2025 23rd International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers 2025)

Orlando, Florida, USA
29 June - 3 July 2025

Pages 1-541

IEEE Catalog Number: CFP25SSA-POD
ISBN: 979-8-3315-1382-5

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP25SSA-POD
ISBN (Print-On-Demand):	979-8-3315-1382-5
ISBN (Online):	979-8-3315-1381-8
ISSN:	2167-0013

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings .com

TABLE OF CONTENTS

Sunday, 29 June

All times are Eastern Standard Time (EST)

Special Event - Future Visions for Transducers Part 1

09:00 – 12:00

Poster Session and Workshop

Transducers Industry Session

13:00 – 16:30

Monday, 30 June

All times are Eastern Standard Time (EST)

Welcome Address and Technical Program Introduction

08:30 – 09:00

TRF President
Reza Ghodssi, *University of Maryland, USA*

Conference Chair:
Jack Judy, *University of Florida, USA*

Executive Program Chair:
Ellis Meng, *University of Southern California, USA*

Plenary Presentation 1

09:00 - 09:45

M1A.P1 THE REVOLUTION OF SILICON PHOTONICS ..... N/A
Michal Lipson
Columbia University, USA

Plenary Presentation 2

09:45 - 10:30

M1A.P2 IN VIVO-MANUFACTURED ORGANIC BIOELECTRONICS FOR NEUROLOGICAL APPLICATIONS ..... N/A
Magnus Berggren
Linköping University, SWEDEN

10:30 - 11:00 **Break and Exhibit Inspection**

Plenary Presentation 3

11:00 - 11:45

M1A.P3 FROM FLOW CYTOMETRY TO FLOW ZOOMETRY: A PARADIGM SHIFT IN HIGH-THROUGHPUT SCREENING ..... N/A
Keisuke Goda
University of Tokyo, JAPAN

2025 Transducers Early Career Award Presentation

11:45 - 12:00

Transducers 2027 Announcement

12:00 - 12:15

12:15 - 14:00 **Lunch and Exhibit Inspection**

Poster Session M4P and Exhibit Inspection

14:00 - 16:00

Session M4A - Functional Materials

16:00 - 16:15

M4A.01 SILVER NANOWIRE-PATTERNED, FREEZE-CASTED PVDF AEROGELS FOR SIMULTANEOUS PASSIVE RADIATIVE COOLING AND AIRFLOW SENSING 5
Hyeyoung Lee[1], Donghyun Lee[1], Beom Soo Joo[2], Gumin Kang[2], and Jungwook Choi[1]
[1]Chung-Ang University, KOREA and [2]Korea Institute of Science and Technology, KOREA

16:15 - 16:30

M4A.02 MELAMINE-DERIVED CARBON NITRIDE-FUNCTIONALIZED POLYURETHANE NANOMESH-BASED TRIBOELECTRIC NANOGENERATOR FOR SELF-POWERED RESPIRATION MONITORNING 9
M.Robiul Islam, Omar Faruk, Md Selim Reza, Trilochan Bhatta, Md Shofiul Alam, Zahidul Islam, Seungjae Lim, and Jae Yeong Park
Kwangwoon University, KOREA

16:30 - 16:45

M4A.03 LOW-VOLTAGE ELECTROMECHANICAL SWITCHING BASED ON LOW DIMENSIONAL MATERIALS 13
Tong Dang[1], Jinchi Han[2], Zhien Wang[1], Zhangqi Zheng[1], Jing Kong[1], Jeffrey H. Lang[1], and Vladimir Bulovic[1]
[1]Massachusetts Institute of Technology, USA and [2]Peking University, CHINA

Session M4B - PMUTs

Session M4C - Cellular Systems I

Session M4D - Resonators I

16:15 - 16:30

M4D.02 TOWARDS A VOCS SENSING ARRAY VIA BATCH-COMPATIBLE POST-CMOS THIOL FUNCTIONALIZATION ON CMOS-MEMS MONOLITHIC RESONATORS **76**
Pedro Llinàs, Rafel Perelló-Roig, Jaume Verd, Bartomeu Soberats, Salvador Barceló, Sebastià Bota, and Jaume Segura
[1]University of the Balearic Islands, SPAIN

