

# Technical Program: 1. Day – July 26

<b>1. Day – July 26: Plenary sessions Myhal Auditorium</b>	
<b>08:30 – 09:10 Opening ceremony</b>	
<b>09:10 – 10:30 Plenary talks</b> Chair: David J. Cappelleri / Purdue University, US	
09:10	Commercialization of medical microrobotics <b>Jong-Oh Park</b> / Chonnam National University, KR
09:50	Novel microrobot imaging strategies towards closed-loop control in tissues <b>Veronica Iacovacci</b> / Scuola Superiore Sant'Anna, Pisa, IT
<b>16:30 – 17:50 Plenary talks</b> Chair: Aude Bolopion / FEMTO-ST, FR	
16:30	The robotics part of micro and nano robots <b>Bradley Nelson</b> / Swiss Federal Institute of Technology (ETH), CH
17:10	Instrumented microphysiological analytic platforms for precision measurement and manipulation of tissue functions <b>Deok-Ho Kim</b> / John Hopkins University School of Medicine, US

<b>1. Day – July 26:</b>		<b>Parallel technical sessions</b>	<b>11:00 – 13:00</b>
<b>Special session</b>		<b>Reconfigurable micro/nanomachines, robotics, and swarms (I)</b>	
<b>Bahen Room C</b>		Organized & chaired by <b>Donglei (Emma) Fan</b> / University of Texas at Austin, US	
11:00	Active colloids in nematic liquid crystals for micro-robotics and reconfigurable systems <b>Kathleen Stebe</b> / Univ of Pennsylvania, US		
11:20	Self-organization of signaling active matter <b>Igor Aronson</b> / Pennsylvania State Univ, US		
11:40	Active swarm nanobots from simple ion exchange reaction <b>Jinyao Tang</b> / Univ of Hong Kong, SAR, CN		
12:00	Swarming micro/nanorobots with biomimetic taxis <b>Fangzhi Mou, F. Wang, J. Guan</b> / Wuhan Univ of Technology, CN		
12:20	Light-directed electric micromotor swarms with high-precision mode, spatial, temporal control Z. Liang, <b>Donglei (Emma) Fan</b> / Univ of Texas at Austin, US		
<b>Special session</b>		<b>4D Printing for Microrobotic Applications</b>	
<b>Bahen Room E</b>		Organized & chaired by <b>David J. Cappelleri</b> / Purdue University, US <b>Cedric Clevy</b> / FEMTO-ST, FR <b>Kanty Rabenoroso</b> / FEMTO-ST, FR	
11:00	3D printing of stealth materials for immunoevasive microrobots <b>Abdon Pena-Francesch</b> / Univ of Michigan, US		
11:20	3D printing of acoustically programmable soft microactuators <b>Amit Dolev</b> / EPFL, CH		
11:40	Multiresponsive 3D printed constructs for bioapplications <b>Veronika Magdanz</b> / Inst for Bioengineering of Catalonia (IBEC), ES		
12:00	3D printed multifunctional microrobots for targeted delivery <b>Hakan Ceylan</b> / Mayo Clinic College of Medicine and Science, US		
12:20	Modeling & fabrication of hydrogel-based microrobots for advanced functionalities <b>Liyuan Tan</b> / Purdue Univ, US		
12:40	3D printed multi-scale soft robots <b>Kanty Rabenoroso</b> / FEMTO-ST, FR		

<b>1. Day – July 26:</b>		<b>Parallel technical sessions</b>	<b>11:00 – 13:00</b>
<b>Special session</b>		<b>Design, modeling and fabrication of biohybrid robots</b>	
<b>Bahen Room A</b>		Organized & chaired by <b>Victoria Webster-Wood</b> / Carnegie Mellon University, US <b>Bahareh Behkam</b> / Virginia Tech, US	
11:00	Biohybrid robots – a few lessons learned, a few challenges to overcome <b>Taher Saif</b> / Univ of Illinois at Urbana-Champaign, US		
11:20	BIOBOTS: 3D printed hybrid swimmers based on skeletal muscle tissues <b>Samuel Sanchez</b> / Inst for Bioengineering of Catalonia (IBEC), ES		
11:40	Self-reconfigurable eight-loop living robots <b>Maria Guix Noguera</b> / Inst for Bioengineering of Catalonia (IBEC), ES		
12:00	Computational tools for reducing barriers of entry in biohybrid robotics <b>Victoria Webster-Wood</b> / Carnegie Mellon Univ, US		
12:20	Modeling, simulation and control of soft creatures and robots <b>Mattia Gazzola</b> / Univ of Illinois at Urbana-Champaign, US		
<b>Special session</b>		<b>Robotic Capsules for Gut</b>	
<b>Bahen Room B</b>		Organized & chaired by <b>Ebubekir Avci</b> / Massey University, NZ	
11:00	Magnetic tentacle robots for enhanced endoluminal access <b>Pietro Valdastri</b> / Univ of Leeds, UK		
11:20	Magnetic miniature piston-cylinder with a liquid seal for fluid sampling <b>Yung (Priscilla) Lai</b> , E. Diller / Univ of Toronto, CA		
11:40	Levitation control of capsule robot with 5-DOF based on arrayed Hall elements <b>Fengwu Wang</b> , J. Yang, L. Song, L. Feng / Beihang Univ, CN		
12:00	Recent achievements on robotic capsule <b>Jayoung Kim</b> / Korea Inst of Medical Microrobotics, KR		
12:20	Robotic capsule for gut microbiota and digesta sampling <b>Muhammad Rehan</b> , E. Avci / Massey Univ, NZ		
12:40	Systemic delivery of biologics from swallowable robotic capsules <b>Benjamin S. Terry</b> / Brigham Young Univ, US		

