

Technical Program: 1. Day – July 29

1. Day – July 29: Plenary sessions Fowler Hall	
09:00 – 09:50 Opening ceremony	
09:50 – 10:30 Plenary talk Chair: Shucong Li / Georgia Inst of Technology, US	
09:50	Nano robots enabled manufacturing systems Ning Xi / Univ of Hong Kong, S.A.R., CN
16:30 – 17:50 Plenary talks Chair: Sreenath Balakrishnan / Indian Inst of Techn, IN	
16:30	Can we 3D print tiny robots? Sarah Bergbreiter / Carnegie Mellon Univ, US
17:10	Accessing the nanoscale: Silicon nanowires in monolithic miniaturization, automated testing and multiscale modeling B. Erdem Alaca / Koç Univ, TR

1. Day – July 29:		Parallel technical sessions	11:00 – 13:00
Special session Room 1		Bio-inspired sensing and agile locomotion in miniature robots Organized by Yufeng (Kevin) Chen / Massachusetts Inst of Technology, US Cameron Aubin / Univ of Michigan, US	
11:00	Electronically integrated microscopic robots Itai Cohen / Cornell Univ, US		
11:20	Multimodal jumping microrobots Ryan St. Pierre / Univ at Buffalo, US		
11:40	Agile miniature robots for 3D navigation in challenging environments Sean Huang / Univ of Michigan, US		
12:00	Long endurance and acrobatic flight in sub-gram aerial robots Yufeng (Kevin) Chen Massachusetts Inst of Technology, US		
12:20	Skating on water: High speed locomotion using interfacial flight E. Farrell Helbling / Cornell Univ, US		
Special session Room 2		Avatar cells - Designed cell-cell communication Organized by Yoko Yamanishi / Kyushu Univ, JP Takeshi Hayakawa / Chuo Univ, JP	
11:00	The potential of avatar cells in promoting human health Akiko Takahashi / Cancer Institute Hospital of JFCR, JP		
11:20	Designed cell-cell communication for avatar cell Satoshi Yotsumoto Tokyo Univ of Pharmacy and Life Sciences, JP		
11:40	Safety functions for avatar cells Kan Shoji / Nagaoka Univ of Technology, JP		
12:00	Integrated knowledge platform for data-driven engineering of cell-cell communication Atsushi Hijikata Tokyo Univ of Pharmacy and Life Sciences, JP		
12:20	Chemically-triggered communication Kosuke Dodo / RIKEN CSRS, JP		
12:40	Designed cell-cell communication harnessing orthogonal gene switches Sugano Shigeo National Inst of Advanced Industrial Science and Technology, JP		

1. Day – July 29:		Parallel technical sessions	11:00 – 13:00
Special session		Active colloidal swarms: Collective dynamics	
Room 3		Organized by Igor S. Aronson & Ayusman Sen / Penn State Univ, US	
11:00	Aggregation and fragmentation of active superparamagnetic colloids under strong magnetic fields Ubaldo M. Córdova-Figueroa ^a , R. Delacruz-Araujo ^b , I. Kretzschmar ^c , L.Y. Rivera-Rivera ^a ; ^a Univ of Puerto Rico at Mayagüez, PR; ^b National Auton Univ of Tayacaja Daniel Hernández Morillo, PE; ^c City Univ of New York, US; ^d Univ of Michigan, US		
11:20	Dynamic collective assembly and motility of soft magnetic micro-rotators: Colloidal gears, caterpillars and cartwheels A. Basu, Orlin Velev / North Carolina State Univ, US		
11:40	Wall-climbing magnetic colloidal swarms Igor Aronson ^a , S. Yang ^b , M. Sun ^b , D. Zhao ^b , X. Ji ^b , C. Yang ^b , L. Zhang ^b ^a Penn State Univ, US; ^b Chinese Univ of Hong Kong, S.A.R., CN		
12:00	Optoelectronic control of active Janus particles: Trajectory reconfiguration, directed self-assembly and mobility reversals S. Das ^a , P. García-Sánchez ^b , A. Ramos ^b , Gilad Yossifon ^a ^a Tel-Aviv Univ, IL; ^b Univ of Seville, ES		
12:20	Particle swarms with collective memory Alexey Snezhko / Argonne National Laboratory, US		
12:40	Acoustically energized active liquid crystals: From undulation instabilities to topological droplet transformations Andrey Sokolov , T. Emersic, J. Katuri, A. Snezhko / Argonne National Laborat, US		
Special session		Biological automation and actuation for improving human health	
Room 4		Organized by Warren Ruder / Univ of Pittsburgh, US Mark DeAngelis / Carnegie Mellon Univ, US	
11:00	Designing a high-throughput platform for assessing microbial dynamics in defined microenvironments Tagbo Niepa / Carnegie Mellon Univ, US		
11:20	Injectable and wearable neural interfaces for restoring motor function in people with severe paralysis Douglas Weber / Carnegie Mellon Univ, US		
11:40	Toward autonomous cell-based devices for monitoring and controlling human physiology Caleb Bashor / Rice Univ, US		
12:00	De novo engineering of a bacterial lifestyle program Ting Lu / Univ of Illinois Urbana-Champaign, US		
12:20	Automating discovery of plant physiology with robotic technologies Mark DeAngelis / Carnegie Mellon Univ, US		

