Vibration-assisted Cutting
J. Shimizu, K. Ohya, T. Yamamoto, L. Zhou, T. Onuki, H. Ojima, K. Kaneko, Y. Fukahori
- 14:05 **C193** Investigation of efficient fabrication method for micro/nano structure of Au using oil-based ink printing transfer process
M. Terano, H. Kariya, M. Yoshino
- 14:20 **C195** Molecular Dynamics Simulation of Chemical Mechanical Polishing of Si Wafer using Potential Control
N. Hashimura, J. Shimizu, K. Kaneko, L. Zhou, T. Onuki, H. Ojima

15:10 - 16:10

Chair: Jun Shimizu (Ibaraki University)

- 15:10 **C054** The impact of air feeding on silicon surface nanostructure formation by moderate-pressure hydrogen plasma
T. Nomura, N. Tamura, H. Kakiuchi, H. Ohmi
- 15:25 **C257** Optimization of bullseye structure on a metal surface to obtain localized enhancement of incident light
R. Kobayashi, M. Yoshino, Y. Nakagawa
- 15:40 **C263** Emergent Ferromagnetic properties for the Fe nanofilms on the architected three-dimensional patterned surfaces
A. Hattori, L. Pamasi, N. Hosoito, A. Irmikimov, K. Hattori, X. Shi, F. Guo, A. Osaka, H. Tanaka
- 15:55 **C280** Realization of Verwey Transition in 50 nm Fe₃O₄ Ultrathin Film Grown on Atomically Ordered Smooth Substrate
A. Osaka, D. Toh, K. Yamauchi, Y. Sano, H. Tanaka, A. Hattori

G1 Bio-medical engineering and applications

Room6 (Hall A+B 1F)

Tuesday, November 29th

12:55 - 14:10

Chair: Ichiro Sakuma (The University of Tokyo)

- 12:55 **C079** Surface force measurement between protein-coated probe and solid surfaces
H. Sato, K. Takashima, Y. Shima, H. Kobayashi, M. Hasegawa, A. Kaneko
- 13:10 **C076** Effects of surface morphology and conductivity of poly-pyrrole electrode on electroporation
S. Amaki, Y. Kato, T. Sudo, A. Kaneko
- 13:25 **C241** Morphology control of ZrO₂ with two-dimensional structure in high-temperature ionic liquid
T. Yamada, Y. Yanagida
- 13:40 **Canceled**
- 13:55 **C288** Biotagging method using microneedle arrays for individual identification of animals
J. Park, B. Kim

H1 MEMS/NEMS

Room5 (205 2F)

Thursday, December 1st

09:15 - 10:15

Chair: Kazuyoshi Tsuchiya (Tokai University)

- 09:15 **C086** Microfluidic synthesis of polymer particles using step emulsification and deterministic lateral displacement
G. Ji, Y. Kanno, T. Nisisako
- 09:30 **C134** Design Optimization of a Microfluidic Diagnostic Device with Air Plug-in Valves for the On-site Multiplexed Genetic Detection of Food Allergens
D. Natsuhara, S. Misawa, K. Shirai, R. Saito, S. Okamoto, M. Nagai, M. Kitamura, T. Shibata
- 09:45 **C102** A Centrifugal Microfluidic Device with a Pair of Capillary Stop Valves for Multiplexed Genetic Diagnosis
R. Saito, D. Natsuhara, K. Shirai, S. Okamoto, M. Nagai, T. Shibata
- 10:00 **C253** Biodegradable microneedle mesh sheets as a novel treatment device for acute type A aortic dissection
T. Asami, T. Akaki, S. Imamura, K. Honda, Y. Nishimura, A. Tanaka, N. Kato

Poster Presentations

Hall C

Tuesday, November 29th

14:30 - 15:30

- P-1 Canceled

- P-2 Effect of the cutting conditions on surface defects in end-milling of UD-CFRP
T. Hashimoto, T. Samukawa

- P-3 Investigation on the material removal process in laser in-situ assisted diamond cutting of reaction-bonded silicon carbide
Y. Fu, J. Zhang, X. Chen, G. Xu, Y. Yu, J. Xu