16:30 - 16:45

M4D.03 MAGNETIC FIELD-TUNABLE NONRECIPROCAL ACOUSTIC TRANSDUCER WITH LORENTZ FORCE INTERACTION **80**
Daozheng Luo[1], Yuxi Wang[1,2,3,4], Xuankai Xu[1], Jiawei Li[1,2], Lihui Jin[1], and Tao Wu[1,2,3,4]
[1]ShanghaiTech University, CHINA, [2]Chinese Academy of Sciences, CHINA, [3]University of Chinese Academy of Sciences, CHINA, and [4]Shanghai Engineering Research Center of Energy Efficient and custom AI IC, CHINA

16:45 - 17:00

M4D.04 SELF-FREQUENCY PUMPING FOR CHAOTIC MICROMECHANICAL FREQUENCY COMB GENERATION VIA MULTIMODAL INTERNAL RESONANCE **84**
Ting-Yi Chen and Wei-Chang Li
National Taiwan University, TAIWAN

17:00 - 17:15

M4D.05 HEAVILY-DOPED DUAL-MODE DISTRIBUTED LAMÉ RESONATOR (DLR) FOR TEMPERATURE-COMPENSATED MEMS OSCILLATORS **88**
Shubham Sahasrabudhe[1], Haoran Wen[2], Gregory V. Junek[2], and Farrokh Ayazi[1,2]
[1]Georgia Institute of Technology, USA and [2]StethX Microsystems Inc., USA

17:15 - 17:30

M4D.06 TEMPERATURE-COMPENSATED SELF-SENSING DIAMOND RING RESONATORS **92**
Xintian Liu, Kevin H. Zheng, Hung-Yu Chen, Mehmet Akgul, and Clark T.-C. Nguyen
University of California, Berkeley, USA

17:30 Adjourn for the Day

Future Visions for Transducers Part II – Panel Discussion

17:45 - 18:45

Tuesday, 1 July

Session T1A - Optical & Photonic Devices

08:30 - 09:00

INVITED PRESENTATION

09:00 - 09:15

09:15 - 09:30

09:30 - 09:45

09:45 - 10:00

Session T1B - Fabrication & Materials

08:30 - 09:00

INVITED PRESENTATION

09:00 - 09:15

Session T1C - DNA Devices

Session T1D - Gas Sensing

08:30 - 09:00

INVITED PRESENTATION

T1D.01 SMART ENVIRONMENTAL MONITORING BY LOW-POWER/SELF-POWERED GAS SENSORS AND AI ..... **N/A**

Inkyu Park

Korea Advanced Institute of Science and Technology (KAIST), Korea

09:00 - 09:15

T1D.02 HIGHLY ROBUST AND MECHANICALLY STABLE GAS SENSOR THROUGH SYMMETRICAL FIXED-GUIDED L-SHAPED BEAMS **156**

Se-Yoon Jung[1], Sung-Ho Kim1, Min-Seung Jo[2], Beom-Jun Kim[1], Jae-Soon Yang[1], Myung-Kun Chung[1], Tae-Soo Kim[1], Yu-Hyun Shim[1], and Jun-Bo Yoon[1]

[1]Korea Advanced Institute of Science and Technology (KAIST), KOREA, and [2]Northwestern University, USA

09:15 - 09:30

T1D.03 HIGHLY SENSITIVE METAL-OXIDE GAS SENSOR USING THERMALDOPING TECHNIQUE FOR HIGH DEVICE UNIFORMITY **160**

Sung Ho Kim[1], Se-Yoon Jung[1], Jae-Young Yoo[2], Beom-Jun Kim[1], Jae-Soon Yang[1], Tae-Soo Kim[1], Yu-Hyun Shim[1], and Jun-Bo Yoon[1]

[1]Korea Advanced Institute of Science and Technology (KAIST), KOREA and [2]Sungkyunkwan University (SKKU), KOREA

09:30 - 09:45

T1D.04 MONOLITHICALLY INTEGRATED CMOS-MEMS MICROCANTILEVER GAS SENSOR WITH SUB-10 MILLIWATT POWER CONSUMPTION **164**

Xuanqing Hua, Fengyang Li, Peng Liu, Shiyang Yuan, Xufeng Wang, Zhiheng Yu, and Dacheng Zhang