1. Day – July 29:		Parallel technical sessions	11:00 – 13:00
Regular session		Measurement and characterization (I)	
Room 5		Chair: Dipak Bhowmik / Univ of Oldenburg, DE	
11:00	Bioinspired micro-scale flexible air flow sensor for wireless portable spirometer Tak Nok Douglas Yu , H. Ren, Y. Shen Hong Kong Univ of Science and Technology, S.A.R., CN		
11:20	Controlled AFM stage cooling enables nanomechanical characterization of intracellularly assembled coiled-coil hydrogels Muhammedin Deliorman ^a , P. Sukumar ^a , M. Meleties ^b , A.L. Wang ^b , J.K. Montclare ^b , M.A. Qasaimeh ^{a,b} ^a New York Univ Abu Dhabi, AE; ^b New York Univ, US		
11:40	Probing primary and mechanically degraded nanoplastic particles via Atomic Force Microscopy Dipak Bhowmik , S. Fatikow Univ of Oldenburg, DE		
12:00	Dynamic mechanical characterisation of zebrafish eggs with a micro-robotic system using quartz tuning forks with tungsten probes Mehdi Zenine , S. Régnier, S. Haliyo, M. Boudaoud Sorbonne Université, FR		
12:20	Investigating temperature, strain, and force generation in nanorobotic microgels via Finite Element Modeling Chen Wang , Z. Deng, B. Özkale Technical Univ of Munich, DE		

1. Day – July 29:		Parallel technical sessions	14:00 – 16:00
Special session		Dynamic robot locomotion at the centimeter scale	
Room 1		Organized by Cameron Aubin / Univ of Michigan, US Yufeng (Kevin) Chen / Massachusetts Inst of Technology, US Xiaoguang Dong / Vanderbilt Univ, US Siyi Xu / Univ of Illinois Urbana-Champaign, US	
14:00		Highly agile flat swimming robots at the insect-scale Florian Hartmann / Max Planck Inst for Intelligent Systems, DE	
14:20		Increasing agility of insect robots through body shape morphing Heiko Kabutz Univ of Colorado, Boulder, US	
14:40		Advancing miniature aerial robotics through bio-inspired design Pakpong Chirarattananon / Univ of Toronto, CA	
15:00		Amphibious insect-scale robots traverse granular and fluidic media Cameron Aubin / Univ of Michigan, U	
15:20		Biomimetic magnetic soft robots inspired to marine worms Arianna Menciassi / Scuola Super. Sant'Anna Pisa, IT	
Special session		Avatar cells - Pioneering technologies in the design framework	
Room 2		Organized by Yoko Yamanishi / Kyushu Univ, JP Takeshi Hayakawa / Chuo Univ, JP	
14:00		Separation of target white blood cells from whole blood for the production of avatar cells Naotomo Tottori / Kyushu Univ, JP	
14:20		Avatar cells production based on electromechanical poration by electrically-induced bubbles Yoko Yamanishi / Kyushu Univ, JP	
14:40		Avatar cells production based on cell-self-motivated eating of nanoparticles Niko Kimura / Tokyo Univ of Agriculture and Technology, JP	
15:00		3D in vitro models for evaluation of Avatar cells' function Yu Xueping / Chuo Univ, JP	
15:20		Visualization of cell-cell communication Yoshitaka Shirasaki / Univ of Tokyo, JP	
15:40		Guide to selecting avatar cells: High-speed and/or high-resolution Shinya Sakuma / Kyushu Univ, JP	

