

Schedule: 3rd World Congress on Micro and Nano Manufacturing

Monday September 9, 2019	
17:00-19:00	Congress registration
18:00-19:00	Joint leadership meeting (I2M2, 4M, and IFMM)
19:00- 21:00	Reception



Tuesday September 10, 2019	
8:00- 9:00	Continental breakfast
8:30-9:00	Registration
9:00-9:20	Welcome, Congress Chair Welcome, Dean College of Engineering, NC State University
9:20-9:30	Brief history of I2M2, 4M, and IFMM
9:30-10:30	Plenary session 1: Chair. Sathyan Subbiah Plenary speaker: Prof. Marc Madou, University of California, Irvine
10:30-10:50	Coffee break
Session # 1: Laser micro-processing , Session Chair Dr. Dr. Gert-willem R.B.E. Römer	
	20 Top-Hat Laser Drilling of Micro-Scale Holes in SiN Substrates: Morphological Effects <i>Vahid Nasrollahi, Pavel Penchev, Afif Batal, Stefan Dimov, kyunghan kim</i>
	33 Study on Laser-Induced Oxidation of Ti6Al4V Alloy under Two Different Reactive Atmospheres <i>Wei Zhao, Guolong Zhao, Ning He, Liang Li, Asif Iqbal</i>
	68 Femtosecond Laser Processing of Zirconia Based Ceramics with Different Alumina Contents for Dental Applications <i>Jide Han, Olivier Malek, Jozef Vleugels, Annabel Braem, Sylvie Castagne</i>
	83 Comparative Investigation of Ablation Through Femtosecond Laser Micromachining in Soft and Hard Materials <i>Manobalasanakar Muthu, Sivarama Krishnan, Anubhab Sahoo, Balaji Srinivasan, Soundarapandian S</i>
	95 Effects of Flat-Top Laser Beam Processing and Scanning Strategies in Laser Micro-Structuring <i>Hoang Le*, Pavel Penchev, Stefan Dimov</i>
Session # 2: Micromachining I , Session Chair Dr. Martin Byung-Guk Jun	
10:50-12:30	78 Theoretical Cutting-Edge Radius on a Single Crystal Diamond Tool <i>Amit Dodmani, Sathyan Subbiah</i>
	36 CO2 Laser Assisted Ultrafast Laser Machining of Borosilicate Glass <i>Seunghwan Jo, Martin Byung-Guk Jun</i>
	24 Real-Time Detection of Micro-Scale Surface Defects Via a Laser Line Scanner for Additive Restoration <i>Bhargavi Ankamreddy, Sandesh Birla, Ramesh Singh</i>
	26 Impact of Machining Condition on the Cylindricity of Micro Rods in Micro Electrochemical Turning Process <i>Mohan Kumar, Nirmal Kumar Singh, Deepak Kumar</i>
	39 Micromilling of Equal Channel Angular Pressing Titanium <i>Fabio Oliveira Campos, Juan Carlos Garcia de Blás, Anna Carla Araujo</i>

