4M/ICOMM2015
Schedule

4M/ICOMM2015
MILAN, ITALY
31st March - 2nd April

Monday March 30 2015	
18:15–21:00	**Welcome Party and Guided Tour (all welcome)** **Castello Sforzesco, Piazza Castello**

Tuesday March 31 2015 Assolombarda Congress Centre						
08:30–09:00	**Registration**					
09:00–09:20	**Opening plenary session** | Chair: Massimiliano Annoni, Politecnico di Milano, Italy					
	Plenary					
09:20–10:20	**Key Note** Professor Christian Hopmann, RWTH Aachen University, Germany **Process development for the production of plastic parts with micro features**					
10:20–10:50	Coffee break					
10:50–12:50	**Track 1 (Sala A)** **Micro EDM process performance**		**Track 2 (Sala B)** **Micro Machining Process Performance**		**Track 3 (Sala C)** **Metal Forming I**	
	Chair	G Maccarini, University of Bergamo, Italy	Chair	Simon Park, University of Calgary, Canada	Chair	Jian Cao, Northwesern University, US
	004	**Comparison EDM / Dry-EDM in microdrilling process** Cristina Merla, Giancarlo Maccarini, Gianluca D'Urso and Chiara Ravasio *University of Bergamo* Anthony Surleraux *Cardiff University*	**033**	**Test for evaluating the performance of micro milling processes** Aldo Attanasio, Alessandro Garbellini and Elisabetta Ceretti *University of Brescia* Claudio Giardini *University of Bergamo*	**052**	**Dynamic Model of One-Dimensional Piezoelectric Actuators in Micro-forming** Peng Hu, Tegoeh Tjahjowidodo, Sylvie Castagne *Nanyang Technological University*
	005	**Micro-EDM-milling and –sinking combined approach for the fabrication of micro-components** Francesco Modica, Valeria Marrocco, Vito Basile and Irene Fassi, *ITIA CNR*	**034**	**Analysing machining errors resulting from a micromilling process using CT measurement and process simulation** Petra Kersting, Sven Odendah, Tobias Siebrecht, Eugen Krebs, *TU Dortmund University* Simone Carmignato, Filippo Zanini, *University of Padova*	**053**	**Effect of tribological condition on forming minute parts by micro-meso extrusion of A6063 alloy** N. Takatsuji, University of Toyama, K. Dohda, *Northwestern University*, T. Funazuka *University of Toyama*
	006	**Influence on Pulse Width on Micro Electrical Discharge Machining of Non-Conductive Silicon Carbide** Florian Zeller, Nirdesh Ojha, Claas Müller, Holger Reinecke, *University of Freiburg*	**035**	**Machining Error in Micro Dimple Milling** Takashi Matsumura, Yuji Musha, *Mechanical Engineering, Tokyo Denki University*	**054**	**Replication of prismatic microstructures by electromagnetic embossing** Lasse Langstädtler, Arne Bloem, Christian Schenck, Bernd Kuhfuss *Universtity of Bremen* Lars Schönemann *Universtity of Bremen*
	007	**Evaluation of the Mechanical Properties of Non-Conductive Ceramics Machined with EDM using AE** Nirdesh Ojha, Florian Zeller, Claas Müller, Holger Reinecke *University of Freiburg*	**041**	**Machinability on Micro-End Milling Process of Ti-6Al-4V with Nanofluid Minimum Quantity Lubrication Using Hexagonal Boron Nitride Particle** Dae Hoon Kim, Pil-Ho Lee, Jung Sub Kim and Sang Won Lee *Sungkyunkwan University*	**055**	**Influence of lubricant viscosity on punch force in strip drawing test** Hendrik Tetzel Annika Bohlen *BIAS–Bremer Institut für angewandte Strahltechnik* Frank Vollertsen *BIAS–Bremer Institut für angewandte Strahltechnik and University of Bremen*

10:50–12:50	**008**	**Experimental Investigation of the Effect of Dielectric Conductivity on Characteristics of Micro-EDM Process** Soham S. Mujumdar, Shiv G. Kapoor, *University of Illinois at Urbana Champaign, USA* Davide Curreli *University of Illinois at Urbana Champaign, USA*	**043**	**An Experimental Study on Micro Milling of PZT deposited Si wafer** Yao-Yang Tsai, Kuan-Ming Li *National Taiwan University* Ken-Han Chen, Ming-Chyuan Lu and Chia-Che Wu *Naional Chung Hsing University, Taichung, Taiwan*	**056**	**Experimental Study of a Microforging Process of Parallel Ribs from Metal Strip** Tommaso Stellin, Marion Merklein and Ulf Engel *Institute of Manufacturing Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)*
	009	**Improvements in debris flushing in micro-electric discharge machining using atomized dielectric spray** Arvind Pattabhiraman, Deepak Marla and Shiv Kapoor *University of Illinois at Urbana-Champaign, Urbana, USA*	**038**	**Rapid and Autonomous Optical Characterization of Tool Diameter and Cutting Edge Radius on Micro End Mills** William Jen, Mechanical Frank E. Pfefferkorn and Justin D. Morrow *University of Wisconsin* Nicola J. Ferrier *University of Chicago*	**057**	**Dimensional accuracy and deformation behaviors in meso-scaled progressive forming of two-level flanged parts** M.W. Fu B. Meng C.M. Fu The Hong Kong Polytechnic University