1. Day – July 29:		Parallel technical sessions	14:00 – 16:00
Special session		Active colloidal swarms: Functional behaviors	
Room 3		Organized by Ayusman Sen & Igor S. Aronson / Penn State Univ, US	
14:00	Multifunctional magnetic microrobots for cellular manipulation Sambeeta Das / Univ of Delaware, US		
14:20	Ferroic phase transition in synthetic active colloidal swarm Jinyao Tang / Univ of Hong Kong, S.A.R., CN		
14:40	Enzyme-regulated non-thermal fluctuations enhance ligand diffusion and receptor-mediated endocytosis Krishna Kanti Dey Indian Inst of Technology Gandhinagar, IN		
15:00	Trienzyme-in-One nanoparticle making multifunctional synergistic nanorobot for tumor therapy Zhixue Gao, M. Luo, J. Guan / Wuhan Univ of Technology, CN		
15:20	Active doping drives the self-assembly of patchy particle gels under confinement M. Puthenpurayil, D. Friedenberg, Stewart Mallory Penn State Univ, US		
Regular session		Micro/Nano robots (I)	
Room 4		Chair: Shogo Hamada / Inst of Science Tokyo, JP	
14:00	Single-atom colloidal nanorobotics enhanced stem cell therapy for corneal injury repair Xiaohui Ju ^a , E. Javorková ^b , J. Michalička ^c , M. Pumera ^c ^a Mendel Univ, Brno, CZ; ^b Academy of Sci, CZ; ^c CEITEC Brno Univ of Techn, CZ		
14:20	Comparison of flagellar motion of micro-gel robot and microorganisms Kanon Hama ^a , Y. Yokoyama ^b , T. Hayakawa ^a ^a Chuo Univ, JP; ^b Toyama Industrial Technology R&D Center, JP		
14:40	Smart sampling capsule with bacterially-triggered polymer coating for targeted colonic microbiome analysis Devendra Sarnaik, A. Krishnakumar, S. Nejati, R. Rahimi Purdue Univ, US		
15:00	ModSoftBot: Design, modeling and control of a modular pneumatic serial soft robot J. Yi, Wissem Haouas, K. Rabenoroso FEMTO-ST Inst, FR		
15:20	Quasi-phototaxis in slime-type molecular robots Shogo Hamada ^a , S. Kumagai ^b , S.-I.M. Nomura ^b , S. Murata ^b ^a Inst of Sci Tokyo, JP; ^b Tohoku Univ, JP		

1. Day – July 29: Parallel technical sessions		14:00 – 16:00
Regular session Design and fabrication (I) Room 5 Chair: Tianlu Wang / Univ of Hawaii at Manoa, US		
14:00	Rapid prototyping of metallic cantilevers for high-Q-value Micro-Mechanical Oscillators (MMOS) Liyuan Tan^{a,b} , F. Fischer ^{a,c} , T. Qiu ^{a,b} ^a German Cancer Research Center (DKFZ), Dresden, DE; ^b Dresden Univ of Tech, DE; ^c Heidelberg Univ, DE	
14:20	General approach for creating strong ultra-tough gels by exploring dipolar aprotic solvents Jiazheng Bao , D. Fan Univ of Texas at Austin, US	
14:40	Case studies of multiphysics AI-driven inverse design of multifunctional nano products Dima Abuoliem^a , V. Rossmanith ^b , J. Cho ^b ^a Iowa State Univ, US; ^b National Science Foundation high school internship	
15:00	Humidity-responsive bilayer microstructures fabricated via theta-pipette printing Xiao Huan^a , D. Wang ^b , X. Tang ^b ^a Univ of Illinois Urbana-Champaign, US; ^b Univ of Hong Kong, S.A.R., CN	
15:20	Miniaturization of soft pouch bending actuators D. Roy, Tianlu Wang Univ of Hawaii at Manoa, US	

Technical Program: 2. Day – July 30

2. Day – July 30: Plenary sessions Fowler Hall	
09:00 – 09:10	Welcome by the mayor of West Lafayette, IN
09:10 – 10:30	Plenary talks Chair: Shinya Sakuma / Kyushu Univ, JP
09:10	New fabrication method for microneedles Yuen K. Yong / Univ of Newcastle, AU
09:50	Lean robotic micromanufacturing with the Nexus Dan Popa / Univ of Louisville, US
16:30 – 17:50	Plenary talks Chair: Hao Zeng / Tampere Univ, FI
16:30	Microfluidic control technologies based on mechanical vibrations for various cell manipulation Takeshi Hayakawa / Chuo Univ, JP
17:10	On bots and bugs: Ingestible technologies for diagnosis and therapy Khalil Ramadi / New York Univ Abu Dhabi, AE

