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SUNDAY 16 June 2013

08:30 - 14:00	SHORT COURSES REGISTRATION
09:00 - 12:30	MORNING TUTORIALS
12:30 - 15:00	LUNCH
15:00 - 18:00	AFTERNOON TUTORIALS
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MONDAY 17 June 2013

08:00 - 18:00	REGISTRATION
08:45 - 09:00	Welcome Address - Juan R. Morante, <i>General Chair</i>
09:00 - 09:15	Technical Program Introduction - Christofer Hierold, <i>Technical Program Chair</i>
09:15 - 09:55	Plenary I - Session Chairs: C. Hierold, <i>ETH Zürich, SWITZERLAND</i> and R. Zengerle, <i>University of Freiburg - IMTEK, GERMANY</i>
	M1G.001 MEMS TECHNOLOGIES IN LIFE SCIENCES H.P. Lang, F. Huber, J. Zhang and Christoph Gerber <i>University of Basel, SWITZERLAND</i>1
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Switch Design, Simulation & Test

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M3P.143	OPERATION PRINCIPLES OF MICRO-PLASMA FIELD EFFECT TRANSISTOR Y. Zhang, P. Pai, F.K. Chowdhury, and M. Tabib-Azar University of Utah, USA	578

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M3P.144	<p>A GAP-CLOSING ELECTROSTATIC ACTUATOR WITH A LINEAR EXTENDED RANGE B. Rivlin, S. Shmulevich, I. Hotzen, and D. Elata <i>Technion - Israel Institute of Technology, ISRAEL</i></p>	582
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16:00 - 16:30	BREAK & EXHIBIT INSPECTION	



MONDAY 17 June 2013

PARALLEL ORAL SESSIONS

Accelerometers	Bio-Microsystems	Nano-Mechanical Resonators	Energy Scavenging & Magnetometers
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1

Session Chairs:

T. Akin, <i>Middle East Technical University (METU)</i>	J. Ducr�e, <i>Dublin City University, IRELAND</i>	W. King, <i>University of Illinois, Urbana-Champaign, USA</i>	P. Woias, <i>University of Freiburg - IMTEK, GERMANY</i>
K. Sawada, <i>Toyohashi University of Technology, JAPAN</i>	S. Shoji, <i>Waseda University, JAPAN</i>	T. Ono, <i>Tohoku University, JAPAN</i>	E. Yeatman, <i>Imperial College London, UK</i>

16:30 - 17:00

<p align="center">INVITED SPEAKER</p> <p>M4A.001 ROAD TO ULTRA LOW COST MULTI-SENSOR INTEGRATION Y. Zhao and Y. Cai <i>MEMSIC, Inc., USA</i>602</p>	<p align="center">INVITED SPEAKER</p> <p>M4B.001 SINGLE-MOLECULE COUNTING OF BIOMOLECULES WITH FEMTOLITER DROPRET CHAMBER ARRAY H. Noji <i>University of Tokyo, JAPAN</i>630</p>	<p align="center">INVITED SPEAKER</p> <p>M4C.001 NANOMECHANICAL RESONATORS BASED ON NANOTUBES AND GRAPHENE J. Moser^{1,2}, A. Eichler^{1,2}, J. Chaste², and A. Bachtold^{1,2} ¹ICFO, SPAIN and ²Institut Catal�a de Nanotecnologia (ICN), SPAIN657</p>	<p align="center">INVITED SPEAKER</p> <p>M4D.001 MEMS BASED VIBRATION HARVESTING: FACING THE UGLY FACTS R.J.M. Vullers, M. Renaud, R. Elfrink, and R. van Schaijk <i>imec/Holst Centre, THE NETHERLANDS</i>685</p>
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17:00 - 17:15

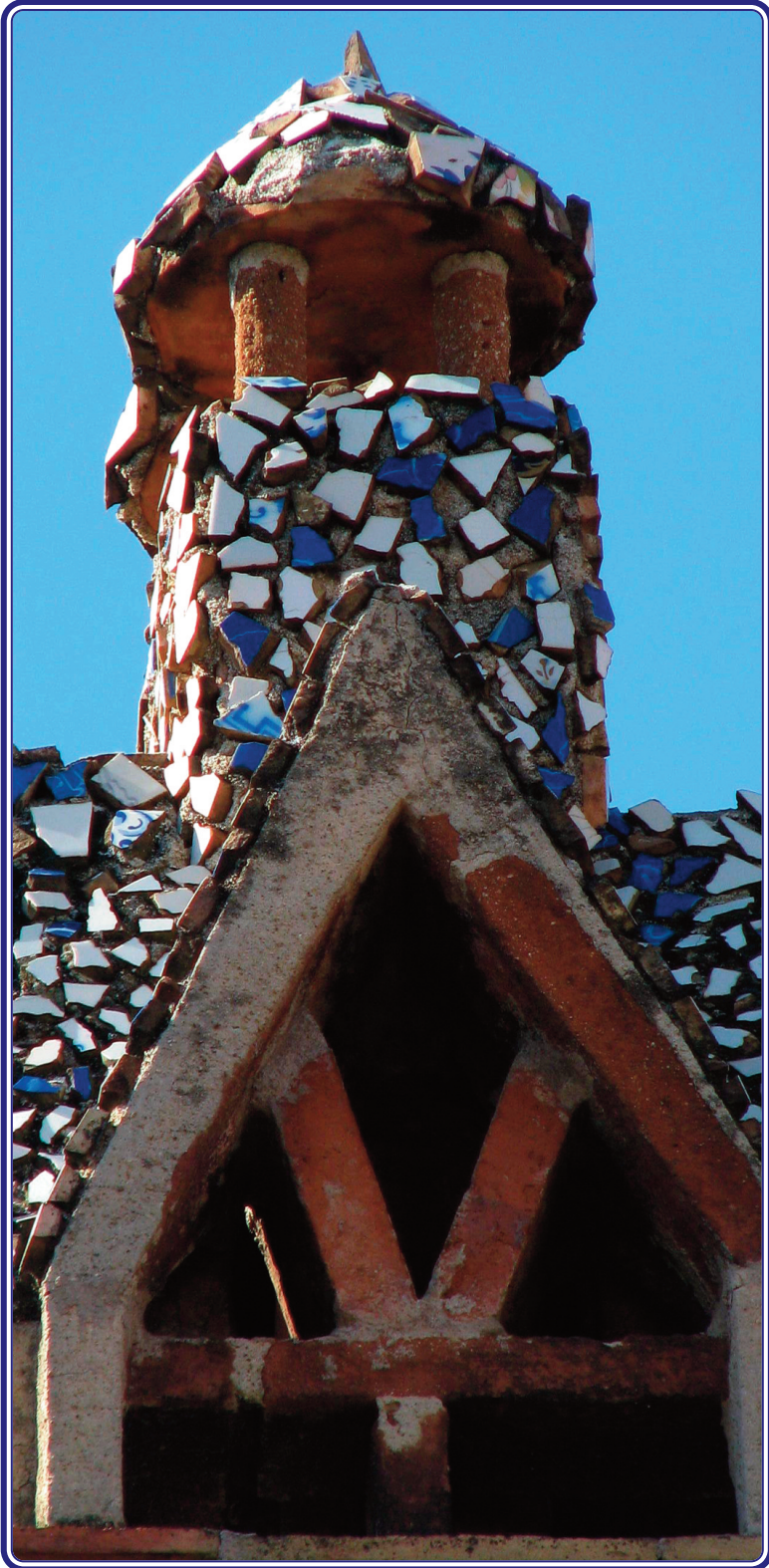
<p>M4A.002 HERMETICALLY ENCAPSULATED DIFFERENTIAL RESONANT ACCELEROMETER D.L. Christensen, C.H. Ahn, V.A. Hong, E.J. Ng, Y. Yang, B.J. Lee, and T.W. Kenny <i>Stanford University, USA</i>606</p>	<p>M4B.002 SINGLE MOLECULE ENZYMOLOGY USING CARBON NANOTUBE CIRCUITS Y. Choi, P.C. Sims, T. Olsen, O.T. Gul, B.L. Corso, M. Iftikhar, G.A. Weiss, and P.G. Collins <i>University of California, Irvine, USA</i>633</p>	<p>M4C.002 AEROSOL IMPACTOR WITH EMBEDDED MEMS RESONANT MASS BALANCE FOR REAL-TIME PARTICULATE MASS CONCENTRATION MONITORING E. Mehdizadeh^{1,3}, J.C. Wilson¹, A. Hajjam², A. Rahafrooz¹, and S. Pourkamalji^{2,3} ¹University of Denver, USA, ²FemtoScale, Inc., USA, and ³University of Texas, USA661</p>	<p>M4D.002 AN ENERGY HARVESTER FOR ROTATING ENVIRONMENTS USING OFFSET PENDULUM DYNAMICS S.J. Roundy and J. Tola <i>University of Utah, USA</i>689</p>
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17:15 - 17:30

<p>M4A.003 A FULLY-DIFFERENTIAL, MULTIPLEX-SENSING INTERFACE CIRCUIT MONOLITHICALLY INTEGRATED WITH TRI-AXIS PURE OXIDE CAPACITIVE CMOS-MEMS ACCELEROMETERS Y.-C. Liu¹, M.-H. Tsai², S.-S. Li¹, and W. Fang¹ ¹National Tsing Hua University, TAIWAN and ²PixArt Imaging Inc., TAIWAN610</p>	<p>M4B.003 THREE DIMENSIONAL LOBULE-MIMETIC REGENERATION IN VITRO BY PEGDA-BASED CELL SHEETS Y.S. Chen, L.Y. Ke, C.K. Tung, C.H. Lu, C.C. Hu, and C.H. Liu <i>National Tsing Hua University, TAIWAN</i>637</p>	<p>M4C.003 FREQUENCY-ADDRESSED NEMS ARRAYS FOR MASS AND GAS SENSING APPLICATIONS E. Sage, O. Martin, C. Dupr�e, T. Ernst, G. Billiot, L. Duraffourg, E. Colinet, and S. Hentz <i>Commissariat � l'�nergie Atomique (CEA), FRANCE</i>665</p>	<p>M4D.003 A HIGH PERFORMANCE ELECTROSTATIC MEMS VIBRATION ENERGY HARVESTER WITH CORRUGATED INORGANIC SiO₂-Si₃N₄ ELECTRET M. Renaud¹, G. Altena¹, M. Goedbloed¹, C. de Nooijer¹, S. Matova¹, Y. Naito², T. Yamakawa², H. Takeuchi², K. Onishi², and R. van Schaijk¹ ¹imec/Holst Centre, THE NETHERLANDS and ²Panasonic Corporation, JAPAN693</p>
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Accelerometers	Bio-Microsystems	Nano-Mechanical Resonators	Energy Scavenging & Magnetometers
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
17:30 - 17:45			
<p>M4A.004 SENSING ELECTRODES WITH NANOPOROUS ANODIC ALUMINUM OXIDE FOR PERFORMANCE ENHANCEMENT OF CMOS-MEMS ACCELEROMETER C.-I. Chang¹, M.-H. Tsai², P.-H. Lo¹, J.-H. Yeh¹, Y.-C. Liu¹, C.-M. Sun², C. Hong¹, and W. Fang¹ ¹National Tsing Hua University, TAIWAN and ²PixArt Imaging Inc., TAIWAN614</p>	<p>M4B.004 MEMBRANE MICROCHANNEL MADE OF COLLAGEN WITH SELF-ASSEMBLED MICRO FIBRIL STRUCTURES FOR TISSUE ENGINEERING M. Ikeuchi^{1,2} and K. Ikuta¹ ¹University of Tokyo, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN641</p>	<p>M4C.004 TIME-DOMAIN AC CHARACTERIZATION OF SILICON CARBIDE (SiC) NANO-ELECTRO-MECHANICAL SWITCHES TOWARD HIGH SPEED OPERATIONS T. He, V. Ranganathan, R. Yang, S. Rajgopal, S. Bhunia, M. Mehregany, and P.X.-L. Feng Case Western Reserve University, USA669</p>	<p>M4D.004 A WIDE-BAND PIEZOELECTRIC ENERGY-HARVESTER FOR HIGH-EFFICIENCY POWER GENERATION AT LOW FREQUENCIES Q.C. Tang and X. Li Chinese Academy of Sciences, CHINA697</p>
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<p>M4A.005 X-Y AND Z-AXIS CAPACITIVE ACCELEROMETERS PACKAGED IN AN ULTRA-CLEAN HERMETIC ENVIRONMENT V.A. Hong, B.J. Lee, D.L. Christensen, D.B. Heinz, E.J. Ng, C.H. Ahn, Y. Yang, and T.W. Kenny Stanford University, USA618</p>	<p>M4B.005 REAL-TIME 3D FORCE/POSITION SENSING SYSTEM BY A SINGLE CCD FOR OPTICALLY DRIVEN MICRO-ROBOT N. Shimada¹, K. Asano², M. Ikeuchi^{1,3}, and K. Ikuta² ¹University of Tokyo, JAPAN, ²Nagoya University, JAPAN and ³Japan Science and Technology Agency (JST), JAPAN645</p>	<p>M4C.005 A NANOWIRE FET SWITCH INTEGRATED WITH A MICROELECTRODE ARRAY FOR RETINAL PROSTHETIC SYSTEMS S. Lee¹, S.W. Jung^{1,2}, J. Ahn¹, H.J. Yoo¹, S.K. Park¹, and D.-I. Cho¹ ¹Seoul National University, SOUTH KOREA and ²Korea Electronics Technology Institute, SOUTH KOREA673</p>	<p>M4D.005 ON-CHIP RF POWER INDUCTORS WITH NANOGANULAR MAGNETIC CORES USING PRISM-ASSISTED UV-LED LITHOGRAPHY D.V. Harburg¹, G.R. Khan¹, F. Herrault², J. Kim², C.G. Levey¹, and C.R. Sullivan¹ ¹Thayer School of Engineering at Dartmouth, USA and ²Georgia Institute of Technology, USA701</p>
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<p>M4A.006 A SILICON MICROSEISMOMETER FOR MARS W.T. Pike¹, I.M. Standley², and S. Calcutt³ ¹Imperial College London, UK, ²Kinematics, Inc., USA, and ³University of Oxford, UK622</p>	<p>M4B.006 HIGH TEMPERATURE MICRO FLOW CONTROL DEVICE FOR MEMS ENABLED CHOPPER STABILIZED GAS CHROMATOGRAPHY - ELECTROANTENNOGRAPHY (MEMS-GC-EAG) M.-D. Zhou, A.J. Myrick, W.J. Khan, X. Gao, T.C. Baker, and S.-Y. Zheng Pennsylvania State University, USA649</p>	<p>M4C.006 IMPLEMENTATION OF ELECTROSTATICALLY CONTROLLED FABRY-PEROT INTERFEROMETER USING NANOPOROUS ANODIC ALUMINUM OXIDE LAYER P.-H. Lo, C.-C. Lee, and W. Fang National Tsing Hua University, TAIWAN677</p>	<p>M4D.006 TOWARDS A MINIATURE ATOMIC SCALAR MAGNETOMETER USING LIQUID CRYSTAL POLARIZATION ROTATOR J. Rutkowski¹, W. Fourcault¹, F. Bertrand¹, U. Rossini¹, S. Gétin¹, O. Lartigue¹, S. Le Calvez¹, T. Jager¹, E. Herth², M. Le Prado¹, J.M. Leger¹, and S. Morales¹ ¹Commissariat à l'énergie Atomique (CEA), FRANCE and ²FEMTO-ST, FRANCE705</p>
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<p>M4A.007 THRESHOLD SHOCK SENSOR BASED ON BI-STABLE MECHANISM A. Frangi¹, B. De Masi¹, F. Confalonieri¹, and L. Baldassarre² ¹Politecnico di Milano, ITALY and ²STMicroelectronics, ITALY626</p>	<p>M4B.007 SELF FOCUSING ACOUSTIC TRANSDUCER (SFAT) WITH 10 MM FOCAL LENGTH FOR CANCER-SPECIFIC LOCALIZED CYTOLYSIS OF 3D CELL SPHEROIDS IN 3D MATRIGEL L. Wang, C.-P. Liao, M.-E. Gross, and E.S. Kim University of California, Los Angeles, USA653</p>	<p>M4C.007 INTEGRATED FINFET BASED SENSING IN A LIQUID ENVIRONMENT S. Rigante¹, M. Wipf², A. Tarasov², D. Bouvet¹, K. Bedner³, R.L. Stoop², and A.M. Ionescu¹ ¹École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, ²University of Basel, SWITZERLAND, and ³Paul Scherrer Institut, SWITZERLAND681</p>	<p>M4D.007 COMPARISON OF LORENTZ-FORCE MEMS MAGNETOMETERS BASED ON DIFFERENT CAPACITIVE SENSING TOPOLOGIES G. Langfelder¹, A. Tocchio², E. Lasalandra², and A. Longoni¹ ¹Politecnico di Milano, ITALY and ²STMicroelectronics, ITALY709</p>

18:30	ADJOURN FOR THE DAY
19:45 - 21:45	MUSEU NACIONAL d'ART de CATALUNYA (MNAC) VISIT & COCKTAILS



TUESDAY 18 June 2013

PARALLEL ORAL SESSIONS

Physical Microsystems 1	Electrical Recording & Stimulation	Nanomaterials (Characterization)	Acoustic/RF Resonators & Oscillators
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1

Session Chairs:

W. Fang, <i>National Tsing Hua University, TAIWAN</i>	J.W. Kwon, <i>University of Missouri, Columbia, USA</i>	L. Buchailot, <i>IEMN, FRANCE</i>	F. Ayazi, <i>Georgia Institute of Technology, USA</i>
O. Paul, <i>University of Freiburg - IMTEK, GERMANY</i>	W. van der Wijngaart, <i>KTH Royal Institute of Technology, SWEDEN</i>	W. Wu, <i>Peking University, CHINA</i>	D. Weinstein, <i>Massachusetts Institute of Technology, USA</i>