<b>1. Day – July 26:</b>		<b>Parallel technical sessions</b>	<b>11:00 – 13:00</b>
<b>Regular session</b>		<b>Micro/Nano robots (I)</b>	
<b>Bahen Room F</b>		Chair: Matthew Uppington / Univ of Bristol, UK	
11:00	Evolving morphologies for locomoting micro-scale robotic agents <b>Matthew Uppington</b> , P. Gobbo, S. Hauert, H. Hauser / Univ of Bristol, UK		
11:20	A tetherless microdriller for maneuverability and on-board cargo delivery inside viscoelastic media; <b>Tony Wang</b> <sup>a</sup> , D. Yang <sup>a</sup> , J. Chen <sup>a</sup> , J. Chow <sup>b</sup> , Y. Hu <sup>a</sup> , K. Hoang <sup>b</sup> , A. Ansari <sup>a</sup> / <sup>a</sup> Georgia Institute of Technology, US; <sup>b</sup> Emory University, US		
11:40	Scaling rules for microrobots with full energetic autonomy E. van Renselaar <sup>a</sup> , B. Keitel <sup>b</sup> , M. Dinc <sup>c</sup> , B. Mizaikoff <sup>c</sup> , A. Susarrey Arce <sup>a</sup> , H. Gardeniers <sup>a</sup> , L. Abelmann <sup>d</sup> , <b>Islam Khalil</b> <sup>a</sup> / <sup>a</sup> Univ of Twente, NL; <sup>b</sup> Ulm Univ, DE; <sup>c</sup> Hahn-Schickard, DE; <sup>d</sup> KIST Europe, DE		
12:00	Evaluating miniature robot surgical scissors <b>Zhuo Fan Bao</b> , E. Diller / Univ of Toronto, CA		
12:20	Role of surface tension in microrobot penetration in membranes; M.M. Rahman <sup>a</sup> , T. Garudadri <sup>b</sup> , <b>Sambeeta Das</b> <sup>b</sup> / <sup>a</sup> Georgia Southern Univ, US; <sup>b</sup> Univ of Delaware, US		
12:40	Serpenbot, a laser driven locomotive microrobot for dry environments using learning control; <b>Zhong Yang</b> , M. Alqatamin, A. Sherehiy, R. Zhang, M. Al Hudidbi, N. Taghavi, D. Popa / Univ of Louisville, US		
<b>Regular session</b>		<b>Design and fabrication (I)</b>	
<b>Bahen Room H</b>		Chair: Edwin W.H. Jager / Linköping University, SE	
11:00	Soft actuators that self-create bone for biohybrid (micro)robotics D. Cao <sup>a</sup> , J.G. Martinez <sup>a</sup> , E.S. Hara <sup>b</sup> , <b>Edwin W.H. Jager</b> <sup>a</sup> <sup>a</sup> Linköping University, SE; <sup>b</sup> Okayama University, JP		
11:20	A mechanical metamaterial structure with chiral concave quadrilateral negative Poisson's ratio <b>Fahua Qu</b> , S. Jiang, R. Wang, B. Zhu, X. Zhang / South China Univ of Tech, CN		
11:40	A miniature tubular linear electromagnetic actuator: Design, modeling and experimental validation <b>Mouna Ben Salem</b> <sup>a</sup> , L. Petit <sup>a</sup> , M. Ullah Khan <sup>a</sup> , J. Terrien <sup>a</sup> , C. Prella <sup>a</sup> , F. Lamarque <sup>a</sup> , T. Coradin <sup>b</sup> , C. Egles <sup>a</sup> / <sup>a</sup> Univ de Technologie de Compiègne, FR; <sup>b</sup> Sorbonne Univ, FR		
12:00	Design of a compliant vertical micropositioning stage inspired by lamina emergent mechanism; <b>Zekui Lyu</b> , Q. Xu / Univ of Macau, SAR, CN		
12:20	Optimal design of high bandwidth piezo-based nanopositioners employing bridge-type displacement amplifiers <b>Suresh Babu Lavanya</b> , G. R. Jayanth / Indian Inst of Sci, Bangalore, IN		
12:40	Design of 3D printed electrothermal actuator for compact and low-cost 2D mesoscopic positioning system; <b>Benjamin Calmé</b> <sup>a</sup> , L. Rubbert <sup>b</sup> , Y. Haddab <sup>a</sup> <sup>a</sup> Univ of Montpellier, FR; <sup>b</sup> Univ of Strasbourg, FR		

<b>1. Day – July 26:</b>		<b>Parallel technical sessions</b>	<b>14:00 – 16:00</b>
<b>Special session</b>		<b>Micro/Nano-robots for drug and/or cell delivery</b>	
<b>Bahen Room C</b>		Organized & chaired by <b>Hongsoo Choi</b> / Daegu-Gyeongbuk Inst of Sci and Tech (DGIST), KR	
14:00	3D interlocked metal-organic magnetic microrobots <b>Fabian Landers; Salvador Pané</b> / ETH Zurich, CH		
14:20	Online real-time platform for microrobot steering in a multi-bifurcation B.W. Jarvis, R. Poli, <b>Ali Kafash Hoshidar</b> / Univ of Essex, UK		
14:40	Steroid loaded 3D micro-scaffolds for next-generation cochlear implant <b>Jongmoon Jang</b> / Korea Inst of Materials Science, KR		
15:00	Targeted stem cell delivery in the brain via the intranasal pathway using magnetically functionalized stem-cell microrobot <b>Sungwoong Jeon</b> / IMsystem, KR		
15:20	Supercavitating ballistic nanoswimmer and applications <b>Eungkyu Lee</b> / Kyung Hee Univ, KR		
<b>Special session</b>		<b>Nanomechanical characterization</b>	
<b>Bahen Room H</b>		Organized & chaired by <b>James Lee Mead</b> / Univ of Oldenburg, DE	
14:00	Adhesion of 2D materials characterized via nanomanipulation <b>Han Huang</b> / Univ of Queensland, AU		
14:20	Picogram-order mass detection via a cantilevered micro-plate <b>Shujun Ma</b> / Northeastern Univ, CN		
14:40	Effect of twin boundaries on the strength of tungsten nanowires <b>Junfeng Cui</b> / Ningbo Inst of Materials Technology and Engineering, CAS, CN		
15:00	Adhesion characterization of peeling nanowires via optical microscope-based visualization and elastic modelling <b>James Lee Mead</b> / Univ of Oldenburg, DE		
15:20	Deformation and fracture mechanisms of Cu/Nb nanolaminates by in-situ TEM mechanical tests <b>Zhilin Liu</b> / Central South Univ, CN		
15:40	Characterizing the frictional behavior between nanowires by optical microscope nanomanipulation <b>Shiliang Wang</b> / Central South Univ, CN		

<b>1. Day – July 26:</b>		<b>Parallel technical sessions</b>	<b>14:00 – 16:00</b>
<b>Special session</b>		<b>Cell sorting and characterization</b>	
<b>Bahen Room D</b>		Organized & chaired by <b>Aude Bolopion</b> / FEMTO-ST, FR <b>Federica Caselli</b> / University of Rome "Tor Vergata", IT	
14:00	Rapid trapping and long-term analysis of <i>C. elegans</i> embryos in a spiral microfluidic channel; <b>Peng Pan</b> / Univ of Toronto, CA		
14:20	Control of biological objects using dielectrophoresis <b>Alexis Lefevre</b> / FEMTO-ST, FR		
14:40	Characterisation of cells and small organisms using acoustic manipulation <b>Nino Läubli</b> / Univ of Cambridge, UK		
15:00	Single-cell impedance cytometry meets neural networks <b>Federica Caselli</b> / Univ of Rome "Tor Vergata", IT		
15:20	Microfluidic chip combining dielectrophoretic and hydrodynamic cells trapping <b>Laure Koebel</b> / FEMTO-ST, FR		
<b>Regular session</b>		<b>Positioning and control (I)</b>	
<b>Bahen Room E</b>		Chair: Alireza Mohammadi / Univ of Michigan, US	
14:00	Eddy current damping of magnetically actuated neurosurgical instruments <b>Nancy Wu</b> <sup>a</sup> , T. Looi <sup>b</sup> , J. Drake <sup>b</sup> , E. Diller <sup>a</sup> <sup>a</sup> Univ of Toronto, CA; <sup>b</sup> Hospital for Sick Children, Toronto, CA		
14:20	Data-driven feedforward hysteresis compensation with genetic algorithm for AFM <b>Navid Asmari Saadabad</b> , M. Kangül, S. Andany, A. Karimi, G. Fantner École Polytechnique Fédérale de Lausanne (EPFL), CH		
14:40	Characterization of a trilateration method using Hall effect sensors for microrobot position tracking; <b>Gabriel Géron</b> , J. Terrien, M. Ullah Khan, C. Prella, H. Al Hajjar Univ de Technologie de Compiègne, FR		
15:00	Cooperative control of dual-arm concentric tube continuum robots <b>Hanna Jiamei Zhang</b> <sup>a</sup> , S. Lilge <sup>a</sup> , M.T. Chikhaoui <sup>b</sup> , J. Burgner-Kahrs <sup>a</sup> <sup>a</sup> University of Toronto, CA; <sup>b</sup> Université Grenoble Alpes, FR		
15:20	Controlled helical propulsion against the flow of a physiological fluid <b>Chuang Li</b> <sup>a</sup> , F.R. Halfwerk <sup>b</sup> , J. Arens, <sup>b</sup> S. Misra <sup>b</sup> , M. Warlé <sup>c</sup> , I.S.M. Khalil <sup>b</sup> <sup>a</sup> Univ of Groningen, NL; <sup>b</sup> Univ of Twente, NL; <sup>c</sup> Radboud Univ Medical Center, NL		
15:40	Integral line-of-sight curved path following of helical microswimmers actuated by rotating magnetic dipoles <b>Alireza Mohammadi</b> <sup>a</sup> , M.W. Spong <sup>b</sup> / <sup>a</sup> U of Michigan, US; <sup>b</sup> U of Texas, Dallas, US		