12:50–14:00	Lunch					
14:00–15:40	**Track 5 (Sala A)** **Laser Micro Processing I**		**Track 2 (Sala B)** **Micro Machining Modelling and Simulation**		**Track 3 (Sala C)** **Metal forming II**	
	Chair	Iban Quintana, IK4–TEKNIKER, Spain	Chair	Shiv Kapoor, University of Illinois, USA	Chair	Yannis Korkolis, University of New Hampshire, USA
	083	**Analysis of Shape Geometry of Micro-Channels Fabricated by Laser Milling** Sabina Campanelli, Nicola Contuzzi, Fulvio Lavecchia, Gianluca Percoco, *Politecnico di Bari*	**022**	**Force Modelling in micro-milling of hardened tool steel** R. Piquard, A. Gilbin, S. Thibaud, M. Fontaine, *FEMTO-ST*	**058**	**Microstructure change by micro metal forming of sheet iron** Motoki Terano, Yuji Hirosawa, Masahiko Yoshino, Tokyo Institute of Technology Shiro Torizuka, Department of Materials Science and Chemistry University of Hyogo
	084	**Manufacture of Micro-Hole Array for Planar Porous Aerostatic Bearing with Dual Restrictive Layer Using Picosecond Laser** Yu-Ting Lyu, Kuo-Yu Chien, Fu-Chuan Hsu, Hsin-Chung Li *Metal Industries Research & Development Centre (MIRDC)* Tien-Ching Chen *GeniRay Technology Corporation*	**023**	**A Predictive Model for Thin Plate Deformation in Surface Milling** Jiunn-Jyh J. Wang and Chieh-Cheng Lin, *National Cheng Kung University, Tainan*	**059**	**Elastic-plastic damage behavior identification in micro scale length from instrumented micro-single point incremental forming** Ramzi Ben Hmida, *FEMTO-ST Institute, Besançon, France.* Fabrice Richard, *Université de Franche-Comté*, Sébastien Thibaud, Pierrick Malécot, *ENSMM*
	085	**Single step generation of microstructured hydrophobic Aluminium surface by ns laser** R. Jagdheesh, J.J. García-Ballesteros and J.L. Ocaña *Politécnica de Madrid*	**024**	**Cutting force prediction in micro orthogonal cutting by an analytical-numerical coupled model** A. Afsharhanaei, L. Rebaioli, P. Parenti, M. Annoni *Politecnico di Milano*	**060**	**Scalability of Conventional Tube Hydroforming Processes from Macro to Micro/Meso** James Lowrie and Gracious Ngaile *North Carolina State University*
	086	**Improving the flexibility of micro injection moulding by exploiting fs-laser micro milling to realize mould inserts with complex 3D microfeatures** G.Trotta I. Fassi ITIA CNR, *Institute of Industrial Technology and Automation* A. Ancona FN CNR, *Institute for Photonics and Nanotechnologies* A.Volpe & F.Di Niso *IFN CNR, Institute for Photonics and Nanotechnologies, National Research Council, Bari; & University of Bari*	**025**	**Performance of micro end milling force prediction on Aluminum 6061-T6 with 3D FE simulation** A. Davoudinejad, P. Parenti, L. Rebaioli, M. Annoni, *Politecnico di Milano, Italy*	**061**	**Improved Tool Performance in Microblanking of Thin Metal Foils Through Defined Cutting Edge Modification of Silicon Punches** Sven Hildering, Ulf Engel and Marion Merklein *Institute of Manufacturing Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)*
	087	**Improving laser microcutting quality of AZ31 Mg alloy by submerged cutting for manufacturing of biodegradable stents** Ali Gökhan Demir Barbara Previtali *Politecnico di Milano*	**026**	**Multiscale Analysis of Nano-Scale Elliptical Vibration Cutting via Molecular Dynamics Simulations** Lin Zhang, Li Zhang, and Ping Guo *The Chinese University of Hong Kong*	**062**	**Investigation of Inhomogeneous Deformation Behavior of Pure Copper Foils in Micro Deep Drawing** Dong Xianghuai, Zhou Xionghui *National Shanghai Jiao Tong University* Zhang Haiming *Max-Planck-Institut für Eisenforschung*
15:40–16:00	Coffee break					

	Track 5 (Sala A) Laser Micro Processing II		Track 7 (Sala B) Additive Manufacturing (5)		Track 10 (Sala C) Materials Testing	
	Chair	José L. Ocaña, Technical University of Madrid, Spain	Chair	Lawrence Kulinsky, University of California-Irvine	Chair	Kuniaki Dohda, Northwestern University, USA