	Session # 3: Surface Engineering I , Session Chair Dr. Tatsuhiko Aizawa	
	6	Leak-Free Plastic Mold Packaging into Micro-Textured Copper Substrate by Plasma Printing <i>Tatsuhiko Aizawa, Yasuo Saitoh, Hideki Hasegawa</i>
	11	Effect of Laser Processing Conditions on Wettability and Proliferation of Saos-2 Cells on CoCrMo Alloy Surfaces <i>Afif Batal, Antonio Garcia-Giron, Vahid Nasrollahi, Pavel Penchev, Stefan Dimov</i>
	12	Experimental Investigation on the Fabrication of Micro Metal Surface Features by a Novel Rapid Imprinting Process <i>Jihui Huang, Zhutian Xu, Linfa Peng, Xinmin Lai</i>
	7	Surface Characterization of Micro-Textured Titanium Surfaces Fabricated by Micro-Milling <i>Ankit Jain, Vivek Bajpai</i>
	32	Surface Morphology and Wall Angle Comparison of Micro-Channels Fabricated in Titanium Alloy Using Laser Based Processes <i>Suman Bhandari, Nicolas Martinez-Prieto, Jian Cao, Kornel Ehmann</i>
12:30-14:00	Luncheon Keynote, Dr. Khershed Cooper, National Science Foundation	
	Session # 4: Modeling and Simulation I , Session Chair Dr. Ramesh Singh	
	59	Numerical Simulation of Afm Process of Convergent Divergent Workpiece <i>Kalipada Maity</i>
	23	Identification of Ductile to Brittle Transition Zone in Sintered Zirconia During Progressive Depth Scratching <i>Divyanshu Solanki, Rohit Sencha, S Anandita, Rakesh Mote, Ramesh Singh</i>
	74	Estimating Uncertainty in Polymer Micro-Milling Force Models Using Bayesian Inference <i>Shivang Shekhar, Kadri Bugra Ozutemiz, Recep Onler, Burak Ozdoganlar</i>
	22	Efficient Method for the Determination of the Contact Length During Finite-Element-Simulation on Micro Metal Forming <i>Lewin Rathmann, Stefan Veenaas, Frank Vollertsen</i>
	82	Experimental and Computational Study on Laser Engraving of Mild Steel Using Nanosecond Pulsed Laser <i>Vishnu Narayanan S, Deepak Marla, Ramesh Singh</i>
	Session # 5: Nano Manufacturing/Technology I , Session Chair Dr. Simon Park	
	98	In Situ Measurement of Carbon Nanotube Growth Kinetics in a Rapid Thermal Chemical Vapor Deposition Reactor with Multizone Infrared Heating <i>Moataz Abdulhafez, Jaegeun Lee, Mostafa Bedewy</i>
	97	Self-Limiting Electro spray Deposition on Polymer Masks <i>Lin Lei,, Christianna Kuznetsova,, Arielle R. Gamboa1, Sunshine Littlecreek, Jingren Wang, Qingze Zou, Jeffrey D. Zahn, Jonathan P. Singer</i>
	4	Impact Behaviour of Hydrothermally Synthesized ZnO/Polyester Woven Carbon Fibre Hybrid Composites <i>Ravi Shankar Rai, Chandra Prakash Singh, Vivek Bajpai</i>
	54	Fabrication of High Performance Single Layer MoS2 FETs Using Thermal Nanolithography <i>Xiaorui Zheng, Annalisa Calò, Edoardo Albisetti, Xiangyu Liu, Elisa Riedo</i>
	43	Dielectrophoresis-Driven Assembly of Polymer Microbeads and Carbon Nanotubes Upon Fabricated Carbon Microelectrodes <i>Tuo Zhou, Yu Lu, Sina Habibi Zad, Yeguang Zhou, Lixin Zhao, Lawrence Kulinsky</i>
14:00-15:40		

Session # 6: Microforming , Session Chair Dr. Ming Wang Fu		
	9	Influence of Microstructure on Microextrudability of Micro Forward-backward Extrusion of 6063 Aluminum Alloy <i>Tatsuya Funazuka*, Norio Takatsuji, Kuniaki Dohda</i>
	29	Scaling anomaly in the mechanical response in microscale reverse extrusion of copper <i>Bin Zhang, Wen Jin Meng</i>
	44	An ARX-Based Temperature Controller for a Hybrid Thermoplastic Micro Forming of Surgical Blades from Bulk Metallic Glass <i>Nattasit Dancholvichit, Shiv G. Kapoor</i>
	56	Deformation and Transformation Characteristics in Micropunching of Stainless Steel AISI304 <i>Tomomi Shiratori, Tomohiro Yoshino, Yohei Suzuki, Tatsuhiko Aizawa</i>
	27	Study on Size Effects Affected the Progressively Microformed Plunger Part of Pogo-Pin <i>Junyuan Zheng, Ming Wang Fu</i>
16:00-18:30	NCSU Lab Tours & poster session	<i> Analytical Instrumentation Facility (AIF) <ii> Nannofabrication Facility (NNF) <iii> Center for Additive Manufacturing and Logistics (CAMAL)



Wednesday September 11, 2019	
8:00- 9:00	Continental breakfast
8:30-9:00	Registration
9:10-10:10	Plenary Session 2: Session chair. Dr. Stefan Dimov Plenary speaker; Prof. Gert-willem R.B.E. Römer, University of Twente, The Netherlands
10:10-10:30	Coffee break
Session # 7: Sensors and Systems , Session Chair Dr. Ping Guo	
75	Development of Piezoelectric Force Sensor Using PZT/CNT/PVA Nanocomposites <i>Sina Rezvani, Lei Liu, Jihyun Lee, Simon Park</i>
2	Electrical Conductivity and Structural Evolution of Polymer Derived SiC Ceramics Pyrolyzed from 1200°C to 1800°C <i>Md Atiqur Rahman Chowdhury, Kewei Wang, Yujun Jia, Cheryl Xu</i>
8	Non-Contact Planar Stage Based on Near-Field Acoustic Transportation <i>Ping Guo, Yang Yang, Keyu Chen</i>
37	Development of a Multiaxial Miniature Testing System with High Temperature and In-Situ Scanning Electron Microscope Testing Capabilities <i>Farhan Rahman, Hassan Tasnim, Gracious Ngaile</i>
77	Analysis of Sound Signal for Quality Monitoring in Laser Micro Lap Welding <i>Bo-Si Kuo, Ming-Chyuan Lu</i>
48	A Proposal of Mechanical Characteristic Measurement Method Using Micro Forceps with Force Sensing - Evaluation Using Simulation - <i>Yudai Fujiwara, Tohru Sasaki, Kaoru Tachikawa, Atsushi Murakami, Kenji Terabayashi, Kuniaki Dohda, Hirotake Niwa,</i>