<b>1. Day – July 26:</b>		<b>Parallel technical sessions</b>	<b>14:00 – 16:00</b>
<b>Regular session</b>		<b>Automation (I)</b>	
<b>Bahen Room G</b>		Chair: Basil Abu Zanouneh / Univ of Toronto, CA	
14:00	Cell extraction automation in single cell surgery using the aspiration method <b>Basil Abu Zanouneh</b> , J.K. Mills / Univ of Toronto, CA		
14:20	A predictive model of seal condition in automated patch clamp system <b>Shengjie Yang</b> , K.W.C. Lai / City Univ of Hong Kong, SAR, CN		
14:40	A doppler and B-mode hybrid ultrasound tracking method for microcatheter navigation in noisy environments <b>Moqiu Zhang</b> , L. Yang, H. Yang, L. Su, L. Zhang / Chinese U of Hong Kong, SAR, CN		
15:00	Learning decentralized controllers for segregation of heterogeneous robot swarms with graph neural networks <b>Oyindamola Omotuyi</b> , M. Kumar / Univ of Cincinnati, US		
15:20	Multi-robot collaboration for electronic textile fabrication; <b>Danming Wei</b> , S. Challa, M. Islam, J. Beharic, C. Harnett, D. Popa Univ of Louisville, US		
15:40	Collective planar actuation of miniature magnetic robots towards individual robot operation <b>Jiří Kuthan</b> , M. Juřík, M. Vítek, F. Mach / Univ of West Bohemia, CZ		
<b>Regular session</b>		<b>Measurement and characterization (I)</b>	
<b>Bahen Room F</b>		Chair: U-Xuan Tan / Singapore Univ of Technology and Design, SG	
14:00	Microfluidic electrochemical sensor for heavy metal detection using pyrolytic carbon electrodes and valveless micropump <b>Peng Zhou</b> , T. Zhang, Y. Xu, T. Simon, T. Cui / Univ of Minnesota, US		
14:20	Developing an optical microlever for stable and unsupported force amplification <b>Philippa-Kate Andrew</b> <sup>a</sup> , A. Raudsepp <sup>a</sup> , V. Nock <sup>b</sup> , D. Fan <sup>c</sup> , M.A.K. Williams <sup>a</sup> , U. Staufer <sup>c</sup> , E. Avci <sup>a</sup> / <sup>a</sup> Massey Univ, NZ; <sup>b</sup> Univ of Canterbury, NZ; <sup>c</sup> TU Delft, NL		
14:40	Advancing atomic force microscopy tips with 3D design control and reduced Hamaker constant A. Glia, <b>Muhammedin Deliorman</b> , M.A. Qasaimeh / New York Univ Abu Dhabi, AE		
15:00	Real-time active vibration compensation: A novel scheme with adaptive filter and forecasting Y. He, Y. Fan, <b>U-Xuan Tan</b> / Singapore Univ of Tech and Design, SG		
15:20	Guidelines to reduce visual measurements uncertainties down to a few nanometers: Application to parallel continuum robots <b>Benjamin Mauzé</b> <sup>a</sup> , R. Dahmouche <sup>a</sup> , C. Clévy <sup>a</sup> , P. Sandoz <sup>a</sup> , F. Hennebelle <sup>b</sup> , G.J. Laurent <sup>a</sup> / FEMTO-ST, FR; <sup>b</sup> Univ. Bourgogne Franche-Comté, FR		

# Technical Program: 2. Day – July 27

<b>2. Day – July 27: Plenary sessions Myhal Auditorium</b>	
<b>08:30 – 10:30 Plenary talks</b> Chair: Victoria Webster-Wood /Carnegie Mellon Univ, US	
08:30	Micromanipulation and microsensing for on-site applications <b>U-Xuan Tan</b> / Singapore University of Technology and Design, SG
09:10	Wireless medical millirobots inside our body <b>Metin Sitti</b> / Max Planck Institute for Intelligent Systems, Stuttgart, DE
09:50	Instrumentation, Virtual Reality and haptic systems applied to scanning and micromanipulation platforms: Research and learning aspects <b>Florence Marchi</b> / Université Grenoble, Alpes Neel institute, FR
<b>16:30 – 18:30 Plenary talks</b> Chair: Quan Zhou / Aalto Univ, FI	
16:30	Microflow manipulation with applications to actuation and sensing <b>Boris Stoeber</b> / University of British Columbia, Vancouver, CA
17:10	Agile, robust, and efficient micro-aerial-robots powered by soft artificial muscles <b>Kevin Chen</b> / Massachusetts Institute of Technology (MIT), US
17:50	Multiphysics scanning probes for biomedical applications <b>Mohammad Qasaimeh</b> / New York University Abu Dhabi, AE



<b>2. Day – July 27:</b>		<b>Parallel technical sessions</b>	<b>11:00 – 13:00</b>
<b>Special session</b>		<b>Reconfigurable micro/nanomachines, robotics, and swarms (II)</b>	
<b>Bahen Room G</b>		Organized & chaired by <b>Donglei (Emma) Fan</b> / University of Texas at Austin, US	
11:00	Active matter swarms for cargo capture, transport, and delivery <b>Ayusman Sen</b> / Pennsylvania State Univ, US		
11:20	Transformation-intelligent elastomer soft robot <b>Jinxing Li<sup>a,b</sup></b> , V. Mottini <sup>a,b</sup> , Z. Bao <sup>b</sup> / <sup>a</sup> Michigan State Univ, US; <sup>b</sup> Stanford Univ, US		
11:40	Reconfigurable synthetic colloidal motor swarms <b>Qiang He</b> / Harbin Inst of Technology, CN		
12:00	Active nanobot swarms improve root canal success <b>Ambarish Ghosh</b> / Indian Inst of Science, Bangalore, IN		
12:20	Interaction between electrically powered self-propelling particles & biological cells <b>Gilad Yossifon</b> / Technion - Israel Inst of Technology, IL		
<b>Special session</b>		<b>Soft and 3D printed small scale robotics</b>	
<b>Bahen Room E</b>		Organized & chaired by <b>Maria Guix</b> / Univ of Barcelona, ES <b>Samuel Sánchez</b> / Inst for Bioengineering of Catalonia, ES <b>Veronika Magdanz</b> / Inst for Bioengineering of Catalonia, ES	
11:00	Soft micromotors for aquatic insect-inspired locomotion <b>Abdon Pena-Francesch</b> / Univ of Michigan, US		
11:20	Smart programmable materials for small-scale soft robotics <b>Hamed Shahsavan</b> / Univ of Waterloo, CA		
11:40	Biohybrid robots that emerge, are autonomous, and may learn <b>Taher Saif</b> / Univ of Illinois at Urbana-Champaign, US		
12:00	3D printing fiber-reinforced hydrogels for robotic structures and actuation <b>Victoria Webster-Wood</b> / Carnegie Mellon Univ, US		
12:20	Bio-hybrid robots and ethics: Plotting a path to responsible research and innovation <b>Rafael Mestre</b> / Univ of Southampton, UK		