16:00–17:40	**088**	**Microstructure of S7 Tool Steel after Pulsed Laser Micro Polishing** Qinghua Wang, *Mechanical Engineering Department, University of Wisconsin* Justin D. Morrow, Frank E. Pfefferkorn, *Materials Science Program, University of Wisconsin*	**104**	**An Electrokinetically-Driven Microfabrication Process for Additive Manufacturing Applications** Victor Perez-Gonzalez, Matias Vazquez-Piñon Sergio Martinez-Chapa *Sensors and Devices Group, School of Engineering and Sciences, Tecnologico de Monterrey* Vinh Ho, *Lawrence Kulinsky University of California Irvine*	**130**	**Characterization analysis according to the filler metal types and the diffusion bonding copula shape conditions on the cemented carbide** Bawi Jeong and Jeongwoo Park *Chosun University*
	089	**Laser Polishing of Metallic Freeform Surfaces** Judith Kumstel, John Flemmer *Fraunhofer Institute for Laser Technology* André Temmler *RWTH Aachen University, Chair for Laser Technology*	**105**	**Aerosol Jet printed PEDOT:PSS strain gauges on FDM Printed substrates** Frederik Vogeler Joren De Cuyper Eleonora Ferraris *KU Leuven*	**131**	**Microstructure Characterization of Ductile Cast Iron and its Phase Properties Detection** Surendra Sujakhu and Sylvie Castagne *Nanyang Technological University* Muhammad Taureza, *Singapore Institute of Manufacturing Technology*
	090	**Effects of Initial Surface Texture on Pulsed Laser Micro Polishing of S7 Tool Steel** Qinghua Wang, Justin D. Morrow; Neil A. Duffie, Frank E. Pfefferkorn, *University of Wisconsin-Madison*	**106**	**Study on Plasma of Micro-forming Fields Activated Sintering Technology** Gang Yang, Yi Yang,, Deqiang Yin, Mingxia Wu, Kunlan Huang *School of Manufacturing Science and Engineering, Sichuan University* Yi Qin *University of Strathclyde*	**132**	**Quantitative measurements of plasticity in confined Cu thin films with a micro-pillar protocol** Yang Mu and Wen Jin Meng *Louisiana State University*
	091	**The Modern Concept Of Microsensors/ Microsystems Integration At Wafer Level By High Accuracy Micromanufacturing Processes** D. Ulieru, Oana Maria Ulieru, Xavi Vila, A.Topor, *SITEX 45 SRL*	**107**	**Numerical Simulation of 3D Additive Manufacturing Process** Kentaro Taki *Kanazawa University* Hiroshi Ito *Yamagata University*	**133**	**Custom testing machine for biaxial loading of microtubes** Peter Ripley and Yannis Korkolis *University of New Hampshire*
	092	**Design of Terahertz Waveguide Filters For Hybrid Manufacturing Based On CNC Milling and Laser Micro-Machining** Xiaobang Shang, Michael J. Lancaster, Pavel Penchev, Stefan Dimov, *The University of Birmingham*	**108**	**Analysis of Balling Phenomenon in Micro Direct Laser Metal Deposition** Federico Mazzucato, Paolo F. Bariani *University of Padua*	**081**	**Effect of Manufacturing Conditions on the Mechanical and Corrosion Behavior of Micro-textured AZ91D Prepared by Powder Metallurgy** Aydin Tahmasebifar, Said Kayhan and Zafer Evis, *Middle East Tech Univ* Muammer Koc *HBKU / Ist Sehir Univ*
19:30–23:00	**Gala Dinner** Palazzo delle Stelline					

Wednesday April 1st 2015 Politecnico di Milano	
8:30–9:00	**Registration**
9:00–9:20	**Plenary session |** Chair: Gloria Wiens, University of Florida, US
	Plenary
9:20–10:20	**Key Note** Professor Fengzhou Fang, Tianjian University, China **Nanomanufacturing: perspectives and applications**
10:20–10:50	Coffee Break (poster sessions)

	Track 1 (Sala A) **Micro EDM process performance II**		Track 2 (Sala B) **Micro Machining Dynamics**		Track 4 (Sala C) **Micro Injection Moulding I**		Track 9 (Sala D) **Surface Treatment and Texturing I**	
	Chair	Kamlakar Rajurkar, University of Nebraska-Lincoln, USA	Chair	Kornel Ehmann, Northwestern University, US	Chair	Hiroshi Ito, Yamagata University, Japan	Chair	Ping Guo, Chinese University of Hong Kong, Hong Kong
10:50–12:50	**010**	**Batch mode die-sinking micro-electro-discharge machining of stainless steel using DRIE bulk tungsten electrode** Xian Chen, Lu Song and Jing Chen Peking University	**027**	**Chatter Stability Improvement in Micro Milling with Axial Vibrations** Chaneel I. Park and Simon S. Park University of Calgary Paolo Parenti and Massimiliano Annoni Politecnico di Milano	**063**	**Prototyping polymer microfluidics using a flexible injection mould: case studies of using various microstructured tools** Nan Zhang, Richard Byrne and Michael Gilchrist University College Dublin	**113**	**Distributed Plasma Nitriding Systems for Surface Treatment of Miniature Functional Products** Tatsuhiko Aizawa Shibaura Institute of Technology Yoshio Sugita YS-Eletric Industry, Co. Ltd.