08:30 - 09:00

<p>INVITED SPEAKER T1A.001 MEMS DEVICES AND SENSORS IN STANDARD CMOS PROCESSING J. Montanyà i Silvestri, J.J. Valle Fraga, L. Barrachina Saralegui, and D. Fernández Martínez <i>Baolab Microsystems, SPAIN</i> 713</p>	<p>INVITED SPEAKER T1B.001 TOWARD A HIGH VISUAL-ACUITY RETINAL PROSTHESIS L.-S. Fan <i>National Tsing Hua University, TAIWAN</i> 738</p>	<p>INVITED SPEAKER T1C.001 ATOMICALLY-PRECISE THREE-DIMENSIONAL TOP DOWN FABRICATION J.B. Ballard¹, J.H.G. Owen¹, E. Fuchs¹, S. McDonnell², D. Dick², G. Mordt², A. Azcatt², O. Seitz², P. Campbell², J.F. Veyan², Y. Chabal², R.M. Wallace², M. Bischof³, D. Jaeger³, R. Reidy³, N. Sarkar⁴, and J.N. Randall¹ ¹Zyvex Labs, USA, ²University of Texas, USA, ³University of North Texas, USA, and ⁴Integrated Circuit Scanning Probe Instruments, CANADA 764</p>	<p>INVITED SPEAKER T1D.001 TIME REVERSAL MIRRORS M. Fink <i>Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), FRANCE</i> 788</p>
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09:00 - 09:15

<p>T1A.002 SILICON NANOWIRE BASED RING SHAPE FORCE SENSOR FOR SENSORIZED GUIDEWIRES B. Han^{1,2}, Y.-J. Yoon², M. Hamidullah¹, A.T.-H. Lin², and W.-T. Park³ ¹Agency for Science, Technology and Research (A*STAR), SINGAPORE, ²Nanyang Technological University, SINGAPORE, and ³Seoul National University of Science and Technology, SOUTH KOREA 718</p>	<p>T1B.002 CONFERRING FLEXIBILITY AND RECONFIGURABILITY TO A 26,400 MICRO-ELECTRODE CMOS ARRAY FOR HIGH THROUGHPUT NEURAL RECORDINGS J. Müller¹, M. Ballini¹, P. Livi¹, Y. Chen¹, A. Shadmani¹, U. Frey², I.L. Jones¹, M. Fiscella¹, M. Radivojevic¹, D.J. Bakkum¹, A. Stettler¹, F. Heer¹, and A. Hierlemann¹ ¹ETH Zürich, SWITZERLAND and ²RIKEN, JAPAN 744</p>	<p>T1C.002 STRESS REDUCTION IN ULTRA-SMALL THIN FILM Al₂O₃ DIAPHRAGMS BY ATOMIC LAYER DEPOSITION T. Süss, P. Braeuninger-Weimer, and C. Hierold <i>ETH Zürich, SWITZERLAND</i> 768</p>	<p>T1D.002 A CURVATURE SELF-DETECTABLE 3D ARC-SHAPED IPMC/PVDF TRANSDUCER WITH ACOUSTIC BEAM GENERATION AND TUNABLE FOCAL RANGE ABILITIES G.-H. Feng and G.-Y. Chu <i>National Chung Cheng University, TAIWAN</i> 790</p>
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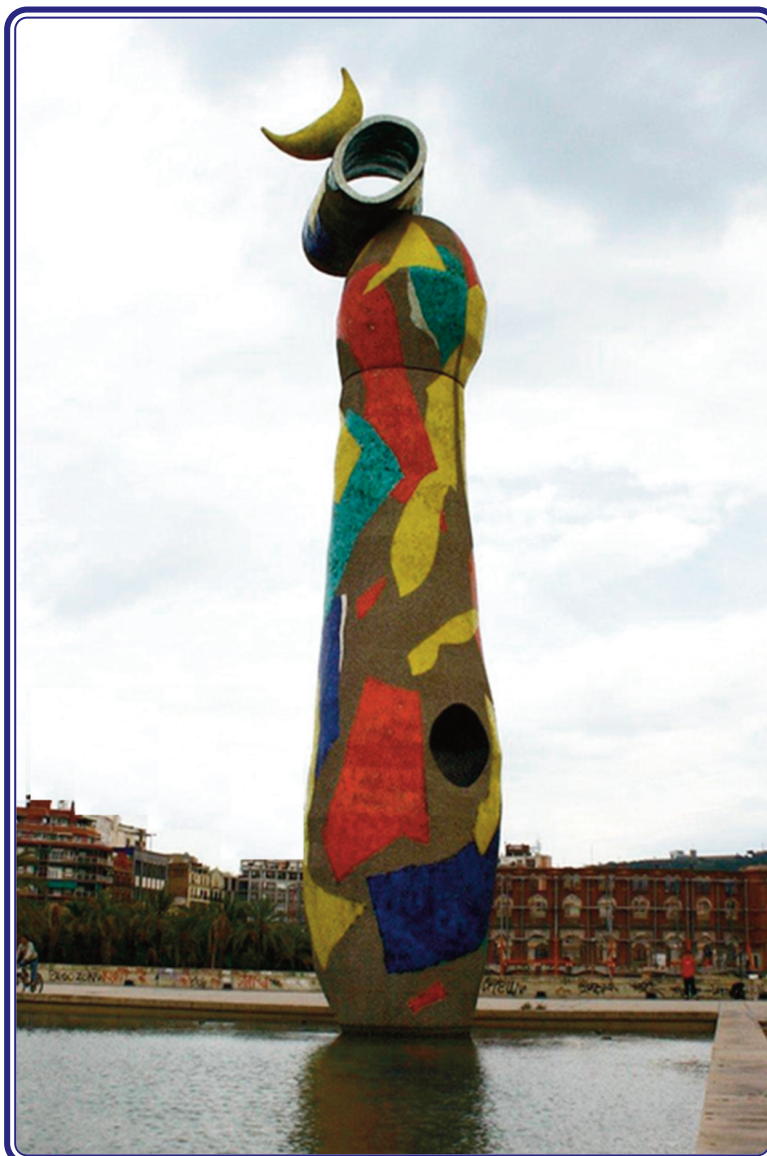
Physical Microsystems 1	Electrical Recording & Stimulation	Nanomaterials (Characterization)	Acoustic/RF Resonators & Oscillators
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
09:15 - 09:30			
<p>T1A.003 A 2-D DIRECTIONAL AIR FLOW SENSOR ARRAY MADE USING STEREO LITHOGRAPHY AND MEMS MICRO-HYDRAULIC STRUCTURES M.M. Sadeghi, R.L. Peterson, and K. Najafi <i>University of Michigan, USA</i> 722</p>	<p>T1B.003 NANOGRASS BORON DOPED DIAMOND MICROELECTRODE ARRAYS FOR RECORDING AND STIMULATING NEURONAL TISSUES R. Kiran¹, M. Cottance², S. Joucla³, L. Rousseau², A. Bongrain^{1,2}, B. Yvert⁵, E. Scorsone¹, A. Bendali^{3,4}, G. Lissorgues², S. Picaud^{3,4,6}, and P. Bergonzo¹ ¹Commissariat à l'énergie Atomique (CEA), FRANCE, ²University Paris Est, FRANCE, ³Institut de la Vision, FRANCE, ⁴Université Pierre et Marie Curie, FRANCE, ⁵Université de Bordeaux, FRANCE, and ⁶Fondation Ophthalmologique Adolphe de Rothschild, FRANCE 748</p>	<p>T1C.003 PYROELECTRIC ELECTRON EMISSION FROM A THIN FILM OF PbZr_xTi_{1-x}O₃ ON A NANOFABRICATED CATHODE P.C. Fletcher, R.V.K. Mangalam, L.W. Martin, and W.P. King <i>University of Illinois, Urbana-Champaign, USA</i> 772</p>	<p>T1D.003 TEMPERATURE COMPENSATED OVERTONE RESONATORS J.R. Clark¹, A.R. Brown², G. He³, and W. Hsu¹ ¹Discera, Inc., USA, ²A. Brown Design, USA, and ³University of Michigan, USA 794</p>
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<p>T1A.004 DESIGN, MODELING, FABRICATION AND CHARACTERIZATION OF A MEMS ACCELERATION SENSOR FOR ACOUSTIC EMISSION TESTING A. Sorger, C. Auerswald, A. Shaporin, M. Freitag, M. Dienel, and J. Mehner <i>Chemnitz University of Technology, GERMANY</i> 726</p>	<p>T1B.004 SENSING AND ACTUATING ELECTROPHYSIOLOGICAL ACTIVITY ON BRAIN TISSUE AND NEURONAL CULTURES WITH A HIGH-DENSITY CMOS-MEA A. Maccione¹, A. Simi¹, T. Nieu¹, M. Gandolfo², K. Imfeld², E. Ferrea¹, E. Sernagor³, and L. Berdondini¹ ¹Istituto Italiano di Tecnologia, ITALY, ²Brain GmbH, SWITZERLAND, and ³Newcastle University, UK 752</p>	<p>T1C.004 SIMULTANEOUS CHARACTERIZATION OF MECHANICAL AND ELECTRICAL PROPERTIES OF NANOWIRE USING MEMS DEVICE H. Zeng¹, T. Li¹, M. Bartenwerfer², S. Fatikow², and Y. Wang¹ ¹Chinese Academy of Sciences, CHINA and ²University of Oldenburg, GERMANY 776</p>	<p>T1D.004 TIP-BASED GRAPHENE ETCHING FOR MEMS RESONATOR FREQUENCY TRIMMING H. Hosseinzadegan and A. Lal <i>Cornell University, USA</i> 798</p>
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<p>T1A.005 SINGLE CHIP PROCESS FOR SENSORS IMPLEMENTATION, INTEGRATION, AND CONDITION MONITORING C.-W. Cheng^{1,2}, K.-C. Liang^{1,2}, C.-H. Chu¹, D.A. Horsley³, and W. Fang² ¹Taiwan Semiconductor Manufacturing Company, TAIWAN, ²National Tsing Hua University, TAIWAN, and ³University of California, Davis, USA 730</p>	<p>T1B.005 A WEARABLE PERCUTANEOUS IMPLANT FOR LONG TERM ZEBRAFISH EPICARDIAL ECG RECORDING Y. Zhao¹, F. Yu², H. Cao², H. Chang³, X. Zhang¹, T.K. Hsiai², and Y.C. Tai¹ ¹California Institute of Technology, USA, ²University of Southern California, USA, and ³Northwestern Polytechnical University, USA 756</p>	<p>T1C.005 PROBING MECHANICAL, ELECTRICAL AND THERMAL PROPERTIES OF NANOSCALE MATERIALS USING MEMS DEVICES M.T. Alam and M.A. Haque <i>Pennsylvania State University, USA</i> 780</p>	<p>T1D.005 HIGH PRECISION FREQUENCY SYNTHESIZER BASED ON MEMS PIEZORESISTIVE RESONATOR K.L. Phan¹, T. van Ansem¹, C. van der Avoort¹, J.T.M. van Beek¹, M.J. Goossens¹, S. Jose¹, R.J.P. Lander², S. Menten¹, T. Naass¹, J. Sijstermans¹, E. Stikvoort¹, F. Swartjes¹, K. Wortel¹, and M.A.A. in 't Zandt¹ ¹NXP Semiconductors, THE NETHERLANDS and ²NXP Semiconductors, BELGIUM 802</p>

Physical Microsystems 1	Electrical Recording & Stimulation	Nanomaterials (Characterization)	Acoustic/RF Resonators & Oscillators
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
10:00 - 10:15			
T1A.006 FULLY MONOLITHIC MEMS BASED THERMAL SENSOR IN 22nm CMOS TECHNOLOGY FOR SOC THERMAL MANAGEMENT R. Mahameed ¹ , M. Abdelmoneum ¹ , D. Duarte ² , G. Taylor ² , S.-J. Choi ² , R. Brain ² , P. Morrow ² , and P. Fischer ² ¹ Intel Architecture Group, USA and ² Intel Technology Manufacturing Group, USA734	T1B.006 ACETYLCHOLINE DYNAMICS IN CORTICAL NETWORKS BY AN ION IMAGE SENSOR WITH NEUROTRANSMITTER-SENSITIVE MAGNETIC NANOMACHINES T. Sakurai ^{1,2} , A. Iwashita ¹ , K. Okumura ^{1,2} , M. Ishida ^{1,2} , and K. Sawada ^{1,2} ¹ Toyohashi University of Technology, JAPAN and ² Japan Science and Technology Agency (JST), JAPAN760	T1C.006 DIRECT OBSERVATION OF DAMAGE ACCUMULATION PROCESS INSIDE SILICON UNDER MECHANICAL FATIGUE LOADING S. Kamiya ¹ , R. Hirai ¹ , H. Izumi ¹ , N. Umehara ² , and T. Tokoroyama ² ¹ Nagoya Institute of Technology, JAPAN and ² Nagoya University, JAPAN784	T1D.006 A 3V CMOS-MEMS OSCILLATOR IN 0.35UM CMOS TECHNOLOGY J. Verd ¹ , A. Uranga ² , J. Segura ¹ , and N. Barniol ² ¹ Universitat de les Illes Balears, SPAIN and ² Universitat Autònoma de Barcelona, SPAIN806
10:15 - 10:45 BREAK & EXHIBIT INSPECTION			
PARALLEL ORAL SESSIONS			
Packaging & Technology	Liquid Chemical Sensing	Neural Probes	NEMS & AFM
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
Session Chairs:			
J.-U. Bu, <i>Senplus, SOUTH KOREA</i>	O. Brand, <i>Georgia Institute of Technology, USA</i>	D. Borkholder, <i>Rochester Institute of Technology, USA</i>	A. Lal, <i>Cornell University, USA</i>
L. Lin, <i>University of California, Berkeley, USA</i>	Z. Brzózka, <i>Warsaw University of Technology, POLAND</i>	G.-B. Lee, <i>National Tsing Hua University, TAIWAN</i>	T. Tsuchiya, <i>Kyoto University, JAPAN</i>
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RF MEMS, Resonators & Oscillators

Resonators/Oscillators

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Optical MEMS

Micro Lenses

T3P.125	A SILICON-GLASS HYBRID LENS FOR SIMULTANEOUS COLOR-AND-THERMAL IMAGING T. Takahata, K. Matsumoto, and I. Shimoyama <i>University of Tokyo, JAPAN</i>1408
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Optical Switches/Splitters

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T3P POSTER SESSION II (continued)

Tera Hertz & Plasmonic Devices

T3P.130	<p>AN OPTICALLY TUNABLE TERAHERTZ PERFECT ABSORBER H.R. Seren¹, A.C. Strikwerda¹, L. Cao¹, G. Keiser¹, J. Zhang¹, K. Fan¹, G. Metcalfe², M. Wraback², R.D. Averitt¹, and X. Zhang¹ ¹<i>Boston University, USA and</i> ²<i>U.S. Army Research Laboratory, USA</i></p> <p>.....1428</p>
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Fluidic Design & Test

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T3P.138	<p>STUDIES ON THINNED FLEXIBLE INTEGRATED CAPACITIVE PRESSURE SENSORS IN TACTILE SENSOR ARRAYS FOR THE USE IN ROBOTICS AND PROSTHETICS J.A. Müntjes¹, J. Häfner¹, M. Görtz², and W. Mokwa¹ ¹<i>RWTH Aachen University, GERMANY and</i> ²<i>Fraunhofer Institute of Microelectronic Circuits and Systems, GERMANY</i></p> <p>.....1460</p>

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T3P.139	<p>IN-LINE ADHESION MONITORING AND THE EFFECTS OF PROCESS VARIATIONS ON ADHESION IN MEMS M. Shavezipur^{1,2}, W. Gou^{1,3}, C. Carraro¹, Y. Tian^{1,4}, R. Maboudian¹, I. Gelmi⁵, R. Campedelii⁵, and M. Azpeitia⁵ ¹<i>University of California, Berkeley, USA,</i> ²<i>Ohio State University, USA,</i> ³<i>Hohai University, CHINA,</i> ⁴<i>Harbin Institute of Technology, CHINA, and</i> ⁵<i>STMicroelectronics, ITALY</i></p> <p>.....1464</p>
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Late News

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T3P.141	<p>MONOLITHIC 2GHZ ELECTROSTATICALLY ACTUATED MEMS OSCILLATOR WITH OPTO-MECHANICAL FREQUENCY MULTIPLIER S. Tallur and S.A. Bhave <i>Cornell University, USA</i></p> <p>.....1472</p>
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T3P.144	<p>SUB-MICRON GAP A-SI:H THIN FILM LAMÉ-MODE RESONATOR PROCESSED AT LOW TEMPERATURE ON A GLASS SUBSTRATE A. Gualdino¹, J. Gaspar², V. Chu¹, and J.P. Conde^{1,3} ¹<i>Instituto de Engenharia de Sistemas e Computadores (INESC), PORTUGAL,</i> ²<i>International Iberian Nanotechnology Laboratory (INL), PORTUGAL, and</i> ³<i>Instituto Superior Técnico, PORTUGAL</i></p> <p>.....1484</p>
16:00 - 16:30	BREAK & EXHIBIT INSPECTION



TUESDAY 18 June 2013

PARALLEL ORAL SESSIONS

Physical Microsystems 2	Microfluidics with Cells	Polymer MEMS	Physical Actuator & Thrusters
Room 113, Level 1	Room Level 114, Level 1	Room 115, Level 1	Room 116, Level 1

Session Chairs:

T. Kenny, <i>Stanford University, USA</i>	D. Juncker, <i>McGill University, CANADA</i>	J. Gardner, <i>University of Warwick, UK</i>	U. Varshney, <i>National Science Foundation (NSF), USA</i>
S. Franssila, <i>Aalto University, FINLAND</i>	Y.-K. Lee, <i>Hong Kong University of Science and Technology, HONG KONG</i>	R. Syms, <i>Imperial College London, UK</i>	W. Lang, <i>University of Bremen, GERMANY</i>

16:30 - 17:00

INVITED SPEAKER	INVITED SPEAKER	INVITED SPEAKER	INVITED SPEAKER
T4A.001 INTERROGATING AND MANIPULATING AT THE NANOMETRE SCALE - FROM SCIENTIFIC INSTRUMENTATION TO INDUSTRIAL APPLICATIONS U. Staufer ¹ , T. Akiyama ² , S. Gautsch ² , D. Parrat ² , N.F. de Rooij ² , and R. Imer ³ ¹ <i>Delft University of Technology, THE NETHERLANDS,</i> ² <i>École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, and</i> ³ <i>Centredoc, SWITZERLAND</i>1488	T4B.001 CELL-LADEN HYDROGEL BEADS, FIBERS AND PLATES FOR 3D TISSUE CONSTRUCTION S. Takeuchi <i>Tokyo University, JAPAN and Japan Science and Technology Agency (JST), JAPAN</i>1515	T4C.001 PROGRAMMING STRUCTURAL COLOR AND MAGNETIC ANISOTROPY IN POLYMER COMPOSITE MICROSTRUCTURE FOR NOVEL BIOSYSTEMS J. Kim, H. Lee, J. Kim, H. Kim, and S. Kwon <i>Seoul National University, SOUTH KOREA</i>1543	T4D.001 PROGRESS IN THIN-FILM SHAPE-MEMORY-ALLOY ACTUATORS A. Ishida <i>National Institute for Materials Science, JAPAN</i>1573