<b>2. Day – July 27:</b>		<b>Parallel technical sessions</b>	<b>11:00 – 13:00</b>
<b>Special session</b>		<b>Novel magnetic drives and manipulation</b>	
<b>Bahen Room C</b>		Organized & chaired by <b>Ron Pelrine</b> / Pelrine Innovations, US	
11:00	2D-compliant, diamagnetic levitating micro-robots for operation on non-flat, non-clean tracks A. Hsu <sup>a</sup> , R. Pelrine <sup>b</sup> , R. de Gouvea Pinto <sup>c</sup> , <b>Ethan Schaler</b> <sup>c</sup> / <sup>a</sup> SRI International, US; <sup>b</sup> Pelrine Innovations, US; <sup>c</sup> NASA Jet Propulsion Lab, California Inst of Tech, US		
11:20	Magnetic pick, mechanical place on small scales <b>Ron Pelrine</b> <sup>a</sup> , A. Hsu <sup>b</sup> / <sup>a</sup> Pelrine Innovations, US; <sup>b</sup> SRI International, US		
11:40	<b>Presentation withdrawn</b>		
12:00	Diamagnetic micro-robot simulation tools using Gazebo/ROS <b>Allen Hsu</b> / SRI International, US		
12:20	Levitated micro-robot operation inside a Scanning Electron Microscope <b>Annjoe Wong-Foy</b> / SRI International, US		
<b>Special session</b>		<b>Microrobots imaging: are we on the way towards the clinics? (I)</b>	
<b>Bahen Room B</b>		Organized & chaired by <b>Veronica Iacovacci</b> / Scuola Superiore Sant'Anna, Pisa, IT <b>Salvador Pané</b> / Swiss Federal Inst of Technology (ETH) Zurich, CH <b>Mariana Medina-Sanchez</b> / IFW, DE	
11:00	Magnetic Resonance Imaging in microrobotics <b>Sylvain Martel</b> / Polytechnique Montréal, CA		
11:20	Ultrasound phase analysis for microrobots imaging contrast enhancement <b>Veronica Iacovacci</b> / Scuola Superiore Sant'Anna, IT		
11:40	Imaging for in vitro and in vivo microrobotic applications <b>David J. Cappelleri</b> / Purdue Univ, US		
12:00	How to listen to microrobots by light - Optoacoustic imaging of microrobots <b>Paul Wrede</b> / Max Planck ETH Center for Learning Systems, DE/CH		
12:20	Strategies for detection of and communication with microrobots through acoustic and magnetic fields <b>Simone Schuerle</b> / ETH Zurich, CH		

<b>2. Day – July 27:</b>		<b>Parallel technical sessions</b>	<b>11:00 – 13:00</b>
<b>Regular session</b>		<b>Measurement and characterization (II)</b>	
<b>Bahen Room F</b>		Chair: Li Wang/ Qilu Univ of Technology, CN	
11:00	Real time intelligent system with parallel impedance cytometry T. Tang <sup>a</sup> , Y. Tanaka <sup>b</sup> , <b>Yaxiaer Yalikun<sup>a</sup></b> , Y. Yang <sup>c</sup> , M. Li <sup>d</sup> , Y. Hosokawa <sup>a</sup> <sup>a</sup> NAIST, JP; <sup>b</sup> RIKEN, JP; <sup>c</sup> CAS, CN; <sup>a</sup> Macquarie Univ, AU		
11:20	Simulation and parametric study on microfluidic-based force sensing <b>Wael Othman</b> , M. Qasaimeh / New York University Abu Dhabi, AE		
11:40	Piezoresistive film with periodic and multi-level microstructures synergistic for high performance flexible pressure sensing <b>Song Wang<sup>a</sup></b> , C. Wang <sup>a</sup> , X. Xu <sup>a</sup> , F. Han <sup>a</sup> , Y. Sun <sup>b</sup> , Z. Jiang <sup>a</sup> <sup>a</sup> Xi'an Jiaotong Univ, CN; <sup>b</sup> Univ of Toronto, CA		
12:00	Ag/CNT-PDMS crack sensing for measuring contractility of cardiomyocyte <b>Li Wang<sup>a</sup></b> , X. Xu <sup>a</sup> , W. Dou <sup>b</sup> , J. Chen <sup>a</sup> , W. Su <sup>a</sup> , A. Li <sup>a</sup> , C. Xu <sup>a</sup> , X. Liu <sup>c</sup> , L. Xin <sup>d</sup> , C. Ru <sup>e</sup> <sup>a</sup> Qilu Univ of Technology, CN; <sup>b</sup> Univ of Toronto, CA; <sup>c</sup> Dalian Univ of Technology, CN; <sup>d</sup> Shanghai Univ, CN; <sup>e</sup> Suzhou Univ of Science and Technology, CN		
12:20	Design and characterization of a fully 3D printed vision-based micro-force sensor for microrobotic applications; G. Adam <sup>a</sup> , G. Ulliac <sup>b</sup> , C. Cleavy <sup>b</sup> , <b>David J. Cappelleri<sup>a</sup></b> <sup>a</sup> Purdue Univ, US; <sup>b</sup> FEMTO-ST, FR		