	011	**A Study to Improve Shape Accuracy of the Hole Drilled by Micro EDM** Yunn-Shiuan Liao and Chang-Sheng Lin National Taiwan University	**028**	**Effect of Lubrication on Dynamic Instability in High-Speed Micromilling of Ti-6Al-4V** Rinku Mittal, Kundan Singh and Ramesh kumar Singh Indian Institute of Technology, Mumbai	**064**	**Effect of vacuum venting process on replication of nano/ micro-features in microinjection molding: Quantitative and qualitative analysis** Seong Ying Choi, Nan Zhang,Garreth Dunne, J.P. Toner and Michael Gilchrist niversity College Dublin	**114**	**Plasma Nitriding Assisted Micro-Texturing into Martensitic Stainless Steel Molds for Injection Molding** Tatsuhiko Aizawa Shibaura Institute of Technology Testuya Yamaguchi Sanko-Light Industry, Co. Ltd.
	012	**Fabrication of an Insulated Micro Spherical Tool by Using Electrophoretic Deposition and Electrical Discharge Machining** Jung-Chou Hung and Jia-Jin Li Feng Chia University Zhi-Wen Fan and Yao-Guang Yang Metal Industries Research & Development Centre	**029**	**Modeling three-dimensional dynamics of rotating micro-endmills including attachment errors** Bekir Bediz and O. Burak Ozdoganlar Carnegie Mellon University	**065**	**Investigation of air entrapment and weld line defects in micro injection moulded thermoplastic elastomer micro rings** Frederik Boris Hasnaes , Guido Tosello, Matteo Calaon , René Elsborg and Hans Nørgaard HansenThe Technical University of Denmark	**115**	**High Density Oxygen Plasma Micro-Texturing into CVD-Diamond Coated Dies for Micro-Embossing** Tatsuhiko Aizawa and Edo-Ercy Yunata Shibaura Institute of Technology Hiroshi Morita Nano-Coat, llc.
	013	**Study on the forming of the cone-shaped electrode in Micro-EDM milling with fix-length compensation method** Jingyu Pei, Zhaowei Zhou, Xiaoshun Zhuang, Lenan Zhang and Zhiliang Wang Shanghai Jiao Tong University	**030**	**Parametric and non-parametric identification of micromilling dynamics** Marco Leonesio CNR–ITIA Andreas Archenti KTH–Royal Institute of Technology, Paolo Parenti Politecnico di Milano	**066**	**Mould Design and Material selection for Film Insert Moulding of Direct Methanol Fuel Cell Packaging** Timo Wöhner, Hans Nørgaard Hansen and Aminul Islam Technical University of Denmark Silja Senkbeil and Torsten Lund-Olesen Danish Technological Institute	**116**	**Autonomously Generating Micro-Textured Surfaces with Regular Alignment Shapes by using Molecular Beam Epitaxy for Nanoimprint Die** Naoki Taira and Akira Kakuta Tokyo National Collage of Technology
	014	**Micro EDM milling with low energy discharges and thin microtool** Rabah Dahmani, Yasmina Layouni, Vincent Semet and Michel Cabrera Institut des Nanotechnologies de Lyon	**031**	**Modeling Of Micro Drill Dynamics Based On 2-D Finite Element Method** Xiaoliang Jin and Narahara Koya Oklahoma State University	**067**	**Injection moulding simulation of a microreactor baseplate** Joško Valentinčič and Izidor Sabotin University of Ljubljana Andrej GlojekTecos	**117**	**Development of Superhydrophobic Surfaces Using Ultrasonic Imprint Lithography** Keun Park, Young-Hak Cho and Jun-Hyung Lee Seoul National University of Science and Technology Bo-Hyun Kim Soogsil University
	015	**Pulse monitoring and discrimination in micro-EDM milling of Si3N4-TiN micro-channels** Valeria Marrocco, Francesco Modica, Vincenzo Bellantone and Irene Fassi ITIA CNR	**032**	**The Effect of Dynamometer Dynamics on the Measurement Accuracy of Micromachining Forces** Emrullah Korkmaz, Y. Efe Bayiz and O. Burak Ozdoganlar Carnegie Mellon University	**068**	**Design and fabrication of a polymeric micro-filter** Rossella Surace, Vincenzo Bellantone, Gianluca Trotta, Vito Basile and Francesco Modica Institute of Industrial Technology and Automation–National Research Council	**118**	**Application of Functional Nano-Patterning to Polymer Medical Micro Implants** Giuliano Bissacco, Francesco Biondani , Michael Mischkot and Hans N. Hansen Technical University of Denmark Peter Torben Tang IPU
12:50–14:30	Lunch (poster sessions)							