2. Day – July 30:		Parallel technical sessions	11:00 – 13:00
Special session Room 1		Intelligent miniature soft machines merging sensing and actuation Organized by Xiaoguang Dong / Vanderbilt Univ, US Siyi Xu / Univ of Illinois Urbana-Champaign, US	
11:00	Contrast-enhanced robotic capsule tracking in ultrasound using a dynamic acoustic retroreflector Ann Ping ^a , G. Faoro ^b , V. Iacovacci ^b , A. Menciassi ^b , E. Diller ^a ^a Univ of Toronto, CA; ^b Scuola Super. Sant'Anna Pisa, IT		
11:20	Miniature multi-modal continuum robots for the brain and spine Yash Chitale / Univ of Louisville, US		
11:40	Wireless miniature soft robots for fluidic sensing and manipulation Xiaoguang Dong / Vanderbilt Univ, US		
12:00	Skin-like soft sensors and inflatable actuators for soft robots Yong-Lae Park / Seoul National Univ, KR		
12:20	Electrical actuation and control of soft robots Siyi Xu / Univ of Illinois Urbana-Champaign, US		
Special session Room 2		Frontiers in living and compliant soft robotics Organized by Maria Guix Noguera / Univ of Barcelona, ES	
11:00	Lessons learned from small scale biohybrid systems – potentials and challenges Taher A. Saif Univ of Illinois Urbana- Champaign, US		
11:20	Compliant mechanisms for force enhancement and modularity in biohybrid muscle-based actuators Victoria Webster-Wood Carnegie Mellon Univ, US		
11:40	Tissue engineering biological actuators for soft robotics Ritu Raman / Massachusetts Inst of Technology, US		
12:00	Enhanced maneuverability of biohybrid robotic jellyfish Nicole W. Xu / Univ of Colorado Boulder, US		
12:20	Navigating the body: Locomotion of bacterial biohybrids in mucus and interstitial spaces Bahareh Behkam Virginia Tech, US		
12:40	Inchworm-inspired groove-guided soft-robot locomotion Hari Prakash Thanabalan / Univ of Gothenburg, SE		

2. Day – July 30:		Parallel technical sessions	11:00 – 13:00
Regular session		Measurement and characterization (II)	
Room 3		Chair: Wael Othman / New York Univ Abu Dhabi, AE; New York Univ, US	
11:00	Impact of time window in time domain Scanning Microwave Microscopy Muhammad Yasir / Univ of Oldenburg, DE		
11:20	Differential quantitative phase imaging using Hadamard encoded illumination D. Sun, Yongliang Yang , L. Liu / Shenyang Inst of Automation, CAS, CN		
11:40	Real-time estimation of drag coefficients of a magnetically driven microprobe in aqueous solutions near 3D objects T.-M. Meng ^a , Chia-Hsiang Menq^b ^a Caterpillar, US; ^b National Tsing Hua Univ, TW		
12:00	Microfluidic non-stationary process for live cell imaging of triggered cell death Makoto Saito^a , R. Kurogi ^a , S. Yoshimoto ^b , N. Kiyama ^a , Y. Yamanishi ^a , K. Dodo ^b , T. Kamatani ^c , Y. Shirasaki ^d , S. Sugano ^e , S. Yotsumoto ^f , S. Sakuma ^a ^a Kyushu Univ, JP; ^b RIKEN, JP; ^c Inst of Sci Tokyo, JP; ^d Univ of Tokyo, JP; ^e National Inst of Adv Industrial Sci & Techn, JP; ^f Tokyo Univ of Pharmacy and Life Sci, JP		
12:20	Soft teeth-patterned microfluidic force sensor for laparoscopic graspers Wael Othman^{a,b} , L. Alkasaji ^a , M.A. Qasaimeh ^{a,b} ^a New York Univ Abu Dhabi, AE; ^b New York Univ, US		
Regular session		Manipulation (I)	
Room 4		Chair: Wisseem Haouas / FEMTO-ST Inst, FR	
11:00	Hydrodynamics of microfluidic multipoles toward tunable and contactless microparticle manipulation Ayoub Glia^a , A. Al Tahhan ^{a,b} , M.A. Qasaimeh ^{a,b} ^a New York Univ Abu Dhabi, AE; ^b New York Univ, US		
11:20	Silver ink-based electromagnetic coils for magnetic actuation in microrobotics Yuvaraj Kamble , S. Murudkar, A. Thakur Indian Inst of Technology Patna, IN		
11:40	Soft human-machine interface for multi-scale-controlled nanorobotic manipulation Bin Lian , J. Bao, D. Fan / Univ of Texas at Austin, US		
12:00	Chip-level surface patterning solutions towards high-throughput, parallel surface modulation of 1D nanomaterials B. Ali, U. Kerimzade, B. Erdem Alaca / Koç Univ, TR		
12:20	Microvibration-based active adhesion control of PDMS/Silicon for robotics manipulation J. Yi, Wisseem Haouas , K. Rabenoroso FEMTO-ST Inst, FR		