Peking University, CHINA

09:45 - 10:00

T1D.05 OPTIMIZING DUAL APTAMER BINDING ASSAYS FOR C-REACTIVE PROTEIN (CRP) BY BIOSTATISTICAL ANALYSIS, 3D MOLECULAR SIMULATIONS, AND SELECTION ON AN INTEGRATED MICROFLUIDIC CHIP **168**

Chih-Hung Wang, To-Wen Chen and Gwo-Bin Lee

National Tsing Hua University, TAIWAN

10:00 - 10:30 **Break and Exhibition Inspection**

Session T2A - Resonators II

10:30 - 10:45

T2A.01 KU-BAND ALSCN-ON-DIAMOND SAW RESONATORS WITH PHASE VELOCITY ABOVE 8600 M/S **172**

Tzu-Hsuan Hsu[1], Kapil Saha[2], Jack Kramer[1], Omar Barrera[1], Pietro Simeoni[2], Matteo Rinaldi[2], and Ruochen Lu[1]

[1]University of Texas, Austin, USA and [2]Northeastern University, USA

10:45 - 11:00

T2A.02 SURFACE ACOUSTIC WAVE PHYSICAL RESERVOIR COMPUTER USING THERMOACOUSTIC PHASE MODULATOR **176**

Taiki Ijima[1], Claude Meffan[1,2], Masaki Shimofuri[1], Amit Banerjee[1], Jun Hirotani[1], and Toshiyuki Tsuchiya[1]

[1]Kyoto University, JAPAN and [2]University of Canterbury, NEW ZEALAND

Session T2B - Metasurfaces & Metamaterials

11:30 - 11:45

11:45 - 12:00

Session T2C – Microfluidics I

10:30 - 10:45

10:45 - 11:00

11:00 - 11:15

11:15 - 11:30

11:30 - 11:45

Session T2D - Physical & Optical Sensors

10:30 - 10:45

10:45 - 11:00

11:00 - 11:15

11:15 - 11:30

11:30 - 11:45

11:45 - 12:00

12:00 - 14:00 **Lunch**

Poster Session T3P and Exhibit Inspection

14:00 - 16:00

15:30 - 16:00 **Break**

Session T4A - Acoustic Devices

16:00 - 16:15

16:15 - 16:30

Session T4B - Resonators III

Session T4C - Biomedical Devices

Session T4D - Physical Sensors

16:00 - 16:15

Shital Sharma, Gagan Bahadur Pradhan, Trilochan Bhatta, and Jae Yeong Park
Kwangwoon University, KOREA

16:15 - 16:30

Long Cheng[1,2], Ying Chen[1,2], Tao Jiang[1,2], Jiachou Wang[1,2], Xinxin Li[1,2], and Pengcheng Xu[1,2]
[1]Chinese Academy of Sciences, CHINA and [2]University of Chinese Academy of Sciences, CHINA

16:30 - 16:45

Tingfeng Peng[1,2], Zihan Lu[1,2], Hongxin Xu[1,2], Chunlong Cheng[1,2], Zhiqing Zhang[1,2], Jingwen Yang[1,2], Yuan Wang[3], Qingqing Ke[1,2], and Huahuang Luo[1,2]
[1]Sun Yat-sen University, CHINA and [2]Macau University of Science and Technology, CHINA and [3] University of Macau, CHINA

16:45 - 17:00

Tomohiro Nakatsuka and Satoshi Konishi
Ritsumeikan University, JAPAN

17:00 - 17:15

Jun Li[1,2], Hao Jia[1,3], Pengcheng Xu[1,3], and Xinxin Li[1,3]
[1]Chinese Academy of Sciences, CHINA, [2]ShanghaiTech University, CHINA, and [3]University of Chinese Academy of Sciences, CHINA

17:15 - 17:30

Toshihiro Shiratori, Gakuto Kagawa, and Hidetoshi Takahashi
Keio University, JAPAN