	Track 6 (Sala A) **Nano Manufacturing I**		Track 8 (Sala B) **Abrasive Waterjet and Abrasive Flow Machining**		Track 12 (Sala C) **Hyproline**		Track 10 (Sala D) **Metrology, Monitoring and Assembly**	
	Chair	Martin Byung-Guk Jun, University of Victoria	Chair	Joško Valentinčič, University of Ljubljana, Slovenia	Chair	Ola Lyckfeldt, SWEREA, Sweden	Chair	Shih Ming Wang, Chung Yuan Christian University, Taiwan
14:30–16:10	**093**	**Joule Heating Based Sublimation Thinning of Suspended Nanofibers** Giulia Canton, Marc Madou and Lawrence Kulinsky *Mechanical and Aerospace Engineering, UCI, Irvine* Christian Mendoza-Buenrostro *Electrical and Computational Engineering, ITESM*	**109**	**Abrasive Waterjet micro machining of Non-conventional Materials for Industrial Applications** Massimiliano Annoni, Francesco Arleo, Francesco Viganò, Luca Villa, and Stefano Volpi *Politecnico di Milano*	**140**	**Improving the Surface Integrity of 3D Printed Stainless Steel Parts by Laser Polishing** Debajyoti Bhaduri, Pavel Penchev, Stefan Dimov and Sein Leung Soo *The University of Birmingham*	**125**	**Design for micromanufacturing: A scaling study on tolerance analysis** Nishant Srinivasan and J. Rhett Mayor *Georgia Institute of Technology*
	094	**Manufacturing and Characterization of Coaxial Microfibers with Different Molecular Weights Using Melt Electrospinning Technique** Junghyuk Ko, Jason Keonhag Lee and Martin Byung-Guk Jun *University of Victoria* Patrick C. Lee *University of Vermont*	**110**	**Micro-machining of channels using a high pressure abrasive slurry jet machine (HASJM)** Naser Haghbin, Farbod Ahmadzadeh and Marcello Papini Jan K. Spelt *University of Toronto*	**141**	**On Comparative Evaluation of Accuracy, Repeatability and Reproducibility of Laser Micromachining Systems** Debajyoti Bhaduri, Pavel Penchev, Stefan Dimov and Sein Leung Soo *The University of Birmingham*	**126**	**Evaluation of the capabilities and damage risk of cleaning methods for micro-CMM stylus tips** Xiaobing Feng and Simon Lawes *The University of Nottingham* Peter Kinnell *Loughborough University*
	095	**The effect of distribution of UV light on elastic modulus of UV cured film in Roll-to-Roll UV nanoimprint process** Hiroshi Ito. Shunsuke Kondo and Takehiro Taguchi *Yamagata University* Kentaro Taki *Kanazawa University*	**111**	**Modelling and Optimization of Abrasive Flow Machining of Al Alloy** Kalipada Maity and Kanhu Charan Tripathi, *National Institute of Technology, Rourkela*	**142**	**Metal powder characterization for 3D printing** Ola Lyckfeldt Swerea IVF AB	**127**	**Uncertainty in 3D Micro Measurement with Focus Variation Microscopy** Giovanni Moroni, Wahyudin P. Syam and Stefano Stefano Petrò *Politecnico di Milano*
	096	**Analysis of the bubble defects in R2R UV micro-imprinting process** Hao Wu, Peiyun Yi, Linfa Peng and Xinmin Lai *Shanghai Jiao Tong University*	**112**	**A Combined Numerical-analytical Methodology for Surface Profile Prediction of Abrasive Slurry Jet Micro-machined Holes** Hooman Nouraei, Kavin Kowsari and Jan K. Spelt *University of Toronto* Babak Samareh *Simulent Inc.* Marcello Papini *Ryerson University*	**143**	**Novel manufacturing route for scale up production of Terahertz technology devices** Pavel Penchev, Xiaobang Shang, Stefan Dimov and Michael Lancaster *University of Birmingham*	**128**	**2D position sensor based on speckle correlation** Arne Bloem, Christian Schenck and Bernd Kuhfuss BIME–*University Bremen*
	097	**PCB-based multi-spinnerets for high-efficiency electrospinning piezoelectric nonwoven fiber fabrics** C.K. Yen, J.C. Huang, L. Lin and C.T. Pan *National Sun Yat-Sen University* Z.H. Liu and F.C. Hsu *Metal Industries Research and Development Centre Taiwan* L.W. Lin *University of California*	**NSF Poster Competition** **Electrically-Assisted Roll Bonding of Ultra Thin Sheet Metals** Man-Kwan Ng (student), Kornel F. Ehmann, Lanyun Li, Jian Cao, Zhaoyan Fan, Robert X. Gao, and Edward F. Smith ***Correct Surface Profiles of Light Weight Optics by Adjustable Stress in Coating*** Xiaoli Wang (student), Youwei Yao, Melville P. Ulmer, Michael E. Graham, Semyon Vaynman, and Jian Cao **Wireless Data and Energy Transfer in a Small Sensor Network** Wako Tuni (student), William R. Eisenstadt **Experimental Investigation of Radial Throw in Miniature Spindles used for Micromachining** Subhanshu Mahata (student), Recep Onler, and O. Burak Ozdoganlar			**129**	**Electrostatic Force for Self-alignment of Microparts and Its Dependence on Geometrical and Electrical Parameters** Georgia Kritikou, Panagiotis Lazarou and Nikolaos Aspragathos *University of Patras*