17:00 - 17:15

T4A.002 HIGH SPEED AND PARALLEL NANOIMAGING USING AN ARRAY OF HEATED ATOMIC FORCE MICROSCOPE CANTILEVERS S. Somnath, H. Kim, H. Hu, and W.P. King <i>University of Illinois, Urbana-Champaign, USA</i>1493	T4B.002 QUANTITATIVE ESTIMATION OF THE LIPID PRODUCTIVITY OF SINGLE ALGAE CELLS IN ALGINATE HYDROGEL MICROBEADS D.-H. Lee, C.Y. Bae, J.-I. Han, and J.-K. Park <i>Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA</i>1519	T4C.002 PARYLENE ORIGAMI STRUCTURE FOR INTROCUAR IMPLANTATION Y. Liu ¹ , J. Park ¹ , R.J. Lang ² , A. Emami-Neyestanak ¹ , S. Pellegrino ¹ , M.S. Humayun ² , and Y.-C. Tai ¹ ¹ <i>California Institute of Technology, USA,</i> ² <i>Robert J. Lang Origami, USA, and</i> ³ <i>University of Southern California, Los Angeles, USA</i>1549	T4D.002 MULTIARTICULAR MANIPULATOR AND ITS MULTI DEGREE OF FREEDOM MOTION BY DISTRIBUTED THIN PISTON-CYLINDER ACTUATORS T. Chishiro and S. Konishi <i>Ritsumeikan University, JAPAN</i>1579
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17:15 - 17:30

T4A.003 DESIGN OF MICRO-FABRICATED TRANSPARENT OPTICAL SENSORS FOR ACCURATE LINE-OF-SIGHT DETECTION AND THEIR APPLICATIONS IN INFORMATION COMMUNICATION TECHNOLOGY M. Ozawa ¹ , A. Oikawa ¹ , K. Sampei ¹ , and N. Miki ^{1,2} ¹ <i>Keio University, JAPAN and</i> ² <i>Japan Science and Technology Agency (JST), JAPAN</i>1497	T4B.003 INERTIAL SEPARATION OF PARTICLES WITH SMALL SIZE-VARIATIONS USING SELF-RELEASING MICROVORTEX X. Wang, J. Zhou, and I. Papautsky <i>University of Cincinnati, USA</i>1523	T4C.003 CHARACTERISTIC OF SINGLE-FIBER PVDF NANO-HARVESTER VIA NEW HOLLOW CYLINDRICAL NEAR-FIELD ELECTROSPINNING PROCESS Y.L. Lin ¹ , Z.H. Liu ^{1,3} , C.T. Pan ¹ , L.W. Lin ² , C.K. Yen ¹ , Z.Y. Ou ¹ , and C.H. Taso ¹ ¹ <i>National Sun Yat-Sen University, TAIWAN,</i> ² <i>University of California, Berkeley, USA, and</i> ³ <i>Industrial Technology Research Institute (ITRI), TAIWAN</i>1553	T4D.003 A 6-DOF PIEZOELECTRIC MICRO VIBRATORY STAGE BASED ON MULTI-AXIS DISTRIBUTED-ELECTRODE EXCITATION OF PZT/SI UNIMORPH T-BEAMS E.E. Aktakka, R.L. Peterson, and K. Najafi <i>University of Michigan, USA</i>1583
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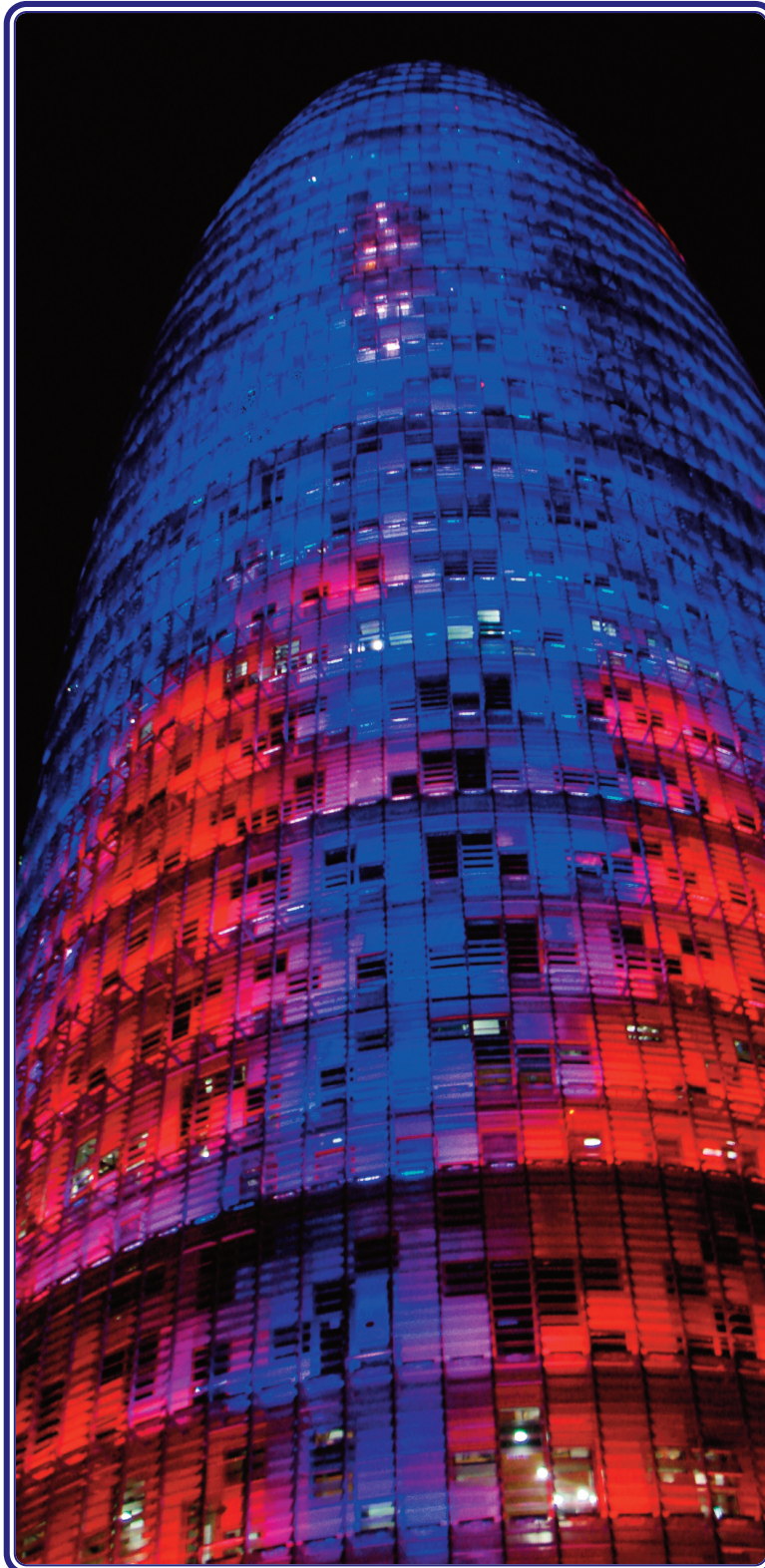
Physical Microsystems 2	Microfluidics with Cells	Polymer MEMS	Physical Actuator & Thrusters
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
17:30 - 17:45			
T4A.004 MULTI-AXIAL CONFOCAL DISTANCE SENSOR USING VARIFOCAL LIQUID LENS K. Noda, N. Binh-Khiem, Y. Takei, T. Takahata, K. Matsumoto, and I. Shimoyama <i>University of Tokyo, JAPAN</i>1499	T4B.004 REAL-TIME MULTI-PARAMETER MONITORING OF IMMOBILIZED SINGLE YEAST CELLS VIA ELECTRICAL IMPEDANCE SPECTROSCOPY Z. Zhu, O. Frey, N. Haandbæk, D.S. Ottox, F. Rudolf, and A. Hierlemann <i>ETH Zürich, SWITZERLAND</i>1527	T4C.004 DESIGN AND FABRICATION OF MAGNETICALLY TUNABLE MICROSTRUCTURED SURFACES Y. Zhu, R. Xiao, and E.N. Wang <i>Massachusetts Institute of Technology, USA</i>1557	T4D.004 LARGE IN-PLANE DISPLACEMENT MICROACTUATORS BASED ON ELECTRO-THERMAL BIMORPHS WITH FOLDED MULTIPLE SEGMENTS S. Pal, S.R. Samuelson, X. Zhang, and H. Xie <i>University of Florida, USA</i>1587
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T4A.005 MEMS HIGH-DOSES RADIATION SENSOR I. Augustyński ¹ , J. Dziuban ¹ , P. Knapkiewicz ¹ , M. Matusiak ² , M. Olszacki ² , and P. Pons ^{3,4} ¹ Wrocław University of Technology, POLAND, ² National Center for Nuclear Research, POLAND, ³ Laboratoire d'Analyse et d'Architecture des Systèmes (LAAS), FRANCE, and ⁴ University of Toulouse, FRANCE1503	T4B.005 NOVEL MICROFLUIDIC PLATFORM WITH THROUGH-POLYDIMETHYLSILOXANE MICROTIP ELECTRODE ARRAY FOR ON-CHIP CELL ANALYSIS J.-G. Ha ¹ , S.-K. Lee ² , S.-J. Bai ² , Y.-S. Song ² , Y.-K. Kim ¹ , and J.-H. Park ² ¹ Seoul National University, SOUTH KOREA and ² Dankook University, SOUTH KOREA1531	T4C.005 DEVELOPMENT OF A FABRICATION PROCESS FOR A PIEZOELECTRIC ENERGY HARVESTING FILM USING A REEL-TO-REEL CONTINUOUS FIBER PROCESS T. Yamashita ¹ , S. Takamatsu ² , T. Kobayashi ² , and T. Itoh ² ¹ Macro BEANS Center, JAPAN and ² National Institute of Advanced Industrial Science and Technology (AIST), JAPAN1561	T4D.005 DISPLACEMENT ENHANCEMENT OF 1-AXIS LORENTZ FORCE ACTUATOR S.-J. Lin, C.-C. Lee, W.-L. Sung, F.-Y. Lee and W. Fang <i>National Tsing Hua University, TAIWAN</i>1591
18:00 - 18:15			
T4A.006 SERPENTINE GEOMETRY FOR ENHANCED PERFORMANCE OF NANOMETER-THIN PLATINUM BOLOMETERS F. Purkl ^{1,2} , T.S. English ³ , G. Yama ² , J. Provine ³ , A.K. Samara ³ , A. Feyh ³ , B. Kim ³ , G. O'Brien ³ , O. Ambacher ¹ , R.T. Howe ³ , and T.W. Kenny ³ ¹ University of Freiburg - IMTEK, GERMANY, ² Robert Bosch LLC, USA, and ³ Stanford University, USA1507	T4B.006 COMPLETE CELL SEPARATION BY MODULATING INERTIAL FORCE J. Zhou, P.V. Giridhar, S. Kasper, and I. Papautsky <i>University of Cincinnati, USA</i>1535	T4C.006 INTEGRATION OF PDMS-INFILTRATED CNTS AND SI BULK-MICROMACHINING FOR MONOLITHIC PHYSICAL SENSORS APPLICATION C.-F. Hu, C.-M. Lin, and W. Fang <i>National Tsing Hua University, TAIWAN</i>1565	T4D.006 HIGH-SPEED AIR MICROJET ARRAYS PRODUCED USING ACOUSTIC STREAMING FOR MICRO PROPULSION S.Y. Yee, R.L. Peterson, L.P. Bernal, and K. Najafi <i>University of Michigan, USA</i>1595
18:15 - 18:30			
T4A.007 A NOVEL TRANSDUCER FOR PHOTON ENERGY DETECTION VIA NEAR-FIELD CAVITY OPTOMECHANICS J.F. Tao ^{1,2} , H. Cai ² , W.X. Zhang ² , J.M. Tsai ² , P. Kropelnicki ² , A.B. Randles ² , M. Tang ² , and A.Q. Liu ^{1,2} ¹ Nanyang Technological University, SINGAPORE and ² Agency for Science, Technology and Research (A*STAR), SINGAPORE1511	T4B.007 A MICROFLUIDIC WHOLE-PLANT PHENOTYPING DEVICE H. Jiang, Z. Xu, M.R. Aluru, and L. Dong <i>Iowa State University, USA</i>1539	T4C.007 ALL-POLYMER HIGH-ASPECT-RATIO SPRING WITH EMBEDDED ELECTRODE Y. Feng and Y. Suzuki <i>University of Tokyo, JAPAN</i>1569	T4D.007 ON-CHIP POROUS SILICON MICROTHRUSTER FOR ROBOTIC PLATFORMS W.A. Churaman ¹ , C.J. Morris ² , L.J. Currano ² , and S. Bergbreiter ¹ ¹ University of Maryland, USA and ² U.S. Army Research Laboratory, USA1599

18:30

ADJOURN FOR THE DAY

20:15 - 21:45

UNIVERSITAT de BARCELONA RECEPTION



WEDNESDAY 19 June 2013

PARALLEL ORAL SESSIONS

Fabrication Technology 1	Gas Sensors	Medical Microsystems	Actuators for Bioapplications
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1

Session Chairs:

K. Böhringer, <i>University of Washington, USA</i>	C. Di Natale, <i>University of Rome Tor Vergata, ITALY</i>	A. Llobera, <i>Spanish Council for Scientific Research (CSIC), SPAIN</i>	S. Bergbreiter, <i>University of Maryland, USA</i>
J. Brugger, <i>École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND</i>	E. Llobet, <i>University Rovira i Virgili, SPAIN</i>	M. Shikida, <i>Nagoya University, JAPAN</i>	N. Miki, <i>Keio University, JAPAN</i>

08:30 - 09:00

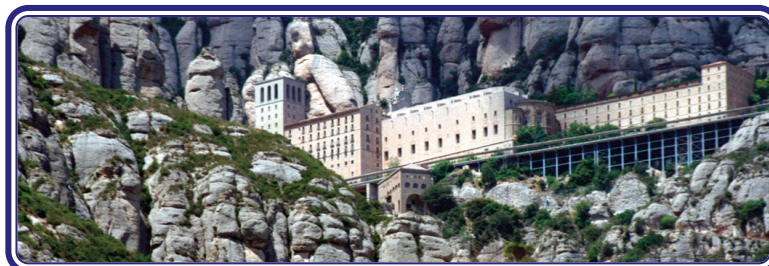
<p>INVITED SPEAKER W1A.001 TRENDS IN DRUG DELIVERY SYSTEM MICROFABRICATION AND A NEW SCALABLE TECHNOLOGY USING X-RAY SYNCHROTRON IRRADIATION D.I. Cho, H.J. Yoo, S. Lee, S.J. Hong, J.M. Seo, T.Y. Kim, and S.J. Kim <i>Seoul National University, SOUTH KOREA</i> 1603</p>	<p>INVITED SPEAKER W1B.001 DESIGN CRITERIA FOR PORTABLE POINT-OF-CARE BREATH ANALYSIS SYSTEMS Y. Zrodnikov, K. Zamuruyev, J.D. Pedersen, A.G. Fung, D.J. Peirano, M.J. Schirle, A. Panigrahy, A. Pasamontes, W.H.K. Cheung, A.A. Aksenov, M. Schivo, N.J. Kenyon, J.-P. Delplanque, and C.E. Davis <i>University of California, Davis, USA</i> 1629</p>	<p>INVITED SPEAKER W1C.001 NOVEL MEDICAL WIRED PALPATION DEVICE; A VALIDATION STUDY OF MATERIAL PROPERTIES X. Wang¹, C. Di Natale², M. Beccani², M. Kern¹, P.Valdastrì², and M. Rentschler¹ ¹<i>University of Colorado, USA</i> and ²<i>Vanderbilt University, USA</i> 1653</p>	<p>INVITED SPEAKER W1D.001 PNEUMATICALLY ACTUATED DEVICES FOR CELL MANIPULATION Y. Sun <i>University of Toronto, CANADA</i> 1679</p>
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09:00 - 09:15