<b>2. Day – July 27:</b>		<b>Parallel technical sessions</b>	<b>14:00 – 16:00</b>
<b>Special session</b>		<b>Microrobots for various biomedical applications &amp; their control</b>	
<b>Bahen Room C</b>		Organized & chaired by <b>Hongsoo Choi</b> / Daegu-Gyeongbuk Inst of Sci and Tech (DGIST), KR	
14:00	Tumbling mobile microrobots for drug delivery and diagnostics <b>Aaron Davis; David J. Cappelleri</b> / Purdue Univ, US		
14:20	Targeted delivery of neural cells and construction of neuronal connections using a magnetic microrobot; <b>Eunhee Kim</b> / IMsystem, KR		
14:40	Nanorobot and its one-dimensional structure <b>Bumjin Jang</b> / Hanyang Univ, KR		
15:00	Design, fabrication, and control of microrobots for navigation on and penetration in soft tissues; <b>Azadeh Ansari</b> / Georgia Inst of Technology, US		
15:20	Propulsion of microrobot using a wireless power transfer system <b>Dongwook Kim</b> / Yeungnam Univ, KR		
15:40	Magnetic transmissions for powerful wireless biomedical microrobots <b>Eric Diller</b> / Univ of Toronto, CA		
<b>Special session</b>		<b>Optical based automated micro-manipulation</b>	
<b>Bahen Room G</b>		Organized by <b>Wenqi Hu</b> / Max Planck Inst for Intelligent Systems, DE Chaired by <b>Aude Bolopion</b> / FEMTO-ST, FR	
14:00	Laser-induced thermocapillary manipulation at the air-water interface <b>Franco Piñan Basualdo</b> <sup>a</sup> , A. Bolopion <sup>b</sup> , M. Gauthier <sup>b</sup> , P. Lambert <sup>a</sup> / <sup>a</sup> Université libre de Bruxelles, BE; <sup>b</sup> FEMTO-ST, FR		
14:20	Cell focusing and rotation by a planar optoelectronic tweezers C. Gan, J. Zhang, J. Zhao, S. Liang, Y. Ji, <b>Lin Feng</b> / Beihang Univ, CN		
14:40	Machine learning-based real-time localisation and automatic trapping of multiple microrobots in optical tweezer; Y. Ren, M. Keshavarz, S. Anastasova, G. Hatami, B. Lo, <b>Dandan Zhang</b> / Imperial College London, UK		
15:00	Light-powered miniature self-adaptive oscillator <b>Mingtong Li</b> , W. Hu, M. Sitti / Max Planck Inst for Intelligent Systems, Stuttgart, DE		
15:20	On-chip single-cell manipulations based on a flow control by using integrated light-driven gel actuators; <b>Yuha Koike</b> <sup>a</sup> , Y. Yokoyama <sup>b</sup> , T. Hayakawa <sup>a</sup> / <sup>a</sup> Chuo Univ, JP; <sup>b</sup> Toyama Industrial Technology Research and Development Center, JP		
15:40	Long-term imaging and spatio-temporal control of living cells using light <b>Neshika Wijewardhane</b> , A. Rubio Denniss, M. Uppington, H. Hauser, T.E. Gorochoowski, E. Piddini, S. Hauert / Univ of Bristol, UK		

<b>2. Day – July 27:</b>		<b>Parallel technical sessions</b>	<b>14:00 – 16:00</b>
<b>Special session</b>		<b>Multiscale soft robotics (I)</b>	
<b>Bahen Room H</b>		Organized & chaired by <b>Xinyu Liu</b> / University of Toronto, CA <b>Jun Liu</b> / City University of Hong Kong, SAR, CN	
14:00	Smaller and stronger: Scaling down dielectric elastomer actuators <b>Mihai Duduta</b> / Univ of Toronto, CA		
14:20	Independent control strategy of multiple magnetic flexible millirobots for position control and path following <b>Tiantian Xu</b> / Shenzhen Inst of Advanced Technology, CN		
14:40	Soft robotic designs for cardiovascular interventions <b>Bobak Mosadegh</b> / Joan & Sanford I. Weill Medical College of Cornell Univ, US		
15:00	Frontiers in modeling tendon-driven soft continuum robots <b>Priyanka Rao</b> / Univ of Toronto, CA		
15:20	Bioinspired small robotics for biomedical engineering <b>Yajing Shen</b> / City Univ of Hong Kong, SAR, CN		
15:40	3D co-printing of ionic hydrogel and elastomer for fabrication of wearable sensors and soft robots; <b>Pengfei Xu</b> / Univ of Toronto, CA		
<b>Regular session</b>		<b>Positioning and control (II)</b>	
<b>Bahen Room E</b>		Chair: <b>Sambeeta Das</b> / Univ of Pennsylvania, US	
14:00	High speed operation of the composite shape memory effect nanoactuator: Computer modelling and experiment; <b>Petr Lega</b> <sup>a</sup> , S. Romanov <sup>b</sup> , A.Orlov <sup>a</sup> , A.Kartsev <sup>b</sup> , A.Prokunin <sup>a</sup> , N. Kataev <sup>b</sup> , V. Koledov <sup>a</sup> / <sup>a</sup> Kotelnikov Inst of Radioeng. and Electronics, RAS, RU; <sup>b</sup> Bauman Moscow State Technical Univ, RU		
14:20	Optimal path planning of micromanipulators in confined spaces and nanomanipulation of 1D nanomaterials; U. Dey, S. Sen, P. Venkatesh L, C. Jacob, <b>C. S. Kumar</b> / Indian Inst of Technology Kharagpur, IN		
14:40	A first-order approach to model simultaneous control of multiple microrobots L. Beaver <sup>a</sup> , <b>Sambeeta Das</b> <sup>b</sup> , A. Malikopoulos <sup>a</sup> <sup>a</sup> Univ of Delaware, US; <sup>b</sup> Univ of Pennsylvania, US		
15:00	Cancelling stray magnetic fields to render magnetic nanobots autonomous G. Patil, P. Mandal, J. Behera, A. Ajith, <b>Ambarish Ghosh</b> Indian Inst of Science, Bangalore, IN		
15:20	Acoustic manipulation of microbubble swarms through biomimetic porous structures; <b>Alexia Del Campo Fonseca</b> , P. Arend, L. Boggia, D. Ahmed ARSL ETH Zurich, CH		
15:40	Scalable, spatially selective actuation of living microrobots <b>Nima Mirkhani</b> , M. Christiansen, S. Schuerle / ETH Zurich, CH		

