

2006 IEEE Sensors

**Daegu, Korea
22-25 October 2006**

Volume 1 of 3



**IEEE Catalog Number:
ISBN:**

**06CH37803
1-4244-0375-8**

Table of Contents

Thick Sol-Gel PZT Film integrated in SOI-Based, Micromachined Ultrasonic Transducers	1
<i>Brahim Belgacem, Florian Calame and Paul Muralt</i>	
Self-Powered Wireless Sensor System using MEMS Piezoelectric Micro Power Generator	6
<i>Robert Xia, Christopher Farm, Wonjae Choi and Sang-Gook Kim</i>	
Sputtered AlN Thin Films for Piezoelectric MEMS Devices	10
<i>Li-Peng Wang, Eyal Ginsburg, Friedel Gerfers, Dean Samara-Rubio, Boaz Weinfeld, Qing Ma, Valluri Rae and Ming Yuan He</i>	
Comparison of 4H-SiC Separate Absorption and Multiplication Region Avalanche Photodiodes Structures for UV Detection	14
<i>Ho-Young Cha, Stanislav Soloviev, Greg Dunne, Larry Rowland, Scott Zelakiewicz, Peter Waldrab and Peter Sandvik</i>	
Electrooptic Properties of Lithium Niobate for Optical Sensors.....	18
<i>Akira IKEDA, Yukiko OTSUKA and Yoichi FUJII</i>	
Synthesis and optical properties of colloidal core-shell semiconductor nanocrystals quantum dots for sensory application	22
<i>Pham Thu Nga, Nguyen Van Chuc, Vu Duc Chinh, Nguyen Xuan Nghia, Phan Tien Dung, Dao Nguyen Thuan, Pham Thai Cuong, Chu Viet Ha, Vu Hong Hanh, Vu Thi Kim Lien, C. Barthou, P. Benalloul, M. Romanelli and A. Maitre</i>	
Miniaturized InSb Mid-IR Sensor for Room Temperature Operation	26
<i>Edson Gomes Camargo, Koichiro Ueno, Tomohiro Morishita, Masayuki Sato, Hidetoshi Endo, Masaaki Kurihara, Kazutoshi Ishibashi and Naohiro Kuze</i>	
160x120 Uncooled IRFPA for Small IR Camera	30
<i>Toshiki Seto, Keisuke Kama, Masafumi Kimata, Munehisa Takeda, Hisatoshi Hata, Yoshiyuki Nakaki, Hiromoto Inoue, Yasuhiro Kosasayama, Yasuaki Ohta and Hiroshi Fukumoto</i>	
Evaluation of Monolithically Integrated Antennas and RF Transmitters for Silicon Smart Micro Sensors with Wireless-Communication Ability.....	34
<i>Jong-Wan Kim, Hidekuni Takao, Kazuaki Sawada and Makoto Ishida</i>	
A CMOS Micromachined Gripper Array with on-Chip Optical Detection	37
<i>Michael S.-C. Lu, Chia-En Huang, Zhong-Hong Wu, Chun-Fu Chen, Shi-Yu Huang and Ya-Chin King</i>	
Configurable Hardware-Efficient Interface Circuit for Multi-Sensor Microsystems	41
<i>Chao Yang, Andrew Mason, Jinwen Xi and Peixin Zhong</i>	
Specific nearby electronic scheme for multiplexed excitation and detection of piezoelectric silicon-based micromembranes resonant frequencies using FPGA technology	45
<i>D. Lagrange, C. Ayela, L. Nicu, E. Cattani and C. Soyer</i>	
Adaptive Multi-Sensor Interface System-on-Chip.....	50
<i>Jinwen Xi, Chao Yang, Andrew Mason and Peixin Zhong</i>	
Thin SOI NEMS Accelerometers Compatible with in-IC Integration.....	54
<i>Eric Ollier, L. Duraffourg, M. Delaye, S. Deneuille, V. Nguyen, P. Andreucci, H. Grange, P. Robert, Thomas Baron, F. Marchi, R. Dianoux</i>	
Merits and Pitfalls of Implantable Wireless Monitoring Systems.....	58
<i>Robert Puers</i>	
Diffuse Optical Tomography in a Spinal Cage: Monte Carlo Simulation and in-Vitro Studies.....	62
<i>Eucarco Margello-Babis, Hector Kuano-Suarez, Theo H. Smit and Patrick J. French</i>	
SU8-Based Micro Neural Probe for Enhanced Chronic in-Vivo Recording of Spike Signals from Regenerated Axons	66
<i>Hong Lu, Sung-Hoon Cho, J-B Lee, Mario Romero-Ortega, Lawrence Cauller and Gareth Hughes</i>	

Table of Contents

Development of a Novel Flexural Plate Wave Biosensor for Immunoglobulin-E Detection by Using SAM and MEMS Technologies	70
<i>I-Yu Huang, Ming-Chih Lee and Yi-Wen Chang</i>	
Conductive Rubber Belt to Monitor Respiratory Changes.....	74
<i>Kyung-Ah Kim, In-Kwang Lee, Seong-Su Choi, Tae-Soo Lee and Eun-Jong Cha</i>	
First Observation of Hydrogen sensing by Trap Assisted Conduction Current in Pd/TiO₂/SiC Capacitors at High Temperature.....	77
<i>Ming-Hung Weng, Alton Horsfall, Rajat Mahapatra and Nick Wright</i>	
A New Type of Highly Sensitive Portable Ozone Sensor Operating at Room Temperature	81
<i>Ch. Y. Wang, V. Cimalla, C.-C. Roehlig, Th. Stauden, F. Niebelschuetz, O. Ambacher, O. Kiesewetter and S. Kittelmann</i>	
Online Gas Diagnosis by a Capillary-Attached Gas Sensor Coupled to a Pattern Recognition System.....	85
<i>Vahid Ghafarinia and Faramarz Hossein-Babaei</i>	
Gas Diagnosis by the Application of System Identification Technique on the Response of a Thermally Modulated Semiconductor Gas Sensor.....	89
<i>S. M. Hosseini Golgoo and Faramarz Hossein-Babaei</i>	
On-Chip Electrochemical Impedance Spectroscopy for Biosensor Arrays.....	93
<i>Chao Yang, Daniel Rairigh and Andrew Mason</i>	
Humidity-Sensitive SAW Device Based on TPPS₄ nanostrip Structure.....	97
<i>Rimeika R., Rotomskis R., Poderys V., Sereika A., Selskis A., Ciplys D. and Shur M. S.</i>	
Microfluidic Cell Counter/Sorter Utilizing Laser Tweezers and Multiple Particle Tracing Technique.....	101
<i>Chen-Chen Lin, Angela Chen, New-Jin Ho, Chie-Wei Wu and Che-Hsin Lin</i>	
A Microfluidic Flow Sensor for Measuring Cell Adhesion	105
<i>Keon Woo Kwon, Sung Sik Choi, Byungkyu Kim, Se Na Lee, Min Cheol Park, Pilnam Ki , Sang Ho Lee, Seok Ho Park and Kahp Y. Suh</i>	
Technique for Plug Dispersion Compensation In Moving Field Capillary Electrophoresis Application	109
<i>Florin Tatar, Lujun Zhang, Jeroen Bastemeijer, Peter Turmezei, Jeff Mollinger and Andre Bossche</i>	
Optical Detection of Different Single Biological Cells in an Integrated Projection Cytometer	113
<i>S. Kostner and M. J. Vellekoop</i>	
Fabrication of Protein Chip with Ni-Co Alloy Coated Surface	117
<i>Yaw-Jen Chang, Cheng-Hao Chang, Chih-Yu Hu and Chia-Chen Liao</i>	
Surface Modification of SU-8 by Photografting of Functional Polymers for Lab-on-a-Chip Applications.....	121
<i>Zhan Gao, David B. Henthorn and Chang-Soo Kim</i>	
Microchannel Integrated Comb-Type Electrode System for Electrochemical Detection.....	124
<i>Yuheon Yi and Je-Kyun Park</i>	
Effect of Acid Treatment on the Single-walled Carbon Nanotube-based Gas Sensors	128
<i>Hong-Quang Nguyen, Shao-Lin Zhang and Jeung-Soo Huh</i>	
Development of a Label-Free Optical Biosensor Using Porous Anodic Alumina (PAA) Layer Chip	132
<i>Do-Kyun Kim, Young-Soo Kwon and Eiichi Tamiya</i>	
A Field-Portable Toxicity Tester Using Bacterial Bioluminescence.....	136
<i>Min-Chol Shin, Jeong-Gun Lee, Kyusik Yun and Je-Kyun Park</i>	
Electrophysiological Biosensor with Micro Channel Array for Sensing of Signals from Single Cells	140
<i>Wataru Tonomura, Reina Kitawawa, Tomoko Ueyama, Hitoshi Okamura and Satoshi Konishi</i>	
Sensing Characteristics of Charge Transfer Type Ph Sensor by Accumulative Operation.....	144
<i>Takeshi Hizawa, Kazuaki Sawada, Hidekuni Takao and Makoto Ishida</i>	

