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T1B.002	OSCILLATING BEHAVIOR OF QUALITY FACTOR OF A FILM BULK ACOUSTIC RESONATOR IN LIQUIDS W. Xu, A. Abbaspour-Tamijani, and J. Chae Arizona State University, USA	696
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W1C.003	A NEW PLATFORM FOR MANIPULATING A SINGLE DNA MOLECULE BY USING OPTICALLY-INDUCED DIELECTROPHORESIS Y.-H. Lin ¹ , C.-M. Chang ¹ , and G.-B. Lee ^{1,2} ¹ <i>National Cheng Kung University, TAIWAN</i> and ² <i>Industrial Technology Research Institute, TAIWAN</i>	1590
W1C.004	MICROFLUIDIC INTEGRATED OPTOELECTRONIC TWEEZERS K.W. Huang ¹ , T.-H. Wu ¹ , J.F. Zhong ² , and P.Y. Chiou ¹ ¹ <i>University of California, Los Angeles, USA</i> and ² <i>University of Southern California, USA</i>	1594

W1C.005	SORTING OF DIFFERENTIATED NEURONS USING PHOTOTRANSISTOR-BASED OPTOELECTRONIC TWEEZERS FOR CELL REPLACEMENT THERAPY OF NEURODEGENERATIVE DISEASES H.Y. Hsu, H. Lee, S. Pautot, K. Yu, S. Neale, A.T. Ohta, A. Jamshidi, J. Valley, E. Isocaff, and M.C. Wu <i>University of California, Berkeley, USA</i>	1598
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3D Technologies

W1E.001	Invited Speaker MATERIALS AND MECHANICS FOR STRETCHABLE ELECTRONICS - FROM ELECTRONIC EYE CAMERAS TO CONFORMAL BRAIN MONITORS J. Rogers <i>University of Illinois, Urbana-Champaign, USA</i>	1602
W1E.002	HIGH ASPECT RATIO MICROELECTROMECHANICAL SYSTEMS: A VERSATILE APPROACH USING CARBON NANOTUBES AS A FRAMEWORK D.N. Hutchison, Q. Aten, B. Turner, N. Morrill, L.L. Howell, B.D. Jensen, R.C. Davis, and R.R. Vanfleet <i>Brigham Young University, USA</i>	1604
W1E.003	A THREE-DIMENSIONAL SILICON SHADOW MASK FOR PATTERNING ON TRENCHES WITH VERTICAL WALLS S. Morishita ¹ , J.H. Kim ¹ , F. Marty ² , Y. Li ³ , A.J. Walton ³ , and Y. Mita ¹ ¹ <i>University of Tokyo, JAPAN</i> , ² <i>Université Paris Est, FRANCE</i> and ³ <i>University of Edinburgh, UK</i>	1608
W1E.004	MINIMIZED BLURRING IN STENCIL LITHOGRAPHY USING A COMPLIANT MEMBRANE K. Sidler, G. Villanueva, O. Vazquez-Mena, and J. Brugger <i>Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND</i>	1612
W1E.005	PARAMETER OPTIMIZATION METHOD FOR FABRICATING 3D MICROSTRUCTURES EMBEDDED IN SINGLE-LAYER NEGATIVE-TONE PHOTORESIST Y. Hirai, K. Sugano, T. Tsuchiya, and O. Tabata <i>Kyoto University, JAPAN</i>	1616

Mass & Tip-Based Sensors

W1F.001	Invited Speaker CANTILEVER SENSORS EQUIPPED WITH NANO SENSING EFFECTS FOR ULTRA-SENSITIVE DETECTION OF BIO/CHEMICAL MOLECULES X. Li <i>Chinese Academy of Sciences, CHINA</i>	1620
W1F.002	AN ARRAY OF MONOLITHIC FBAR-CMOS OSCILLATORS FOR MASS-SENSING APPLICATIONS M.L. Johnston, I. Kymissis, and K.L. Shepard <i>Columbia University, USA</i>	1626
W1F.003	HIGH Q FACTOR PLATE RESONATORS FOR ULTRASENSITIVE MASS SENSING APPLICATIONS V. Agaché, M. Cochet, R. Blanc, F. Baleras, and P. Caillat <i>CEA - LETI - Minatec, FRANCE</i>	1630