- P-4 Improvement of edge surface flatness of silicon wafer during polishing
U. Satake, T. Enomoto

- P-5 Evaluation of hydration layer on the glass surface formed by Fine-Bubble CMP
S. Mochizuki, S. Suda

- P-6 Highly efficient polishing of GaN substrates by direct UV irradiation assist
T. Kanaeda, S. Matsui, E. Yamamoto, T. Yajima, D. Ninomiya

- P-7 Fabrication of Micro Pin Array Using Eccentric Tools
U.S. Lee, C.Y. Yang, J.H. Lee, D.B. Sim, B.H. Kim

- P-8 Study on chatter vibration suppression of pipe frame machine tools
O. Shibata, A. Hayashi, Y. Morimoto

- P-9 Effect of polishing on the wear of cermet and cBN cutting tools edge
K. Nagaya, H. Tanaka, Y. Kawase, Y. Akagami

- P-10 Characterization of high-speed polishing system with small rectangular pads by quantification of material-removal amount and comparison with simulation
S. Matsui, K. Hiroshima, A. Une

- P-11 Online Laboratory Course on Feedback Control of DC Motor by Web-based Operation
K. Furutani

- P-12 Fundamental study on optical detection of silica nano-particle on an inclined substrate surface with dark-field microscopy
S. Kutomi, P. Khajornrungruang, D. Goto

- P-13 First-principles electronic structure calculation for analyzation of crystallographic damage states in Raman spectral data
J. Kuroda, T. Onuki, K. Kaneko, H. Ojima, J. Shimizu, L. Zhou

- P-14 Sub-100nm height measurement of a nanoparticle position from surface based on optical interferometry and evanescent field
D. Goto, P. Khajornrungruang, A. Blattler, S. Kutomi

- P-15 Personally Adapted Human Body Model Generation Based on 3D Body Scanning, Mesh Morphing, and Statistical Shape Model
A. Sotome, S. Kanai, H. Date, Y. Endo

- P-16 Deposition of W-C films by dual source dc magnetron sputtering
S. Inoue, N. Morikawa, A. Heya, T. Namazu

- P-17 Improving the efficiency of polymer electrolyte fuel cell electrode catalyst using chemically-adsorbed monolayers
A. Nakayama, Y. Suzaki, K. Ogawa
- P-18 Joining of magnesium alloy with pure titanium foil by shot peening
K. Sugihara, Y. Harada, I. Tanaka
- P-19 Fabrication of silicon nanoparticles films covered with a chemically adsorbed monolayer having reactive epoxy groups for the solar cells
T. Ishikawa, A. Nakayama, K. Ogawa, O. Suzaki
- P-20 Microfabrication technology applicable to three-dimensional surfaces by masking process and micro slurry-jet process
Y. Doi, R. Tashiro, Y. Nakashima, Y. Nakanishi
- P-21 Evaluation of machining characteristics by Atomic-force-microscopy scratching
T. Isono, S. Matsui, N. Torii
- P-22 A novel method for 2D eyelid pressure measurement using spherical sucrose lenses
Y. Mori, T. Hatsuzawa
- P-23 Evaluation of influence of Shape of a Pair of Half-divided microneedle Mimicking Mosquito on Minimally Invasive Puncture Characteristics
M. Imanishi, M. Suzuki, A. Ueda, Y. Okumura, T. Takahashi, S. Aoyagi
- P-24 Development of a System to Monitor Dementia Patients in a Hospital Using Depth Sensor
M. Fujio, N. Ito
- P-25 Simulation of microneedle puncture by nonlinear Finite Element Analysis
A. Mizutsu, S. Yamamoto, T. Takahashi, S. Masato, S. Aoyagi, T. Nagashima, M. Chiyonobu
- P-26 Vibration Velocity Control for Ultrasonic Dental Scaler Tip
M. Takasaki, F. Suzuki, Y. Ishino, T. Mizuno
- P-27 Stabilizing the flow of microchannels by adding micro textures
A. Kakuta, Y. Murai