	Session # 8: Nano Manufacturing/Technology II, Session Chair Dr. Lawrence Kulinsky	
10:30-12:30	47	Electrokinetic Movement of the Microparticulates between High Resistance Microelectrodes under the Influence of Dielectrophoretic Force <i>Jennifer Cortez, Kimia Damyar, Runtian Gao, Lawrence Kulinsky</i>
	52	Enzyme Nanopatterning by High-Throughput Thermochemical Scanning Probe Lithography <i>Xiangyu Liu, Mohit Kumar, Annalisa Calò, Edoardo Albisetti, Xiaorui Zheng, Rein Ulijn, Elisa Riedo</i>
	30	Graphene Reinforced Aluminium Matrix Composites an Innovative Approach <i>Rachit Ranjan, Vivek Bajpai</i>
	55	Flexibility Enhancements of Hybrid Copper Inks with Cellulose Nanocrystals <i>Lei Liu, Danny Wong, Jihyun Lee, Simon Park</i>
	96	Thermocapillary Dewetting-Based Dynamic Spatial Light Modulator <i>Dylan Kovacevich, Michael Nitzsche, Valeria Saro-Cortes, Arielle R. Gamboa, Emily Davis, Tianxing Ma, Jonathan P. Singer</i>
	Session # 9 :Microman , Session Chair Dr. Massimiliano Annoni	
	85	Debinding and Pre-Sintering of High Aspect Ratio Micro Bi-Lumen Tubes Produced by Extrusion of 17-4PH Feedstock <i>Sandeep Kuriakose, Salvatore Cataldo, Paolo Parenti, Massimiliano Annoni</i>
	88	Effect of Feedstock Properties on Extrusion of High Aspect Ratio Micro Bi-Lumen Tubes <i>Sandeep Kuriakose, Massimiliano Annoni</i>
	10	Experimental Investigation into a Novel Configuration of Hybrid Laser-Electrochemical Micromachining Process <i>Krishna Saxena, Jun Qian, Dominiek Reynaerts</i>
	90	Modelling the Filling Behavior of Micro Structured Plastic Optical Components <i>Dario Loaldi, Danilo Quagliotti, Matteo Calaon, Guido Tosello</i>
	91	Injection moulding based replication process - replication of nanofeatures for anti-microbial applications <i>Ben Whiteside, Millan-John Gilson, Maria Katsikogianni</i>
	92	Influence of Vibrations in Micro Polishing and Its Effect on Material Removal <i>Soufian Ben Achour, Gianpiero Gaeta, Leonardo De Chiffre, Giuliano Bissacco</i>
12:30-14:00	Lunch	
	Session # 10: Surface Engineering II, Session Chair Dr. Tohru Sasaki	
	41	Laser Surface Modification of Wire-Electric Discharge Machined Graphene Nanoparticle Reinforced SiC Composites <i>Annebushan Singh Meinam, Ondrej Hanzel, Ramesh Singh, Pavol Sajgalik, Deepak Marla</i>
	5	Plasma-Printed AISI316L Multi-Punch Array for Fabrication of Aluminum Heatsink with Micro-Pillar Fins <i>Tatsuhiko Aizawa, Tomomi Shiratori, Kenji Wasa</i>
	19	Multiscale Surface Patterning of Zirconia by Picosecond Pulsed Laser Irradiation <i>Yuka Yamamuro, Tomotaka Shimoyama, Isao Yamashita, Jiwang Yan</i>
	34	Dual Regime Spray Deposition Based Laser Direct Writing of Metal Patterns on Polymer Substrates <i>Semih Akin, Ted Gabor, Seunghwan Jo, Yeonsoo Park, Jung-Ting Tsai, Chi-Hwan Lee, Minsoo Park, Martin Byung-Guk Jun</i>
	35	A Novel Laser Patterning Process for Highly Flexible Transparent Conducting Heater <i>Haoxuan You, Zach Lowery, Qinghua Wang, Ruoxing Wang, Caterina Lamuta, Fatima Toor, Wenzhuo Wu, Albert Ratner, Hongtao Ding</i>