17:30 Adjourn for the Day

Leti and COMSOL Events

18:00 - 20:00

Wednesday, 2 July

Session W1A - Quantum Devices

08:30 - 09:00

INVITED PRESENTATION

09:00 - 09:15

09:15 - 09:30

09:30 - 09:45

Session W1B - Microfluidics II

08:30 - 09:00

INVITED PRESENTATION

09:00 - 09:15

09:15 - 09:30

09:30 - 09:45

09:45 - 10:00

Session W1C - PiezoMEMS

08:30 - 09:00

INVITED PRESENTATION

09:00 - 09:15

09:15 - 09:30

09:30 - 09:45

09:45 - 10:00

Session W1D - Materials Characterization

08:30 - 09:00

INVITED PRESENTATION

Damla Leblebicioglu, Immanuel Ampomah Maensah, Joseph Allen,
Ahilesh Vadivel, Nathaniel Hanson, and **Kristen L. Dorsey**
Northeastern University, USA

09:00 - 09:15

Zechun Li[1,2], Shaokui Tan[1,3], Yuhang Yang[1,2], Ming Li[1,2],
Xiaoyuan Xia[1,4], Yemin Dong[1,4], Pengcheng Xu[1,2], and Xinxin Li[1,2]
[1]Chinese Academy of Sciences, CHINA, [2]University of Chinese Academy of Sciences, CHINA,
[3]Shanghai Normal University, CHINA, and
[3]Shanghai Industrial μTechnology Research Institute (SITRI), CHINA

09:15 - 09:30

Eying Sim Wong[1], Aron Michael[1], Jayden D.R. Moore[1], and Hemanshu Pota[2]
[1]University of New South Wales (UNSW), Sydney, AUSTRALIA and
[2]University of New South Wales (UNSW), Canberra, AUSTRALIA

09:30 - 09:45

Qiaoyuan Yang[1,2], Zijian Wu[2], Ruomeng Guo[1], Ming Li[1,2], Pengcheng Xu[1,2], and Xinxin Li[1,2]
[1]Chinese Academy of Sciences, CHINA and [2]University of Chinese Academy of Sciences, CHINA

09:45 - 10:00

Yi Chen and Dacheng Zhang
Peking University, CHINA

10:00 - 10:30 **Break and Exhibit Inspection**

Session W2A - Piezoelectric Devices

10:30 - 10:45

Paul Raschdorf[1], Christian V. Hofen[1,2], Nils Voß[1,3], Erdem Yarar[1],
Gunnar Wille[1], Fabian Lofink[1,2,4], and Shanshan Gu-Stoppel[1,3]
[1]Fraunhofer Institute for Silicon Technology, GERMANY, [2]Christian-Albrecht-University Kiel, GERMANY,
[3]West Coast University of Applied Sciences, GERMANY, and [4]Kiel Nano, GERMANY

10:45 - 11:00

Po-Shen Chen[1], Chia-Hao Lin[1], Chin Tseng[1],
Zih-Song Hu[1], Sung-Cheng Lo[2], and Weileun Fang[1,2]
[1]National Tsing Hua University, TAIWAN and [2]Upbeat Technology Co., Ltd., TAIWAN

Session W2B - Bio & Chemical Sensors

Session W2D - Neural Interfaces

10:30 - 10:45

Hyunjun Han[1], Sangjun Sim[1], Chaesung Kim[2,3], Maesoon Im[2,4,5], and Jongbaeg Kim[1]
[1]Yonsei University, KOREA, [2]Korea Institute of Science and Technology, KOREA, [3]Korea University, KOREA, [4]University of Science and Technology, KOREA, and [5]Kyung Hee University, KOREA

10:45 - 11:00

Zhiyuan Du[1], Qingda Xu[1], Ye Xi[1], Mengfei Xu[1], Quan Peng[1], Kunyu Zheng[1], Ning Wei[1], Haoyuan Chen[1], Xiuyan Li[1], Qingkun Liu[1], Xiaolin Wang[1], Bin Yang[1], Wen Li[2], and Jingquan Liu[1]
[1]Shanghai Jiao Tong University, CHINA and [2]Michigan State University, USA

11:00 - 11:15

Jiayan Zhang, Yunxu Zhao, Junshi Li, Zhitong Zhang, and Zhihong Li
Peking University, CHINA