Table of Contents

Enhancement Method of Limit of Frequency Resolution Using Magnetic Bead on the Microcantilever.....	148
<i>Ki Yong Choi, Duck Kyun Choi, Ki Yong Choi, Ga Young Han, Dae Sung Yoon, Tae Song Kim Sang, Myung Lee, Yoon-Sik Lee</i>	
A Novel Lab-on-Tip Device for pico-Newton Lateral Force Measurement.....	152
<i>Zhuo Wang, Waqas Khalid and Yong Xu</i>	
Novel Biomolecular Finger Printing with an Active Dual-Band Antenna Biosensor	156
<i>Nan-Fu Chiu, Yang-Hung Liang and Chii-Wann Lin</i>	
BioMEMS for the Electrochemical Detection of Troponin I	160
<i>Katja Riebesee, Barbara Enderle, Gerhard Jobst, Gerald A. Urban and Isabella Moser</i>	
Droplet-Based Magnetically Activated Cell Separator (DMACS): Evaluation of Separation Efficiency Versus Variance of Magnetic Flux Density	162
<i>Youngho Kim, Su Hong, Sang Ho Lee, Kyeongkap Paek and Byungkyu Kim</i>	
Plastic Coated Fiber Bragg Gratings As High Sensitivity Hydrophones.....	166
<i>A. Cusano, S. D'Addio, A. Cutolo, M. Giordano, S. Campopiano, M. Balbi and S. Balzarini</i>	
DC Characterization of Highly Sensitive 1 by 128 NIR Photodetector Arrays with CMOS Readout IC.....	170
<i>Hoon Kim, Young Chang Jo, Hong Joo Song, Dong Kyu Yoo, Hyuck Ki Hong, Sin-Hwan Lim, Hwan Mok Jung and Pyong Choi</i>	
Ultra Thin-Film MSM Photodetector with Low Parasitic Capacitance	174
<i>Cheolung Cha, Yunsik Lee, Nan M. Jokerst, Martin A. Brooke and Sang-woo Seo</i>	
Magnetic Shape Memory Alloy Based Fiber Bragg Grating Magnetic Field Sensor	177
<i>C. Ambrosino, A. Cutolo, D. Davino, C. Visone, A. Cusano, S. Campopiano and M. Giordano</i>	
A 160×120 Bio-Inspired Vision Chip for Edge Detection Using a MOS-type Photodetector for Logarithmic Active Pixel Sensor	181
<i>Jae-Sung Kong, Sang-Heon Kim, Dong-Kyu Sung, Jang-Kyoo Shin and Hiroo Yonezu</i>	
The Micro-Optic Mach-Zehnder Interferometry : Application to the UV Sensors.....	185
<i>Kyu-Jin Kim, Jong Hoon Lee, Su-Won Jang, Hyun Deok Kim, Jae-won Song and Shin-Won Kang</i>	
Refractive Index Measurement of Liquids Using A Dual-color Optical Fiber SPR Sensing System	189
<i>Hitoshi Suzuki, Hideki Shibata, Mitsunori Sugimoto, Yoshikazu Matsui and Jun Kondoh</i>	
Enhanced Sensitivity in Humidity Sensors Based on Long Period Fiber Gratings	193
<i>Jesus M. Corres, Ignacio del Villar, Ignacio R. Matias and Francisco J. Arregui</i>	
Characteristics of InAs QDs/GaAs RC-SACM APD on the Etching Process of the Active-Mesa.....	197
<i>Hong Joo Song, Cheong Hyun Roh, Cheol-Koo Hahn, Hoon Kim and Dong Ho Kim</i>	
Optical Fiber Sensors Coated with Carbon Nanotubes, Tin Dioxide and Nanoporous Polymers for Cryogenic Detection of Hydrogen	201
<i>M. Consales, A. Cutolo, A. Cusano, M Penza, P. Aversa, M. Giordano and A. Guemes</i>	
Characterizations of a Fiber-Optic Scintillating Detector for High Energy Electron Beam Therapy.....	205
<i>Kyoungh Won Jang, Dong Hyum Cho, Bongsoo Lee, Jeong Han Yi, Sin Kim, Hyosung Cho, Sung-Yong Park and Dongho Shin</i>	
256 × 256 CMOS Image Sensor Using a Pseudo 3-Transistor Active Pixel Sensor for Low-illumination Level Application	208
<i>Sang-Ho Seo, Sung-Ho Lee, Hyoung-Do Kim, Jang-Kyoo Shin and Pyung Choi</i>	
Micro Hydrogen Gas Sensor of SnO₂-Ag₂O-PtOx System Using the MEMS Process	212
<i>Il Jin Kim, Sang Do Han, Dae Ung Hong, Chi Hwan Han, Jihye Gwak, Hi Doek Lee and Jin Suk Wang</i>	
Functionalized Single Wall Carbon Nanotubes Based Gas Sensor	216
<i>M. Z. Atashbar and C. Baratto, G. Faglia and G. Sberveglieri</i>	
Gas Sensing Property and Humidity Effect of Polypyrrole and SnO₂ Composite Films.....	220
<i>Do-Yeon Kim, Joon-Boo Yu, Cheol-Beom Lim, Hyung-Gi Byun, Duk-Dong Lee and Jeung-Soo Huh</i>	

Table of Contents

Sensing of Gas Concentration Using Photonic Bandgap Fiber.....	224
<i>Joanna Pawlat, Takahiro Matsuo, Toshitsugu Ueda and Tadashi Sugiyama</i>	
Gas-Sensor Interface Circuit Based on Calibration Free Novel Frequency Measurement Approach with 16-Bit Digital Output.....	228
<i>Marco Grassi, Andrea Lombardi, Vincenzo Ferragina, Piero Malcovati, Simonetta Capone, Luca Francioso, Pietro Siciliano and Andrea Baschiroto</i>	
A 4×4 Tin Oxide Gas Sensor Array with Surface Micro-machined Convex Micro-hotplates.....	232
<i>Bin Guo, Amine Bermak, Philip C. H. Chan and Gui-Zhen Yan</i>	
Carbon Monoxide Gas Sensor Based on Titanium Dioxide Nanocrystalline with a Langasite Substrate.....	236
<i>Joy Tan, Wojtek Wlodarski, Kourosh Kalantar-Zadeh and Peter Livingston</i>	
Nanostructured Molybdenum Oxide Gas Sensors.....	240
<i>Y. X. Li, Q. B. Yang, X. F. Yu, A. Trinchi, A. Z. Sadek, W. Wlodarski and K. Kalantar-zadeh</i>	
PPB Level Benzene Gas Detection by Portable BTX Sensor Based on Integrated Hollow Fiber Detection Cell.....	243
<i>S. Camou, T. Horiuchi and T. Haga</i>	
NO sensing characteristics of ZnO nanorod prepared by ultrasound radiation method.....	247
<i>Jong-Won Kim, Eu-Gene Oh, Geon-Young Cha, Soo-Hwan Jeong and Jeung-Soo Huh</i>	
Development of Ultra Low Power Consumption Hotplates for Gas Sensing Applications.....	251
<i>I. Elmi, S. Zampolli, E. Cozzani, M. Passini, G.C. Cardinali and M. Severi</i>	
Detection of Receptor-Ligand Interactions with an GHz Impedance Biosensor System.....	255
<i>U. Schlecht, T.M.A. Gronewold, A. Malavé, M. Tewes and M. Löhndorf</i>	
Biosensor Arrays Based on the Degradation of Thin Polymer Films Interrogated by Scanning Photo-Induced Impedance Microscopy.....	259
<i>Yinglin Zhou, Steffi Krause, Jean-Noel Chazalviel and Calum J. McNeil</i>	
Impedance Spectroscopy on Solid State Electrochemical Sensors and Devices: Potentials and Pitfalls.....	263
<i>Jong-Sook Lee</i>	
Impedance Spectroscopy to Identify the Conduction Mechanisms in Wo3 Sensors.....	267
<i>K. Aguir, A. Labidi and C. Lambert-Mauriat</i>	
A Resonance-Induced Sensitivity Enhancement Method for Conductivity Sensors.....	271
<i>Chi-Yuan Shih, Wei Li, Siyang Zheng and Yu-Chong Tai</i>	
Distance Measurement Line Sensor with PIN Photodiodes.....	275
<i>Alexander Nemecek, Klaus Oberhauser, Gerald Zach and Horst Zimmermann</i>	
Design of a Thin Film Photodetector with Angular Sensitivity for Optical Micro-Encoder.....	279
<i>Bongseok Choi, Yoshiaki Kanamori and Kazuhiro Hane</i>	
Long-Range Displacement Mini-Sensor with Submicrometric Resolution.....	283
<i>A. Khat, F. Lamarque, C. Prella, Ph. Pouille, M. Leester-Schädel and S. Büttgenbach</i>	
Low Cost Optical Array Sensing Platform.....	287
<i>King Tong Lau, Roderick L Shepherd, Bill Yerazunis and Dermot Diamond</i>	
Study of Laser-Induced Breakdown Spectroscopy from Micro-Droplet of NaCl Solution.....	291
<i>Satoshi Ikezawa, Muneaki Wakamatsu and Toshitsugu Ueda</i>	
Dynamic Capabilities of the Hybrid Fiber-Optic Voltage and Current Sensors.....	295
<i>P. Niewczas, G. Fusiek and J. R. McDonald</i>	
A Novel Self-Adaptive Photosensing Active-Pixel Structure with Tunable Sensitivity for High Performance CMOS Image Sensors.....	299
<i>Sungsik Lee and Kyoungsoon Yang</i>	
A Multi-Chip Analog VLSI Vision Sensor with Selectivity to Orientation and Spatial Frequency.....	303
<i>Kazuhiro Shimonomura and Tetsuya Yagi</i>	