<p>W1A.002 MICROSTRUCTURED SiO₂ SURFACE REPELLANT TO LIQUIDS WITHOUT COATING T. Liu and C.-J. Kim <i>University of California, Los Angeles, USA</i> 1609</p>	<p>W1B.002 CARBON DIOXIDE GAS SENSOR WITH IONIC GEL K. Ishizu¹, Y. Takei¹, M. Honda^{2,3}, K. Noda¹, A. Inaba¹, T. Itoh⁴, R. Maeda⁴, K. Matsumoto¹, and I. Shimoyama¹ ¹<i>University of Tokyo, JAPAN</i>, ²<i>NMEMS Technology Research Organization, JAPAN</i>, ³<i>OMRON, JAPAN</i>, and ⁴<i>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN</i> 1633</p>	<p>W1C.002 IMPLANTABLE ACCELEROMETER FOR DETERMINATION OF BLOOD PRESSURE M. Theodor¹, J. Fiala¹, D. Ruh¹, K. Förster², C. Heilmann², F. Beyersdorf², H. Zappe¹, and A. Seifert¹ ¹<i>University of Freiburg - IMTEK, GERMANY</i> and ²<i>University Medical Center Freiburg, GERMANY</i> 1659</p>	<p>W1D.002 A HYDROGEL-BASED INTRAVASCULAR MICROGRIPPER MANIPULATED USING MAGNETIC FIELDS J.-C. Kuo, S.-W. Tung, and Y.-J. Yang <i>National Taiwan University, TAIWAN</i> 1683</p>
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Fabrication Technology 1	Gas Sensors	Medical Microsystems	Actuators for Bioapplications
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
09:15 - 09:30			
<p>W1A.003 INTEGRATION OF POLYMER MICROFLUIDIC CHANNELS, VIAS, AND CONNECTORS WITH SILICON PHOTONIC SENSORS BY ONE-STEP COMBINED PHOTOPATTERNING AND MOLDING OF OSTE C. Errando-Herranz^{1,2}, F. Saharil¹, A. Mola Romero^{1,3}, N. Sandström¹, R.Z. Shafagh¹, W. van der Wijngaart¹, T. Haraldsson¹, and K.B. Gylfason¹ ¹<i>KTH Royal Institute of Technology, SWEDEN</i>, ²<i>Polytechnic University of Valencia, SPAIN</i>, and ³<i>University of Barcelona, SPAIN</i> 1613</p>	<p>W1B.003 HYSTERESIS-FREE, SUSPENDED PRISTINE CARBON NANOTUBE GAS SENSORS K. Chikkadi, M. Muoth, and C. Hierold <i>ETH Zürich, SWITZERLAND</i> 1637</p>	<p>W1C.003 STIMULATING AUDITORY NERVE WITH MEMS HARVESTERS FOR FULLY IMPLANTABLE AND SELF-POWERED COCHLEAR IMPLANTS L. Beker¹, Ö. Zorlu¹, N. Göksu², and H. Külah¹ ¹<i>Middle East Technical University (METU), TURKEY</i> and ²<i>Gazi University, TURKEY</i> 1663</p>	<p>W1D.003 FLEXIBLE PNEUMATIC TWISTING ACTUATORS B. Gorissen^{1,2}, T. Chishiro¹, S. Shimomura¹, M. De Volder², D. Reynaerts², and S. Konishi¹ ¹<i>Ritsumeikan University, JAPAN</i> and ²<i>Katholieke Universiteit Leuven, BELGIUM</i> 1687</p>
09:30 - 09:45			
<p>W1A.004 HIGHLY-RELIABLE ELECTROSTATIC ACTUATOR USING FILLETED ELECTRODE MADE WITH PHOTORESIST SOLVENT REFLOW S.Y. Yee, R.L. Peterson, L.P. Bernal, and K. Najafi <i>University of Michigan, USA</i> 1617</p>	<p>W1B.004 HIGHLY SENSITIVE NO₂ GAS SENSOR BASED ON ZINC OXIDE/COPPER OXIDE HYBRID-NANOSTRUCTURES M.K. Fuadi, D. Yang, C. Park, and I. Park <i>Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA</i> 1641</p>	<p>W1C.004 MAGNETIC SENSOR FOR MONITORING OF ARTERIAL STRAIN J. Ruhhammer¹, T. Herbstritt¹, K. Foerster², C. Heilmann², F. Beyersdorf², A. Seifert¹, F. Goldschmidtboeing¹, and P. Woias¹ ¹<i>University of Freiburg - IMTEK, GERMANY</i> and ²<i>University Medical Center Freiburg, GERMANY</i> 1667</p>	<p>W1D.004 NEMATIC OPTO-MECHANICAL ACTUATORS FOR THE FABRICATION OF REFRESHABLE TACTILE SYSTEMS N. Torras¹, K.E. Zinoviev¹, C.J. Camargo¹, E.M. Campo¹, H. Campanella¹, J. Esteve¹, J.E. Marshall², E.M. Terentjev², M. Omastova³, I. Krupa³, P. Teplicky⁴, B. Mamojka⁴, P. Burns⁵, B. Röder⁵, M. Vallribera¹, R. Malet¹, S. Zuffanelli¹, V. Soler¹, J. Roig¹, N. Walker⁶, D. Wenn⁴, F. Vossen⁶, and F.M.H. Cropvoets⁸ ¹<i>Universitat Antònia de Barcelona (UAB), SPAIN</i>, ²<i>University of Cambridge, UK</i>, ³<i>Slovak Academy of Science, SLOVAKIA</i>, ⁴<i>Unia Nevidiacich a Slabozrakych Slovenska, SLOVAKIA</i>, ⁵<i>Universität Hamburg, GERMANY</i>, ⁶<i>Microsharp Corporation Ltd, UK</i>, ⁷<i>iXscient Ltd, UK</i>, and ⁸<i>Philips Research, THE NETHERLANDS</i>, 1691</p>



Fabrication Technology 1	Gas Sensors	Medical Microsystems	Actuators for Bioapplications
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
09:45 - 10:00			
<p>W1A.005 UV-ASSISTED INTERMITTENTLY-SPINNING OZONE STEAM ETCHING OF SU-8 FOR MICROMOLDING PROCESS S. Yoshida, K. Suzuki, M. Esashi, and S. Tanaka <i>Tohoku University, JAPAN</i> 1621</p>	<p>W1B.005 SEEBECK OZONE SENSORS M. Mischo¹, M. Bitterling¹, M. Himmerlich², S. Krischok², O. Ambacher¹, and V. Cimalla¹ ¹<i>Fraunhofer Institute for Applied Solid State Research, GERMANY</i> and ²<i>Ilmenau University of Technology, GERMANY</i> 1645</p>	<p>W1C.005 A MEMS-BASED PASSIVE HYDROCEPHALUS SHUNT WITH ADAPTIVE FLOW CHARACTERISTICS S.B. Johansson¹, A. Eklund², J. Malm², G. Stemme¹, and N. Roxhed¹ ¹<i>KTH Royal Institute of Technology, SWEDEN</i> and ²<i>Umeå University, SWEDEN</i> 1671</p>	<p>W1D.005 PHOTO-PATTERNING OF IONOGEL MICROSTRUCTURES FOR ON-CHIP MICROVALVE APPLICATIONS CONTROLLED BY FIBER OPTICS M. Czugala¹, C. O'Connell¹, A. McKeon¹, C. Fernández Sánchez², X. Muñoz-Berbel², A. Llobera², D. Diamond¹, and F. Benito-Lopez^{1,3} ¹<i>Dublin City University, IRELAND</i>, ²<i>Spanish Council for Scientific Research (CSIC), SPAIN</i>, and ³<i>CIC microGUNE, SPAIN</i> 1695</p>
10:00 - 10:15			
<p>W1A.006 AUTOMATIC PROCESS DESIGN FOR 3D THICK-FILM GRAYSCALE PHOTOLITHOGRAPHY F.C.M. van Kempen¹, Y. Hirai², F. van Keulen¹, and O. Tabata² ¹<i>Delft University of Technology, THE NETHERLANDS</i> and ²<i>Kyoto University, JAPAN</i> 1625</p>	<p>W1B.006 A LOW-POWER CMOS INTEGRATED SENSOR FOR CO₂ DETECTION IN THE PERCENTAGE RANGE A. Humbert¹, B.J. Tuerlings², R.J.O.M. Hoofman¹, Z. Tan³, D. Gravesteyn¹, M.A.P. Pertijs³, C.W.M. Bastiaansen⁴, and D. Soccol¹ ¹<i>NXP Semiconductors N.V., BELGIUM</i>, ²<i>Polymer Technology Group Eindhoven B.V., THE NETHERLANDS</i>, ³<i>Delft University of Technology, THE NETHERLANDS</i>, and ⁴<i>Eindhoven University of Technology, THE NETHERLANDS</i> 1649</p>	<p>W1C.006 CHARACTERIZATION OF LIQUID JET INJECTION INTO TISSUE BASED ON OPTICAL COHERENCE TOMOGRAPHY K. Mutschler¹, L. Tanguy², N. Weber¹, A. Ernst¹, R. Zengerle^{1,2}, and P. Koltay¹ ¹<i>University of Freiburg - IMTEK, GERMANY</i> and ²<i>Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY</i> 1675</p>	<p>W1D.006 MICROFLUIDIC CELLULAR VALVE POWERED BY LINEAR BIOACTUATOR M. Nagai, K. Tanizaki, Y. Hayasaka, T. Kawashima, and T. Shibata <i>Toyohashi University of Technology, JAPAN</i> 1699</p>
10:15 - 10:45 BREAK & EXHIBIT INSPECTION			



PARALLEL ORAL SESSIONS			
Resonance Phenomena	Liquid Chemical Sensing	Pressure Sensors	Optofluidics
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
Session Chairs:			
C.-W. Baik, <i>Chung-Ang University, SOUTH KOREA</i>	I. Barsony, <i>Hungarian Academy of Sciences, HUNGARY</i>	B. Jakoby, <i>Johannes Kepler University Linz, AUSTRIA</i>	C. Bergaud, <i>Laboratoire d'Analyse et d'Architecture des Systèmes (LAAS-CNRS), FRANCE</i>
M. Tabib-Azar, <i>National Science Foundation (NSF), USA</i>	S. Tadiadapa, <i>Pennsylvania State University, USA</i>	X. Li, <i>Chinese Academy of Sciences, CHINA</i>	S. Takeuchi, <i>University of Tokyo, JAPAN</i>
10:45 - 11:00			
W2A.001 BI-STATE CONTROL OF A DUFFING MICRORESONATOR ON THE FALLING EDGE OF THE INSTABILITY C. Guo and G.K. Fedder <i>Carnegie Mellon University, USA</i>1703	W2B.001 HIGH-SPEED CHEMICAL IMAGING INSIDE A MICROFLUIDIC CHANNEL A. Itabashi ¹ , K. Miyamoto ¹ , T. Wagner ¹ , M.J. Schöning ^{2,3} , and T. Yoshinobu ¹ ¹ Tohoku University, JAPAN, ² Aachen University of Applied Sciences, GERMANY, and ³ Peter-Grünberg Institute, GERMANY1731	W2C.001 NOVEL TPMS SENSING CHIP WITH PRESSURE SENSOR EMBEDDED IN ACCELEROMETER W.-C. Yeh ¹ , C.-K. Chan ¹ , J. Hsieh ¹ , C.-F. Hu ² , F.-M. Hsu ² , and W. Fang ² ¹ Asia Pacific Microsystems, Inc., TAIWAN and ² National Tsing Hua University, TAIWAN1759	W2D.001 MICROFLUIDICALLY TUNABLE LENTICULAR LENS Y. Imura ¹ , T. Teshima ¹ , Y.J. Heo ^{1,2} , Y. Morimoto ¹ , S. Yoshida ¹ , H. Onoe ^{1,2} , and S. Takeuchi ^{1,2} ¹ University of Tokyo, JAPAN and ² Japan Science and Technology Agency (JST), JAPAN1787
11:00 - 11:15			
W2A.002 STOCHASTIC RESONANCE IN A VOLTAGE-CONTROLLED MEMS-SLIDER: INCREASING THE SIGNAL-TO-NOISE RATIO WITH NOISE H. Droogendijk, M.J. de Boer, R.A. Brookhuis, R.G.P. Sanders, and G.J.M. Krijnen <i>MESA+, University of Twente, THE NETHERLANDS</i>1707	W2B.002 A WIRELESS CHEMICAL SENSOR USING FERROPARTICLES EMBEDDED HYDROGEL J.H. Park ¹ , S.H. Song ¹ , G. Chitnis ¹ , R.A. Siegel ² , and B. Ziaie ¹ ¹ Purdue University, USA and ² University of Minnesota, USA1735	W2C.002 PIEZORESISTIVE PRESSURE SENSOR WITH DUAL-UNIT CONFIGURATION FOR ON-CHIP SELF-COMPENSATION AND SUPPRESSION OF TEMPERATURE DRIFT J.C. Wang ¹ , X.Y. Xia ¹ , H.S. Zou ¹ , F. Song ² , and X. Li ¹ ¹ Chinese Academy of Sciences, CHINA and ² Shanghai University of Engineering Science, CHINA1763	W2D.002 A NANO-OPTOFLUIDIC WAVEGUIDE COUPLER WITH SUPER-RESOLUTION VIA CONCURRENT DEAN FLOWS L.K. Chin, Y. Yang, L. Lei, and A.Q. Liu <i>Nanyang Technological University, SINGAPORE</i>1791
11:15 - 11:30			
W2A.003 INVESTIGATING VIBRATION DYNAMICS OF CROSS-COUPLED MEMS RESONATORS FOR REDUCED MOTIONAL RESISTANCE A. Erbes, P. Thiruvengathan, J. Yan, and A.A. Seshia <i>University of Cambridge, UK</i>1711	W2B.003 MULTIDIMENSIONAL METAMATERIAL FLUID SENSOR R. Lucklum ¹ , M. Zubtsov ¹ , A. Oseev ¹ , A. Omar ¹ , and A. Martinez ² ¹ Otto-von-Guericke-University Magdeburg, GERMANY and ² Universidad Politécnica de Valencia, SPAIN1739	W2C.003 ULTRA-COMPACT ABSOLUTE PRESSURE SENSOR BASED ON MECHANICAL AMPLIFICATION COUPLED TO SUSPENDED PIEZORESISTIVE NANOGAUGE Y. Deimerty ^{1,2} , P. Robert ¹ , G. Jourdan ¹ , P. Rey ¹ , and T. Bourouina ² ¹ Commissariat à l'Énergie Atomique (CEA), FRANCE and ² Université Paris-Est, FRANCE1767	W2D.003 TRANSPORTATION OF MONO-DISPersed MICRO-PLASMA BUBBLE IN MICROFLUIDIC CHIP UNDER ATMOSPHERIC PRESSURE Y. Yamanishi, S. Sameshima, H. Kuriki, S. Sakuma, and F. Arai <i>Nagoya University, JAPAN</i>1795

Resonance Phenomena	Liquid Chemical Sensing	Pressure Sensors	Optofluidics
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
11:30 - 11:45			
W2A.004 SURFACE EFFECT INFLUENCE ON THE QUALITY FACTOR OF MICRORESONATORS B. Shiri and K. Najafi <i>University of Michigan, USA</i>1715	W2B.004 DEVELOPMENT OF A 64x64-PIXEL ION CAMERA CHIP FOR IONIC IMAGING USING AN UNMODIFIED 0.35 μM CMOS TECHNOLOGY B. Nemeth, A. Streklas, A.G. Boulay, M. Symes, C. Busche, L. Cronin, and D.R.S. Cumming <i>University of Glasgow, UK</i>1743	W2C.004 MICROFABRICATED SPHERICAL PRESSURE SENSING PARTICLES FOR PRESSURE AND FLOW MAPPING Y. Xie, N. Banerjee, and C.H. Mastrangelo <i>University of Utah, USA</i>1771	W2D.004 A MICROFLUIDIC SURFACE ENHANCED RAMAN SPECTROSCOPIC BIOSENSOR USING APTAMER FUNCTIONALIZED NANOPILLARS J. Yang ¹ , M. Palla ¹ , F.G. Bosco ² , M.S. Schmidt ² , T. Rindzevicius ² , A. Boisen ² , J. Ju ¹ , and Q. Lin ¹ ¹ <i>Columbia University, USA</i> and ² <i>Technical University of Denmark, DENMARK</i>1799
11:45 - 12:00			
W2A.005 VISCOTHERMAL ACOUSTIC WAVE IN MICRO SCALE RESONATORS. H.C. Qiu ^{1,2} , P. Schwarz ¹ , D. Feili ¹ , X.Z. Wu ² , and H. Seidel ¹ ¹ <i>Saarland University, GERMANY</i> and ² <i>National University of Defense Technology, CHINA</i>1719	W2B.005 A 7μW PH-TO-DIGITAL CONVERTER FOR QUALITY MONITORING OF PERISHABLE PRODUCTS S.H. Shalmany ¹ , M. Merz ² , A. Fekri ¹ , Z. Chang ¹ , R. Hoofman ² , and M.A.P. Pertijs ¹ ¹ <i>Delft University of Technology, THE NETHERLANDS</i> and ² <i>NXP Semiconductors, BELGIUM</i>1747	W2C.005 PIEZOELECTRIC PRESSURE MICROSENSOR ARRAYS G. Mirshekari, M. Brouillette, and L.G. Frechette <i>Universite de Sherbrooke, CANADA</i>1775	W2D.005 ELECTROPHORETIC PRECONCENTRATION ON PLASMONIC NANOPILLAR ARRAYS FOR HIGHLY INTENSE SURFACE-ENHANCED RAMAN SCATTERING M. Park, Y.-J. Oh, and K.-H. Jeong <i>Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA</i>1803
12:00 - 12:15			
W2A.006 GEOMETRIC COMPENSATION OF (100) SINGLE CRYSTAL SILICON DISK RESONATING GYROSCOPE FOR MODE-MATCHING C.H. Ahn, E.J. Ng, V.A. Hong, Y. Yang, B.J. Lee, M.W. Ward, and T.W. Kenny <i>Stanford University, USA</i>1723	W2B.006 SILICON NANOWIRE ION-SENSITIVE FIELD-EFFECT TRANSISTOR ARRAY INTEGRATED WITH A CMOS-BASED READOUT CHIP P. Livi ¹ , M. Wipf ² , A. Tarasov ² , R. Stoop ² , K. Bedner ³ , J. Rothe ¹ , Y. Chen ¹ , A. Stettler ¹ , C. Schönenberger ² , and A. Hierlemann ¹ ¹ <i>ETH Zürich, SWITZERLAND</i> , ² <i>University of Basel, SWITZERLAND</i> , and ³ <i>Paul Scherrer Institute, SWITZERLAND</i>1751	W2C.006 A NEW INTRACRANIAL PRESSURE SENSOR ON POLYIMIDE LAB-ON-A-TUBE USING EXCHANGED POLYSILICON PIEZORESISTORS Z.Z. Wu ¹ , N. Bhattacharjee ¹ , C.Y. Li ^{1,2} , J.A. Hartings ³ , R.K. Narayan ² , and C.H. Ahn ¹ ¹ <i>University of Cincinnati, USA</i> , ² <i>Feinstein Institute for Medical Research, USA</i> , and ³ <i>University of Cincinnati College of Medicine, USA</i>1779	W2D.006 SERS CHARACTERIZATION BASED ON SILVER NANOPARTICLE DIMER IN MICROFLUIDIC LAMINAR FLOW FOR MOLECULE TRACE DETECTION K. Sugano ¹ , H. Katayama ² , Y. Hirai ² , T. Tsuchiya ² , and O. Tabata ² ¹ <i>Kobe University, JAPAN</i> and ² <i>Kyoto University, JAPAN</i>1807
12:15 - 12:30			
W2A.007 A MICROMECHANICAL RESONANT CHARGE PUMP Y. Lin, R. Liu, W.-C. Li, M. Akgul, and C.T.-C. Nguyen <i>University of California, Berkeley, USA</i>1727	W2B.007 NANOPOROUS SENSOR FOR THE DETECTION OF NITROGEN TRICHLORIDE IN SWIMMING POOLS. FROM THE LABORATORY TO THE MARKET T.-H. Nguyen ^{1,2} , C. Rivron ¹ , T.-H. Tran-Thi ¹ , E. Chevallier ² , P. Karpe ^{1,2} , and C. Beaubestre ³ ¹ <i>Commissariat à l'énergie Atomique (CEA), FRANCE</i> and ² <i>Etherae R&D, FRANCE</i> , and ³ <i>Laboratoire d'Hygiène, FRANCE</i>1755	W2C.007 MICRO PIRANI PRESSURE SENSOR FABRICATED BY INKJET PRINTING OF SILVER NANOPARTICLES TO THE MARKET D. Sette ¹ , D. Mercier ¹ , P. Brunet-Manquat ¹ , C. Poulain ¹ , and A. Blayo ² ¹ <i>Commissariat à l'énergie Atomique (CEA), FRANCE</i> and ² <i>Grenoble Institute of Technology, FRANCE</i>1783	W2D.007 PHOTOPROCESSIBLE THERMO-SENSITIVE GEL ACTUATOR FOR FUNCTIONAL MICROFLUIDIC DEVICES K. Ito ¹ , S. Sakuma ¹ , Y. Yokoyama ² , and F. Arai ¹ ¹ <i>Nagoya University, JAPAN</i> and ² <i>Toyama Industrial Technology Center, JAPAN</i>1811
12:30 - 14:15			
LUNCH ON OWN & EXHIBIT INSPECTION			