11:15 - 11:30

Om T. Kolhe[1], Alec C. Booth[1,2], Hammad F. Khan[1], and Krishna Jayant[1]
[1]Purdue University, USA and [2]Indiana University School of Medicine, USA

11:30 - 11:45

Ning Wei, Longchun Wang, Kejun Tu, Jiawei Cao, Qingda Xu, Zhiyuan Du, Mengfei Xu, Chunpeng Jiang, Haoyuan Chen, Bin Yang, Xiaolin Wang, and Jingquan Liu
Shanghai Jiao Tong University, CHINA

11:45 - 12:00

Kehui Qi[1,2], Changding Li[1,2], Nan Li[1], Qinggang Meng[1,2], Jian Chen[1,2], and Junbo Wang[1,2]
[1]Chinese Academy of Sciences, CHINA and [2]University of Chinese Academy of Sciences, CHINA

12:00 - 14:00 **Lunch**

Session W3A - Ultrasonic Devices

14:00 – 14:15

Yilmaz Arin Manav[1], Andrew Piasecki[1], Amit Lal[2,3], Dori Woods[1], and Benyamin Davaji[1]
[1]Northeastern University, USA and [2]Geegah LLC, USA, [3]Cornell University, USA

14:15 - 14:30

Xiaoxi Zhao, Michiel Pertijs, and Tomás Manzaneque
Delft University of Technology (TU Delft), NETHERLANDS

Session W3B - Biomedical Devices

15:15 - 15:30

Session W3C - Flow Sensors

14:00 - 14:15

14:15 - 14:30

14:30 - 14:45

14:45 - 15:00

15:00 - 15:15

15:15 - 15:30

Session W3D - Actuators

14:00 - 14:15

14:15 - 14:30

14:30 - 14:45

W3D.03 CANTILEVER FREE MULTISTABLE MAGNETIC LIFT ACTUATOR FOR LARGE OUT-OF-PLANE DISPLACEMENTS **600**
Pascal M. Weber and Ulrike Wallrabe
University of Freiburg, GERMANY

14:45 - 15:00

W3D.04 HEXASTABLE MEMS STAGE **604**
Shun Yasunaga and Yoshio Mita
University of Tokyo, JAPAN

15:00 - 15:15

W3D.05 CASCADE-ACTUATION UNCOUPLED-MOTION XYZ-MICROSTAGE WITH MONOLITHIC INTEGRATION OF IN-PLANE COMB-DRIVE XY-MICROSTAGE AND OUT-OF-PLANE AL/SIO_2 BIMORPH THERMOELECTRIC ACTUATORS **608**
Huanyu Dai, Zengyi Wang, Penghong Shi, Junyang Ding, Bing Li, and Gaopeng Xue
Harbin Institute of Technology, CHINA

15:15 - 15:30

W3D.06 SLITHER-TYPE BIOHYBRID ROBOT POWERED BY HIGHLY CONTRACTILE MUSCLE RINGS **612**
Tomohiro Morita, Minghao Nie and Shoji Takeuchi
University of Tokyo, JAPAN

Poster Session W4P and Exhibit Inspection

15:35 - 17:30

15:30 – 16:00 **Break**

17:30 Adjourn for the Day

Transducers 2025 Conference Banquet

17:30 - 23:00

Thursday, 3 July

Session Th1A - Robotics & Tactile Sensing

08:30 - 09:00

INVITED PRESENTATION

09:00 - 09:15

09:15 - 09:30

09:30 - 09:45

09:45 - 10:00

Session Th1B - Energy Harvesters

08:30 - 09:00

INVITED PRESENTATION

09:00 - 09:15

Session Th1C - Environmental Sensors

Session Th1D - MEMS CMOS Integration

08:30 - 09:00

INVITED PRESENTATION

Th1D.01 ENHANCING MEMS PERFORMANCE THROUGH CMOS INTEGRATION: THE CASE OF PMUTS **678**
Eyglis Ledesma, Ivan Zamora, Ahsan Shabeer, Mohammadamir Ghasemishabankareh, Zeyuan Hui, *Francesc Torres, Arantxa Uranga and* **Núria Barniol**
Universitat Autònoma de Barcelona, SPAIN