Table of Contents

Dynamic Braille Display Utilizing Phase-Change Microactuators	307
<i>Scott R. Green, Brandon J. Gregory and Naveen K. Gupta</i>	
Enhanced Frequency Resolution in Parametrically Resonant Microcantilever Sensors	311
<i>Michael Requa and Kimberly Turner</i>	
3D Objects Tracking Using Smart Image Sensor	315
<i>Toshiyuki Sugita, Takashi Yoshida, Takayuki Hamamoto and Kazuya Kodama</i>	
An Ultrasonic 3D Image Sensor Employing PN Code	319
<i>Hongbo Zhu, Hiroki Inubushi, Noriyuki Takahashi and Kenji Taniguchi</i>	
GAN Heterodimensional Schottky Diode for THz Detection	323
<i>D. Veksler, F. Aniel, S. Rumyantsev, M. S. Shur, N. Pala, X. Hu, R. S. Q. Fareed and R. Gaska</i>	
Millimetre Wave Radar Vision for the Mining Industry	327
<i>G. Brooker, S. Scheduling, A. Maclean, R. Hennessy, C. Lobsey and E. Widzyk-Capehart</i>	
Trace Sensing with Miniaturized Mid-Infrared Sensors	331
<i>Mizaikoff B., Young C., Charlton C., Temelkuran B., Dellemann G., Giovannini M. and Faist J.</i>	
An Inline-Type Microwave Power Sensor Based on MEMS Technology	334
<i>Lei Han, Qing-An Huang and Xiao-Ping Liao</i>	
Photoacoustic Monitoring of CO₂ in Biogas Matrix Using a Quantum Cascade Laser	338
<i>Bernhard Lendl, Wolfgang Ritter, Michael Harasek, Reinhard Niessner and Christoph Haisch</i>	
Development of Nanofibers Composite Polyaniline/CNT Fabricated by Electro Spinning Technique for CO Gas Sensor	342
<i>Y. Wanna, S. Pratontep, A. Wisitsoraat and A. Tuantranont</i>	
Work Function As a Useful Feature for Development of SnO₂ Nanowires Based Gas Sensing Devices	346
<i>Bianchi S., Comini E., Faglia G., Sberveglieri G., Arbiol J. and Morante JR.</i>	
New Selective Gas Sensing Device Based on Metal Oxide Layer with Suspended Catalyst	350
<i>Comini E., Faglia G., Poli N., Ponzoni A. and Sberveglieri G.</i>	
Study of 4,4- Dithiodibutyric Acid As a Monolayer for Protein Chip	354
<i>Hao-Kai Keng, Yi-Chu Hsu and Ling-Sheng Jang</i>	
Behavior of a Microelectrode with a Concentrated Enzyme-Immobilized Layer	358
<i>Masatoshi Hashimoto, Naohisa Sakamoto, Sanjay Upadhyay and Hiroaki Suzuki</i>	
Genetic Field Effect Devices for DNA Analysis	362
<i>Toshiya Sakata and Yuji Miyahara</i>	
MINIATURIZED FLUORESCENCE DETECTION CHIP FOR QUECHING ASSAY OF ATRAZINE	366
<i>Kyeong-Sik Shin, Sang Kyung Kim, Eun Gyeong Yang, Tae Song Kim, Ji Yoon Kang and Jung Ho, Park</i>	
Towards bio-nanotransistors for electrical DNA sensing	370
<i>G. Faglia, C. Baratto, E. Comini, M. Ferroni, G. Sberveglieri, G. Andreano, L. Cellai, A. Flamini, G. Marrazza, A. Nannini, G. Pennelli and M. Piotto</i>	
Intelligent Interface Using Natural Voice and Vision for Supporting the Acquisition of Robot Behaviors	374
<i>Keigo Watanabe, Chandimal Jayawardena and Kiyotaka Izumi</i>	
Charge Based Capacitive Sensor Array for CMOS Based Laboratory-on-Chip Applications	378
<i>Ebrahim Ghafar-Zadeh and Mohamad Sawan</i>	
Intelligent Sensor System for Real Time Tracking and Monitoring	382
<i>Maki K. Habib</i>	
A Sensor to Measure Hardness of Human Tissue	388
<i>Shunji Moromugi, Shinichi Kumano, Mitsuaki Ueda and Maria Q. Feng, Takayuki Tanaka</i>	
Development of Welding Profile Measuring System with Vision Sensor	392
<i>Chang-Hyun Kim, Tae-Yong Choi, Ju-Jang Lee, Jeong Suh, Kyoung-Taik Park and Hee-Shin Kang</i>	

Table of Contents

Wide Dynamic Range CMOS Image Sensors for High Quality Digital Camera, Security, Automotive and Medical Applications	396
<i>Nana Akahane, Shigetoshi Sugawa, Satoru Adachi and Koichi Mizobuchi</i>	
A CMOS Image Sensor for Fluorescence Lifetime Imaging.....	400
<i>Hyung-June Yoon and Shoji Kawahito</i>	
A Wide Dynamic Range CMOS Image Sensor with Gated Charge Storage and a Multiple Sampling Technique	404
<i>Suhaidi Shafie and S. Kawahito</i>	
New Concept of Compact Optical Fourier-Transform Spectrometer	408
<i>A. Mamuilskiy, H.A. Andersson, G. Thungström and H-E. Nilsson</i>	
Chip-Scale High-Speed Fourier-Transform Spectrometer Based on a Combination of a Michelson and a Fabry-Perot Interferometer.....	412
<i>Kyoungsik Yu, Namkyoo Park, Daesung Lee and Olav Solgaard</i>	
Robotic System for Localizing a Chemical Source Underwater by Mimicking Crayfish Behavior	416
<i>Tomomichi Nakatsuka, Yoshinori Kagawa, Hiroshi Ishida and Shigeki Toyama</i>	
Estimation of Gas-Source Location Using Gas Sensors and Ultrasonic Anemometer	420
<i>Takashi Ushiku, Nozomi Satoh, Hiroshi Ishida and Shigeki Toyama</i>	
Random Forests, Nearest Shrunken Centroids and Support Vector Machines for the Classification of Diverse E-Nose Datasets.....	424
<i>Matteo Pardo and Giorgio Sberveglieri</i>	
Body-Heat Powered Autonomous Pulse Oximeter	427
<i>Tom Torfs, Vladimir Leonov, Chris Van Hoof and Bert Gyselinckx</i>	
Experiments on Hydrodynamic Focusing of Non Coaxial Sheath Flows.....	431
<i>G. Hairer, M.J. Vellekoop</i>	
Design, Simulation and Fabrication of a Dielectrophoretic Separation Device Using Topographic Channel Structure.....	435
<i>L. Zhang, F. Tatar, J.R. Mollinger and A. Bossche</i>	
Capacitive Humidity Sensing Using Carbon Nanotube Enabled Capillary Condensation.....	439
<i>John T.W. Yeow and James P.M. She</i>	
Nanomaterials Enabled Chemical Sensors: The Detection of Hydrocarbons with a High Degree of Sensitivity and Selectivity.....	444
<i>Zhouying Zhao, Mayrita Arrandale, Michael A. Carpenter, Oxana Vassiltsova and Marina A. Petrukhhina</i>	
Fabrication of Nanotips for Microelectrode Array Sensors Using Meniscus Etching.....	448
<i>Jayalakshmi Parasuraman and Ian Papautsky</i>	
Investigation on Novel Poly (3-hexylthiophene)-ZnO Nanocomposite Thin Films Gas Sensor	452
<i>C. Baratto, G. Faglia, M. Ferroni, G. Sberveglieri, M.Z. Atashbar and E. Hrehorova</i>	
PEG Lipopolymers Gas Coatings for QCM Odor Sensors. Effect of Tether's Chain-length.....	456
<i>Bartosz Wyszynski, Pakpum Somboon and Takamichi Nakamoto</i>	
SOI-CMOS based single crystal silicon microheaters for gas sensors	460
<i>T. Iwaki, J.A. Covington, J.W. Gardner, F. Udrea, C.S. Blackman and I.P. Parkin</i>	
Gas Sensing Response Improvement of Well-Aligned TiO₂ Nanowires Array	464
<i>L. Francioso, A.M. Taurino, A. Forleo, P. Siciliano and M. Epifani</i>	
Formaldehyde Gas Sensor Utilizing Self-Heating NiO Thin Film and Pt Electrodes.....	466
<i>Chia-Yen Lee, Yu-Hsiang Wang, Wen-Fu Ho, Rong-Hua Ma and Po-Cheng Chou</i>	
Design and Application of a DEP-Based Cell Sorter for Efficiently Separating Two Types of Human MCF Cells.....	470
<i>Jaemin An, Youngho Kim, Byungkyu Kim, Jungyul Park, Sukho Park, Jong-oh Park, Sukho Park, Jong-oh Park and Sangho Lee</i>	