2. Day – July 30: Parallel technical sessions		14:00 – 16:00
Special session Emerging materials systems for microrobotics and active matter Room 1 Organized by Abdon Pena-Francesch / Univ of Michigan, US		
14:00	Synthetic DNA as building blocks for highly programmable cell-interacting nanorobots Tania Patiño Padial / Eindhoven Univ of Technology, NL	
14:20	Emergent and controllable behaviors of microrobot collectives Steven Ceron / Univ of Michigan, US	
14:40	3D-printed microrobots for magnetic actuation, imaging, and hyperthermia Jinxing Li / Michigan State Univ, US	
15:00	There is plenty of room in the middle Albert Liu / Univ of Michigan, US	
15:20	Coffee ground derived microrobots Jeffrey Moran / George Mason Univ, US	
15:40	Microrobotic behavior of hierarchical self-propelled flexicles: From single to collective dynamics Philipp Schönhöfer / Univ of Michigan, US	
Special session Light assisted manufacturing for micro robotics Room 2 Organized by Hao Zeng / Tampere Univ, FI Wan Shou / Univ of Arkansas, US		
14:00	Microscopic robots with microscopic computers Marc Miskin / Univ of Pennsylvania, US	
14:20	Self-regulated motions in slender microstructures and collectives of photoresponsive liquid crystalline elastomers Shucong Li / Georgia Tech, US	
14:40	4D microfabrication for sensors and actuators Colm Delaney / Trinity College Dublin, UK	
15:00	Multi-material additive manufacturing of functional materials and devices Yayue Pan / Univ of Illinois Chicago, US	
15:20	Design and 3D printing of piezoelectric metamaterials for custom micro-transducers Saurav Sharma / TU Delft, NL	
15:40	Light-controlled electric manipulation of nanoparticles and molecules for reconfigurable motors, swarms, and ultra-enhanced biosensing Donglei (Emma) Fan Univ of Texas at Austin, US	

2. Day – July 30:		Parallel technical sessions	14:00 – 16:00
Regular session Micro/Nano robots (II)			
Room 3		Chair: Eric Diller / Univ of Toronto, CA	
14:00	Novel multiple-shot milli-scale magnetic robot for cargo delivery T. Srymbetov, A. Menciassi, Veronica Iacovacci Scuola Super. Sant'Anna Pisa, IT;		
14:20	MagPrint: Direct fabrication method for embedded-magnet microrobots Yang Yang , A.C. Davis, B.M. Schmidt, D.J. Cappelleri / Purdue Univ, US		
14:40	Design of a lab-based graduate mobile microrobotics course David J. Cappelleri , I. Gong / Purdue Univ, US		
15:00	Magnetic microcapsule robots for biofilm disruption via surface-driven mechanical actuation Hong Huy Tran^a , M.J. Oh ^a , A. Babeer ^b , N. Jaruchotiratanasakul ^{a,c} , D. Lee ^a , H. Koo ^a , E. Steager ^a ^a Univ of Pennsylvania, US; ^b King Abdulaziz Univ, SA; ^c Mahidol Univ, TH		
15:20	Magnetic capsule for stable collection of large GI tract microbiome samples Taeyoung Lee , E. Diller / Univ of Toronto, CA		
Regular session Design and fabrication (II)			
Room 4		Chair: Andrew Bickerdike / Univ of Exeter, UK	
14:00	Sensor and controller integration for a compact, 1D-addressable thin-film piezoelectric scanning mirror Yiwei Yang , J. Yu, T. Wang, K. Oldham / Univ of Michigan, US		
14:20	FilMBot: Towards 100-Euro DIY-friendly high-speed robotic micromanipulator Jiangkun Yu , H. Bettahar, Q. Zhou Aalto Univ, FI		
14:40	Magni-DOME: An open platform for high-resolution light-based and magnetic contactless fabrication of active microstructures Nitirak Rayabphand^a , N. Wijewardhane ^a , N.-J. Prendergast ^a , J.P.K. Armstrong ^a , D. Zhang ^b , S. Hauert ^a ^a Univ of Bristol, UK; ^b Imperial College London, UK		
15:00	High-fidelity 3D printing of programmable magnetic soft robots Siwen Xie , K. Clancy, O. Onaizah McMaster Univ, CA		
15:20	Soft robotic colon simulator as a test platform for ingestible robots and endoscopic training Andrew Bickerdike , Y. Liu, B. Tian, X. Fang, L. Adams, J. Shen, Z. Wang Univ of Exeter, UK		