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W1F.005	TIP-MATTER INTERACTION MEASUREMENTS USING MEMS RING RESONATORS E. Algré, B. Legrand, M. Faucher, B. Walter, and L. Buchailot Centre National de la Recherche Scientifique (CNRS), FRANCE	1638
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CONCURRENT SESSIONS	10:00 - 11:45
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Chemical Microsensors & Microsystems II

W2B.001	MICROFLUIDIC HIGH-RESOLUTION NMR CHIP FOR BIOLOGICAL FLUIDS J.G.E. Gardeniers ¹ , J. Bart ¹ , A.J. Kolkman ² , A.J. de Vries ² , J.W.G. Janssen ² , P.J.M. van Bentum ² , K.A.M. Ampt ² , S.S. Wijmenga ² , and A. Kentgens ² ¹ University of Twente, THE NETHERLANDS and ² Radboud University, THE NETHERLANDS	1642
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W2B.002	CNT-BASED GAS IONIZERS WITH INTEGRATED MEMS GATE FOR PORTABLE MASS SPECTROMETRY APPLICATIONS L. Velásquez-García ¹ , B. Gassend ² , and A. Akinwande ¹ ¹ Massachusetts Institute of Technology, USA and ² Exponent, Inc., USA	1646
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W2B.003	SELECTIVE DETECTION OF CHEMICAL SPECIES IN LIQUIDS AND GASES USING RADIO-FREQUENCY IDENTIFICATION (RFID) SENSORS R.A. Potyrailo, C. Surman, W.G. Morris, and S. Go General Electric Company, USA	1650
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W2B.007	HIGH-SPEED TWO-DIMENSIONAL GAS CHROMATOGRAPHY USING MICROFABRICATED GC COLUMNS COMBINED WITH NANOELECTROMECHANICAL MASS SENSORS J.J. Whiting ¹ , C.S. Fix ¹ , J.M. Anderson ¹ , A.W. Staton ¹ , R.P. Manginell ¹ , R.D. Wheeler ¹ , E.B. Myers ² , M.L. Roukes ² , and R.J. Simonson ¹ ¹ Sandia National Laboratories, USA and ² California Institute of Technology, USA	1666
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Biochemical and Humidity Sensors

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W2C.002	SUBCELLULAR-RESOLUTION RECORDING OF ELECTRICAL ACTIVITY USING A CMOS-MICROELECTRODE SYSTEM U. Frey ¹ , U. Egert ² , F. Heer ¹ , S. Hafizovic ¹ , and A. Hierlemann ¹ ¹ ETH Zürich, SWITZERLAND and ² University of Freiburg, GERMANY	1674
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W2C.004	MULTISITE FIELD POTENTIAL RECORDING FROM RETINA VIA VAPOR-LIQUID-SOLID GROWN SILICON PROBE ARRAY T. Harimoto ^{1,2} , A. Ishihara ² , T. Kawano ¹ , K. Takei ¹ , H. Kaneko ³ , M. Ishida ¹ , and S. Usui ^{1,2,4} ¹ Toyohashi University of Technology, JAPAN, ² Chukyo University, JAPAN, ³ National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and ⁴ RIKEN Brain Science Institute, JAPAN	1682
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W2C.007	IN-SITU FORMATION OF AN ION-DOPED POROUS STRUCTURE FOR HIGH SENSITIVE HUMIDITY SENSING UTILIZING LOW-COST UV SENSITIVE GLUE C.-H. Chen, C.-W. Hung, and C.-H. Lin National Sun Yat-sen University, TAIWAN	1694
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Metal MEMS