Mechanical/Physical Sensors & Microsystems

Accelerometers

W3P001	A SENSING DEVICE FOR FORCE AND INERTIAL MEASUREMENTS OF HAND WRITING BEHAVIOR M. Attari, A. Touchen, Y. Remram, and S. Boukhenous <i>Université des Sciences et de la Technologie, ALGERIA</i>1815
W3P002	DESIGN AND IMPLEMENTATION OF A NOVEL POLY-SI SINGLE PROOF-MASS DIFFERENTIAL CAPACITIVE-SENSING 3-AXIS ACCELEROMETER S.-C. Lo ¹ , C.-K. Chan ² , W.-C. Lai ¹ , M. Wu ³ , Y.-C. Lin ⁴ , and W. Fang ¹ ¹ <i>National Tsing Hua University, TAIWAN</i> , ² <i>Asia Pacific Microsystems Inc., TAIWAN</i> , ³ <i>Domintech Co. Ltd., TAIWAN</i> , and ⁴ <i>National Cheng Kung University, TAIWAN</i>1819
W3P003	HIGH-SENSITIVITY DIFFERENTIAL FRINGE-FIELD MEMS ACCELEROMETERS G. Langfelder ¹ , A. Caspani ¹ , A. Tocchio ^{1,2} , S. Zerbini ² , and A.F. Longoni ¹ ¹ <i>Politecnico di Milano, ITALY</i> and ² <i>ST Microelectronics, ITALY</i>1823
W3P004	PERFORMANCE ENHANCEMENT OF A DUAL-AXIS MICRO-ACCELEROMETER USING COMPLIANT DISPLACEMENT-AMPLIFIERS S. Khan and G.K. Ananthasuresh <i>Indian Institute of Science, INDIA</i> P IC

Acoustic Sensors

W3P005	PIEZOELECTRIC MICROMACHINED ULTRASOUND TRANSDUCER ARRAY FOR PHOTOACOUSTIC IMAGING W. Liao ¹ , W. Liu ² , J.E. Rogers ¹ , F. Usmani ¹ , Y. Tang ² , B. Wang ² , H. Jiang ¹ , and H. Xie ¹ ¹ <i>University of Florida, USA</i> and ² <i>Southeast University, CHINA</i>1831
W3P006	WIDE-BAND AERO-ACOUSTIC MICROPHONE WITH IMPROVED LOW-FREQUENCY CHARACTERISTICS Z.J. Zhou ¹ , L. Rufer ² , E. Salze ³ , S. Ollivier ³ , and M. Wong ¹ ¹ <i>Hong Kong University of Science & Technology, HONG KONG</i> , ² <i>TIMA Laboratory, FRANCE</i> , and ³ <i>Ecole Centrale de Lyon, FRANCE</i>1835

Actuators & Characterization Tools

W3P007	IMPROVED MEMS-IN-TEM SETUP FOR HIGH SENSITIVITY THERMAL CHARACTERIZATION OF NANOWIRE USING A NEW TEM CRYO-HOLDER L. Jalabert ¹ , G. Valet ¹ , A. Chorosz ² , D. Guo ¹ , R. Kometani ¹ , H. Guillou ¹ , T. Sato ¹ , S. Volz ³ , and H. Fujita ¹ ¹ <i>University of Tokyo, JAPAN</i> , ² <i>ECAM, FRANCE</i> , and ³ <i>Ecole Centrale Paris, FRANCE</i>1839
W3P008	SELF POWERED INERTIA SENSOR BASED ON VIBRATION ENERGY HARVESTER USING ELECTRET AND FERROELECTRIC PLATE M. Suzuki, T. Takahashi, and S. Aoyagi <i>Kansai University, JAPAN</i>1843

Gyroscopes

W3P009	A HIGH-Q BIRDBATH RESONATOR GYROSCOPE (BRG) J. Cho, J.-K. Woo, J. Yan, R. L. Peterson, and K. Najafi <i>University of Michigan, USA</i>1847
W3P010	A Y-AXIS SOI-MEMS GYROSCOPE WITH A ZIGZAG-SHAPED Z-ELECTRODE SUPPORTED BY THREE-Dimensionally-INTERSECTED Z-BEAMS T. Akashi, Y. Omura, H. Funabashi, M. Fujiyoshi, Y. Nonomura, and Y. Hata <i>Toyota Central R&D Labs Inc., JAPAN</i>1851
W3P011	MEMS GYROSCOPE BIAS DRIFT CANCELLATION USING CONTINUOUS-TIME MODE REVERSAL M.H. Kline ¹ , Y.-C. Yeh ¹ , B. Eminoglu ¹ , I.I. Izyumin ¹ , M. Daneman ³ , D.A. Horsley ² , and B.E. Boser ¹ ¹ <i>University of California, Berkeley, USA</i> , ² <i>University of California, Davis, USA</i> , and ³ <i>Invensense, USA</i>1855

W3P POSTER SESSION III (continued)

Infrared & Magnetic

W3P.012	<p>CHARACTERIZATION AND MODEL VALIDATION OF A MICROMECHANICAL RESONANT MAGNETIC FIELD SENSOR W. Zhang and J.E.-Y. Lee <i>City University of Hong Kong, HONG KONG</i></p> <p style="text-align: right;">.....1859</p>
W3P.013	<p>NOVEL CONCEPT AND TECHNOLOGY FOR A SELF RESONANT MAGNETIC FIELD SENSOR P. Simon and O. Paul <i>University of Freiburg - IMTEK, GERMANY</i></p> <p style="text-align: right;">.....1863</p>

Pressure & Flow

W3P.014	<p>DETERMINATION OF THE THERMAL CONDUCTIVITY OF GASES UNDER FLOW CONDITIONS D.F. Reyes Romero, K. Kogan, A.S. Cubukcu, and G.A. Urban <i>University of Freiburg, GERMANY</i></p> <p style="text-align: right;">.....1867</p>
W3P.015	<p>HYBRID CONTACT LENS CAPABLE OF INTRAOCULAR PRESSURE MONITORING IN NONINVASIVE WAY V. Laukhin^{1,2,3}, V. Lebedev², E. Laukhina³, R. Martin⁴, J.C. Pastor⁴, R. Villa², J. Aguilo², C. Rovira^{2,3}, and J. Veciana^{2,3} ¹<i>Institució Catalana de Recerca i Estudis Avançats (ICREA), SPAIN,</i> ²<i>Spanish Council for Scientific Research (CSIC), SPAIN,</i> ³<i>Biomedical Research Networking Centre on Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), SPAIN, and</i> ⁴<i>Universidad de Valladolid, SPAIN</i></p> <p style="text-align: right;">.....1871</p>
W3P.016	<p>THREE DIMENSIONAL THERMAL SENSOR FOR INTRAVASCULAR FLOW MONITORING R. Tang¹, H. Huang¹, Y.M. Yang², J. Oiler¹, M. Liang¹, and H. Yu¹ ¹<i>Arizona State University, USA and</i> ²<i>Intel, USA</i></p> <p style="text-align: right;">.....1875</p>

Resonant Sensors

W3P.017	<p>ENHANCED PERFORMANCE OF SENSOR/ACTUATOR INTEGRATED PIEZOELECTRIC MICROCANTILEVER BY USING TETRAGONAL COMPOSITON PZT THIN FILMS T. Kobayashi¹, N. Makimoto¹, H. Funakubo², T. Oikawa², A. Wada², T. Itoh¹, and R. Maeda¹ ¹<i>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN, and</i> ²<i>Tokyo Institute of Technology, JAPAN</i></p> <p style="text-align: right;">.....1879</p>
W3P.018	<p>THIN FILM CONDUCTIVITY SENSOR BASED ON ACOUSTOELECTRIC INTERACTION IN 36° YX LITHIUM TANTALATE D. Čiuplys, R. Rimeika, and A. Sereika <i>Vilnius University, LITHUANIA</i></p> <p style="text-align: right;">.....1883</p>
W3P.019	<p>VERTICAL CARBON NANOFIBER ARRAYS AND NANOMECHANICAL RESONATORS WITH POTENTIAL FOR RADIATION SENSING J. Lee¹, A.B. Kaul², and P.X.-L. Feng¹ ¹<i>Case Western Reserve University, USA and</i> ²<i>California Institute of Technology, USA</i></p> <p style="text-align: right;">.....1887</p>

Tactile Sensors

W3P.020	<p>A DOME SHAPED PIEZOELECTRIC TACTILE SENSOR ARRAY USING CONTROLLED INFLATION TECHNIQUE M.S. Kim, S.E. Jo, D.H. Kang, H.R. Ahn, and Y.J. Kim <i>Yonsei University, SOUTH KOREA</i></p> <p style="text-align: right;">.....1891</p>
W3P.021	<p>CMOS-BASED TACTILE SENSORS USING OXIDE AS SACRIFICIAL LAYER Y.-C. Lin, C.-J. Hsieh, C.-T. Sun, J.-C. Liou, and W.-C. Tian <i>National Taiwan University, TAIWAN</i></p> <p style="text-align: right;">.....1895</p>
W3P.022	<p>HYPER-FLEXIBLE 1-D SHAPE SENSOR M.K. Dobrzynski, H. Vanderparre, R. Pericet-Camara, G. L'Eplattenier, S. Lacour, and D. Floreano <i>École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND</i></p> <p style="text-align: right;">.....1899</p>

W3P POSTER SESSION III (continued)

Thermometers

W3P.023	<p>A MONOLITHIC POLYIMIDE MICRO CRYOGENIC COOLER Y.D. Wang¹, R. Lewis¹, R. Radebaugh², and Y.C. Lee¹ ¹University of Colorado, USA and ²National Institute of Standards and Technology (NIST), USA</p> <p>.....1903</p>
W3P.024	<p>HIGH TEMPERATURE MICRO-HOTPLATES ON POROUS SILICON SUBSTRATES F. Lucklum¹, A. Schwaiger², and B. Jakoby¹ ¹Johannes Kepler University Linz, AUSTRIA and ²E+E Elektronik Ges.m.b.H, AUSTRIA</p> <p>.....1907</p>
W3P.025	<p>SILICON ON INSULATOR THERMODIODE WITH EXTREMELY WIDE WORKING TEMPERATURE RANGE A. De Luca¹, V. Pathirana^{1,2}, S.Z. Ali², and F. Udre^{1,2} ¹University of Cambridge, UK and ²Cambridge CMOS Sensors, UK</p> <p>.....1911</p>

Materials, Fabrication & Packaging Technologies

3-D Structures

W3P.026	<p>3-LAYER-COPPER MICROCOILS TRANSFORMED INTO 3-D CYLINDRICAL STATOR WINDINGS FOR MICROMOTORS V. Biefeld¹, S. Springmann², and W. Lang¹ ¹University of Bremen, GERMANY and ²Kählig Antriebstechnik GmbH, GERMANY</p> <p>.....1915</p>
W3P.027	<p>FABRICATION OF 3D STRUCTURES USING SELF-ASSEMBLY AT AIR-WATER INTERFACE K.S. Park¹, Ç. Varel¹, R. Baskaran², and K.F. Böhringer¹ ¹University of Washington, USA and ²Intel Corporation, USA</p> <p>.....1919</p>
W3P.028	<p>OPTIMAL ARTICULATION STRATEGY FOR A MICROFABRICATED GECKO-INSPIRED CONTROLLABLE ADHESIVE J. Tamiel, S. Chary, and K.L. Turner University of California, Santa Barbara, USA</p> <p>.....1923</p>
W3P.029	<p>THE SIZE LIMIT OF AL/NI MULTILAYER RECTANGULAR CUBOIDS FOR GENERATING SELF-PROPAGATING EXOTHERMIC REACTION ON A SI WAFER S. Ito¹, S. Inoue¹, and T. Namazu^{1,2} ¹University of Hyogo, JAPAN and ²Japan Science and Technology Agency (JST), JAPAN</p> <p>.....1927</p>

Films & Nanostructures

W3P.030	<p>ULTRA-THIN ATOMIC LAYER DEPOSITION FILMS FOR CORROSION RESISTANCE A.J. Haemmerli, J.C. Doll, J. Provine, R.T. Howe, D. Goldhaber-Gordon, and B.L. Pruitt Stanford University, USA</p> <p>.....1931</p>
W3P.031	<p>DEVELOPMENT OF SUSPENDED 2D CARBON NANOSTRUCTURES: NANOWIRES TO NANOMESHES Y. Lim¹, J. Heo¹, M.J. Madou², and H. Shin¹ ¹Ulsan National Institute of Science and Technology (UNIST), SOUTH KOREA, and ²University of California, Irvine, USA</p> <p>.....1935</p>
W3P.032	<p>LOW THERMAL BUDGET LOW STRESS THICK POLYSILICON FILMS FOR MEMS USING ULTRA-HIGH VACUUM E-BEAM EVAPORATION A. Michael, C.Y. Kwok, O. Kazuo, and S. Varlamov University of New South Wales, AUSTRALIA</p> <p>.....1938</p>
W3P.033	<p>STABLE DRIE-PATTERNED SiO₂/Si₃N₄ ELECTRETS S. Boisseau, J.J. Chaillout, J.S. Danel, J.B. Legras, and G. Despesse Commissariat à l'énergie Atomique (CEA), FRANCE</p> <p>.....1942</p>

Materials Characterization

W3P.034	<p>EFFECT OF SURFACE MORPHOLOGY AND CRYSTAL ORIENTATIONS ON FRACTURE STRENGTH OF THIN FILM (110) SINGLE CRYSTAL SILICON A. Uesugi, Y. Hirai, K. Sugano, T. Tsuchiya, and O. Tabata Kyoto University, JAPAN</p> <p>.....1946</p>
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W3P POSTER SESSION III (continued)

W3P.035	<p>MATERIAL STRENGTH EXAMINATION OF THIN FILM PDMS FOR RELIABLE PNEUMATIC BALLOON ACTUATOR Y. Matsushita, C. Nakagami, T. Toriyama, and S. Konishi <i>Ritsumeikan University, JAPAN</i></p> <p>.....1950</p>
W3P.036	<p>TENSION-TORSION-BENDING COMBINED LOADING TEST TECHNIQUE FOR THE RELIABILITY OF MEMS STRUCTURES T. Fujii¹, H. Yamagiwa¹, S. Inoue¹, and T. Namazu^{1,2} ¹<i>University of Hyogo, JAPAN</i> and ²<i>Japan Science and Technology Agency (JST), JAPAN</i></p> <p>.....1954</p>

Packaging

W3P.037	<p>MEMS MIXER AS AN EXAMPLE OF A NOVEL CONSTRUCTION METHOD OF MICROFLUIDICS BY DISCRETE MICROPARTS Y. Murakami, K. Araki, R. Ohashi, H. Honma, K. Takahashi, K. Sawada, and M. Ishida <i>Toyoashi University of Technology, JAPAN</i></p> <p>.....1958</p>
W3P.038	<p>STRESS-MINIMIZED PACKAGING OF INERTIAL SENSORS USING WIRE BONDING S. Schröder¹, A. Nafari², K. Persson², E. Westby³, A.C. Fischer¹, G. Stemme¹, F. Niklaus¹, and S. Haas¹ ¹<i>KTH Royal Institute of Technology, SWEDEN</i>, ²<i>Imego - Acreo AB, SWEDEN</i>, and ³<i>Sensoror AS, NORWAY</i></p> <p>.....1962</p>
W3P.039	<p>WAFER LEVEL SANDWICH PACKAGING TECHNOLOGY FOR THREE-AXIS PIEZORESISTIVE ACCELEROMETER T. Aono, A. Kazama, R. Okada, S. Hata, and E. Sakamoto <i>Hitachi, Ltd., JAPAN</i></p> <p>.....1966</p>

Patterning Printing & Etching

W3P.040	<p>A PDMS/METAL-FILM PHOTO-MASK FOR LARGE-AREA CONTACT PHOTOLITHOGRAPHY AT SUB-MICROMETER SCALE Y.C. Lee and Y.T. Hsieh <i>National Cheng Kung University, TAIWAN</i></p> <p>.....1970</p>
W3P.041	<p>MICRO-RELAY RELIABILITY IMPROVEMENT BY INKJET-PRINTED MICROSHELL ENCAPSULATION Y. Chen, E.S. Park, I.-R. Chen, L. Hutin, V. Subramanian, and T.-J. King Liu <i>University of California, Berkeley, USA</i></p> <p>.....1974</p>
W3P.042	<p>PERFECT ADSORPTION OF PPB-LEVEL SURFACTANT IN 5%KOH WATER SOLUTION ON A SILICON SURFACE CHANGING ANISOTROPIC ETCHING PROPERTIES H. Tanaka¹, N. Umeki¹, and K. Sato² ¹<i>Tsuruoka National College of Technology, JAPAN</i> and ²<i>Aichi Institute of Technology, JAPAN</i></p> <p>.....1978</p>

Nanoscale Materials, Devices & Fabrication

Bio/Chemical Sensors

W3P.043	<p>A DESIGN OF HIGH PERFORMANCE GAS SENSOR ARRAY WITH DISCRETE ISLANDS OF AU CATALYST FOR INCREASING OF ZINC OXIDE NANOWIRE JUNCTIONS H. Nguyen¹, C.T. Quy², N.D. Hoa², and N.V. Hieu² ¹<i>Uppsala University, SWEDEN</i> and ²<i>Hanoi University of Science and Technology, VIETNAM</i></p> <p>.....1982</p>
W3P.044	<p>HIGHLY EFFICIENT SURFACE IONIZATION GAS DETECTORS USING MICROFABRICATED PLATFORMS WITH INTEGRATED SURFACE ELECTRODES B. Bouxin¹, K. Maier¹, A. Hackner¹, G. Mueller¹, F. Shao², F. Hernandez-Ramirez^{2,3}, and J.R. Morante^{2,3} ¹<i>EADS Innovation Works, GERMANY</i>, ²<i>Institut de Recerca en Energia de Catalunya (IREC), SPAIN</i>, and ³<i>Universitat de Barcelona, SPAIN</i></p> <p>.....1986</p>
W3P.045	<p>LABEL-FREE AND REAL-TIME DNA DETECTOR BASED ON AS-GROWN CVD GRAPHENE W.R. Wang, A.R. Gao, N. Lu, C. Liang, H. Yang, T. Li, and Y.L. Wang <i>Chinese Academy of Sciences, CHINA</i></p> <p>.....1989</p>