Table of Contents

Transferrin Electronic Detector for Iron Disease Diagnostics	474
<i>Girard A., Bendriaa F., De Sagazan O., Harnois M., Le Bihan F., Salatin A.C., Mohammed-Brahim T., Brissot P. and Loréal O.</i>	
New method for the detection of enzyme immobilized on Si-based glucose Biosensors	478
<i>S. Libertino, V. Aiello, P. Fiorenza, M. Fichera, A. Scandurra and F. Sinatra</i>	
A Novel Impedimetric Immunosensor Based on Sol-Gel Derived Barium Strontium Titanate Composite Film	482
<i>Sun Lingling, Tan Ooi Kiang, Mao Baowei, Tan Lay Im, Gan Leong Huat and Gan Yik Yuen</i>	
Flow Type Electrochemical Immuno Sensing Systems	486
<i>Yutaka Yamaguchi, Nobuo Honda, Masashi Inaba, Tetsushi Sekiguchi and Shuichi Shoji</i>	
New Ultrasound-Based Wearable System for Cardiac Monitoring	489
<i>Antonio Lanata, Enzo Pasquale Scilingo, Raffaello Francesconi, Giovanni Varone. and Danilo De Rossi</i>	
Ad Hoc Wireless Sensor Tomography	493
<i>T.A. York, D.R. Stephenson, S. Murphy, J.L. Davidson and B.D. Grieve</i>	
Key Issues in Designing Capacitance Tomography Sensors	497
<i>Wuqiang Yang</i>	
Effect of Current Injection Patterns on Dynamic Electrical Resistance Imaging for Fast Transient Processes	506
<i>Sin Kim, Umer Zeeshan Ijaz, Anil Kumar Khambampati, Kyung Youn Kim and Min Chan Kim</i>	
High-Resolution Gamma Ray Detector for Process Tomography	510
<i>U. Hampel, A. Bieberle, E. Schleicher and J. Kronenberg</i>	
Sinogram Enhancement for Tomographic Sensing Systems with Limited Resources	514
<i>Eugenio P. A. Constantino and Krikor B. Ozanyan</i>	
Vital Sign Monitoring System with Life Emergency Event Detection Using Wireless Sensor Network	518
<i>Dae-Seok Lee, Young-Dong Lee, Wan-Young Chung and Risto Myllyla</i>	
Security Enhanced Indoor Location Tracking System for Ubiquitous Home Healthcare	522
<i>Wan-Young Chung, Vinay Kumar Singh, Risto Myllyla and Hyotaek Lim</i>	
A Mobile Robots PSO-Based for Odor Source Localization in Extreme Dynamic Advection-Diffusion Environment with Obstacle	526
<i>Wisnu Jatmiko, Kosuke Sekiyama and Toshio Fukuda</i>	
Fabrication of a MEMS-based fine-pitch cantilever-type probe unit	530
<i>Chang Jin Kim, Ho Jung, Jae Chang Yang, Seong Ho Kong, Dong Sue Jang and Cheol Kim</i>	
New Non-Contacting Linear Displacement Inductive Sensors for Industrial Automation	534
<i>Dr. Manfred Jagiella, Dr. Sorin Fericean and Reinhard Droxler</i>	
Electro-Thermally Activated Polymeric Stack for Linear in-Plane Actuation	538
<i>G. K. Lau, J. F. L. Goosen, F. van Keulen, T. Chu Duc and P. M. Sarro</i>	
Integrated Gigant Magnetic Resistance based Angle Sensor	542
<i>Wolfgang Granig, Christian Kolle, Dirk Hammerschmidt, Bernhard Schaffer, Richard Borgschulze, Christian Reidl and Jurgen Zimmer</i>	
Thermo-Elastic Behavior of Buckled Multi-Layered MEMS Bridge: Model and Experiment	546
<i>Aron Michael and Chee Yee Kwok</i>	
Novel Tactile and Nearness Sensing Properties of Carbon Microcoils (CMCs)	550
<i>S. Motojima, X. Chen, S. Yang, C. Kuzuya, K. Kawabe and M. Takaki</i>	
Development of a Sensor System for Measuring Tactile Sensation	554
<i>Yoshihiro Tanaka, Mami Tanaka and Seiji Chonan</i>	
Tactile Perception Using Micro Force/Moment Sensor Embedded in Soft Fingertip	558
<i>Ikuo Fujii, Takahiro Inoue, Dzung Viet Dao, Susumu Sugiyama and Shinichi Hirai</i>	

Table of Contents

Flexible Multimodal Tactile Sensing System for Object Identification	563
<i>Jonathan Engel, Nannan Chen, Craig Tucker, Chang Liu, Sung-Hoon Kim and Douglas Jones</i>	
Conductivity and mechanical properties of a singlehelix carbon microcoil prepared by thermal chemical vapor deposition.....	567
<i>T. Katsuno, I. Ozeki, S. Yang, X Chen, H. Natsuhara, S. Motojima and K. Yoshimura</i>	
Micro-Heater on Membrane with Large Uniform-Temperature Area.....	571
<i>Tie Li, Lei Wu, Yanxiang Liu, Lichun Wang, Yi Wang and Yuelin Wang</i>	
Diamond Ultramicroelectrode Chemical Sensing Arrays	576
<i>W.P. Kang, J.L. Davidson, K.L. Soh, Y.M. Wong, D.E. Cliffler and A.B. Bonds.</i>	
Smart Microplates: Integrated Photodiodes for Detecting Bead-Based Chemiluminescent Reactions	580
<i>Yoon S. Park, Matthew M. Andringa, Dean P. Neikirk, Himali S. Hewage and Eric V. Asnlyn</i>	
On-Chip pH-Regulator and its Application to Bio/Chemical Sensing.....	584
<i>Katsuya Morimoto, Mariko Toya, Junji Fukuda and Hiroaki Suzuki</i>	
Site-Specific Magnetic Assembly of Nanowires for Sensor Arrays Fabrication	588
<i>Bongyoung Yoo, Youngwoo Rheem, Carlos Hangarter, Nosang V. Myung and Eui-hyeok Yang</i>	
Plastic-Silicon PCR Amplification System Made Using Microfabrication Technologies.....	592
<i>Dae-Sik Lee, Se Ho Park, Kwang Hyo Chung and Hyeon-Bong Pyo</i>	
Fully Integrated Enzymeless Biosensor for U-Health Care Application	596
<i>Hye K. Seo and Jae Y. Park</i>	
Label-Free, Capacitive Immunosensor for Protein Detection	600
<i>Ozgur Gul, Emre Heves, Mehmet Kaynak, Huveyda Basaga and Yasar Gurbuz</i>	
Lithium Tantalate Surface Acoustic Wave Sensors for Bio-Analytical Applications.....	604
<i>A. Malavé, U. Schlecht, T. M. A. Gronewold, M. Perpeet and M. Tewes</i>	
Nano-Hole Arrays in Thin Au/Pd Film on Glass, for High Speed Molecular Analysis.....	608
<i>O. M. Piciu, M. C. v. der Krogt, F. Tatar, P. M. Sarro, A. Bossche, M. W. Docter, Y. Garini and I.T. Young</i>	
Post-CMOS Compatible Microfabrication of a Multi- Analyte Bioelectrochemical Sensor Array Microsystem	612
<i>Yue Huang, Andrew Mason, Aaron J. Greiner, Robert Y. Ofoli and R. Mark Worden</i>	
An Optical Halitosis (Bad Breath) Sensor with MAO-A.....	616
<i>Masaharu Kozuka, Takeshi Minamide, Hirokazu Saito, Hiroyuki Kudo, Kimio Otsuka, Motoharu Takao and Kohji Mitsubayashi</i>	
Flexible Glucose Sensor Using Biocompatible Polymers.....	620
<i>Hiroyuki Kudo, Takanori Sawada, Ming Xing Chu, Takao Saito, Hirokazu Saito, Kimio Otsuka, Yasuhiko Iwasaki and Kohji Mitsubayashi</i>	
Bio-Sniffers with Enzyme for Breath Analysis After Drinking	624
<i>Masayuki Sawai, Hiroyuki Matsunaga, Genk Nishio, Hirokazu Saito, Hiroyuki Kudo, Kimio Otsuka, Motoharu Takao and Kohji Mitsubayashi</i>	
Real-Time Detection of Protein Interactions Using Pyrolyzed Carbon	628
<i>Jung A Lee, Seung S. Lee, Kwang-Cheol Lee and Se Il Park</i>	
Infrared Radiation Thermometer Using a Silver Halides Optical Fiber for Biomedical Applications.....	631
<i>Wook Jae Yoo, Bongsoo Lee, Dong Hyun Cho, Soon-cheol Chung, Gye-Rae Tack and Jae Hun Jun</i>	
Process development for the formation of postbonding biorecognition layers in microfluidic biosensors.....	634
<i>Martin G. Perez, Phaninder R. Kanikella, James N. Reck, Chang-Soo Kim and Matthew J. O Keefe</i>	
Single-Cell Level Array of Yeast Cells in Pumpless Microfluidic Channels induced by Receding Meniscus	638
<i>Min Cheol Park, Jae Young Hur, Keon Woo Kwon, Sang-Hyun Park and Kahp Y. Suh</i>	