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W2E.002	NEW ELECTRICAL CONNECTION TECHNOLOGY FOR MICROSYSTEMS USING INKTELLIGENT PRINTING® AND FUNCTIONAL NANOSCALED INKS H. Sturm ¹ , C. Sosna ¹ , R. Buchner ¹ , C. Werner ² , D. Godlinski ² , V. Zöllmer ² , M. Busse ² , and W. Lang ¹ ¹ University Bremen, GERMANY and ² Fraunhofer IFAM, GERMANY	1702
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W2E.004	IMPLEMENTATION OF A NOVEL ZERO-INSERTION-FORCE (ZIF) MEMS-CONNECTOR B.-H. Jang ^{1,2} , H.-Y. Huang ¹ , and W. Fang ¹ ¹ National Tsing Hua University, TAIWAN and ² Industrial Technology Research Institute (ITRI), TAIWAN	1710
W2E.005	MECHANICAL DEGRADATION MECHANISM OF ALUMINUM-ALLOY STRUCTURAL FILMS EVALUATED BY ENVIRONMENT-CONTROLLED TENSILE TESTING Y. Kaibara ¹ , H. Fujii ¹ , T. Namazu ¹ , Y. Tomizawa ² , K. Masunishi ² , and S. Inoue ¹ ¹ University of Hyogo, JAPAN and ² Toshiba Corporation, JAPAN	1714
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W2E.007	WAFER COUNTER-BONDING FOR INTEGRATING CTE-MISMATCHED SUBSTRATES AND ITS APPLICATION TO MEMS TUNEABLE METAMATERIALS M. Sterner, G. Stemme, and J. Oberhammer Royal Institute of Technology (KTH), SWEDEN	1722
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POSTER SESSION III

13:00 - 15:00

Actuators

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W3P.002	3DOF EQUIVALENT CIRCUIT MODEL OF A COMB-DRIVE ACTUATOR Y. Nishimori ¹ , N. Fujiwara ² , H. Ooiso ¹ , T. Tuchiya ^{3,4} , S. Mochizuoki ⁴ , and G. Hashiguchi ¹ ¹ Shizuoka University, JAPAN, ² Mizuho Information & Research Institute, JAPAN, ³ Kyoto University, JAPAN and ⁴ Mathematical Systems Inc., JAPAN	1758
W3P.003	IMPROVED PERFORMANCE OF LARGE STROKE COMB-DRIVE ACTUATORS BY USING A STEPPED FINGER SHAPE J.B.C. Engelen ¹ , M.A. Lantz ² , H.E. Rothuizen ² , L. Abelman ¹ , and M.C. Elwenspoek ^{1,3} ¹ University of Twente, THE NETHERLANDS, ² IBM Zürich, SWITZERLAND and ³ Albert-Ludwigs Universität, GERMANY	1762
W3P.004	OFF-CHIP ACTUATION FOR ANGULAR POSITION CONTROL OF MEMS MIRRORS S.M. Ardanuc and A. Lal Cornell University, USA	1766
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BioSensors & BioMicrosystems

W3P.007	ELECTROACTIVE SURFACES BASED ON CONDUCTING POLYMERS FOR CONTROLLING CELL ADHESION, SIGNALING, AND PROLIFERATION E.W.H. Jager ^{1,3} , M.H. Bolin ^{1,3} , K. Svennersten ^{2,3} , X. Wang ^{1,3} , A. Richter-Dahlfors ^{2,3} , and M. Berggren ^{1,3} ¹ <i>Linköping University, SWEDEN</i> , ² <i>Karolinska Institutet, SWEDEN</i> , and ³ <i>Strategic Research Center for Organic Bioelectronics, SWEDEN</i>	1778
W3P.008	IMPROVEMENT OF CELL CAPTURE EFFICIENCY USING A REVERSIBLE DEP FIELD S.C. Chu ^{1,2} , B.Y. Shew ² , C.K. Chen ² , Y.C. Su ¹ , S.J. Liu ³ , and C.H. Leng ³ ¹ <i>National Tsing Hua University, TAIWAN</i> , ² <i>National Synchrotron Radiation Research Center, TAIWAN</i> , and ³ <i>National Health Research Institute, TAIWAN</i>	1782
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W3P.013	A BEAD-BASED ELECTROCHEMICAL BIOSENSOR WITH INTEGRATED MAGNETIC MANIPULATION FOR SAMPLE PRECONCENTRATION Z.-C. Peng ¹ , T. Sulchek ¹ , W. Heineman ² , and P. Hesketh ¹ ¹ <i>Georgia Institute of Technology, USA</i> and ² <i>University of Cincinnati, USA</i>	1802
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W3P.016	LABEL-FREE ELECTRONIC DETECTION OF GROWTH FACTOR INDUCED CELLULAR CHATTER ON CHEMORECEPTIVE NEURON MOS (CvMOS) TRANSISTORS K. Jayant, T. Porri, J.W. Erickson, and E.C. Kan <i>Cornell University, USA</i>	1814
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Chemical Microsensors & Microsystems