W3P POSTER SESSION III (continued)

Fabrication

W3P046	<p>A ELECTROSTATIC CONTROLLED NEAR-FIELD NANO-OPTO-PROBE FOR NANO MANIPULATION M. Ren¹, H. Cai², Y. Yang¹, J.M. Tsai², P. Kropelnicki², A.B. Randles², M. Tang², D.L. Kwong², and A.Q. Liu^{1,2} ¹<i>Nanyang Technological University, SINGAPORE</i> and ²<i>Agency for Science, Technology and Research (A*STAR), SINGAPORE</i></p> <p style="text-align: right;">.....1993</p>
W3P047	<p>INTEGRATION OF UNIFORM POROUS SHELL LAYERS IN MICROFABRICATED PILLAR ARRAY COLUMNS BY ELECTROCHEMICAL ANODIZATION M. Callewaert¹, J. Op de Beeck¹, H. Ottevaere¹, H. Gardeniers², G. Desmet¹, and W. de Malsche¹ ¹<i>Vrije Universiteit Brussel, BELGIUM</i>, and ²<i>MESA+, University of Twente, THE NETHERLANDS</i></p> <p style="text-align: right;">.....1997</p>
W3P048	<p>MULTIPLE ANTIWEAR PROBES FOR STABLE AND HIGH THROUGHPUT SCANNING PROBE MICROSCOPE NANOLITHOGRAPHY Y.F. Li¹, Y. Tomizawa¹, A. Koga¹, M. Sugiyama², and H. Fujita² ¹<i>Toshiba Corporation, JAPAN</i> and ²<i>University of Tokyo, JAPAN</i></p> <p style="text-align: right;">.....2001</p>

Nanodevices

W3P049	<p>245 MHZ GRAPHENE-ALUMINUM NITRIDE NANO PLATE RESONATOR Z. Qian, Y. Hui, F. Liu, S. Kar, and M. Rinaldi <i>Northeastern University, USA</i></p> <p style="text-align: right;">.....2005</p>
W3P050	<p>FABRICATION OF CNFETS WITH LOW-RESISTANCE ELECTRICAL CONTACTS W. Liu, K. Chikkadi, S.W. Lee, C. Hierold, and M. Haluska <i>ETH Zürich, SWITZERLAND</i></p> <p style="text-align: right;">.....2009</p>
W3P051	<p>SYNCHRONIZATION OF STOCHASTIC RESONANCE USING COUPLED NONLINEAR SILICON RESONATORS Y. Mitsui, Y. Kawai, and T. Ono <i>Tohoku University, JAPAN</i></p> <p style="text-align: right;">.....2013</p>

Nanomaterials & Characterization

W3P052	<p>EVALUATION OF NANO DEFORMATION MECHANISMS OF MWCNT BY MEMS-BASED TENSILE TEST AND MOLECULAR DYNAMICS SIMULATION H. Ohmori, K. Yamauchi, H.-J. Oh, K. Yashiro, and Y. Isono <i>Kobe University, JAPAN</i></p> <p style="text-align: right;">.....2017</p>
W3P053	<p>PREPARATION OF NICKEL, NICKEL-IRON, AND SILVER-COPPER NANOPARTICLES IN IONIC LIQUIDS P. Lobotka¹, G. Radnoczi², Z. Czigan², I. Vavra¹, M. Drzik³, M. Micusik⁴, E. Dobrocka¹, and P. Kunzo¹ ¹<i>Slovak Academy of Sciences, SLOVAKIA</i>, ²<i>Hungarian Academy of Sciences, HUNGARY</i>, ³<i>International Laser Centre, SLOVAKIA</i> and ⁴<i>Polymer Institute SAS, SLOVAKIA</i></p> <p style="text-align: right;">.....2021</p>

Chemical Sensors & Microsystems

Chemical Sensors

W3P054	<p>BATCH FABRICATION OF MICRO PRECONCENTRATOR WITH THIN FILM MICROHEATER USING TOLLEN'S REACTION Y.-S. Lin¹, C.-Y. Kuo¹, W.-C. Tian¹, T.-H. Wu¹, H.-J. Sheen¹, H.-Y. Kuo², and C.-J. Lu² ¹<i>National Taiwan University, TAIWAN</i> and ²<i>National Taiwan Normal University, TAIWAN</i></p> <p style="text-align: right;">.....2025</p>
W3P055	<p>DEVELOPMENT OF PH SENSOR WITH ENHANCED SENSITIVITY USING VOLUME OF BUBBLES GENERATED BY ELECTROLYSIS J. Sim, D.-S. Kwon, and J. Kim <i>Yonsei University, SOUTH KOREA</i></p> <p style="text-align: right;">.....2029</p>
W3P056	<p>PERMEABLE-MEMBRANE SEPARATING DETECTION OF VAPORIZED LIQUID WITH NANOPARTICLE FUNCTIONALIZED RESONANT CANTILEVER FOR SOLUTION-NOISE SUPPRESSION H. Yu, P. Xu, and X.X. Li <i>Chinese Academy of Sciences, CHINA</i></p> <p style="text-align: right;">.....2033</p>

W3P POSTER SESSION III (continued)

Environmental Sensors

W3P.057	DETECTION OF CHLORIDE ION CONCENTRATION USING CHRONOPOTENTIOMETRY Y. Abbas, W. Olthuis, and A. van den Berg <i>MESA+, University of Twente, THE NETHERLANDS</i>2037
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FET Based Gas Sensors

W3P.058	COMBINATION OF TEMPERATURE CYCLED AND GATE BIAS CYCLED OPERATION TO ENHANCE THE SELECTIVITY OF SiC-FET GAS SENSORS C. Bur ¹ , M. Bastuck ¹ , A. Schütze ¹ , A. Lloyd Spetz ² , and M. Andersson ² ¹ Saarland University, GERMANY and ² Linköping University, SWEDEN2041
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Gas Sensors

W3P.059	AN ACTIVE TEMPERATURE MODULATION OF GAS SENSOR BASED ON SELF-ADAPTIVE STRATEGY E. Martinelli, A. Catini, and C. Di Natale <i>University of Rome Tor Vergata, ITALY</i>2045
W3P.060	CO₂ SENSING BY WORK FUNCTION READOUT OF ZNO BASED SCREEN PRINTED FILMS R. Pohle, A. Tawil, C. Mrotzek, and M. Fleischer <i>Siemens AG, GERMANY</i>2048
W3P.061	DEVELOPMENT OF EGFET-BASED MICROSENSORS WITH HIGH-SENSITIVITY AND HIGH-LINEARITY FOR DISSOLVED OXYGEN AND CARBON DIOXIDE DETECTION C.-H. Hsieh, P.-H. Chen, R.-H. Chen, and I.-Y. Huang <i>National Sun Yat-Sen University, TAIWAN</i>2051
W3P.062	GRAPHENE SOI CMOS SENSORS FOR DETECTION OF PPB LEVELS OF NO₂ IN AIR J.W. Gardner ¹ , M.T. Cole ² , A. De Luca ² , P. Clément ³ , E. Llobet ³ , S.Z. Ali ⁴ , and F. Udrea ² ¹ Warwick University, UK, ² University of Cambridge, UK, ³ University Rovira i Virgili, SPAIN and ⁴ Cambridge CMOS Sensors, Ltd., UK2055
W3P.063	NOVEL GASEOUS PHASE ETHANOL SENSOR IMPLEMENTED WITH UNDERLOADED RF RESONATOR FOR SENSOR-EMBEDDED PASSIVE CHIPLESS RFIDS W.T. Chen ¹ , K.M.E. Stewart ¹ , J. Carroll ² , R. Mansour ¹ , E. Abdel-Rahman ¹ , and A. Penlidis ¹ ¹ University of Waterloo, CANADA and ² Sober Steering Inc., CANADA2059
W3P.064	ULTRA HIGH PERFORMANCE GAS SENSOR BASED ON IC COMPATIBLE FUSION OF MICROMACHINED HOTPLATFORM AND NANOSTRUCTURED POROUS FILM L. Xu, Z. Dai, T. Li, G. Duan, W. Cai, and Y. Wang <i>Chinese Academy of Sciences, CHINA</i>2063
W3P.065	WORK FUNCTION BASED GAS SENSING WITH BENZENE TRICARBOXYLATE LINKED METAL ORGANIC FRAMEWORKS - A COMPARISON STUDY P. Davydovskaya ^{1,2} , V. Pentyala ² , L. Hussein ² , R. Pohle ¹ , and G. Urban ² ¹ Siemens AG, GERMANY and ² University of Freiburg - IMTEK, GERMANY2067

Humidity Sensors

W3P.066	DEVELOPMENT OF AN ELECTROCHEMICAL MICROSENSOR BASED ON ALGAL METABOLISM FOR THE DETECTION OF WATER POLLUTANTS A. Tsopela ^{1,2} , A. Lale ^{1,2} , E. Vanhove ^{1,2} , C. Christophe ^{1,2} , F. Lefèvre ³ , P. Temple-Boyer ^{1,2} , I. Seguy ^{1,2} , P. Juneau ³ , J. Launay ^{1,2} , and R. Izquierdo ³ ¹ Laboratoire d'Analyse et d'Architecture des Systèmes (LAAS-CNRS), FRANCE, ² Université de Toulouse, FRANCE and ³ Université du Québec à Montréal, CANADA2071
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Hydrogen Gas Sensors

W3P.067	GAS SENSING PROPERTIES OF NANOSTRUCTURED MIXED OXIDE FILM PREPARED BY ANODIZING Zr-W ALLOY THROUGH THE ALUMINA NANOPORES R.M. Vázquez ¹ , R. Calavia ¹ , F. Gispert-Guirado ¹ , E. Llobet ¹ , J. Hubálek ² , and A. Mozalev ² ¹ University Rovira i Virgili, SPAIN and ² Brno University of Technology, CZECH REPUBLIC2075
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W3P POSTER SESSION III (continued)

Nanowire Based Sensors

W3P.068	DEVELOPMENT OF A HYDROGEN GAS SENSOR BASED ON A SUSPENDED MONOLITHIC CARBON NANOWIRE PLATFORM J. Heo, Y. Lim, and H. Shin <i>Ulsan National Institute of Science and Technology (UNIST), SOUTH KOREA</i>2079
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Bio-Sensors & Bio-Microsystems

Cell Sensing & Manipulation

W3P.069	A CONTINUOUSLY TUNABLE SIZE-BASED FILTER H.L. Chang ¹ , F.L. Chen ¹ , F. Ye ¹ , S.J. Hong ¹ , W.Z. Yuan ¹ , and Y.C. Tai ² ¹ <i>Northwestern Polytechnical University, CHINA</i> and ² <i>California Institute of Technology, USA</i>2082
W3P.070	DETECTION OF IMATINIB RESISTANCE IN K562 LEUKEMIA CELLS BY 3D-ELECTRODE CONTACTLESS DIELECTROPHORESIS Y. Demircan, A. Koyuncuoğlu, M. Erdem, E. Özgür, U. Gündüz, and H. Külah <i>Middle East Technical University (METU), TURKEY</i>2086
W3P.071	LIGHT-ADDRESSABLE MEASUREMENTS OF CELLULAR OXYGEN CONSUMPTION RATES IN MICROWELL ARRAYS BASED ON PHASE-BASED PHOSPHORESCENCE LIFETIME DETECTION H.T. Chu ¹ , Y.S. Lin ¹ , K.Y. Hung ² , and S.H. Huang ¹ ¹ <i>National Taiwan Ocean University, TAIWAN</i> and ² <i>Ming Chi University of Technology, TAIWAN</i>2090
W3P.072	MICROFLUIDIC CELL CULTURING BY HYDROGEL-BASED DIFFUSION/PERFUSION D. Puchberger-Enengl ¹ , S. van den Driesche ² , C. Krutzler ³ , F. Keplinger ¹ , and M.J. Vellekoop ² ¹ <i>Vienna University of Technology, AUSTRIA</i> , ² <i>University of Bremen, GERMANY</i> , and ³ <i>Integrated Microsystems Austria GmbH, AUSTRIA</i>2094
W3P.073	A DISPOSABLE POLYMER LAB-ON-A-SLIDE FOR POINT-OF-CARE DIAGNOSTICS OF METHICILLIN-RESISTANT <i>STAPHYLOCOCCUS AUREUS</i> (MRSA) M. Bu ¹ , I.R. Perch-Nielsen ¹ , J. Skov ¹ , K.S. Sørensen ¹ , Y. Sun ² , M.E. Perderson ¹ , M.F. Hansen ² , K.W. Harlow ¹ , and A. Wolff ² ¹ <i>DELTA, DENMARK</i> and ² <i>Technical University of Denmark, DENMARK</i>2098

Fluid Manipulation in Microsystems

W3P.074	A BIOLOGICAL/ELECTROCHEMICAL RESERVOIRS INTEGRATED MICROSENSOR FOR THE DETERMINATION OF BIOCHEMICAL OXYGEN DEMAND J.F. Wang, C. Bian, J.H. Tong, J.Z. Sun, Y. Li, H. Zhang, and S.H. Xia <i>Chinese Academy of Sciences, CHINA</i>2102
W3P.075	AN INTERVENTIONAL FLEXIBLE MICRONEEDLE WITH THREE-ELECTRODE SYSTEM ON THE CAPILLARY FOR CONTINUOUS GLUCOSE MONITORING AND DRUG DELIVERY Z. Yang ¹ , A. Toda ² , Y. Zhang ¹ , T. Itoh ¹ , and R. Maeda ¹ ¹ <i>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN</i> and ² <i>Meltex Incorporation, JAPAN</i>2106
W3P.076	ELECTROCHEMICAL GATING ON CMOS: INTERPLAY OF FIELD, ACIDITY AND SALINITY ON AN ELECTROLYTE-INSULATOR INTERFACE K. Jayant ¹ , K. Auluck ¹ , S. Anwar ² , and E.C. Kan ¹ ¹ <i>Cornell University, USA</i> and ² <i>City College New York, USA</i>2110
W3P.077	HIGHLY SENSITIVE AND RAPID DETECTION OF SHIGELLA FLEXNERI IN LIQUID SAMPLE BY AN IMMUNOMAGNETIC ASSAY WITH SHEAR HORIZONTAL SURFACE ACOUSTIC WAVE SENSORS H.C. Hao and D.J. Yao <i>National Tsing Hua University, TAIWAN</i>2114
W3P.078	MICRO-NMR PROBE FEATURING DISPOSABLE, SELF- PRIMING SAMPLE-INSERTS, TOWARDS HIGH-THROUGHPUT PROFILING N. Spengler, R.Ch. Meier, A. Moazenzadeh, V. Badilita, J.G. Korvink, and U. Wallrabe <i>University of Freiburg, GERMANY</i>2118

W3P POSTER SESSION III (continued)

W3P.079	<p>OPTOFUIDICS NANOPARTICLES SORTING BY HYDRODYNAMIC OPTICAL FORCE Y. Yang¹, Y.Z. Shi^{1,2}, L.K. Chin¹, J.B. Zhang³, D.P. Tsai⁴, and A.Q. Liu^{1,2,3} ¹Nanyang Technological University, SINGAPORE; ²Xi'an Jiao Tong University, CHINA, ³Agency for Science, Technology and Research (A*STAR) and ⁴National Taiwan University, TAIWAN 2122</p>
W3P.080	<p>THE INFLUENCE OF MOLECULAR CHARGES ON MICROTUBULE CURVATURES IN AN ELECTRICAL FIELD N. Isozaki¹, T. Nakahara¹, S. Ando¹, N. Kamisetty¹, H. Shintaku¹, H. Kotera¹, E. Meyhofer², and R. Yokokawa^{1,3} ¹Kyoto University, JAPAN, ²University of Michigan, USA and ³Japan Science and Technology Agency (JST), JAPAN 2126</p>

Manipulation & Detection of Bacteria

W3P.081	<p>ARTIFICIAL BACTERIAL FLAGELLA FUNCTIONALIZED WITH TEMPERATURE-SENSITIVE LIPOSOMES FOR BIOMEDICAL APPLICATIONS F. Qiu¹, R. Mhanna¹, L. Zhang², Y. Ding¹, K. Sugihara¹, M. Zenobi-Wong¹, and B.J. Nelson¹ ¹ETH Zürich, SWITZERLAND and ²Chinese University of Hong Kong, CHINA 2130</p>
W3P.082	<p>PHASEGUIDE-CHIP FOR POINT-OF-CARE DIAGNOSTIC OF BACTERIA WITH INTEGRATED ENRICHMENT, LYSIS, AND NUCLEIC ACID PURIFICATION H. Hubbe, S. Hakenberg, G. Dame, and G.A. Urban University of Freiburg - IMTEK, GERMANY 2134</p>