Table of Contents

Development of High-Throughput Compartmental Microfluidic Devices for Multiplexed Single-Cell Sorting, Manipulation and Analysis.....	642
<i>Ramachandra Rao Sathuluri, Masahito Kitamura, Shohei Yamamura and Eiichi Tamiya</i>	
Application of Sn-Doped InSb Single Crystal Thin Film Magneto-Resistance Devices to Detecting Gear-rotation Speed	646
<i>S. Yamada, H. Goto, A. Okamoto, I. Shibasaki, K. Nishimura</i>	
Multi-DSP Hierarchical Architecture with Field-Programmable Logic for Hard-Field Tomography Sensors	650
<i>Sergio Garcia Castillo and Krikor B. Ozanyan</i>	
Improving Accelerometers Performance Using Smart Sensing Techniques	654
<i>J.M. Dias Pereira, Carlos Banha, Octavian Postolache and P. Silva Girão</i>	
Smart Flexible Turbidity Sensing Based on Embedded Neural Network	658
<i>Octavian Postolache, J.M. Dias Pereira, P. Silva Girão, H. elena Ramos</i>	
Integrated Silicon-Polymer Laterally Stacked Bender for Sensing Microgrippers	662
<i>T. Chu Duc, J. Wei, P. M. Sarro and G. K. Lau</i>	
Development of a 3D Motion Sensor Module.....	666
<i>Kyoung-Soo Chae, Hyun-Joon Kim, Ghun Hahm, Sung-Whan Cho, Ho-Joon Park, Joseph Y. Lee and Yong-Soo Oh</i>	
Direct Integration of Carbon Nanotubes on Micro Gas Sensing Platforms	671
<i>D. Briand, M. Vincent, M. Suter, G. Schurmann, N.F. de Rooij, D.C.T. Doan and M.C. Dang</i>	
A Novel Method for Manufacturing of Portable Oxygen Sensor	675
<i>Young-Jei Oh, I.-B. Shim and Deuk Yong Lee</i>	
Electrical and Gas Sensing Properties of Cr2O3-TiO2 Thin Films Made by Pulsed Laser Deposition.....	679
<i>R. Jaaniso, A. Gerst, A. Floren, T. Avarmaa, V. Sammelselg and H. Mändar</i>	
Fast Detection of Hydrogen at Room Temperature Using a Nanoparticle-Integrated Microsensor.....	683
<i>Peng Zhang, Sameer Deshpande, Studipta Seal, Hyoung J. Cho and Pedro J. Medelius</i>	
Development of Thermoelectric Gas Sensors for Volatile Organic Compounds	687
<i>Anuradha.S, K. Rajanna</i>	
Enhanced Sensitivity of SAW Gas Sensor Based on High Frequency Stability Oscillator	690
<i>Wen Wang, Shitang He, Shunzhou Li and Yong Pan</i>	
Sensitive and Selective Photo Acoustic Gas Sensor Suitable for High Volume Manufacturing	694
<i>Kari Schjolberg-Henriksen, Alain Ferber, Sigurd Moe, Dag T. Wang, Ralph W. Bernstein, Henrik Rogne and Martin Lloyd, Olaf Schulz, Gerhard Muller, Karl-Heinz Suphan</i>	
A Proto-type Hydrogen Sensor using Palladium Nanowire Array	698
<i>Moon Jung Kim and Sung Min Cho</i>	
A Room Temperature Polyaniline/In2O3 Nanofiber Composite Based Layered ZnO/64° YX LiNbO3 SAW Hydrogen Gas Sensor	702
<i>A. Z. Sadek, W. Wlodarski, K. Kalantar-zadeh, K. Shin and R. B. Kaner</i>	
A ZnO Nanorod Based 64° YX LiNbO3 Surface Acoustic Wave CO Sensor	706
<i>A. Z. Sadek, W. Wlodarski, K. Kalantar-zadeh, Y. Li, W. Yu, X. Li and X. Yu</i>	
Sensing Characteristics of Nano-Network Structure of Polypyrrole for Volatile Organic Compounds (VOCs) Gases	710
<i>Cheol-Beom Lim, Joon-Boo Yu, Do-Yeon Kim, Hyung-Gi Byun, Duk-Dong Lee and Jeung-Soo Huh</i>	
A Low Temperature Potentiometric CO2 Sensor Combined with SiO2:B2O3:Li2O:Bi2O3 Composite Metal Oxide.....	714
<i>L. Satyanarayana, Whyo Sup Noh, Gwang Ho Kim, Woon Young Lee and Jin Seong Park</i>	

Table of Contents

A Feasibility Study of Multi-Node Sensor Network Based on Free Space Optics Using Adjustable Mirror Devices	719
<i>Young-jin Oh, Dae-hoon Yang, Jong-suk Jin, Soon Joon Yoon, Donghyun Kim</i>	
A Proposal of the Co-Existence MAC of IEEE 802.11b/g and 802.15.4 Used for the Wireless Sensor Network	722
<i>Keisuke Nakatsuka, Kenzo Nakamura, Yuichi Hirata and Takeshi Hattori</i>	
Design and Implementation of Efficient Base Station for Wireless Sensor Networks	726
<i>Young-Ho Song, Changsu Suh and Tack-Geun Kwon</i>	
Flexible Tactile Sensor Fabricated Using Polymer Membrane	730
<i>Woo-Sung Cho, Kunnyun Kim, Kang Ryeol Lee, Yong-Kook Kim, Dae-Sung Lee, Won Hyo Kim, Nam-Kyu Cho, Kwang-Bum Park, Hyo-Derk Park, Jung-Ho Park and Byeong-Kwon Ju</i>	
Technology Development of Silicon Based CMOS Tactile Sensor for Robotics Applications.....	734
<i>Yong-Kook Kim, Kunnyun Kim, Kang Ryeol Lee, Woo-Sung Cho, Dae-Sung Lee, Won Hyo Kim, Nam-Kyu Cho, Kwang-Bum Park, Hyo-Derk Park, Jung-Ho Park and Byeong-Kwon Ju</i>	
A PVDF Tactile Sensor for Static Contact Force and Contact Temperature	738
<i>Jun-ichiro YUJI and Chikara SONODA</i>	
Fabrication of Polymer-Based Flexible Tactile Sensing Module with Metal Strain Gauges and Interconnector.....	742
<i>Kang Ryeol Lee, Kunnyun Kim, Yong-Kook Kim, Dae-Sung Lee, Won Hyo Kim Nam-Kyu Cho, Kwang-Bum Park, Kyu-Sik Shin and Hyo-Derk Park</i>	
MOSFET-Embedded Microcantilevers: An All-Electronic Label- and Optics-Free Signal Transduction Paradigm for Bio-Chem Sensing.....	746
<i>Gajendra Shekhawat, Soo-Hyun Tark and Vinayak P. Dravid</i>	
Trace TNT Vapor Detection with an SAMfunctionalized Piezoresistive SiO₂ Microcantilever	749
<i>Guomin Zuo, Xinxin Li, Peng Li, Yuelin Wang, Zhenxing Cheng and Songlin Feng</i>	
Vibrating Microcantilever used as Viscometer and Microrheometer.....	753
<i>Naser Belmiloud, Isabelle Dufour, Liviu Nicu, Annie Colin and Jacques Pistré</i>	
Symmetrical Wheatstone Microcantilever Sensor with on-Chip Temperature Sensors	757
<i>Adisorn Tuantranont, T. Lomas, K. Jaruwongrungsi, A. Jomphoak and A. Wisitsora-at</i>	
Development of SPICE Compatible Thermal Model of Silicon MEMS Piezoresistive Pressure Sensor for CMOS- MEMS Integration	761
<i>C. Pramanik, S. Banerjee, D. Mukherjee and H. Saha</i>	
Wireless Powering of Implanted Sensors Using RF Inductive Coupling.....	765
<i>Kyriaki Fotopoulou and Brian W. Flynn</i>	
Advanced Telemetric Powering of Sensors Using Multi-Wire Coils.....	769
<i>Christian Peters and Yiannos Manoli</i>	
2.45 GHz Passive Wireless Temperature Monitoring System Featuring Parallel Sensor Interrogation and Resolution Evaluation.....	773
<i>J. H. Kuypers, S. Tanaka, M. Esashi, D. A. Eisele and L. M. Reindl</i>	
Staggered Sampling for Energy Efficient Data Collection.....	777
<i>Jennifer L. Wong, Seaphan Megerian, Miodrag Potkonjak</i>	
Racemote: a Mobile Node for Wireless Sensor Networks.....	781
<i>Guangming Song, Wei Zhuang, Zhigang Wei and Aiguo Song</i>	
Synchronized Access to Sensor Networks.....	785
<i>Patrick Loschmidt, Georg Gaderer and Thilo Sauter</i>	
A Magnetic Field Response Recorder: A New Tool for Measurement Acquisition.....	789
<i>Stanley E. Woodard and Bryant D. Taylor</i>	