2. Day – July 30: Parallel technical sessions 14:00 – 16:00	
Regular session Automation Room 5 Chair: Artur Kopitca / Aalto Univ, FI	
14:00	Dithering based actuation of a miniaturized active ball-and-socket joint Sagnik Acharya , G. R. Jayanth Indian Inst of Science, Bangalore, IN
14:20	Microporous magnetic soft materials with programmable locomotion and on-demand liquid cargo release Youyi Zhou , F. Kocabas, Y. Alapan University of Wisconsin-Madison, US
14:40	Dataset and benchmarks for Deep Learning-based optical microrobot pose and depth perception Lan Wei , D. Zhang Imperial College London, UK
15:00	Automated magnetic micro-robot assembly system Oliver Shindell , D.J. Cappelleri Purdue Univ, US
15:20	Application of Large Language Models in magnetically manipulated microrobots Artur Kopitca , U. Sattar, Q. Zhou Aalto Univ, FI

Technical Program: 3. Day – July 31

3. Day – July 31:		Plenary sessions	Fowler Hall
09:00 – 09:10		Introduction of the agenda / MARSS2025 General Chair	
09:10 – 10:30		Plenary talks	
		Chair: Sambeeta Das / Univ of Delaware, US	
09:10	Bioinspired microrobots engineered from living and synthetic materials		
	Maria Guix Noguera / Univ of Barcelona, ES		
09:50	Catalytic antimicrobial robots for biofilm treatment		
	Edward Steager / Univ of Pennsylvania, US		
16:30 – 17:50		Plenary talk	
		Chair: Kenn Oldham / Univ of Michigan, US	
16:30	Flexible magnetic robots for the gut and brain		
	Eric Diller / Univ of Toronto, CA		
17:10	Advances in precision and ultimate miniaturization of robotics with integrated actuation for industrial and environmental applications		
	Cédric Clevy / FEMTO-ST Institute, FR		
17:50 – 18:30		Closing & Awards ceremony	
18:30 – 21:30		Conference banquet	

3. Day – July 31:		Parallel technical sessions	11:00 – 13:00
Special session Room 1		Acoustics for targeted therapeutic approaches Organized by Paul Wrede / ETH Zurich, CH	
11:00	RENAL: Robot Enhanced Navigation And Localization Ethan Luk, B. Wong, L. Gonzalez-Serracin, A. Trieu, A. Marie Tondat, A. Laing, V. Magdanz Univ of Waterloo, CA		
11:20	Imaging-guided bioresorbable acoustic hydrogel microrobots Hong Han / Caltech, US		
11:40	Nanoflowers as novel agent for <i>in vivo</i> acoustic micromanipulation Paul Wrede / ETH Zurich, CH		
12:00	Cyclic jetting enables microbubble-mediated drug delivery Marco Cattaneo / ETH Zurich, CH		
12:20	Microparticle dynamics in acoustically driven viscoelastic fluids Khemraj Gautam Kshetri, N. Nama Univ of Nebraska-Lincoln, US		
Special session Room 2		Advances in magnetic and soft robotics for targeted medical interventions Organized by Onaizah Onaizah / McMaster Univ, CA	
11:00	Soft and continuum medical robots across actuation modes James Chandler / Univ of Leeds, UK		
11:20	Magnetic carrier robots for targeted cargo delivery Veronica Iacovacci Scuola Superiore Sant'Anna Pisa, IT		
11:40	Techniques on magnetization patterning for flexible magnetic robots towards complex motion Amanda De Oliveira Barros / Univ of Texas at El Paso, US		
12:00	Progress in microrobotic control and interventions for vitreous hemorrhage recovery Elizabeth Fox Applied Research Associates, Inc. (ARA), US		
12:20	Hyperelastic hydrogel microrobot Jinxing Li / Michigan State Univ, US		
12:40	Magnetically actuated tools for medical applications Onaizah Onaizah McMaster Univ, CA		