Sensing in Biosystems

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W4A.004 GLOW-DISCHARGE ION-SORPTION MICROPUMP FOR VACUUM MEMS T. Grzebyk ¹ , A. Górecka-Drzazga ¹ , A. Zawada ² , and J.A. Dziuban ¹ ¹ Wrocław University of Technology, POLAND and ² Institute of Tele- and Radiotechniques, POLAND2411	W4B.004 LABEL-FREE AND ULTRASENSITIVE DETECTION OF MICRORNA BIOMARKERS IN LUNG CANCER CELLS BASED ON SILICON NANOWIRE FET BIOSENSORS A. Gao, N. Lu, P. Dai, T. Li, and Y. Wang Chinese Academy of Sciences, CHINA2439	W4C.004 METAL MICROMECHANICAL FILTER-POWER AMPLIFIER UTILIZING A DISPLACEMENT-AMPLIFYING RESONANT SWITCH W.-C. Li, Y. Lin, and C.T.-C. Nguyen University of California, Berkeley, USA2469	W4D.004 A BIO-INSPIRED HEMISPHERICAL LENS BASED ON REFLECTING SUPERPOSITION COMPOUND EYE OPTICS C.-C. Huang, B. Aldalali, X. Wu, and H. Jiang University of Wisconsin, USA2497
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W4A.005 MICROMACHINED POLYCRYSTALLINE DIAMOND HEMISPHERICAL SHELL RESONATORS A. Heidari ¹ , M.-L. Chan ¹ , H.-A. Yang ² , G. Jaramillo ¹ , P. Taheri-Tehrani ¹ , P. Fonda ¹ , H. Najjar ¹ , K. Yamazaki ^{1,2} , L. Lin ² , and D.A. Horsley ¹ ¹ University of California, Davis, USA and ² University of California, Berkeley, USA2415	W4B.005 SILK STABILIZED GRAPHENE FET ENZYMATIC GLUCOSE BIOSENSOR X.Q. You and J.J. Pak Korea University, SOUTH KOREA2443	W4C.005 EXPERIMENTAL STUDY ON THE IMPACT OF ANCHOR LOSSES ON THE QUALITY FACTOR OF CONTOUR MODE ALN RESONATOR J. Segovia-Fernandez ¹ , M. Cremonesi ² , C. Cassella ¹ , A. Frangi ² , and G. Piazza ¹ ¹ Carnegie Mellon University, USA and ² Politecnico di Milano, ITALY2473	W4D.005 15µM AIR GAP 8x8/4x4 PIXELS SINGLE CRYSTAL SILICON CONTINUOUS MEMBRANE DEFORMABLE MIRROR T. Wu, T. Sasaki, M. Akiyama, and K. Hane Tohoku University, JAPAN2501
18:00 - 18:15			
W4A.006 LOCALIZED, DEGENERATELY DOPED EPITAXIAL SILICON FOR TEMPERATURE COMPENSATION OF RESONANT MEMS SYSTEMS E.-J. Ng, C.H. Ahn, Y. Yang, V.A. Hong, C.-F. Chiang, E. Ahadi, M.W. Ward, and T.W. Kenny Stanford University, USA2419	W4B.006 MOTOR PROTEIN BASED TAU PROTEIN DETECTION DEVICE Y. Orazov ¹ , M.C. Tarhan ¹ , R. Yokokawa ² , S.L. Karsten ³ , and H. Fujita ¹ ¹ University of Tokyo, JAPAN, ² Kyoto University, JAPAN, and ³ NeuroInDx Inc., USA2447	W4C.006 TOPOLOGY OPTIMIZED RF MEMS SWITCHES M.A. Philippine ¹ , H. Zareie ² , O. Sigmund ³ , G.M. Rebeiz ² , and T.W. Kenny ¹ ¹ Stanford University, USA, ² University of California, San Diego, USA, and ³ Technical Institute of Denmark, DENMARK2477	W4D.006 32X32 OPTICAL PHASED ARRAY WITH ULTRA-LIGHTWEIGHT HIGH-CONTRAST-GRATING MIRRORS B.W. Yoo ¹ , M. Megens ¹ , T.K. Chan ² , T. Sun ¹ , W. Yang ¹ , D.A. Horsley ² , C.J. Chang-Hasnain ¹ , and M.C. Wu ¹ ¹ University of California, Berkeley, USA and ² University of California, Davis, USA2505
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W4A.007 EXPERIMENTAL EVALUATION OF HIGH VOLTAGE HOLD-OFF CAPABILITY OF POST-PROCESS MESA-ISOLATED SERIES STANDARD CMOS TRANSISTORS A. Hirakawa, S. Morishita, I. Mori, M. Kubota, and Y. Mita University of Tokyo, JAPAN2423	W4B.007 CELL ARRAY FLUIDIC CHANNEL INTEGRATED WITH ELECTRODES FOR CELL-BASED MULTIPLE CHEMICAL SENSING N. Misawa ¹ , H.J. Lee ¹ , H. Mitsuno ² , R. Kanzaki ² , and K. Sawada ^{1,3} ¹ Toyohashi University of Technology, JAPAN, ² University of Tokyo, JAPAN, and ³ Japan Science and Technology Agency (JST), JAPAN2451	W4C.007 MICROFLUIDIC TUNABLE METAMATERIAL FOR GIGAHERTZ FILTER ARRAY A.Q. Liu ^{1,2} , W.M. Zhu ² , Q.H. Song ¹ , R.F. Huang ³ , S.K. Ting ³ , J.H. Teng ⁴ , and X.H. Zhang ⁴ ¹ Xi'an Jiaotong University, CHINA, ² Nanyang Technological University, SINGAPORE, ³ Temasek Laboratories, SINGAPORE, and ⁴ Institute of Materials Research and Engineering, SINGAPORE2481	W4D.007 MINIATURE FOURIER TRANSFORM INFRARED SPECTROMETER FOR MIDDLE INFRARED WAVELENGTH RANGE T. Tanahashi, M. Toda, H. Miyashita, and T. Ono Tohoku University, JAPAN2509
18:30	ADJOURN FOR THE DAY		
20:15 - 23:00	CONFERENCE BANQUET		

THURSDAY 20 June 2013

PARALLEL ORAL SESSIONS

Physical Microsystems 3	Bio-Microsystems in Diagnostics	MEMS & NEMS	Photonics for Bio/Fluidic Applications
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Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
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Session Chairs:

T. Kenny, <i>Stanford University, USA</i>	Z. Brzózka, <i>Warsaw University of Technology, POLAND</i>	G. Skidmore, <i>DRS Technologies RSTA, USA</i>	A.Q. Liu, <i>Nanyang Technological University, SINGAPORE</i>
M. Wong, <i>Hong Kong University of Science and Technology, CHINA</i>	A. Herr, <i>University of California, Berkeley, USA</i>	T. Tsuchiya, <i>Kyoto University, JAPAN</i>	R. Puers, <i>Katholieke Universiteit Leuven, BELGIUM</i>

08:30 - 09:00

INVITED SPEAKER	INVITED SPEAKER	INVITED SPEAKER	INVITED SPEAKER
Th1A.001 CMOS MEMS: A KEY TECHNOLOGY TOWARDS THE "MORE THAN MOORE" ERA W. Fang, S.-S. Li, C.-L. Cheng, C.-I. Chang, W.-C. Chen, Y.-C. Liu, M.-H. Tsai, and C. Sun <i>National Tsing Hua University, TAIWAN</i>2513	Th1B.001 BIOMEDICAL MICRO AND NANOTECHNOLOGY: FROM LAB-ON-CHIP TO BUILDING SYSTEMS WITH CELLS U. Hassan, P. Bajaj, G. Damhorst, and R. Bashir <i>University of Illinois, Urbana-Champaign, USA</i>2539	Th1C.001 SUCCESSFUL IMPLEMENTATION OF A MEMS MICROMIRROR ARRAY IN A LITHOGRAPHY ILLUMINATION SYSTEM W. Endendijk, M. Mulder, and B. van Drieënhuizen <i>ASML, THE NETHERLANDS</i>2564	Th1D.001 NANOPHOTONIC BIOSENSORS IN SILICON-ON-INSULATOR P. Bienstman ¹ , S. Werquin ¹ , C. Lerma Arce ¹ , D. Witters ² , R. Puers ² , J. Lammertyn ² , T. Claes ¹ , E. Hallynck ¹ , J.-W. Hoste ¹ , and D. Martens ¹ ¹ <i>Ghent University - imec, BELGIUM</i> and ² <i>Katholieke Universiteit Leuven, BELGIUM</i>2588

09:00 - 09:15

Th1A.002 A HIGH PERFORMANCE AUTOMATIC MODE-MATCHED MEMS GYROSCOPE WITH AN IMPROVED THERMAL STABILITY OF THE SCALE FACTOR S. Sonmezoglu, S.E. Alper, and T. Akin <i>Middle East Technical University (METU), TURKEY</i>2519	Th1B.002 A MICROFLUIDIC APTASENSOR INTEGRATED WITH NANODROP GENERATOR FOR MALDI-TOF MS ANALYSIS IN CLINICAL APPLICATIONS J. Yang, J. Zhu, and Q. Lin <i>Columbia University, USA</i>2544	Th1C.002 PIRANI GAUGE BASED ON ALTERNATIVE SELF-HEATING OF SILICON NANOWIRE J. Ruellan, J. Arcamone, D. Mercier, C. Dupré, and L. Duraffourg <i>Commissariat à l'énergie Atomique (CEA), FRANCE</i>2568	Th1D.002 QUANTUM DOT BASED COMPACT SOLID-STATE SWEEPED LIGHT SOURCE FOR HYPERSPECTRAL CELLULAR IMAGING K. Hoshino, G. Bhave, N. Triesault, P. Joshi, A. Zubieta, V. Wang, K.V. Sokolov, and X.J. Zhang <i>University of Texas, Austin, USA</i>2592
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09:15 - 09:30

Th1A.003 A HIGH PERFORMANCE MEMS BASED DIGITAL-OUTPUT GYROSCOPE A. Ismail, B. George, A. Elmallah, A. Mokhtar, M. Abdelazim, M. Elmala, A. Elshennawy, A. Omar, M. Saeed, I. Mostafa, and A. Elsayed <i>Si-ware Systems, EGYPT</i>2523	Th1B.003 AUTOMATED ON-DISC TOTAL RNA EXTRACTION FROM WHOLE BLOOD TOWARDS POINT-OF-CARE FOR EARLY-STAGE DIAGNOSTICS N. Dimov ¹ , J. Gaughran ¹ , E. Clancy ² , T. Barry ² , T.J. Smith ² , and J. Ducreé ¹ ¹ <i>Dublin City University, IRELAND</i> and ² <i>National University of Ireland, IRELAND</i>2548	Th1C.003 DUAL-LAYER NANOPOROUS ANODIC ALUMINUM OXIDE WITH EMBEDDED ELECTRODES FOR CAPACITIVE RELATIVE HUMIDITY SENSOR C.-L. Hsieh, P.-H. Lo, and W. Fang <i>National Tsing Hua University, TAIWAN</i>2572	Th1D.003 VARIABLE MULTI-COLOR MICROFLUIDIC ORGANIC LIGHT EMITTING DEVICE BASED ON MIXING OF ELECTROCHEMILUMINESCENCE SOLUTIONS T. Kasahara ¹ , J. Mizuno ¹ , S. Matsunam ² , T. Edura ² , M. Tsuwaki ¹ , J. Oshima ³ , C. Adachi ² , and S. Shoji ¹ ¹ <i>Waseda University, JAPAN</i> , ² <i>Kyushu University, JAPAN</i> , and ³ <i>Nissan Chemical Industries, Ltd., JAPAN</i>2596
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Physical Microsystems 3	Bio-Microsystems in Diagnostics	MEMS & NEMS	Photonics for Bio/Fluidic Applications
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
09:30 - 09:45			
Th1A.004 INTERACTION EFFECTS OF TEMPERATURE AND STRESS ON MATCHED-MODE GYROSCOPE FREQUENCIES E. Tatar, C. Guo, T. Mukherjee, and G.K. Fedder <i>Carnegie Mellon University, USA</i>2527	Th1B.004 A COMPACT, OPTOFLUIDIC SYSTEM FOR MEASURING RED BLOOD CELL CONCENTRATION M.N. Gulari, M. Ghannad-rezaie, and N. Chronis <i>University of Michigan, USA</i>2552	Th1C.004 MICRO-CHEMO-MECHANICAL HYDROGEN SENSOR BASED ON CONTACT RESISTANCE OF CARBON NANOTUBES ARRAY M.-O. Kim, K. Lee., H. Na, D.-S. Kwon, J. Choi, J.-I. Lee, D. Baek, and J. Kim <i>Yonsei University, SOUTH KOREA</i>2576	Th1D.004 CMOS-MEMS FABRY-PEROT OPTICAL INTERFERENCE DEVICE WITH TUNABLE RESONANT CAVITY G.-L. Luo, C.-C. Lee, C.-L. Cheng, M.-H. Tsai, and W. Fang <i>National Tsing Hua University, TAIWAN</i>2600
09:45 - 10:00			
Th1A.005 1 PPM PRECISION SELF-CALIBRATION OF SCALE FACTOR IN MEMS CORIOLIS VIBRATORY GYROSCOPES A.A. Trusov ^{1,2} , I.P. Prikhodko ¹ , D.M. Rozelle ² , D. Meyer ² , and A.M. Shkel ¹ ¹ University of California, Irvine, USA and ² Northrop Grumman Electronic Systems, USA2531	Th1B.005 MULTICOLOR ULTRA HIGH THROUGHPUT PARALLEL MICROFLUIDIC FLOW CYTOMETER Y.J. Fan ^{1,2} , Y. Chen ¹ , Y.C. Wu ¹ , Y.C. Kung ¹ , T.H. Wu ¹ , H.J. Sheen ² , and P.Y. Chiou ¹ ¹ University of California, Los Angeles, USA and ² National Taiwan University, TAIWAN2556	Th1C.005 FACILE FABRICATION OF HETEROGENEOUS NANOMATERIAL ARRAY TOWARDS LOW-POWER AND MULTIPLEXED GAS SENSING APPLICATION D. Yang ¹ , M.K. Fuadi ¹ , Z. Li ² , and I. Park ¹ ¹ Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA and ² Hewlett Packard Laboratory, USA2580	Th1D.005 THERMALLY ACTUATED LIQUID TUNABLE MICROLENS WITH EMBEDDED THERMOELECTRIC DRIVER AND SUB-SECOND RESPONSE TIME A.O. Ashtiani and H. Jiang <i>University of Wisconsin, USA</i>2604
10:00 - 10:15			
Th1A.006 ELECTRONIC SENSING SYSTEM WITH FLEXIBLE BIOMECHANICAL GROUND REACTION SENSOR ARRAY ACHIEVING 100 μm/sec GAIT GROUND VELOCITY RESOLUTION Q. Guo ¹ , M.A. Suster ² , R. Surapaneni ¹ , C.H. Mastrangelo ¹ , and D.J. Young ¹ ¹ University of Utah, USA and ² Case Western Reserve University, USA2535	Th1B.006 LIVE IMAGING OF CELL APOPTOSIS USING FRET-BASED BIOPROBES IN MEMS FABRICATED MICROCULTURE DISH R. Kajiyama ¹ , Y. Edagawa ² , M. Suzuki ³ , A. Nakahara ¹ , D.H. Yoon ¹ , T. Sekiguchi ¹ , and S. Shoji ¹ ¹ Waseda University, JAPAN, ² Teikyo Heisei University, JAPAN, and ³ Saitama University, JAPAN2560	Th1C.006 RESISTIVE GAS SENSORS FABRICATED BY WAFER-SCALE, IN-SITU INTEGRATION OF HORIZONTAL CARBON NANOTUBE MEMBRANES H. Le Poche ¹ , H. Guerin ² , R. Pöhle ³ , M. Fernández-Bolaños Badia ² , J. Dijon ¹ , and A.M. Ionescu ² ¹ Commissariat à l'énergie Atomique (CEA), FRANCE, ² Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND, and ³ Siemens AG Corporate Research, GERMANY2584	Th1D.006 MICROFLUIDICS INTEGRABLE PLASMA SOURCE POWERED BY A SILICON THROUGH-SUBSTRATE SPLIT-RING RESONATOR M. Berglund, A. Persson, H. Kratz, and G. Thornell <i>Uppsala University, SWEDEN</i>2608
10:15 - 10:45		BREAK	



PARALLEL ORAL SESSIONS

PARALLEL ORAL SESSIONS			
Flexible Technology	Microfluidics	Composite Materials & Characterization	Optical and Fluidic Systems
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
Session Chairs:			
<p>X. Wang, <i>Tsinghua University, CHINA</i></p> <hr/> <p>L. Sarro, <i>Delft University of Technology, THE NETHERLANDS</i></p>	<p>Y.-C. Lin, <i>National Cheng Kung University, TAIWAN</i></p> <hr/> <p>R. Zengerle, <i>University of Freiburg - IMTEK, GERMANY</i></p>	<p>C. Nguyen, <i>University of California, Berkeley, USA</i></p> <hr/> <p>S. Tatic-Lucic, <i>Lehigh University, USA</i></p>	<p>K. Böhringer, <i>University of Washington, USA</i></p> <hr/> <p>T. Cui, <i>University of Minnesota, USA</i></p>
10:45 - 11:00			
<p>Th2A.001 RELIABLE PACKAGING FOR PARYLENE-BASED FLEXIBLE RETINAL IMPLANT J.H.-C. Chang, Y. Liu, D. Kang, and Y.-C. Tai <i>California Institute of Technology, USA</i>2612</p>	<p>Th2B.001 VALVE-ONLY PUMPING IN MECHANICAL GAS MICROPUMPS A. Besharatian, K. Kumar, R.L. Peterson, L.P. Bernal, and K. Najafi <i>University of Michigan, USA</i>2640</p>	<p>Th2C.001 IMPROVED PERFORMANCE OF SELF-ASSEMBLED GRAPHENE BIOSENSORS INTEGRATED WITH SHRINK-INDUCED TUNABLE MORPHOLOGY OF SILVER NANOPARTICLES B. Zhang and T. Cui <i>University of Minnesota, USA</i>2668</p>	<p>Th2D.001 MICRO-OPTICAL 1D MOIRÉS AS ANTI-COUNTERFEITING FEATURES V.J. Cadarso, S. Chosson, K. Sidler, R.H. Hersch, and J. Brugger <i>École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND</i>2696</p>
11:00 - 11:15			
<p>Th2A.002 CREATING PARTICULATE MICROSTRUCTURES FOR TWO- AND THREE-DIMENSIONAL CELL PATTERNING X. Zhang and Y. Zhao <i>Ohio State University, USA</i>2616</p>	<p>Th2B.002 HIGH-THROUGHPUT IONIC LIQUID ELECTROSPRAY SOURCES BASED ON DENSE MONOLITHIC ARRAYS OF EMITTERS WITH INTEGRATED EXTRACTOR GRID AND CARBON NANOTUBE FLOW CONTROL STRUCTURES F.A. Hill, P.J. Ponce de Leon, and L.F. Velásquez-García <i>Massachusetts Institute of Technology, USA</i>2644</p>	<p>Th2C.002 FORMATION AND INTEGRATION OF TUNABLE ANISOTROPIC MAGNETIC POLYMER COMPOSITES BY TWO STAGES SOLIDIFICATION PROCESS F.-M. Hsu, W.-C. Chen, C.-F. Hu, G.-Y. Liu, and W. Fang <i>National Tsing Hua University, TAIWAN</i>2672</p>	<p>Th2D.002 3D RECONSTRUCTION AND FEATURE EXTRACTION FOR ANALYSIS OF NANOSTRUCTURES BY SEM IMAGING F.-Y. Zhu¹, Q.-Q. Wang², X.-S. Zhang¹, W. Hu¹, X. Zhao², and H.-X. Zhang¹ ¹<i>Peking University, CHINA</i> and ²<i>Nankai University, CHINA</i>2700</p>
11:15 - 11:30			
<p>Th2A.003 HYDROCHLORIC ACID-IMPREGNATED PAPER FOR LIQUID METAL MICROFLUIDICS D. Kim¹, Y. Lee¹, D.-W. Lee², W. Choi¹, and J.-B. Lee¹ ¹<i>University of Texas, Dallas, USA</i> and ²<i>Chonnam National University, SOUTH KOREA</i>2620</p>	<p>Th2B.003 SELF-SENSING NANOPIPETTE FOR LIQUID DISPENSING AND AFM IMAGING H.H. Perez Garza, R. Stoute, M.K. Ghatkesar, and U. Staufer <i>Delft University of Technology, THE NETHERLANDS</i>2648</p>	<p>Th2C.003 PUSHING THE LIMITS OF PHOTO-CURABLE SU-8-BASED SUPERPARAMAGNETIC POLYMER COMPOSITES C. Peters, O. Ergeneman, G.A. Sotiriou, S.E. Pratsinis, B.J. Nelson, and C. Hierold <i>ETH Zürich, SWITZERLAND</i>2676</p>	<p>Th2D.003 HIGH DETECTIVITY UNCOOLED THERMOPILE DETECTORS WITH SPECTRALLY SELECTIVE RESPONSIVITY A.S. Gawarikar, R.P. Shea, and J.J. Talghader <i>University of Minnesota, USA</i>2704</p>