<b>2. Day – July 27:</b>		<b>Parallel technical sessions</b>	<b>14:00 – 16:00</b>
<b>Regular session</b>		<b>Design and fabrication (II)</b>	
<b>Bahen Room D</b>		Chair: Nicholas Carlisle / Massey Univ, NZ	
14:00	Mechanically amplified piezoelectric device for studying mechanotransduction <b>Nicholas Carlisle<sup>a</sup></b> , S. Rosset <sup>b</sup> , E. Avci <sup>a</sup> / Massey Univ, NZ; <sup>b</sup> Univ of Auckland, NZ		
14:20	Design and modeling of a piezoelectric, bistable out-of-plane actuator for micro-robotic appendages; M. Clad <sup>a</sup> , C.-H. Rhee <sup>b</sup> , <b>Kenn Oldham<sup>c</sup></b> <sup>a</sup> Baumer Electric, CH; <sup>b</sup> Samsung Advanced Inst of Techn, KR; <sup>c</sup> Univ of Michigan, US		
14:40	MEMS bimorph fiber-gripping actuators; <b>Mohammad S. Islam<sup>a</sup></b> , S. Challa <sup>a</sup> , M.H. Yassin <sup>b</sup> , S.S. Vankayala <sup>c</sup> , J. Beharic <sup>a</sup> , C.K. Harnett <sup>a</sup> / <sup>a</sup> Univ of Louisville, US; <sup>b</sup> Univ of Illinois at Urbana-Champaign, US; <sup>c</sup> Gayatri Vidya Parishad Coll of Eng, IN		
15:00	<b>Presentation withdrawn</b>		
15:20	Micromachines driven by optoelectronic tweezers <b>Mohamed Elsayed<sup>a</sup></b> , S. Zhang <sup>b</sup> , A. Wheeler <sup>a</sup> <sup>a</sup> Univ of Toronto, CA; <sup>b</sup> Beijing Inst of Technology, CN		
15:40	Fabrication and driving of flagellated micro-gel robot; <b>Hinako Sato<sup>a</sup></b> , Y. Yokoyama, T. Hayakawa <sup>a</sup> / <sup>a</sup> Chuo Univ, JP; <sup>b</sup> Toyama Industrial Technology R & D Center, JP		
<b>Regular session</b>		<b>Manipulation (I)</b>	
<b>Bahen Room J</b> (2nd floor)		Chair: Samuel Sofela / New York Univ Abu Dhabi, AE	
14:00	Manipulating anisotropic nanoparticles with 20-nm-precision and 3D-angular control in for real-time detection of single bacteria metabolism <b>Huaizhi Li</b> , D. Teal, Z. Liang, D. Fan / Univ of Texas at Austin, US		
14:20	Formation of multi-scale cell patterns based on a fluid-vibration interactions K. Morita, T. Iizawa, <b>Takeshi Hayakawa</b> / Chuo Univ, JP		
14:40	A hybrid nanorobotic manipulation platform: A sharing holder between a Cs-TEM and an SEM for micro to sub-nanometer fabrication <b>Wenqi Zhang<sup>a</sup></b> , D. Chen <sup>a</sup> , C. Hou <sup>a</sup> , R. Shao <sup>b</sup> , Z. Yang <sup>c</sup> , L. Dong <sup>a</sup> <sup>a</sup> City Univ of Hong Kong, SAR, CN; <sup>b</sup> Beijing Inst of Tech, CN; <sup>c</sup> Soochow Univ, CN		
15:00	Inertial focusing and lateral manipulation of particles in a microchannel flow <b>Waqas Waheed</b> , E. Abu-Nada, A. Alazzam / Khalifa Univ, AE		
15:20	Acoustofluidic end-effector for microscale particle manipulation <b>Prajwal Agrawal</b> , J. Durrer, D. Ahmed / ETH Zurich, CH		
15:40	Integrated microfluidic probe for single cell manipulation <b>Samuel Sofela</b> , A. Saleh, M. Qasaimeh / New York Univ Abu Dhabi, AE		

## Technical Program: 3. Day – July 28

<b>3. Day – July 28: Plenary sessions</b>		<b>Myhal Auditorium</b>
<b>08:30 – 10:30 Plenary talks</b>		
Chair: Donglei (Emma) Fan / Univ of Texas at Austin, US		
08:30	Synthetic micro/nanorobots: From test tubes to live animals <b>Wei Gao</b> / California Institute of Technology (Caltech), US	
09:10	Transpothotherapy: Therapy based on nanorobotic transporters <b>Sylvain Martel</b> / Polytechnique Montréal, CA	
09:50	Medical microrobots for non-invasive in vivo assisted reproduction <b>Mariana Medina Sánchez</b> Leibniz Institute for Solid State and Materials Research, Dresden, DE	
<b>16:30 – 17:10 Plenary talk</b>		
Chair: Hatem ElBidweihy / United States Naval Acad., US		
16:30	Toward automated passive flow microfluidics for biomedical applications <b>Francis Lin</b> / University of Manitoba, CA	
<b>17:10 – 18:30 Closing &amp; Awards ceremony</b>		

<b>3. Day – July 28:</b>		<b>Parallel technical sessions</b>	<b>11:00 – 13:00</b>
<b>Special session</b>		<b>Multiscale soft robotics (II)</b>	
<b>Bahen Room F</b>		Organized & chaired by <b>Xinyu Liu</b> / University of Toronto, CA <b>Jun Liu</b> / City University of Hong Kong, SAR, CN	
11:00	Micro-manufactured VACNT arrays for transfer printing of micro objects and sensing at large strains	<b>Changhong Cao</b> / McGill Univ, CA	
11:20	On-chip transportation & mixing of microsample using electrohydrodynamic flow	M. Wang <sup>a</sup> , Z. Li <sup>a</sup> , W. Dai <sup>a</sup> , R. Liu <sup>a</sup> , S. Yuan <sup>b</sup> , <b>Jun Liu<sup>a</sup></b> / <sup>a</sup> City Univ of Hong Kong, SAR, CN; <sup>b</sup> Chinese Univ of Hong Kong, SAR, CN;	
11:40	Hierarchically-structured electrostatic artificial muscle for microrobots	<b>Hongqiang Wang</b> / South Univ of Science and Technology, CN	
12:00	Multi-material fabrication for magnetically driven miniature soft robots using stereolithography	<b>Zhaoxin Li</b> , E. Diller / Univ of Toronto, CA	
12:20	Multi-stimuli responsive hybrid pneumatic – magnetic soft actuator with novel channel integration	<b>Ji Eun Lee</b> / Univ of Toronto, CA	
12:40	Noncontact displacement sensing with high bandwidth and subnanometer resolution based on squeeze film damping effect	S. Zhai, J. Shi, P. Yu, T. Yang, C. Su, <b>Lianqing Liu</b> / Shenyang Inst of Autom, CAS, CN	
<b>Special session</b>		<b>Swarming and collective magnetic nano- and microrobots</b>	
<b>Bahen Room E</b>		Organized & chaired by <b>Maria Guix</b> / Univ of Barcelona, ES <b>Samuel Sánchez</b> / Inst for Bioengineering of Catalonia, ES <b>Veronika Magdanz</b> / Inst for Bioengineering of Catalonia, ES	
11:00	Magnetic microswarm: recent progress and outlook	<b>Li Zhang</b> / Chinese University of Hong Kong, SAR, CN	
11:20	Materials for magnetoelectric small-scale robots;	<b>Donghoon Kim</b> /ETH Zurich, CH	
11:40	MOFBOTS: Metal–Organic–Framework–Based Biomedical Microrobots	<b>Josep Puigmarti</b> / Univ of Barcelona, ES	
12:00	Learning from sperm: from single to cooperative microrobots	<b>Veronika Magdanz</b> / Inst for Bioengineering of Catalonia (IBEC), ES	
12:20	Rigid-body rotation versus transverse bending wave swimming of magnetically-functionalized sperm cells;	V. Magdanz <sup>a</sup> , A. Klingner <sup>b</sup> , L. Abelmann <sup>c</sup> , <b>Islam S.M. Khalil<sup>c</sup></b> / <sup>a</sup> IBEC, ES; German Univ in Cairo <sup>b</sup> , EG; <sup>c</sup> Univ of Twente, NL	
12:40	Design and control of synthetic and living microrobots to enhance drug transport using scalable rotational magnetic fields;	<b>Simone Schuerle</b> / ETH Zurich, CH	