Table of Contents

A Self-Contained Active Sensor System for Health Monitoring of Civil Infrastructures	798
<i>Seunghee Park and Chung-Bang Yun and Daniel J. Inman</i>	
A Tunable Resonant Vibration Measurement Unit Based on a Micromachined Force Coupled Sensor-Actuator System.....	803
<i>Jan Mehner, Thomas Gessner, Roman Forke, Dirk Scheibner and Wolfram Doetzel</i>	
VHDL-AMS Modeling for Simulation of MEMS Array-Based Smart Surface Applied in Microfluid Air-Flow Environment.....	807
<i>L. Zhou, Y. Herve, Y.-A. Chapuis and H. Fujita</i>	
Comparison of Lifting and B-spline DWT Implementations for Implantable Neuroprosthetics.....	811
<i>Awais M. Kamboh and Andrew Mason</i>	
A Multifunctional Self-Calibrated Sensor for Brake Fluid Condition Monitoring.....	815
<i>Chuantong Wang and Katsunori Shida</i>	
A Tactile Sensing for Human-Centered Robotics.....	819
<i>Akihito Sano, Ryo Kikuuwe, Hiromi Mochiyama, Naoyuki Takesue and Hideo Fujimoto</i>	
Development of Force Sensor for a Linear Object	823
<i>Yoshitaka Nagano, Akihito Sano, Masamichi Sakaguchi and Hideo Fujimoto</i>	
A Large Area Robot Skin Based on Cell-Bridge System.....	827
<i>Takayuki Hoshi and Hiroyuki Shinoda</i>	
Development of Soft Areal Tactile Sensors for Human-Interactive Robots.....	831
<i>Toshiharu MUKAI, Masaki ONISHI, Shinya HIRANO and Zhiwei LUO</i>	
An LED-Based Tactile Sensor for Multi-Sensing Over Large Areas.....	835
<i>Jonathan Rossiter and Toshiharu Mukai</i>	
Development of Methanol Sensor Using SH-SAW Sensor for Direct Methanol Fuel Cell.....	839
<i>Jun Kondoh, Shouhei Tabushi and Yoshikazu Matsui</i>	
Nanostructure Dependence of Conductive Polymer Chemical Sensors.....	843
<i>Bo Li, R. Zhang, G. Sauvé, J. Cooper, M. C. Iovu, S. Santhanam, Lawrence Schultz, Jay L. Snyder, L. E. Weiss, T. Kowalewski, G. K. Fedder, R. D. McCullough, D. N. Lambeth and J. L. Snyder</i>	
High Temperature SOI CMOS Tungsten Micro-Heaters.....	847
<i>S.Z. Ali, P.K. Guha, C.C.C. Lee, F. Udrea, W.I. Milne, T. Iwaki, J. Covington, J.W. Gardner, S. Maeng, J. Park</i>	
Influence of Layers Morphology on the Sensitivity of SnO₂-Based Optical Fiber Sensors	851
<i>M. Consales, M. Pisco, P. Pilla, A. Cusano, A. Buosciolo, M. Giordano, R. Viter and V. Smyntyna</i>	
Web-based colorimetric sensing for food quality monitoring.....	855
<i>Jer Hayes, Alexis Pacquit, Karl Crowley, Kim Lau and Dermot Diamond</i>	
Compact Digital Compass with PCB Fluxgate Sensors.....	859
<i>Jan Včelák, Vojtěch Petrucha and Petr Kašpar</i>	
Chemical Sensors Based on Functionalized Microcantilever Arrays.....	862
<i>P. G. Datskos, N.V. Lavrik, M. J. Sepaniak and P. Dutta</i>	
Incremental Sigma-Delta Modulators for 3D-Imaging: System Architecture and Signal Processing	868
<i>F. Maloberti, M. Belloni and P. Malcovati</i>	
Efficient CMOS Preamplifier Dedicated for a MEMSBased Electrostatic Field Sensor	872
<i>Guoping Cui, Haigang Yang and Shanhong Xia</i>	
A Novel Creating Method of Ground Blockage Database by Civil GPS Receivers As Distributed Sensors	876
<i>Masato Takahashi</i>	
Ensuring Area k-Coverage in Wireless Sensor Networks with Realistic Physical Layers	880
<i>Antoine Gallais, Jean Carle and David Simplot-Ryl</i>	
Multi-Hop Network Re-Programming Model for Wireless Sensor Networks	884
<i>Kangwoo Lee, Jae-eon Kim, Do Thu Thuy, Daeyoung Kim, Sungjin Ahn, and Jinyoung Yang</i>	

Table of Contents

Interacting Particle-Based Model for Missing Data in Sensor Networks: Foundations and Applications.....	888
<i>Farinaz Koushanfar, Negar Kiyavash and Miodrag Potkonjak</i>	
Energy Controlled Reporting for Industrial Monitoring Wireless Sensor Networks.....	892
<i>Geoff V. Merrett, Nick R. Harris, Bashir M. Al-Hashimi and Neil M. White</i>	
Microfabrication of Single-Wall Carbon Nanotube One-Dimensional Unit	896
<i>Ying Wu, Zhaoying Zhou, Xing Yang, Yingying Zhang, Mingfei Xiao, Jin Zhang and Jinming Li</i>	
Contact UV Lithography Simulation for Thick SU-8 Photoresist.....	900
<i>Zaifa Zhou, Qing-An Huang, Weihua Li, Ming Fen, Wei Lu and Zhen Zhu</i>	
Characterization and Evaluation of Smart Concrete Modules Embedded with Piezoelectric Devices.....	904
<i>Yumei WEN, Yu CHEN and Ping LI</i>	
Extraction of Physically Based High-Level Models for Rapid Prototyping of MEMS Devices and Control Circuitry	915
<i>Martin Niessner, Gabriele Schrag and Gerhard Wachutka</i>	
A filtering approach of iterative Tikhonov regularization method in ECT.....	919
<i>Seong-Hun Lee, Seon-Bong Lee, Yong-Sung Kim, Ji-Hoon Kim, Bong-Yeol Choi and Kyung-Youn Kim</i>	
On-Line Directional Algebraic Reconstruction Technique for Electrical Capacitance Tomography	923
<i>Ji-Hoon Kim, Byoung-Chae Kang, Bong-Yeol Choi, Seong-Hun Lee and Kyung-Youn Kim</i>	
Application of Giant Magnetoresistive Sensor for Nondestructive Evaluation.....	927
<i>Sotoshi Yamad, Komkrit Chomsuwan and Masayoshi Iwahara</i>	
A Novel Bio-sensor for Non-invasive Meat Inspection	931
<i>S. C. Mukhopadhyay, S. D. Karunanayaka, V. Suri and G. Sen Gupta</i>	
Application of the Magnetoresistive Tensor Model to the Hard Axis Behavior of 81/19 Permalloy Magnetoresistive Sensor Elements	935
<i>Michael Haji-Sheikh and Y. Z. Yoo</i>	
Proposal of Coil Structure for Air-Core Induction Magnetometer.....	939
<i>Kunihisa Tashiro</i>	
Shielded Fluxgates for Open-Loop Current Transducers Measuring High Flux Densities Fast.....	943
<i>Wolfram Teppan</i>	
Proposal of Novel Absolute-Humidity Sensing Method using a Pair of Diode-Thermistors and a Micro-Heater on a Micro-Air-Bridge.....	948
<i>Mitsuteru Kimura and Seung Seoup Lee</i>	
A Novel Simple Humidity Sensor Constructed by Sandwiched Cantilever.....	952
<i>Rex Chen, Chun-Hsun Chu, Chia-Yen Lee, Hao-Jen Chen and Wood-Hi Cheng</i>	
High Performance Humidity Sensor Based on Deliquescent Salt Diffused PI Film	956
<i>Ching-Hsiu Chen, Chia-Yen Lee, Shu-Ming Kuo and Che-Hsin Lin</i>	
Qualitative and Quantitative Analysis of Toxic Gases Using a Metal Oxide Sensor Array	960
<i>Kieu An NGO, Pascal LAUQUE and Khalifa AGUIR</i>	
Gas-Sensing Characterization of TiO₂-ZnO Based Thin Film.....	964
<i>A. Wisitsoraat, A. Tuantranont, E. Comini and G., Sberveglieri</i>	
Data Consistency Within a Pervasive Medical Environment	968
<i>John O'Donoghue, John Herbert and Rossana Salerno-Kennedy</i>	
Sensor Validation Within a Pervasive Medical Environment	972
<i>John O'Donoghue, John Herbert, Rune Fensli and Stephen Dineen</i>	
Highly Sensitive Detection of Labeled Microparticles in Blood	976
<i>M. Brandl, M. Ettenauer, V. Weber, T. Posnicek and D. Falkenhagen</i>	