14:00-15:40	Session # 11: Micromachining II, Session Chair Dr. Sathyan Subbiah	
	80	Experimental investigation in microdrilling of Ni-based alloy under different cooling environment <i>Sabana Azim, Soumya Gangopadhyay, Siba Sankar Mahapatra, Rinku Mittal, Ramesh Singh</i>
	84	Effect of Process Parameters on Work Softening Behavior of Zr-Based Bulk Metallic Glass During Orthogonal Micromachining Operation <i>Karuna Dhale, Nilanjan Banerjee, Ramesh Singh</i>
	86	An Approach to Improve Cutting Performance in Micro Milling of Titanium Alloy <i>Yunn-Shiuan Liao, Tsung-Hsien Li, Yi-Chen Liu</i>
	71	Fabrication of Neural Probe Delivery Microneedles and Characterization of Their Insertion Forces <i>Ezgi Pinar Yalcintas, Rakesh Khilwani, Burak Ozdoganlar</i>
	16	Correlation of Ductile-Brittle Transition with Residual Stress Transitions and During Scratching of Silicon <i>Chirag Alreja, Sathyan Subbiah</i>
	Session # 12: Additive Manufacturing I, Session Chair Dr. Steffen Scholz	
	15	Micro-Lattice Material Fabrication by High Resolution DLP Stereolithography <i>Chow Shing Shin, Kai Yu Liu</i>
	61	A Benchmark Artifact to Evaluate the Manufacturing of Microfeatures by DLP Stereolithography <i>Lara Rebaioli, Irene Fassi</i>
	66	FDM Process Optimisation for Low Surface Roughness and Energy Consumption <i>Ahmed Elkaseer, Stella Schneider, Steffen Scholz</i>
67	Improvements in Accuracy of Fused Deposition Modeling Via Integration of Low-Cost On-Board Vision Systems <i>Vito Basile, Francesco Modica, Gianmauro Fontana, Serena Ruggeri, Irene Fassi</i>	
63	Rheology and Direct-Ink-Writing of Liquid Metal Particle-Based Polymer Composites <i>Sepehr Nesaei, Bulent Arda Gozen</i>	
15:40-16:10	Coffee break	
	Session # 13: Tribology, Session Chair Dr. Kuniaki Dohda	
	46	The Use of Femtosecond Laser Processing for Producing Surface Structures/Textures on Diamond-Like Carbon Coated Replication Masters <i>Aleksandra Michalek, Pavel Penchev, Stefan Dimov</i>
	51	Lotus-Leaf Inspired Surfaces: Hydrophobicity Evolution of Replicas Due to Mechanical Cleaning and Tool Wear <i>Jean-Michel Romano, Antonio Garcia-Giron, Pavel Penchev, Mert Gulcur, Ben Whiteside, Stefan Dimov</i>
	53	Progressive Damage Assessment of Tool Coating of Amorphous Carbon (WC/a-C) in High-Speed Micromilling of Ti-6Al-4V <i>Rinku Mittal, Salil S Kulkarni, Harish Barshilia, Ramesh Singh</i>
	79	Formulation of SiO ₂ /Oil Nano-suspension by Hydrodynamic Cavitation and its Lubrication Mechanism in the Metal Forming Process <i>Hao Pang, Nicholas Kandl, Gracious Ngai</i>
	58	Research on Machining Characteristics and Tool Wear in ECM with Electrolyte Suction Tool with Auxiliary Anode <i>Takafumi Tabata, Wataru Natsu, Guanxian Liu</i>