09:00 - 09:15

Th1D.02 CMOS-COMPATIBLE STRATEGY FOR TRANS-SCALE STRUCTURES VIA OPTICALLY PROGRAMMABLE SELF-ASSEMBLY **683**
Zhi-Qi Dong, Kai-Ming Hu, Rui-Jia Xiang, Tian-Yu Zhao, Jun-Feng Zhou, Wen-Ming Zhang, and Guang Meng
Shanghai Jiao Tong University, CHINA

09:15 - 09:30

Th1D.03 A HIGHLY SENSITIVE CMOS-MEMS INTEGRATED SOC FOR FLOW AND TEMPERATURE SENSING USING A MICROCANTILEVER ARRAY **687**
Feiyun Wang, Xuan Ouyang, Xiangyu Song, Linze Hong, and Wei Xu
Shenzhen University, CHINA

09:30 - 09:45

Th1D.04 TOWARD A SELF-POWERED MM-SCALE MEMS SENSOR PLATFORM THROUGH HETEROGENEOUS INTEGRATION OF SCμM AND HV SOI CMOS **691**
Yichen Liu, Daniel Lovell, Titan Yuan, and Kristopher S.J. Pister
University of California, Berkeley, USA

09:45 - 10:00

Th1D.05 STACKED TEMPERATURE AND HUMIDITY SOC WITH ENHANCED SENSITIVITY AND LOW HYSTERESIS VIA CMOS-MEMS INTEGRATION **695**
Yubin Ma, Linze Hong, Ruining Xu, Mengliang Jia, and Wei Xu
Shenzhen University, CHINA

10:00 – 10:30 **Break and Exhibit Inspection**

Session Th2A - Cellular Systems

10:30 - 10:45

Th2A.01 VISUAL FEEDBACK SYSTEM FOR ROTATIONAL ANGLE CONTROL OF A SINGLE CELL BASED ON VIBRATION-INDUCED FLOW **699**
Hatsuhiko Ishiguro, Masatomo Arai, Hiroyasu Kobayashi, and Takeshi Hayakawa
Chuo University, JAPAN

10:45 - 11:00

Th2A.02 HIGH-QUALITY IMAGING FLOW CYTOMETRY BASED ON ACOUSTIC FOCUSING AND ITS APPLICATION IN LABEL-FREE LEUKOCYTE DIFFERENTIAL COUPLED WITH DEEP NEURAL NETWORK **703**
Xukun Huang[1,2], Xiao Chen[1,2], Junbo Wang[1,2], Xuzhen Qin[3], Xiaoye Huo[1,2], Nan Li[1,2], and Jian Chen[1,2]
[1]Chinese Academy of Sciences, CHINA, [2]University of Chinese Academy of Sciences, CHINA, and [3]Peking Union Medical College Hospital, CHINA

11:00 - 11:15

Th2A.03 EFFECT OF TITANIUM DIOXIDE NANOPARTICLES ON REACTIVE OXYGEN SPECIES GENERATION IN A HIGH-FREQUENCY ULTRASOUND RANGE **707**
Kotaro Fujishiro[1], Satoshi Okada[2], Takahiro Kuchimaru[3], and Yuta Kurashina[1]
[1]Tokyo University of Agriculture and Technology, JAPAN, [2]Institute of Science Tokyo, JAPAN, and [3]Jichi Medical University, JAPAN

11:15 - 11:30

Th2A.04 A 3D-PRINTED FLEXIBLE DEVICE FOR MEASURING CONCENTRIC CONTRACTILE FORCE IN IN-VITRO SMOOTH MUSCLE TISSUE MODEL **710**
DongWoo Lee, Byeongwook Jo, Minghao Nie, and Shoji Takeuchi
University of Tokyo, JAPAN