Table of Contents

Investigating the Translational and Rotational Motion of the Swing Using Accelerometers for Athlete Skill Assessment.....	980
<i>Amin Ahmadi, David D. Rowlands, Daniel A. James and Amin Ahmadi</i>	
Size Effect on the Device Performance of K31 Type pMUTs: Experiments and Equivalent Circuit Analysis	984
<i>H. S. Choi, L. Diebler, J. L. Ding, S. Bose and A. Bandyopadhyay</i>	
Everyday Grasping Behavior Measurement with Wearable Electromyography	988
<i>Yoshifumi NISHIDA, Goro KAWAKAMI and Hiroshi MIZOGUCHI</i>	
Bioanalytical Microfluidic Sensors.....	992
<i>Moser I</i>	
Freeze-Dried Matrix As an Alternative to Solution Mixing for Enzyme Analysis in a Micro Flow Channel	996
<i>Katsuya Morimoto, Sanjay Upadhyay, Naoto Ohgami, Terutaka Higashiyama, Junji Fukuda, Hiroaki Suzuki and Hitoshi Kusakabe</i>	
Microdialysis Glucose Sensor System Compared with Needle Type Glucose Sensor in Vivo During OGTT and Physical Exercise	1000
<i>B.U. Moon, K.J.C. Wientjes and A.J.M. Schoonen</i>	
Highly Sophisticated Electrochemical Analysis System with an Integrated Microfluidic System Based on Electrowetting	1004
<i>Wataru Satoh, Hiroomi Yokomaku, Hiroki Hosono and Hiroaki Suzuki</i>	
An Integrated Hall Sensor Platform Design for Position, Angle and Current Sensing.....	1008
<i>Mario Motz, Udo Ausserlechner, Wolfgang Scherr and Ernst Katzmaier</i>	
Single-core Giant Magnetoimpedance with AC Bias.....	1012
<i>Michal Malátek and Pavel Ripka</i>	
Field Concentrator Based Resonant Magnetic Sensor	1016
<i>S. Brugger, P. Simon and O. Paul</i>	
Customized GMR-spin valve sensors for low field applications.....	1020
<i>Ralf Noetzel, Armin Meisenberg and Axel Bartos</i>	
Micromachined Thin Film MI Element for Integrated Magnetic Sensor.....	1024
<i>Hideya Yamadera, Norikazu Ohta and Hirofumi Funabashi</i>	
Inverse Wiedemann Effect Sensor with Pulse Excitation.....	1028
<i>Michal Malátek and Ludik Kraus</i>	
Modeling and Performance Evaluation of 2.4GHz SAW-Based Pressure Sensor	1031
<i>Wen Wang, Keekeun Lee, Taehyun Kim, Ikmo Park and Sangsik Yang</i>	
Fringe Amplitude Modulation Method for Differential Pressure Sensor.....	1035
<i>Seiichiro Kinugasa</i>	
Differential Pressure Sensor Using Common Optical Fiber Path	1039
<i>Seiichiro Kinugasa</i>	
Design and Analysis of Electro-mechanical Characteristics of Micromachined Stainless Steel Pressure Sensor.....	1043
<i>Heung-Shik Lee, Chongdu Cho and Sung Pil Chang</i>	
A Monolithic Multi-Sensor for Three-Axis Accelerometer, Absolute Pressure and Temperature	1049
<i>Xu Jingbo, Zhao Yulong, Jiang Zhuangde and Sun Jian</i>	
Design of an Acoustic Transmitter for Temperature-Pressure Dual Sensing in Injection Molding	1053
<i>Robert X. Gao, Zhaoyan Fan and David O. Kazmer</i>	
Impact of Casimir force on nano accelerometers modeling.....	1057
<i>Philippe Andreucci, Laurent Duraffourg, Eric Ollier, Valérie Nguyen, Marie Thérèse Delay and Philippe Robert</i>	

Table of Contents

Coupled Fabrication Process Simulation and Mechanical Performance Analysis of Microstructures Based on Cellular Automata	1061
<i>Zaifa Zhou, Qing-An Huang, Weihua Li, Chi Zhu and Dawei Xu</i>	
Research on Resonant Low-Velocity Gas Flow Micro-sensor Based on Trichoid Sensillum of Insects	1065
<i>Chen Jian, Chen Deyong, Wang Junbo and Xia Shanhong</i>	
Characterizing Resonating Cantilevers for Liquid Property Sensing	1070
<i>Christian Riesch, Franz Keplinger, Erwin K. Reichel and Bernhard Jakoby</i>	
A CMOS MEMS Gold Plated Electrode Array for Chemical Vapor Detection	1074
<i>Sarah S. Bedair, Bo Li, J.R. Cooper, S. Santhanam, R. D. McCullough, D. N. Lambeth and G. K. Fedder</i>	
Response Properties of the Gold Nanoparticle Sensors Toward Benzene and Toluene Vapors	1078
<i>Young Jun Kim, Hyeon-Bong Pyo and Seon Hee Park</i>	
Organic Vaporsensors Based on Single-walled CNTs	1081
<i>Sutichai Chaisitsak, Buaworn Chaithongrat, Adisorn Tuantranont and Jiji Nukeaw</i>	
Porous Silicon Based Organic Vapor Sensor Array for e-Nose Applications	1085
<i>T. Islam, J. Das and H. Saha</i>	
Selective Sensor to LPG in Presence of CO Using Nanogold Filter, Operating at Low Temperature, with Pt/SnO₂	1089
<i>S. Alipour, Y. Mortazavi, A. Khodadadi, M. Medghalchi and M. Hosseini</i>	
Implementation Aspects and Offline Digital Signal Processing of a Smart Pebble for River Bed Sediment Transport Monitoring	1093
<i>Nihal Kularatna, Bruce Melville, Ehad Akeila, Dulsha Kularatna</i>	
Online Application of Sensors Monitoring Lubricating Oil Properties in Biogas Engines	1099
<i>Attila Agoston, Nicole Dörr and Bernhard Jakoby</i>	
Position Detection in Automotive Application by Adaptive Inter Symbol Interference Removal	1103
<i>Simon Hainz, Erwin Ofner, Dirk Hammerschmidt, Tobias Werth and Herbert Grünbacher</i>	
A GaAs Acoustic Sensor Based on Resonant Tunnelling Diodes	1107
<i>Jian Wang, Wendong Zhang, Chenyang Xue, Binzhen Zhang and Jinming Li</i>	
Fabrication of High Temperature Ceramic Pressure Sensor and Its Characteristics	1111
<i>Gwiy-Sang Chung and Chang-Min Ohn</i>	
Piezoresistive Gas Flow Sensors by Deep RIE Technology	1115
<i>Young-Tae Lee, Kang-Ho Ahn, Yong-Taek Kwon, Hidekuni Takao and Makoto Ishida</i>	
A Novel CMOS MEMS Accelerometer with Four Sensing Finger Arrays	1119
<i>Chih-Ming Sun, Chuan-Wei Wang, Dong Hang Liu, Michael S.-C. Lu, Weileun Fang, Chao-Jui Liang, Hsieh-Shen Hsieh and Tai-Kang Shing</i>	
Study on a Diode-bridge Type Capacitance Detection Circuit for Differential Capacitive Sensor	1123
<i>Takahiro MATSUO, Jinxing LIANG, Joanna PAWLAT and Toshitsugu UEDA</i>	
A Pull-in Operation Mode Accelerometer	1127
<i>Lukasz Pakula and Patrick French</i>	
Integrated CMOS-Based Sensor Array for Mechanical Stress Mapping	1131
<i>P. Ruther, J. Bartholomeyczik, S. Kibbel, T. Schelb, P. Gieschke and O. Paul</i>	
A Low-noise CMOS Readout Circuit for Capacitive Micro-sensors	1135
<i>M. C. Huang, Y. R. Huang and H. P. Chou</i>	
A SEMI-CYLINDRICAL CAPACITIVE SENSOR WITH SIGNAL CONDITIONER FOR FLOW METER APPLICATIONS	1139
<i>Cheng-Ta Chiang and Yu-Chung Huang</i>	
Rapid Detection of Adenine and Cytosine Nucleotides in Short Hetero-Oligodeoxynucleotides	1143
<i>Radka Mikelova, Libuse Trnkova, Frantisek Jelen, Jaromir Hubalek, Vojtech Adam and Rene Kizek</i>	