16:10–16:30	Coffee Break (poster sessions)							

	Track 6 (Sala A) Nano Manufacturing II		Track 2 (Sala B) Micro Machining Applications		Track 4 (Sala C) Hot Embossing and Powder Injection Moulding		Track 11 (Sala D) Hi-Micro	
16:30–18:30	Chair	Jeong Woo Park, Chosun University, Korea	Chair	Burak Ozdoganlar, Carnegie Mellon University, USA	Chair	Ben Whiteside, University of Bradford, UK	Chair	Guido Tosello, University of Denmark, Denmark
	098	**Study by a cycling voltammetry of carbon-based nanocomposites with Cu-Sn, Co-Sn, Ni-Sn nanoparticles for energy storage** Ivania Markova, Valentina Milanova, Tihomir Petrov and Ivan Denev *University of Chemical Technology and Metallurgy-Sofia*	**046**	**Modeling and Manufacturing of Mechanically Machined Hologram Based on Repeated Arcs and End-milling** Eun-chae Jeon, Je-Ryung Lee, Hwan-Jin Choi and Tae-Jin Je *Korea Institute of Machinery and Materials* Hwi Kim *Korea University*	**076**	**Relationship of surfaces of micro mold and embossed plastic part** Hui Wang, Zuyuan Yu, Jianzhong Li and Desheng Xiang *Dalian University of Technology* Wataru Natsu *Tokyo University of Agriculture and Technology*	**134**	**A comparative study of metal and ceramic injection moulding for precision applications** A. Islam, N. Giannekas, D. M. Marhöfer, G. Tosello, H. N. Hansen *Technical University of Denmark*,
	099	**Efficient fabrication methods of various 3D nanodot array structures** Masahiko Yoshino, Zhenxing Li, Motoki Terano and Tadaaki Nagao *National Institute for Materials Science*	**047**	**The Effect of Intermittent Grinding on Burrs and Force generated by Functional Textured Wheel** Liu Feng, C.H.L. Ian and S. Huang *SIMTech* Asma Perveen Bursa *Orhangazi University*	**077**	**A High Throughput Micro-Embossing Manufacturing Cell for Microfluidic Device Manufacture** David Hardt, Maia Bageant, Cailtin Reyda, Katharine Luginbuhl *Massachusetts Institute of Technology*	**135**	**Increasing accuracy and machining speed in precise electrochemical machining of a micro injection molding cavity** Henning Zeidler, Danny Kuhn, André Martin and Andreas Schubert *Technische Universität Chemnitz* Gunnar Meichsner *Fraunhofer Institute for Machine Tools and Forming Technology IWU*
	100	**New fabrication method of metamaterial resonator by self-organization method** Takayuki Ueno, Motoki Terano and Masahiko Yoshino *Tokyo Institute of Technology*	**048**	**Adaptive Control Optimization in Micro-Machining of Hardened Steels** Ricardo Coppel and Héctor R. Siller *Tecnológico de Monterrey* José V. Abellan-Nebot, *Universitat Jaume I*	**078**	**Viscoelasitic characterisation, numerical simulation and experimental investigation of micro hot embossing process with amorphous thermoplastic polymers** Gang Cheng, Mohamed Sahli, Jean-Claude Gelin and Thierry Barriere *FEMTO-ST Institute*	**136**	**Gate design in injection molding of microfluidic components using process simulations** D.M. Marhöfer, G. Tosello, A. Islam, H.N. Hansen *Technical University of Denmark (DTU)*
	101	**Nanometer-Scale Machining of Gallium Arsenide** Noboru Takano, Keitarou ooi and Shigeru Yamada *University of Toyama* Noboru Morita *Chiba University*	**049**	**Design of A Micro Machine Tool with Double-Toggle Mechanisms** Shih-Ming Wang and Zhe-Zhi Ye *Chung Yuan Christian University* Chun-Chieh Wang *Industrial Technology Research Institute* Yunn-Shiuan Liao *National Taiwan University* Shean-juinn Chiou, *National Chung Hsing University*	**079**	**An Inconel based feedstock and its Identification of rheological constitutive model for powder injection moulding** Dmitri Claudel, Mohamed Sahli, Jean-Claude Gelin and Thierry Barriere *FEMTO-ST Institute*	**137**	**Analysis of a PECM Electrode Concept for Micro Injection Moulds by Multiphysics Simulation** Henning Zeidler, André Martin, Michael Kowalick, Matthias Hackert-Oschätzchen, Andreas Schubert1, *Technische Universität Chemnitz*