<b>3. Day – July 28:</b>		<b>Parallel technical sessions</b>	<b>11:00 – 13:00</b>
<b>Special session</b>		<b>Magnetic micro swarms for biomedical applications</b>	
<b>Bahen Room D</b>		Organized & chaired by <b>Yu Sun</b> / University of Toronto, CA <b>Xian Wang</b> / The Hospital for Sick Children, Toronto, CA <b>Jiangfan Yu</b> / Chinese University of Hong Kong – Shenzhen, CN	
11:00	Magnetic swarms for cancer targeting <b>Sylvain Martel</b> / Polytechnique Montréal, CA		
11:20	Imaging and control of magnetic microrobots in bloodstream <b>Qianqian Wang</b> / Southeast Univ, CN		
11:40	Magnetic nanoparticle swarms for intracellular measurement <b>Xian Wang</b> / Univ of Toronto, CA		
12:00	Magnetic swimming microrobots in eye and brain <b>Zhiguang Wu</b> / Harbin Inst of Technology, CN		
12:20	Targeted embolization using magnetic nanoparticle swarms <b>Jiangfan Yu</b> / Chinese University of Hong Kong – Shenzhen, CN		
<b>Regular session</b>		<b>Automation (II)</b>	
<b>Bahen Room C</b>		Chair: <b>Martin Vitek</b> / Univ of West Bohemia, CZ	
11:00	Electronic waste separation using magnetic minirobots O. Carvan, M. Juřík, J. Kuthan, <b>Martin Vitek</b> , F. Mach / Univ of West Bohemia, CZ		
11:20	An automatic system for manipulation and rotation of early stage 2-cell mouse embryos; <b>Basil Abu Zanouneh</b> , James K.Mills / Univ of Toronto, CA		
11:40	Magnetically assembled electronic digital materials <b>Vojtěch Lapuník</b> , F. Mach, M. Vitek, M. Juřík, J. Kuthan Západočeská univerzita v Plzni, CZ		
12:00	Automated fabrication of tactile sensors using a custom additive manufacturing platform; <b>Danming Wei</b> , R. Zhang, J.-T. Lin, D. Ratnayake, O. Olowo, A. Nimon, M. Alqatamin, A. Sherehly, D. Popa / Univ of Louisville, US		
12:20	Training data design and generalization of deep learning for capsule robot tracking in ultrasound; <b>Xiaoyun Liu</b> , E. Diller / Univ of Toronto, CA		
12:40	High-torque miniature magnetic rotating swimmers for 3D path-following and blood clot disruption <b>Jocelyn Ramos</b> , Y. Lu, A. Becker, J. Leclerc / Univ of Houston, US		

<b>3. Day – July 28:</b>		<b>Parallel technical sessions</b>	<b>11:00 – 13:00</b>
<b>Regular session</b>		<b>Design and fabrication (III)</b>	
<b>Bahen Room A</b>		Chair: Fabian von Kleist-Retzow / Univ of Oldenburg, DE	
11:00	A compliant continuously variable transmission mechanism <b>Ali Amoozandeh Nobaveh</b> , J. Herder, G. Radaelli / Delft Univ of Technology, NL		
11:20	Robotic fiber fabrication based on solidification force control <b>Houari Bettahar</b> , T. Välisalmi, M. Linder, Q. Zhou / Aalto Univ, FI		
11:40	Forced wetting by ion implantation for liquid nanoelectronics <b>Fabian von Kleist-Retzow</b> , S. Fatikow / Univ of Oldenburg, DE		
12:00	Manufacturing microfluidic chips: Micro milling approach <b>Martin Allen</b> , S. Lookmire, E. Avci / Massey Univ, NZ		
12:20	Magnetically controlled microfluidic channels <b>Ondřej Sodomka</b> , V. Skřivan, K. Jozová, F. Mach / Univ of West Bohemia, CZ		
12:40	An automated microfabrication method based on dynamic photopolymerization <b>Yuwen Zhao</b> , R. Paul, S. Wang, Y. Liu / Lehigh Univ, US		
<b>Regular session</b>		<b>Measurement and characterization (III)</b>	
<b>Bahen Room B</b>		Chair: Alexander Tselev / Univ of Aveiro, PT	
11:00	Hybrid scanning microscope utilizing an optical confocal sensor and near-field microwave probe; <b>Alexander Tselev</b> , N. Vyshatko / Univ of Aveiro, PT		
11:20	Mechanical characterization of biological samples using robot-assisted optical microelastography E. Ozelci, K. Naumova, <b>Amit Dolev</b> , A.C. Oates, M.S. Sakar / EPFL, CH		
11:40	MEMS-enabled high-NA, large working distance multi-photon imaging for implantable microscopy T. Sahraeibelverdi, A. Shirazi, H. Li, M. Lee, S.E. Kwon, T. Wang, <b>Kenn Oldham</b> / Univ of Michigan, US		
12:00	Wireless microprobe for mechano-sensing in viscoelastic materials <b>Felix Fischer</b> <sup>a</sup> , C. Gletter <sup>b</sup> , T. Qiu <sup>a</sup> <sup>a</sup> Univ of Stuttgart, DE; <sup>b</sup> Max Planck Inst for Medical Research, Heidelberg, DE		
12:20	Imaging and control of nanomaterial-decorated micromotors <b>Azaam Aziz</b> <sup>a</sup> , R. Nauber <sup>a</sup> , A. Sánchez Iglesias <sup>b</sup> , L.M. Liz-Marzán <sup>b</sup> , O.G. Schmidt <sup>c</sup> , M. Medina-Sánchez <sup>a</sup> <sup>a</sup> Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden, DE; <sup>b</sup> CIC biomaGUNE, ES; <sup>c</sup> Chemnitz University of Technology, DE		

<b>3. Day – July 28:</b>		<b>Parallel technical sessions</b>	<b>14:00 – 16:00</b>
<b>Special session</b>		<b>Applications of biohybrid robots</b>	
<b>Bahen Room C</b>		Organized & chaired by <b>Bahareh Behkam</b> / Virginia Tech, US <b>Victoria Webster-Wood</b> / Carnegie Mellon University, US	
14:00	Specifications for biohybrid robotic agents involved in cancer therapy	<b>Sylvain Martel</b> / Polytechnique Montréal, CA	
14:20	Engineering biohybrid microrobots for enhanced intratumoral penetration	<b>Bahareh Behkam</b> / Virginia Tech, US	
14:40	Bacterial microrobots steered in 3D biological matrices for stimuli-responsive cargo delivery	<b>Birgul Akolpoglu; Metin Sitti</b> / MPI for Intelligent Systems, Stuttgart, DE	
15:00	Multifunctional sperm-carrying micromotors	<b>Fatemeh Rajabasadi</b> / IFW Dresden, DE	
15:20	Swarm robotics at micro-/nanoscale	<b>Lidong Yang; Li Zhang</b> / Chinese Univ of Hong Kong, SAR, CN	
<b>Special session</b>		<b>Microrobots imaging: are we on the way towards the clinics? (II)</b>	
<b>Bahen Room E</b>		Organized & chaired by <b>Veronica Iacovacci</b> / Scuola Superiore Sant'Anna, Pisa, IT <b>Salvador Pané</b> / Swiss Federal Inst of Technology (ETH) Zurich, CH <b>Mariana Medina-Sanchez</b> / IFW, DE	
14:00	<b>Presentation withdrawn</b>		
14:20	Imaging guided ingestible microrobot	<b>Wei Gao</b> / California Inst of Technology, US	
14:40	Imaging swarms of biocompatible nanobots in the bladder of mice	<b>Samuel Sanchez</b> / Inst for Bioengineering of Catalonia (IBEC), ES	
15:00	Wireless actuation and localization of microrobots in biological soft tissues	<b>Tian Qiu; Felix Fischer</b> / Univ of Stuttgart, DE	
15:20	Application of a droplet microrobot to stem cell and neural cell delivery	<b>Hongsoo Choi</b> / Daegu Gyeongbuk Inst of Science and Technology (DGIST), KR	
15:40	Endoscopy-assisted endoluminal delivery of biohybrid soft microrobots with a dual imaging system	<b>Kai Fung Chan</b> / Chinese Univ of Hong Kong, SAR, CN	