Flexible Technology	Microfluidics	Composite Materials & Characterization	Optical and Fluidic Systems
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
11:30 - 11:45			
<p>Th2A.004 STRETCHABLE STRAIN SENSOR BASED ON METAL NANOPARTICLE THIN FILM FOR HUMAN MOTION DETECTION & FLEXIBLE PRESSURE SENSING DEVICES J.H. Lee, D. Yang, S. Kim, and I. Park <i>Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA</i> 2624</p>	<p>Th2B.004 FABRICATION OF JANUS HYDROGEL BEADS WITH MAGNETIC ANISOTROPY FOR ELECTRONIC PAPER USING SHRINKAGE-GELATION TECHNIQUE K. Aketagawa, H. Hiram, and T. Torii <i>University of Tokyo, JAPAN</i> 2652</p>	<p>Th2C.004 ULTRAFast PHOTO-TRIGGERED FIELD EMISSION CATHODES USING MASSIVE, UNIFORM ARRAYS OF NANO-SHARP HIGH-ASPECT-RATIO SILICON STRUCTURES M.E. Swanwick¹, P.D. Keathley¹, F.X. Kärtner², and L.F. Velásquez-García¹ ¹<i>Massachusetts Institute of Technology, USA</i> and ²<i>University of Hamburg, USA</i> 2680</p>	<p>Th2D.004 A POWERLESS OPTICAL MICROSENSOR FOR MONITORING INTRAOCULAR PRESSURE WITH KERATOPROSTHETIC M. Ghannad-Rezaie, M.N. Gulari, R. de Melo Franco, S. I. Mian, and N. Chronis <i>University of Michigan, USA</i> 2708</p>
11:45 - 12:00			
<p>Th2A.005 A FLEXIBLE STRESS SENSOR USING A SUB-10µM SILICON CHIP TECHNOLOGY S. Ferwana, E.A. Angelopoulos, S. Endler, C. Harendt, and J.N. Burghartz <i>Institute for Microelectronics Stuttgart (IMS CHIPS), GERMANY</i> 2628</p>	<p>Th2B.005 MICRODROPLET-BASED SYNTHESIS AND CENTRIFUGE-FREE RETRIEVAL OF NANOPARTICLES VIA A CONTINUOUS FLOW MICROPOST ARRAY RAILING SYSTEM K. Iwai, E.Y. Erdem, R.D. Sochol, J.C. Cheng, F.M. Doyle, A.P. Pisano, and L. Lin <i>University of California, Berkeley, USA</i> 2656</p>	<p>Th2C.005 CHARACTERIZATION OF TT-CONJUGATED METALLOPOLYMER'S MECHANICAL STIFFNESS BY USING SILICON NANOTWEEZERS J. Lee, K. Yagi, M. Kumemura, T. Sato, L. Jalabert, N. Lafitte, D. Collard, H. Houjou, and H. Fujita <i>University of Tokyo, JAPAN</i> 2684</p>	<p>Th2D.005 A FLEXIBLE, LASER-DEFINED, PAPER PLATFORM FOR LOCALIZED OXYGEN GENERATION AND DELIVERY M. Ochoa¹, R. Rahimi¹, N. Alemdar², M.R. Dokmeci², A. Khademhosseini², and B. Ziaie¹ ¹<i>Purdue University, USA</i> and ²<i>Brigham and Women's Hospital, Harvard Medical School, USA</i> 2712</p>
12:00 - 12:15			
<p>Th2A.006 LOW-COST ROLL-TO-ROLL COLORIMETRIC GAS SENSOR SYSTEM FOR FIRE DETECTION C. Peter¹, S. Schulz², M. Barth³, M. Gemp², S. Rademacher¹, and J. Wöllenstein⁴ ¹<i>Fraunhofer Institute for Physical Measurement Techniques (IPM), GERMANY</i>, ²<i>A. Raymond, GERMANY</i>, ³<i>HSG-IMAT, GERMANY</i> and ⁴<i>University of Freiburg – IMTEK, GERMANY</i> 2632</p>	<p>Th2B.006 NUMBER CONTROLLABLE ACTIVE MICRODROPLET MERGING WITH WIDE RANGE OF VOLUME FOR DIGITAL CHEMICAL SYNTHESIS D.H. Yoon¹, S. Numakunai¹, J. Ito¹, T. Fukuda², T. Sekiguchi¹, and S. Shoji¹ ¹<i>Waseda University, JAPAN</i> and ²<i>Saitama University, JAPAN</i> 2660</p>	<p>Th2C.006 TOP-DOWN BATCH-FABRICATION OF BOTTOM-UP SELF-ASSEMBLIES FOR REGION-SELECTIVE MULTI-FUNCTIONALIZATION OF MICROFLUIDIC CHIPS C. Chen, P. Xu, and X. Li <i>Chinese Academy of Sciences, CHINA</i> 2688</p>	<p>Th2D.006 A MICROFLUIDIC READ-OUT PLATFORM FOR MINIATURIZED RFID TAGS H.R. Seren, C. Wang, X. Zhao, C. Chen, and X. Zhang <i>Boston University, USA</i> 2716</p>
12:15 - 12:30			
<p>Th2A.007 SILICON FABRIC FOR MULTI-FUNCTIONAL APPLICATIONS G. Torres Sevilla, J.P. Rojas, S. Ahmed, A. Hussain, S.B. Inayat, and M.M. Hussain <i>King Abdullah University of Science and Technology, SAUDI ARABIA</i> 2636</p>	<p>Th2B.007 CHARACTERIZATION OF DEPLETION LAYER FORMATION USING SELF-ASSEMBLED NANOPARTICLES IN MICROCHANNELS E. Choi, K. Kwon, D. Kim, and J. Park <i>Sogang University, SOUTH KOREA</i> 2664</p>	<p>Th2C.007 DEDICATED TEST STRUCTURE FOR THE MEASUREMENT OF ADHESION FORCES BETWEEN CONTACTING SURFACES IN MEMS DEVICES J. De Coster, F. Ling, A. Witvrouw, and I. De Wolf <i>Katholieke Universiteit Leuven, BELGIUM</i> 2692</p>	<p>Th2D.007 FERROFLUID-ASSISTED LEVITATION MECHANISM FOR MICROMOTOR APPLICATIONS B. Assadsangabi, M.H. Tee, and K. Takahata <i>University of British Columbia, CANADA</i> 2720</p>
12:30 - 14:15 LUNCH ON OWN & EXHIBIT INSPECTION			

PARALLEL ORAL SESSIONS

Tactile Sensors	Gas Chromatography	Imunnoassays & Nucleic Acid Assays	Energy Generation & Management
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Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
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Session Chairs:

G. Fedder, <i>Carnegie Mellon University, USA</i>	W. Lang, <i>University of Bremen, GERMANY</i>	CJ Kim, <i>University of California, Los Angeles, USA</i>	E. Yeatman, <i>Imperial College London, UK</i>
G. Skidmore, <i>DRS Technologies RSTA, USA</i>	W. Wlodarski, <i>RMIT University, AUSTRALIA</i>	A.Q. Liu, <i>Nanyang Technological University, SINGAPORE</i>	P. Woias, <i>University of Freiburg - IMTEK, GERMANY</i>

14:15 - 14:45

<p style="text-align: center; margin: 0;">INVITED SPEAKER</p> <p style="margin: 0;">Th3A.001 MICROSYSTEMS AND FUNCTIONAL ASSAYS FOR MECHANOBIOLOGY B.L. Pruitt, J.C. Doll, S.J. Park, N. Harjee, and B.C. Petzold <i>Stanford University, USA</i>2724</p>	<p style="text-align: center; margin: 0;">INVITED SPEAKER</p> <p style="margin: 0;">Th3B.001 THE DEVELOPMENT OF MEMS MASS SPECTROMETERS R.R.A. Syms <i>Imperial College, UK</i>2749</p>	<p style="text-align: center; margin: 0;">INVITED SPEAKER</p> <p style="margin: 0;">Th3C.001 INTEGRATING APTAMERS INTO MICRO- AND NANOBIOSYSTEMS FOR DIAGNOSTICS D. Spasic¹, K.P. Janssen¹, F. Toffalini¹, D.T. Tran², K. Leirs¹, D. Decrop¹, and J. Lammertyn¹ ¹<i>Katholieke Universiteit Leuven, BELGIUM</i> and ²<i>Hanoi University of Agriculture, VIETNAM</i>2775</p>	<p style="text-align: center; margin: 0;">INVITED SPEAKER</p> <p style="margin: 0;">Th3D.001 INTEGRATING MICRO AND NANO: A ROUTE FOR ALL-SILICON THERMOELECTRICITY? L. Fonseca¹, D. Dávila², C. Calaza², A. Tarancón³, A. Morata³, M. Salleras¹, M. Fernández-Regúlez¹, and A. San Paulo⁴ ¹<i>Instituto de Microelectrónica de Barcelona (IMB), SPAIN</i>, ²<i>International Iberian Nanotechnology Laboratory (INL), PORTUGAL</i>, ³<i>Catalonia Institute for Energy Research (IREC), SPAIN</i>, and ⁴<i>Instituto de Microelectrónica de Madrid, (IMM), SPAIN</i>2799</p>
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14:45 - 15:00

<p style="text-align: center; margin: 0;">Th3A.002 A 1.7MM³ MEMS-ON-CMOS TACTILE SENSOR USING HUMAN-INSPIRED AUTONOMOUS COMMON BUS COMMUNICATION M. Makihata¹, M. Muroyama¹, Y. Nakano¹, S. Tanaka¹, T. Nakayama², U. Yamaguchi², H. Yamada², Y. Nonomura³, H. Funabashi³, Y. Hata³, and M. Esashi¹ ¹<i>Tohoku University, JAPAN</i>, ²<i>Toyota Motor Corp., JAPAN</i>, and ³<i>Toyota Central R&D Labs., JAPAN</i>2729</p>	<p style="text-align: center; margin: 0;">Th3B.002 A FACILE, STANDARDIZED FABRICATION APPROACH AND SCALABLE ARCHITECTURE FOR A MICRO GAS CHROMATOGRAPHY SYSTEM WITH INTEGRATED PUMP Y. Qin and Y.B. Gianchandani <i>University of Michigan, USA</i>2755</p>	<p style="text-align: center; margin: 0;">Th3C.002 QUANTUM DOT LABELED IMMUNOASSAY USING ZINC OXIDE NANOWIRES J. Kim, S. Kwon, J.-K. Park, and I. Park <i>Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA</i>2779</p>	<p style="text-align: center; margin: 0;">Th3D.002 THERMAL ENERGY HARVESTING BASED ON FERROMAGNETIC SHAPE MEMORY ALLOY MICROACTUATION M. Gueltig¹, B. Haefner¹, M. Ohtsuka², and M. Kohi¹ ¹<i>Karlsruhe Institute of Technology (KIT), GERMANY</i> and ²<i>Tohoku University, JAPAN</i>2803</p>
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Tactile Sensors	Gas Chromatography	Immunossays & Nucleic Acid Assays	Energy Generation & Management
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
15:00 – 15:15			
<p>Th3A.003 LOW VOLTAGE ACTUATED PLATE FOR HAPTIC APPLICATIONS WITH PZT THIN-FILM F. Casset¹, J.S. Danel¹, C. Chappaz², Y. Civet³, M. Amberg⁴, M. Gorisse³, C. Dieppedale¹, G. Le Rhun¹, S. Basrour³, P. Renaux¹, E. Defay¹, A. Devos⁵, B. Semail⁴, P. Ancey², and S. Fanget¹ ¹Commissariat à l'énergie Atomique (CEA), FRANCE, ²STMicroelectronics, FRANCE, ³TIMA, FRANCE, ⁴Université Lille 1 FRANCE, and ⁵Menapic, FRANCE 2733</p>	<p>Th3B.003 A MEMS-ENABLED INTEGRATED MICROGC PLATFORM FOR ON-SITE MONITORING OF WATER ORGANIC COMPOUNDS M. Akbar, D. Wang, H. Shakeel, J.R. Heflin, and M. Agah <i>Virginia Tech, USA</i> 2759</p>	<p>Th3C.003 DIGITIZING IMMUNOASSAY ON AN ANTIBODY NANOARRAY TO IMPROVE ASSAY SENSITIVITY G. Zhou^{1,2}, S. Bergeron^{1,2}, S. Ricoult^{1,2}, and D. Juncker^{1,2} ¹McGill University, CANADA and ²McGill Genome Innovation Centre, CANADA 2783</p>	<p>Th3D.003 IMMERSION CONDENSATION ON SCALABLE OIL-INFUSED NANOSTRUCTURES FOR HIGH PERFORMANCE THERMAL MANAGEMENT R. Xiao¹, N. Miljkovic¹, R. Enright², and E.N. Wang¹ ¹Massachusetts Institute of Technology, USA and ²Bell Labs-Ireland, IRELAND 2807</p>
15:15 - 15:30			
<p>Th3A.004 LARGE RANGE MULTI-AXIS FINGERTIP FORCE SENSOR R.A. Brookhuis, R.J. Wiegierink, T.S.J. Lammerink, K. Ma, and G.J.M. Krijnen <i>MESA+, University of Twente, THE NETHERLANDS</i> 2737</p>	<p>Th3B.004 FIELDABLE MEMS GAS CHROMATOGRAPH FOR RAPID DETERMINATIONS OF EXPLOSIVE MARKER COMPOUNDS IN COMPLEX MIXTURES W. Collin, G. Serrano, L.K. Wright, H. Chang, N. Nuñovero, and E.T. Zellers <i>University of Michigan, USA</i> 2763</p>	<p>Th3C.004 AUTONOMOUS CAPILLARY MICROFLUIDIC IMMUNOASSAY WITH INTEGRATED DETECTION USING MICROFABRICATED PHOTODIODES: TOWARDS A POINT-OF-CARE DEVICE P. Novo¹, F. Volpetti¹, V. Chu¹, and J.P. Conde^{1,2} ¹Instituto de Engenharia de Sistemas e Computadores (INESC), PORTUGAL and ²Technical University of Lisbon, PORTUGAL 2787</p>	<p>Th3D.004 GOLD NANOPARTICLE-BASED BIOFUEL CELL USING INSECT BODY FLUID CIRCULATION K. Shoji¹, Y. Akiyama¹, M. Suzuki², N. Nakamura², H. Ohno², and K. Morishima¹ ¹Osaka University, JAPAN and ²Tokyo University of Agriculture and Technology, JAPAN 2811</p>
15:30 - 15:45			
<p>Th3A.005 FABRICATION AND MECHANICAL CHARACTERIZATION OF RING-SHAPED LTCC/HTCC FINGER FORCE SENSORS USED FOR PERFORMANCE STUDIES IN CLARINET PLAYING M. Weiguni¹, A. Hofmann², W. Smetana¹, W. Goebel², J. Nicolics¹, and G. Radosavljevic¹ ¹Vienna University of Technology, AUSTRIA and ²University of Music and Performing Arts Vienna, AUSTRIA 2741</p>	<p>Th3B.005 LOW VOLTAGE (<5V) ION-MOBILITY SPECTROMETER ARRAY FOR LABEL-FREE GAS DETECTION V. Gund, Y. Shi, S. Ardanuc, and A. Lal <i>Cornell University, USA</i> 2767</p>	<p>Th3C.005 ISOTHERMAL REAL-TIME POLYMERASE CHAIN REACTION DETECTION OF HERPES SIMPLEX VIRUS TYPE 1 ON A LIGHT-ACTUATED DIGITAL MICROFLUIDICS PLATFORM S.N. Pei¹, Y.-L. Wang², C.-T. Lin², and M.C. Wu¹ ¹University of California, Berkeley, USA and ²National Taiwan University, TAIWAN 2791</p>	<p>Th3D.005 A PASSIVE VAPOR-FEED DIRECT METHANOL FUEL CELL BASED ON A COMPOSITE PERVAPORATION MEMBRANE Z. Wu¹, X. Wang^{1,2}, X. Wu¹, and L. Liu¹ ¹Tsinghua University, CHINA and ²Chinese Academy of Sciences, CHINA 2815</p>

Tactile Sensors	Gas Chromatography	Imunnoassays & Nucleic Acid Assays	Energy Generation & Management
Room 113, Level 1	Room 114, Level 1	Room 115, Level 1	Room 116, Level 1
15:45 - 16:00			
Th3A.006 3-AXIS FINGERTIP FORCE DURING PLAYING THE STRING INSTRUMENT M. Hori ¹ , M. Hosono ² , H. Takahashi ¹ , K. Matsumoto ¹ , and I. Shimoyama ¹ ¹ University of Tokyo, JAPAN and ² Industrial Research Institute of Shizuoka Prefecture, JAPAN2745	Th3B.006 LARGE-CAPACITY-ON-CHIP PRECONCENTRATOR DEVICE FOR SELECTIVE ETHYLENE MEASUREMENT BELOW 400 PPBV S. Janßen, T. Teßmann, M. Nießen, A. Sklorz, and W. Lang Universität Bremen, GERMANY2771	Th3C.006 REAL-TIME MEASUREMENTS OF PNA:DNA HYBRIDIZATION KINETICS WITH SILICON NANOWIRE BIOSENSORS A. De, J. van Nieuwkastele, E.T. Carlen, and A. van den Berg MESA+, University of Twente, THE NETHERLANDS2795	Th3D.006 ALL-SOLID-STATE LITHIUM METAL BATTERIES FOR NEXT GENERATION ENERGY STORAGE C.R. Stoldt and S.-H. Lee University of Colorado, USA2819
16:00 - 16:15	AWARDS CEREMONY		
16:15	CONFERENCE ADJOURNS		