W3P.019	MONOLITHIC MEMS VACUUM VALVES FOR MINIATURE CHEMICAL PRE-CONCENTRATORS C. Baker ¹ , M.-A. Scwab ¹ , R. Moseley ¹ , R.R.A. Syms ^{1,2} , and E.M. Yeatman ^{1,2} ¹ <i>Microsaic Systems Ltd, UK</i> and ² <i>Imperial College London, UK</i>	1826
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W3P.020	PLANAR MICRO FLAME IONIZATION DETECTOR WITH MINIMIZED LEAK CURRENT W.J. Kuipers and J. Müller <i>Hamburg University of Technology, GERMANY</i>	1830
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W3P.029	SELECTIVE REMOVAL OF MICRO-CORRUGATION BY ANISOTROPIC WET ETCHING N. Inagaki, H. Sasaki, M. Shikida, and K. Sato <i>Nagoya University, JAPAN</i>	1865
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W3P.031	LOW-TEMPERATURE BONDING OF PHOTODIODES ON GLASS SUBSTRATE USING AU STUD BUMPS AND ITS APPLICATION TO MICROSENSORS WITH THREE DIMENSIONAL STRUCTURE E. Higurashi ¹ , D. Chino ¹ , T. Suga ¹ , and R. Sawada ² ¹ <i>University of Tokyo, JAPAN</i> and ² <i>Kyushu University, JAPAN</i>	1873
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W3P.033	DESIGN AND FABRICATION OF POSFET DEVICES FOR TACTILE SENSING R.S. Dahiya ¹ , M. Valle ² , G. Metta ² , L. Lorenzelli ³ , and A. Adami ³ ¹ <i>Italian Institute of Technology, ITALY</i> , ² <i>University of Genova, ITALY</i> , and ³ <i>Fondazione Bruno Kessler, Trento, ITALY</i>	1881
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W3P.034	THE INFLUENCE OF PACKAGING TECHNOLOGIES ON THE PERFORMANCE OF INERTIAL MEMS SENSORS J. Mehner ¹ , V. Kolchuzhin ¹ , I. Schmadlak ² , T. Hauck ² , G. Li ³ , D. Lin ³ , and T.F. Miller ³ ¹ <i>Chemnitz University of Technology, GERMANY</i> , ² <i>Freescale Halbleiter GmbH, GERMANY</i> , and ³ <i>Freescale Semiconductor Inc., USA</i>	1885
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 J.B. Chou¹, K. Yu¹, D. Horsley², S. Mathai³, B. Yoxall²,
 M. Tan³, S.Y. Wang³, and M.C. Wu¹
¹University of California, Berkeley, USA,
²University of California, Davis, USA, and ³HP Labs, USA
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 W.M. Zhu¹, W. Zhang¹, H. Cai¹, J. Tamil¹, B. Liu¹,
 T. Bourouina², and A.Q. Liu¹
¹Nanyang Technological University, SINGAPORE and
²University of Paris Est, FRANCE
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 C.-C. Chien, and S.-K. Fan
 National Chiao Tung University, TAIWAN
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Conference Adjourns

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