16:10-18:00	Session # 14: Modeling and Simulation II, Session Chair Dr. Takashi Matsumura	
	31	Regenerative Chatter Detection Using State Transition Matrix <i>Shashwat Kushwaha, Benjamin Gorissen, Jun Qian, Dominiek Reynaerts</i>
	38	Numerical Modeling of the AISI 316LN Plastic Deformation During Machining Using a Modified Genetic Algorithm <i>Do Young Kim, Dong Min Kim, Hyung Wook Park</i>
	50	Machining Simulation in Focused Ion Beam Sputtering <i>Takashi Matsumura, Ryosuke Ogasawara</i>
	60	Experimental Investigation and Modelling of Hastelloy C-276 Using Electro Discharge Machining to Determine Mrr and Surface finish <i>Kalipada Maity</i>
	69	On the Prediction of Anode Profile in Wire-Electrochemical Micromachining Using Artificial Neural Network <i>Ishan Srivastava, Vyom Sharma, Vishal Srivastava, Ramkumar Janakarajan</i>
	Session # 15: Micromachining III, Session Chair Dr. Burak Ozdoganlar	
	42	Axial Strategy for Ultraprecise Single Point Cutting of V-Grooves. Case 2: Constant Cutting Area <i>Delfim Joao, Nicolas Milliken, Remus O. Tutunea-Fatan, Evgueni Bordatchev</i>
	21	A Study on the Damage Layer Removal of Single Crystal Silicon Wafer after Atmospheric-Pressure Plasma Etching <i>Weijia Guo, Senthil Kumar A, XinQuan Zhang, Hui Deng</i>
	13	Research on the Modeling of Burr Formation Process in Micro-Flat Milling Operation on Ti-6Al-4V <i>Ni Chen, Yang Wu, Li Zhenjun, Liang Li, Ning He</i>
	76	Sub Surface Pore Induced Quilting During Machining of Metal Foams <i>Vinothkumar Sundharamoorthi, Sathyan Subbiah</i>
18:00 -19:00	Break /Leadership meetings	
19:00-22:00	Banquet and Award Ceremony	

Thursday September 12, 2019	
8:00- 9:00	Continental breakfast
8:30-9:00	Registration
9:10-10:10	Plenary session 3: Chair, Dr. Kuniaki Dohda Plenary speaker: Prof. Ming Wang Fu, Hong Kong Polytechnic University, Hong Kong
10:10-10:40	Coffee break

Session # 16: Micromachining IV (ECM/EDM), Session Chair Dr. Paul Cohen	
14	Scanning Micro ECM Process for V-Shaped Grooves <i>Hao Zhong, Hao Tong, Zhiqiang Wang, Yong Li, Yubin Pu</i>
18	EDM/ECM Hybrid Machining Base on the Same Machine and Tool Electrode <i>Ryoichiro Kishi, Jiwang Yan</i>
89	Electrochemical Micromachining under Square, Sinusoidal, and Triangular Pulsed Voltage Conditions <i>Divyansh Patel, Vishal Agrawal, Ramkumar Janakarajan, V K Jain</i>
Session # 17: Additive Manufacturing II, Session Chair Dr. Joško Valentincic	
40	ZnO Nanowire Anchored Microfluidic Device with Herringbone Structure Fabricated by Maskless Photolithography <i>Dilshan Sooriyaarachchi, Shahrima Maharubin, George Tan</i>
49	Characterization of a Custom-Made DLP Stereolithographic Printer Based on a Slanted Groove Micromixer Geometry <i>Josko Valentincic, Miha Prijatelj, Izidor Sabotin, Marko Jerman, Andrej Lebar, Suzana Vinetič</i>
93	Electrically Assisted 3D Printing of Bioinspired Multiscale Structures <i>Yang Yang, Jie Jin, Xiangjia Li, Yong Chen</i>
73	Effects of Powder Loadings on the Green-State Micromachinability of Additive Manufactured AISI316L <i>Paolo Parenti, Andrea Cazzani, Luca Simeon, Paolo Spadari, Salvatore Cataldo, Massimiliano Annoni</i>
72	Prediction of Dimensional Error in Down-Facing Surfaces for Laser-Based Powder Bed Fusion Parts <i>Amal Charles, Ahmed Elkaseer, Lore Thijs, Veit Hagenmeyer, Steffen Scholz</i>
Session # 18: Microinjection Molding and Microfluidics, Session Chair Dr. Irene Fassi	
3	Design, Manufacturing and Testing of Microstructures in Lab-On-Chip System <i>Uzumma Ozeh and Ran Zhou</i>
65	Processability of Reinforced Polyamide 6 (PA6) in Manufacturing Mini and Micro Molded Parts <i>Rossella Surace, Claudia Pagano, Vincenzo Bellantone, Francesco Baldi, Irene Fassi</i>
64	A Study on the Effects of Surface Roughness on Properties of Micro Injection Molded Parts <i>Pierre vella, Arif Rochman, Michel bezzina, Thomas zammit tabona, Annarita De Meo, Roberto Pantani</i>
70	Microcontact Printing of Liquid Metals Using Soft Stamps <i>Ezgi Pinar Yalcintas, Kadri Bugra Ozutemiz, Toygun Cetinkaya, Livio Dalloro, Carmel Majidi, Burak Ozdoganlar</i>
12:20-14:00	Lunch, Best Student Presentation Awards, and Closing remarks