<b>3. Day – July 28:</b>		<b>Parallel technical sessions</b>	<b>14:00 – 16:00</b>
<b>Special session</b>		<b>Novel Fabrication Techniques for Multi-Functional Microrobotic Systems</b>	
<b>Bahen Room J</b> (2nd floor)		Organized & chaired by <b>Carmen C. Mayorga-Martinez</b> / Univ of Chemistry&Tech Prague, CZ <b>Mariana Medina-Sánchez</b> / IWF, DE	
14:00	Engineering and controlling living microrobots for cancer therapy <b>Simone Schuerle</b> / ETH Zurich, CH		
14:20	pH responsive Janus micromotors for the release of small molecules and drugs <b>Tijana Maric</b> / Technical Univ of Denmark, DK		
14:40	Smart material for functional nano/micro robotics <b>Carmen C. Mayorga-Martínez</b> / Univ of Chemistry&Tech Prague, CZ		
15:00	Design and construction of multifunctional reconfigurable magnetic microswarms for engineering applications; <b>Dongdong Jin</b> / HIT – Shenzhen, CN		
15:20	Communication and intelligent behaviors of chemically propelled micro/nano robots; <b>Jianguo Guan</b> / Wuhan Univ of Technology, CN		
<b>Regular session</b>		<b>Micro/Nano robots (II)</b>	
<b>Bahen Room D</b>		Chair: Takeshi Hayakawa / Chuo Univ, JP	
14:00	3D printed personalized magnetic micromachines from patient blood-derivable biomaterials; H. Ceylan <sup>a</sup> , N.O. Dogan <sup>b</sup> , I.C. Yasa <sup>c</sup> , M.N. Musaoglu <sup>d</sup> , Z.U. Kulali <sup>d</sup> , <b>Metin Sitti</b> <sup>b</sup> / <sup>a</sup> Mayo Clinic, US; <sup>b</sup> Max Planck Inst for Intelligent Systems, DE; <sup>c</sup> Novartis, CH; <sup>d</sup> Koc Univ, TR		
14:20	Adhesion control of modular microgel robots by light irradiation <b>Natsuki Watanabe</b> <sup>a</sup> , Y. Yokoyama <sup>b</sup> , T. Hayakawa <sup>a</sup> <sup>a</sup> Chuo U, JP; <sup>b</sup> Toyama IndTech R&D Center, JP		
14:40	Fabrication of a biodegradable microrobot for targeted stem cell delivery <b>Seungmin Noh</b> <sup>a</sup> , H. Choi <sup>a</sup> , S. Jeon <sup>b</sup> , E. Kim <sup>b</sup> , U. Oh <sup>c</sup> , D. Park <sup>d</sup> , S.H. Park <sup>d</sup> , S.W. Kim <sup>d</sup> , S. Pane <sup>e</sup> , B. Nelson <sup>e</sup> , J.-y. Kim <sup>a</sup> / <sup>a</sup> Daegu Gyeongbuk Inst of Sci & Tech, KR; <sup>b</sup> IMsystem, KR; <sup>c</sup> KAIST, KR; <sup>d</sup> Catholic Univ of Korea, KR; <sup>e</sup> ETH Zurich, CH		
15:00	Microgrippers based on optothermal microactuators for biomedical applications <b>Belal Ahmad</b> <sup>a</sup> , A. Barbot <sup>b</sup> , G. Ulliac <sup>b</sup> , H. Chambon <sup>b</sup> , P. Tissier <sup>b</sup> , P. Bourgeois <sup>b</sup> , A.F. Barrand <sup>b</sup> , A. Bolopion <sup>b</sup> / <sup>a</sup> Kyushu Inst of Technology, JP; <sup>b</sup> FEMTO-ST, FR		
15:20	Robotically assisted magnetic navigation system for endovascular intervention W. Lee, E. Jung, N. Kim, D. Lee, S. Kim, S. Bae, J. Sa, <b>Gunhee Jang</b> / Hanyang Univ, KR		
15:40	Ultrasound-driven propulsion inspired by starfish; <b>Cornel Dillinger</b> <sup>a</sup> , N. Nama <sup>b</sup> , D. Ahmed <sup>a</sup> / <sup>a</sup> ETH Zurich, CH; <sup>b</sup> Univ of Nebraska-Lincoln, US		

<b>3. Day – July 28:</b>		<b>Parallel technical sessions</b>	<b>14:00 – 16:00</b>
<b>Regular session</b>		<b>Manipulation (II)</b>	
<b>Bahen Room H</b>		Chair: Anas Alazzam / Khalifa Univ, AE	
14:00	Simultaneous and independent micromanipulation of two identical particles with robotic electromagnetic needles O. Isitman, H. Kandemir, G. Alcan, Z. Cenev, <b>Quan Zhou</b> / Aalto Univ, FI		
14:20	A spacious three-coil magnetic manipulation system S. Goswami, <b>Ambarish Ghosh</b> , D. Dasgupta / Indian Inst of Sci, Bangalore, IN		
14:40	Cellular manipulation using rolling microrobots D. Rivas, S. Mallick, M. Sokolich, <b>Sambeeta Das</b> / Univ. of Delaware, US		
15:00	Robotic patch clamp system for brain science research <b>Qili Zhao</b> , Y. Han, Y. Jia, N. Yu, M. Sun, X. Zhao / Nankai Univ, CN		
15:20	<b>Presentation withdrawn</b>		
<b>Regular session</b>		<b>Design and fabrication (IV)</b>	
<b>Bahen Room F</b>		Chair: Kirill Kolesnik / Univ of Melbourne, AU	
14:00	Millimetre-scale magnetic tools are strong enough for microneurosurgical tasks <b>Cameron Forbrigger</b> , E. Diller / Univ of Toronto, CA		
14:20	Arbitrary micropatterning with sub-wavelength acoustic stencils <b>Kirill Kolesnik</b> , P. Segeritz, V. Rajagopal, D.J. Collins / Univ of Melbourne, AU		
14:40	Electromechanical unit cell concept with graphene-loaded resonator for decoupled reflection phase and amplitude control; K. Macdonell <sup>a</sup> , M. Yasir <sup>b</sup> , O. Haenssler <sup>b</sup> , S. Fatikow <sup>b</sup> , <b>Shulabh Gupta</b> <sup>a</sup> / <sup>a</sup> Carleton Univ, CA; <sup>b</sup> Univ of Oldenburg, DE		
15:00	Flexible thermoelectric type temperature sensors based on graphene fibers <b>Yuxin Zhang</b> , F. Han, B. Tian, P. Li, Y. Sun, Z. Jiang / Xi'an Jiaotong Univ, CN		
15:20	Nanorobotics polyarticulated structure with integrated actuator at tapered optical fiber tip; Y. Lei, <b>Cédric Clévy</b> , J.-Y. Rauch, P. Lutz / FEMTO-ST, FR		
15:40	<b>Presentation withdrawn</b>		