	102	**Micro Feature Fabrication by Biomachining along with Fine Tuning of Process Parameters for Increasing Metal Removal Rate** Muhammad Imran and Tae Jo Ko *Yeungnam University*	**050**	**Overview the fundamental issues in PCB micro-drilling industry** Chao Wang, Mike Wellstead, Dave Goodwin and John Stratton *Westwind Air Bearings Division* Kai Cheng *Brunel University*	**080**	**Hybrid Processes for Manufacturing of Multi-material Micro Parts** Volker Piotter, Elvira Honza, Alexander Klein, Mueller Tobias and Plewa Klaus *Karlsruhe Institute of Technology (KIT)*	**138**	**A method for dimensional and surface optical measurements uncertainty assessment on micro structured surfaces manufactured by Jet-ECM** Henning Zeidler *Chemnitz University of Technology* Danilo Quagliotti, Guido Tosello, Aminul Islam and Hans Hansen *Technical University of Denmark*

16:30–18:30	**103**	**Tissue cutting with bio-inspired biopsy punches with serrated edges accompanied by vibrational motions** Marco Giovannini, Peidong Han, Kornel Ehmann and Jian Cao *Northwestern University*	**051**	**High precision coupling system** Eike Foremny, Christian Schenck and Bernd Kuhfuss *BIME University Bremen*	**082**	**Study for Injection Molding of the Intra-oral Scanner Lenses** Sheng Jhih Huang *National Kaohsiung University of Applied Sciences* Yuan Hsun Tsai, Chung Chi Li and Ching Po Lin *Metal Industries Research and Development Centre (MIRDC)* Min Wen Wang *Institute of Mechanical Engineering, National Kaohsiung University*	**139**	**Manufacturing of µIM mould inserts with AMed cooling channels** Jun Qian, Karolien Kempen and Frank Welkenhuyzen *KU Leuven* Wouter Vanderauwera *3D SYSTEMS* Ad Kuijpers *Formatec Technical Ceramics*
19:00–22:00	Lab Dinner @ POLIMI							

Thursday April 2nd 2015 Politecnico di Milano								
8:30–9:00	Registration							
9:00–9:10	**Closing plenary session |** Chair: Irene Fassi ITIA CNR, Italy							
9:10–10:00	**Key Note** Professor Arianna Meciassi **Challenges and opportunities for actuation in microrobotics and medical applications**							
10:00 – 10:10	**4M 2016 Announcement**							
10:10–10:40	Coffee Break							
10:40–13:00	**Track 1 (Sala A)** **Micro EDM modelling and simulation**		**Track 2 (Sala B)** **Micro Machining Process Characterisation**		**Track 4 (Sala C)** **Micro Injection Moulding II**		**Track 9 (Sala D)** **Surface Treatment and Texturing II**	
	Chair	Samuel Bigot, Cardiff University, UK	Chair	Anna Araujo, Federal University of Rio de Janeiro, Brazil	Chair	Giovanni Lucchetta, Università di Padova, Italy	Chair	Sathyan Subbiah, Indian Institute of Technology Madras, India
	016	**Modelling and Simulation of the Crater Formation Process in Micro-EDM** Bai Shao and Kamlakar Rajurkar *University of Nebraska-Lincoln*	**039**	**Size Effect in Micromilling of Superduplex Stainless Steel** Adriane Mougo, Fábio Campos and Anna Carla Araujo *Federal University of Rio de Janeiro–COPPE/UFRJ*	**069**	**Influence of micro injection moulding process parameters on mechanical characteristics of POM and POM/CNT composites** Giancarlo Maccarini, Cristina Merla and Chiara Ravasio *Università di Bergamo* Alessandro Bongiorno *Institute of Industrial Technologies and Automation* Irene Fassi *Institute of Industrial Technologies and Automation*	**119**	**Analysis Of Micro-Debris In Vibratory Media Finishing** Pradeep K Prakasam, Abrol Tejaswi and Sylvie Castagne *Nanyang Technological University* Sathyan Subbiah *Indian Institute of Technology Madras*