11:30 - 11:45

Th2A.05 A HIGH-SENSITIVITY AND CLOGGING-FREE MICROFLUIDIC IMPEDANCE FLOW CYTOMETER ENABLED BY VIRTUAL CONSTRICTION MICROCHANNEL **712**
Xiao Chen[1,2], Yimin Li[1,2], Tingxuan Fang[1,2], Jie Zhang[3], Yueying Li[3], Xuzhen Qin[4], Nan Li[1], Junbo Wang[1,2], Xiaoye Huo[1], and Jian Chen[1,2]
[1]Chinese Academy of Sciences, CHINA, [2]University of Chinese Academy of Sciences, CHINA, [3]China National Center for Bioinformation, CHINA, and [3]Peking Union Medical College Hospital, CHINA

11:45 - 12:00

Th2A.06 QUANTITATIVE NANO-ARTIFACTS EXPOSURE TOWARD SINGLE CELLS UTILIZING A MICRODROPLET-BASED MICROFLUIDIC SYSTEM **716**
Ren Takeuchi[1], Makoto Saito[1], Rinko Kurogi[1], Nariaki Kiyama[1], Yoko Yamanishi[1], Kosuke Dodo[2], Takashi Kamatani[3], Yoshitaka Shirasaki[4], Chia-Hung Dylan Tsai[5], Satoshi Yotsumoto[6], Niko Kimura[7], Shigeo S. Sugano[8], and Shinya Sakuma[1]
[1]Kyushu University, JAPAN, [2]RIKEN, JAPAN, [3]Institute of Science Tokyo, JAPAN, [4]University of Tokyo, JAPAN, [5]National Yang Ming Chiao Tung University, TAIWAN, [6]Tokyo University of Pharmacy and Life Sciences, JAPAN, [7]Tokyo University of Agriculture and Technology, JAPAN [8]National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

Session Th2B - Fabrication & Functional Materials

10:30 - 10:45

Th2B.01 EDIBLE WIRELESS CAPSULE SENSOR FOR SENSING GASTRIC DIGESTIVE FUNCTION BY ELECTROMAGNETIC RESPONSE OF SPLIT-RING RESONATOR WITH VEGETABLE SHEET **720**
Shion Miura[1], Tetsuo Kan[2], and Hiroaki Onoe[1]
[1]Keio University, JAPAN and [2]University of Electro-Communications, JAPAN

10:45 - 11:00

Th2B.02 WAFER-LEVEL MICROFABRICATION OF ZIPPING ELECTROHYDRAULIC ACTUATORS FOR SOFT MILLI-ROBOTS **724**
Shai Shmulevich, Florian Hartmann, and Herbert Shea
École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

11:00 - 11:15

Th2B.03 RESILIENT AND LONG-LASTING LIVING MATERIALS: BRIDGING ELECTRONICS AND BIOLOGICAL SYSTEMS **727**
Ruohan Zhang, Yang Gao, and Seokheun Choi
State University of New York, Binghamton, USA

11:15 - 11:30

Th2B.04 NOVEL FABRICATION SCHEME USING LATERAL STACKING OF HYBRID PIEZO/FERROELECTRIC THIN-FILMS FOR MEMS RESONATORS **731**
Linet Thomas C[1], Praveen Kumar[1], Sambuddha Khan[2], and Gayathri Pillai[1]
[1]Indian Institute of Science, INDIA and [2]University College Cork, IRELAND

11:30 - 11:45

Th2B.05 HIGH ASPECT RATIO 3D CARBON MICROSTRUCTURE FOR INFRARED EMITTER USING PARYLENE CARBONIZATION **735**
Ryo Yoshitake, Shunsuke Yamada, Shuji Tanaka, and Takashiro Tsukamoto
Tohoku University, JAPAN

11:45 - 12:00

Session Th2C - Accelerometers & Gyroscopes

10:30 - 10:45

10:45 - 11:00

11:00 - 11:15

11:15 - 11:30

11:30 - 11:45

11:45 - 12:00

Session Th2D - Mixed

10:30 - 10:45

10:45 - 11:00

Th2D.02 ELECTRONICS INSENSITIVE TRACKING FOR ULTRA-STABLE MEMS FREQUENCY REFERENCES **772**
Jie Yan[1], Jintark Kim[1], Rakibul Islam[1], Jiheng Jing[1], Karim Elmeligy[1], Jiawei Yang[2], Thomas W. Kenny[2], Paven K. Hanumolu[1], and Gaurav Bahl[1]
[1]University of Illinois, Urbana-Champaign, USA and [2]Stanford University, USA