3. Day – July 31:		Parallel technical sessions	11:00 – 13:00
Regular session		Measurement and characterization (III)	
Room 3		Chair: Anwarul Hasan /Qatar Univ, QA; King Fahd Univ of Petr & Min, SA	
11:00	Electromagnetic manipulation of single particles for studying cell adhesion dynamics and viscoelastic properties Houari Bettahar , Q. Zhou / Aalto Univ, FI		
11:20	Passive electrical network for reducing current requirement while driving piezo-actuators with periodic waveforms Abhishek Panchal , A.K Mohanty, G.R. Jayanth / Indian Inst of Sci, Bangalore, IN		
11:40	Adhesion characterisation of nanowires via Kendall peeling under the optical microscope James Mead ^a , S. Wang ^b , L. Ma ^a , H. Huang ^c , S. Fatikow ^a ^a Univ of Oldenburg, DE; ^b Central South University, CN; ^c Univ of Queensland, AU		
12:00	Scalable, non-destructive, and non-contact probing of nanostructure electrical properties via electro-rotation in water Y. Huang ^a , K. Xu ^b , Z. Liang ^a , W. Zhu ^b , Donglei Emma Fan ^a ^a Univ of Texas at Austin, US; ^b Univ of Illinois Urbana-Champaign, US		
12:20	Microneedle array with sustained delivery of oxygen and nitric oxide for expedited diabetic wound healing A. Ullah ^a , F.A. A Alsaffar ^b , Anwarul Hasan ^{a,b} ^a Qatar Univ, QA; ^b King Fahd Univ of Petroleum & Minerals, SA		
Regular session		Positioning and control	
Room 4		Chair: Sinwook Park / Tel Aviv Univ, IL	
11:00	Capture of cancer cells within an open microfluidic system of microfluidic probe and decoupled interdigitated electrodes Waqas Waheed ^a , P. Sukumar ^a , D.S. Ali ^a , M.A. Qasaimeh ^{a,b} ^a New York Univ Abu Dhabi, AE; ^b New York Univ, US		
11:20	Three-dimensional motion control of magnetically actuated droplet robot swarm X. Fan, W. Ge, Qinkai Chen / Soochow Univ, CN		
11:40	Electromagnetic objective lens scanner: Design, modeling and characterization Yuen Yong , B. Routley, A. Fleming / Univ of Newcastle, AU		
12:00	Understanding the wall accumulation of 3D suspended active colloids under external electric field Sandeep Ramteke ^a , J. Dehmel ^b , J.E. Schiffbauer ^b , A. Boymelgreen ^a ^a Florida International Univ, US; ^b Colorado Mesa Univ, US		
12:20	Versatile 2.5D motion control with magnetically and electrically powered Janus microrobots; I. Rachbuch, Sinwook Park , G. Yossifon Tel Aviv Univ, IL		

3. Day – July 31:		Parallel technical sessions	14:00 – 16:00
Special session Room 1		Mechanical manipulation of cells and unicellular organisms Organized by Sreenath Balakrishnan / Indian Inst of Technology Goa, IN	
14:00	Wavy structure control of cell mechanobiology S.-A. Huang, Z.-H. Lin, Pen-hsiu Grace Chao / National Taiwan Univ, TW		
14:20	Towards shearing of diatoms: Design and testing of a compliant mechanism R. Vishwakarma, Sreenath Balakrishnan / Indian Inst of Technology Goa, IN		
14:40	Cell-actuated micromachined compliant grippers Vishwanath R, G. K. Ananthasuresh / Indian Inst of Sci, Bangalore, IN		
15:00	Dielectrophoresis-based cell stretching device for micromechanical phenotyping Safieh Almahmoud ^b , W. Waheed ^a , P. Sukumar ^a , M.A. Qasaimeh ^{a,b} ^a New York Univ Abu Dhabi, AE; ^b New York Univ, US		
15:20	Microfluidic pathways with viscosity gradients for sperm separation based on intrinsic motility Kunal Patil, Shweta Hegde, Nishchal H.L., Kishor Bharadwaj K.S., Shilpa R., Nargis S., Ethan C., Ramnath Babu T.J., Santosh Bhargav D.B. SpOvum Technologies, IN		
Regular session Room 2		Manipulation (II) Chair: Ashis Banerjee / Univ of Washington, US	
14:00	Paper-based microfluidic assay for gingipain detection using fluorescent quantum dots Pavithra Sukumar ^a , M. Elbeh ^{a,b} , Z. Bak ^a , M. Abdelhameed ^a , K.B. Ramadia ^{a,b} , M.A. Qasaimeh ^{a,b} ^a New York Univ Abu Dhabi, AE; ^b New York Univ, US		
14:20	Independent actuation of multiple microrobots via copper foil-based electromagnet grid Yuvaraj Kamble, S. Murudkar, A. Thakur / Indian Inst of Technology Patna, IN		
14:40	Curriculum based reinforcement learning for 3D control of magnetic microrobot swarms Myungjin Park ^{a,b} , M. Sitti ^{a,c} , J. Yoon ^b ^a Max Planck Inst for Intell Systems, Stuttgart, DE; ^b Gwangju Inst of Sci & Techn, KR; ^c Koç Univ, Istanbul, TR		
15:00	FEM exploration of a poly-articulated silica microstructure with embedded electrothermal actuation for nanomanipulation tasks Adesuwa Ebuehi, C. Ndiritu, F. Romero Leiro, J.-Y. Rauch, C. Clévy FEMTO-ST, FR		
15:20	Scalable phase mask generation for holographic optical tweezers using a U-Net model; T. Zhang, Ashis Banerjee Univ of Washington, US		