	017	**Geometric-Based Modeling of Micro-EDM: Model Developme nt and Simulation Study** Mohamed Negm *Becatronics Co.* Ahmed Elkaseer *Port Said University*	**040**	**Characterization of Vibration Assisted High-speed Microdrilling of Ti6Al4V** Shubham Yadav, Ramesh K Singh and V. Kartik *Indian Institute of Technology Bombay*	**070**	**Novel characterisation methods of microneedles manufactured by micro-injection moulding** Karthik Nair, Benjamin Whiteside, Cristina Tuinea-Bobe, Peter Twigg and Anant Paradkar *University of Bradford*	**120**	**Fine Pitch Metal Deposition on LDS Materials** Hagen Mueller, Sascha Weser, Wolfgang Eberhardt and Heinz Kueck *Hahn-Schickard-Gesellschaft–Institut für Mikroaufbautechnik*

10:40–13:00	**018**	**Approach to technological modeling of micro EDM milling** Izidor Sabotin and Joško Valentinčič *University of Ljubljana* Gianluca Tristo *University of Padua*	**036**	**Improvement of procedures for high accuracy micromilling of flat surfaces** A. Banfi, L. Colombo, F. Cacciatore, L. Rebaioli, M. Annoni *Politecnico di Milano*	**071**	**Analysis of the influence of part thickness on the replication of microstructured surfaces by injection molding** Davide Masato, Marco Sorgato and Giovanni Lucchetta *Università di Padova*	**121**	**Biprism Interference Micro-Patterning For Periodic Micro-Structure Generation** Ishan Saxena, Jintao Liu, Kornel Ehmann and Jian Cao *Northwestern University*
	019	**Using voxels in the simulation of manufacturing processes** Anthony Surleraux and Samuel Bigot *Cardiff University* Jean-Philippe Pernot *Arts et Métiers ParisTech* D'Urso Gianluca and Cristina Merla *Università degli studi di Bergamo*	**042**	**Process parameters optimization for micro-milling of EBM Ti6Al4V Titanium Alloy** Zdenka Rysava, Gianluca Tristo and Stefania Bruschi *University of Padua*	**072**	**Injection molding of nano-structured polylactic acid surfaces for bone regeneration studies** Davide Masato, Marco Sorgato and Giovanni Lucchetta *Università di Padova*	**122**	**Development of a Titanium (Ti) Ultrasonic Waveguide System for Nano-surface Treatment** Hyunse Kim, Euisu Lim and Jong-Kweon Park *Korea Institute of Machinery and Materials*
	020	**Research on Pulse Power Supply and Electrode for Electrochemical Machining of Micro Holes** Yong Li, Guodong Liu and Hao Tong Tsinghua University Quancun Kong *Tsinghua University & Beijing Information Science and Technology University*	**037**	**Microtool wear measurement and assessment** Giovanni Moroni , Stefano Petrò, Wahyudin P. Syam *Politecnico di Milano*	**073**	**A novel setup for cavity pressure and temperature measurements in micro-injection moulding** Gianluca Trotta, Vito Basile and Irene Fassi *Institute of Industrial Technology and Automation of National Research Council*	**123**	**Machining effect of vibration electrochemical polishing (VECP)** Uksu Kim and Jeongwoo Park *Chosun University* Sunho Kim *KITECH*
	021	**Experimental investigation of the governing mechanism of the E-jet micro electric machining** Yao Zhang, Ning Han, Wansheng Zhao and Xiaoming Kang *Shanghai Jiao Tong University*	**044**	**Influence of the micro-patterned Inserts on the characteristics of the hard turning process** Dong Min Kim, Ineon Lee and Hyung Wook Park *Ulsan National Institute of Science and Technology* Sun Keel Kim and Bo Hyun Kim *Soongsil University*	**074**	**An Experimental Report of the Force Required to Demould Parts Replicated by Injection Moulding** Kevin Delaney *Dublin Institute of Technology* Franck Lacan *Cardiff University*	**124**	**Improving the Tribological Performance of Poly-ether-ether-ketone (PEEK) in Boundary/mixed Lubrication Regimes by Laser Surface Texturing** Christopher Harris, Karl Dearn, Pavel Penchev and Stefan Dimov *University of Birmingham*
			045	**Effects of the cutting edge serrations on the brittle fracture in the glass milling** Takenori ONO *Teikyo University*	**075**	**Replication Fidelity Assessment in Nano Moulding** Matteo Calaon, Hans Nørgaard Hansen and Guido Tosello *Technical University of Denmark* Jorgen Garnaes *Danish Fundamental Metrology* Wei Li *National Metrology Insitute of China*		
13:00–14:00	**Lunch**							
14:15–16:00	**Last Supper visit** (only for the first 100 people to register)							