11:00 - 11:15

Th2D.03 SUSTAINED AC PLASMA GENERATION AT LOW VOLTAGE USING AMINIATURIZED HIGH-Q ROSEN TRANSFORMER **775**
Justin Phelps and Reza Abdolvand
University of Central Florida, USA

11:15 - 11:30

Th2D.04 CHARACTERIZATION OF MICROREACTORS FOR NANOPARTICLE SYNTHESIS **779**
Avery E. England, Scott D. Collins, Michael D. Mason, and Rosemary L. Smith
University of Maine, USA

11:30 - 11:45

Th2D.06 STATIC HYSTERESIS MITIGATION FOR PZT MEMS VARIFOCAL LIQUID LENS **783**
Andrea Vergara, Zhengnan Tang, Yukio Suzuki, and Shuji Tanaka
Tohoku University, JAPAN

12:00 – 12:15 **Transition Break**

Award Ceremony and Closing Remarks

12:15 - 12:45

12:45 **Conference Adjourns**

Optional Facility Tour

12:30 - 17:30

Poster Presentations

All times are Eastern Standard Time (EST)

Monday, 30 June	14:00 - 16:00
Tuesday, 01 July	14:00 - 16:00
Wednesday, 02 July	15:30 – 17:30

Classification Chart

(last character of poster number)

- Actuators and Microsystems
- Bio-Sensors and Microsystems Including In-Vitro Medical Applications
- Chemical Sensors and Microsystems
- Composite Materials, Polymers, and Fabrication Processes
- Energy, Power and Thermal Management
- Microfluidics Platform Technologies
- Nanoscale Materials and Fabrication
- Optical and Atomic Transducers
- Packaging & Solid-State Materials and Fabrication Processes
- Physical Sensors and Microsystems
- RF MEMS, Resonators and Oscillators
- Wearable and In-Vivo Medical Devices and Microsystems
- Late News

Monday - Actuators and Microsystems

Tuesday - Actuators and Microsystems

Wednesday - Actuators and Microsystems

Monday - Bio-Sensors and Microsystems Including In-Vitro Medical Applications

Tuesday - Bio-Sensors and Microsystems Including In-Vitro Medical Applications

Wednesday - Bio-Sensors and Microsystems Including In-Vitro Medical Applications

Monday - Chemical Sensors and Microsystems

Tuesday - Chemical Sensors and Microsystems

Wednesday - Chemical Sensors and Microsystems

Monday - Composite Materials, Polymers, and Fabrication Processes

Tuesday - Composite Materials, Polymers, and Fabrication Processes

Wednesday - Composite Materials, Polymers, and Fabrication Processes

Monday - Energy, Power and Thermal Management

Tuesday - Energy, Power and Thermal Management

Wednesday - Energy, Power and Thermal Management

Monday - Microfluidics Platform Technologies

Tuesday - Microfluidics Platform Technologies

Wednesday - Microfluidics Platform Technologies

Monday - Nanoscale Materials and Fabrication

Tuesday - Nanoscale Materials and Fabrication

Wednesday - Nanoscale Materials and Fabrication

Monday - Optical and Atomic Transducers

Tuesday - Optical and Atomic Transducers

Wednesday - Optical and Atomic Transducers

Monday - Packaging & Solid-State Materials and Fabrication Processes

Tuesday - Packaging & Solid-State Materials and Fabrication Processes

Wednesday - Packaging & Solid-State Materials and Fabrication Processes

Monday - Physical Sensors and Microsystems

Tuesday - Physical Sensors and Microsystems

Wednesday - Physical Sensors and Microsystems

Monday - RF MEMS, Resonators and Oscillators

Tuesday - RF MEMS, Resonators and Oscillators

Wednesday - RF MEMS, Resonators and Oscillators

Monday - Wearable and In-Vivo Medical Devices and Microsystems

Tuesday - Wearable and In-Vivo Medical Devices and Microsystems

Wednesday - Wearable and In-Vivo Medical Devices and Microsystems

Monday – Late News

Tuesday – Late News

Wednesday – Late News