3. Day – July 31:		Parallel technical sessions	14:00 – 16:00
Regular session		Micro/Nano robots (III)	
Room 3		Chair: Mahmut Yorulmaz / Univ of Stuttgart, DE	
14:00	Mobile microrobot grippers with force feedback for safe biomanipulation Aaron Davis , I. Gong, D.J. Cappelleri / Purdue Univ, US		
14:20	Multi-layer 3D-printed sacrificial molding for miniature low-pressure monolithic soft pneumatic actuators; M. Khalid, James Chandler / Univ of Leeds, UK		
14:40	Cathode-modulated planar vacuum electron tube by employing polysilicon as cathode Ziyi Lai ^a , M. Wang ^a , W. Ying ^b , H. Xu ^a , Q. Yea ^a , S. Zhu ^a , Z. Fang ^a , J. Liu ^b , Y. Wang ^a ^a Shaoxing Univ, CN; ^b Shanghai Jiao Tong Univ, CN		
15:00	Neuro-sliding mode formation control for small-scale robotic platforms Haci Mehmet Guzey / Sivas Univ of Sci and Techn, TR		
15:20	Locomotion behavior of magnetic microrollers in confined tubular geometries containing shear-thinning fluids; Mahmut Yorulmaz ^a , U. Bozuyuk ^b , M. Park ^c , B. Arslan ^d , H. Ozturke ^e , A. Aghakhani ^a , M. Sitti ^f ^a Univ of Stuttgart, DE; ^b Max Planck Inst for Intell Systems, DE; ^c ETH Zurich, CH; ^d Bilkent Univ, TR; ^e Amazon, UK; ^f Koç Univ, TR		
Regular session		Design and fabrication (III)	
Room 4		Chair: Abdenbi Mohand Ousaid / FEMTO-ST Inst, FR	
14:00	Multi-material 2-photon-printing of a rigid and a compliant material using high-precision in situ exchange; P. Yemulwar, J. Zscheile, M.-H. Wong, T. Saxena, Michael Karst , R. Kirchner / HETEROMERGE GmbH, DE		
14:20	Magnetically actuated capsule mechanism for drug delivery, sampling and cargo transport in the gastrointestinal tract S. Gupta, Veerash Palanichamy , O. Onaizah / McMaster Univ, CA		
14:40	3-DoF magnetically actuated robotic manipulator for precision soft tissue resection M. Roshanfar ^a , C. He ^b , L. Huang ^c , Z. Li ^d , L. Cheng ^b , D.J. Podolsky ^a , T. Looi ^a , Eric Diller ^d / ^a Hospital for Sick Children, CA; ^b Univ of Newcastle, AU; ^c Changsha Univ of Sci and Techn, CN; ^d Univ of Toronto, CA		
15:00	Polymer-reinforced on-chip thin-film PZT unimorph arrays for millimeter-scale actuation; S. Lei ^a , A. Valenzuela Garzon ^b , S. Zachary ^c , J. Yu ^a , Kenn Oldham ^a ^a Univ of Michigan, US; ^b Univ of Monterrey, MX; ^c Univ of the District of Columbia, US		
15:20	Impact of volume constraint and weighting factors of the electric field on topology optimization of electrodes: application to dielectrophoresis (DEP)-based devices Abdenbi Mohand Ousaid , A. Abdelraheem, A. Homayouni-Amlashi, A. Bolopion FEMTO-ST Inst, FR		