Table of Contents

Electrical Characteristics of Intraoral Dental Imaging Devices Based on the CMOS Imager Coupled with Integrated X-ray Conversion Fiber Optics.....	1147
<i>Hyosung Cho, Sungil Choi, Bongsoo Lee and Sin Kim</i>	
Pedestrian Localization System Based on Kalman Filter and Fuzzy Logic.....	1151
<i>Edith Pulido Herrera, Ricardo Quirós, German Fabregat, Miguel Ribo and Axel Pinz</i>	
Si via Interconnection Technique for 3D MEMS Package.....	1155
<i>Jinwoo Jeong, Hyeon Cheol Kim and Kukjin Chun, Eunsung Lee and Changyoul Moon</i>	
A Wireless Patch-type Physiological Monitoring MicroSystem	1159
<i>Ting-Chen Ke and Kuo-Yu Yang</i>	
A Conjunctiva Oxygen Sensor for Transcutaneous Monitoring	1163
<i>Takanori Sawada, Takao Saito, Chu Ming Xing, Hiroyuki Kudo, Hirokazu Saito, Kimio Otsuka and Kohji Mitsubayashi</i>	
Chemiluminometric FIA System for Food Nutrient Analysis	1167
<i>Naoko Ishii, Tomomi Nakazato, Hiroyuki Kudo, Kimio Otsuka, Hideaki Endo, Hirokazu Saito, Kohji Mitsubayashi</i>	
Design, Fabrication and Mechancial Characterization of Vertical Micro Contact Probe.....	1171
<i>Jung Yup Kim, Hak Joo Lee, Hyun Ju Choi, Sang J. Lee and Sung Wook Moon</i>	
Blind Image Watermarking Technique for Digital Phone Camera	1175
<i>Jae-Sik Sohn, Seung-Ik Lee, Suk-Hwan Lee, Ki-Ryong Kwon, Duk-Gyoo Kim</i>	
A palm-sized gas-chromatographic system for sub-ppb VOC detection in air quality monitoring applications.....	1179
<i>S. Zampolli, I. Elmi, G.C. Cardinali, L. Masini, A. Zani, M. Severi, P. Betti and E. Dalcanale</i>	
Driver's Thermal Vision Enhancement using Concentration Region on the Vehicles	1183
<i>Ki-Hong Kim, Seong-Woo Lee, Chang-Gyun Noh, Young-Jin Kim and Boo-Hwan Lee</i>	
Electrochemical Sensor for Determination of Metallothionein As Biomarker	1187
<i>Ondrej Blastik , Jaromir Hubalek, Vojtech Adam, Jan Prasek, Miroslava Beklova, Christoph Singer, Bernd Sures, Libuse Trnkova, Josef Zehnalek and Rene Kizek</i>	
Thermal Characteristics in Motion Sensor for High Temperature Environments.....	1191
<i>Kyung Il Lee, Hidekuni Takao, Kazuaki Sawada, Hee Don Seo and Makoto Ishida</i>	
A Full-Range Space Angular Position Sensor Based on Multifunctional Method.....	1195
<i>Wei Quan and Katsunori Shida</i>	
A MEMS-Based Electrolytic Tilt Sensor	1199
<i>Ho Jung, Chang Jin Kim and Seong Ho Kong</i>	
A Novel Method to Investigate Dependence of SAW Resonator Sensor Signatures on Localized Surface Perturbations	1203
<i>Sang Hun Lee, Eric W. Massey, Ryan S. Westafer and William D. Hunt</i>	
Field Emission As Transducer for Sub-Micron and Nano Resonators.....	1207
<i>C.K. Yang, P.J. French, E. van der Drift, J.R. Kim and P. Hadley</i>	
Study of Humidity Properties of Zinc Oxide Modified Porous Silicon	1211
<i>Tao Jiang, Xiaofeng Zhou, Jian Zhang, Jianzhong Zhu, Xinxin Li, Tie Li</i>	
FEM-Based Analysis of Micromachined Calorimetric Flow Sensors	1215
<i>Franz Kohl, Roman Beigelbeck, Patrick Loschmidt, Jochen Kuntner and Artur Jachimowicz</i>	
Effect of the Porosity of PZT Thick Films on Mass Sensitivity and Resonance Force for Cantilever Type Bio Sensors	1219
<i>Jae Hong Park, Tae Yun Kwon, Dae Sung Yoon, Tae Song Kim, Jae Hong Park and Hwan Kim</i>	
Thermal Characterization and Temperature Control of Piezoresistive Microcantilevers.....	1223
<i>Arnab Choudhury, Peter J. Hesketh, Zhiyu Hu and Thomas G. Thundat</i>	

Table of Contents

A Miniaturized Turn-Counting Sensor Using Geomagnetism for Detecting Flight Range of Ammunition	1227
<i>Sang-Hee Yoon, Seok-Woo Lee, Young-Ho Lee and Jong-Soo Oh</i>	
Heteroepitaxial Growth of 3C-Sic Thin Films on Si(100) Substrates by Single Chemical Vapor Depositions for MEMS Applications	1231
<i>Gwiy-Sang Chung and Kang-San Kim</i>	
A Comparison Among Different Technological Processes for the Fabrication of Polysilicon-Based Thermoelectric Transducers.....	1235
<i>Fulvio Mancarella, Alberto Roncaglia, Fabrizio Tamarri, Ivan Elmi, Gian Carlo Cardinali and Maurizio Severi</i>	
Wafer-Level Measurement of Thermal Conductivity on Thin Films	1239
<i>Alberto Roncaglia, Fulvio Mancarella, Michele Sanmartin, Ivan Elmi, Gian Carlo Cardinali and Maurizio Severi</i>	
Characterization of Nafion solid polymer electrolyte for an electrochemical sensor using scanning probe microscopy and electrochemical impedance spectroscopy.....	1243
<i>Jonghyurk Park, S.-E. Moon, E.-K. Kim, H.-R. Lee and K.-H. Park</i>	
New Growth Methods of ZnO Nano Structures Fully Compatible with the Bio-Chemical Sensor Platforms.....	1247
<i>Doo-Hyeob Youn, Sung-Lyul Maeng and Kwang-Yong Kang</i>	
A Novel Combined biomonitoring System for BOD Measurement and Toxicity Detection Using Microbial Fuel Cells	1251
<i>Mia Kim, Hyung Soo Park, Gil Ju Jin, Won Hui Cho, Dong Kwon Lee, Moon Sik Hyun, Chang Ho Choi and Hyung Joo Kim</i>	
Fabrication and Application of Enantioselective TiO₂ Nanofilms by Molecular Imprinting.....	1253
<i>Naoki Mizutani, Do-Hyeon Yang, Noriko Mitsushita, Seung-Woo Lee and Toyoki Kunitake</i>	
Nanopatterned Working Electrode with Carbon Nanotubes Improving Electrochemical Sensors	1257
<i>J. Prasek, J. Hubalek, M. Adamek, O. Jasek and L. Zajickova</i>	
Carbon Nanotubes Paste Versus Graphite Working Electrodes in Electrochemical Analysis.....	1261
<i>J. Prasek, J. Hubalek, M. Adamek and R. Kizek</i>	
Biosensor with Oxide Nanowires.....	1265
<i>Kyung Ah Jeon, Hyo Jeon Son, Chang Eun Kim, M. S. Shon, K. H. Yoo, A. M. Choi, H. I. Jung and Sang Yeol Lee</i>	
Fabrication of Silicon Nanowire for Biosensor Applications	1269
<i>Kook-Nyung Lee, Suk-Won Jung, Won-Hyo Kim, Min-Ho Lee, Woo-Kyeong Seong, Mira Kim and Yoon-sik Lee</i>	
Nanotube Molecular Probes: DNA Hybridization using Single Walled Carbon Nanotubes as Biomarkers.....	1272
<i>Chengfan Cao, Sanghyun Hong, Jae-Boong Choi, Young-Jin Kim, Seunghyun Baik, Eung-Soo Hwang, Hye-Jin Jung and Chang-Yong Cha</i>	
Ultra-high aspect ratio buried silicon nano-channels for biological applications	1276
<i>Ranganathan Nagarajan, B. Ramana Murthy and Linn Linn</i>	
Blood Separation for Reduction of Noise in Glucose Sensing.....	1281
<i>Duckjong Kim, Jae Young Yun and Jee-Hoon Seo</i>	
Mass Detection Using Capacitive Resonant Silicon Sensor.....	1285
<i>Sang-Jin Kim, Takahito Ono and Masayoshi Esashi</i>	
Wine Glass Mode Micro-Mechanical Resonator	1289
<i>Kazumasa Ikoma, Masanobu Okazaki and Masayoshi Esahi</i>	
New Manufacturing Method for Capacitive Ultrasonic Transducers with Monocrystalline Membrane.....	1293
<i>Patrice Rey, M. Salhi, S. Giroud, P. Robert, C. Lagahe-Blanchard, S. Clatot and S. Ballandras</i>	
A Temperature-Compensated ZnO-on-Diamond Resonant Mass Sensor.....	1297
<i>Reza Abdolvand, Zhili Hao and Farrokh Ayazi</i>	
QCR Measurements on Formation of multilayers Using SAM Technique	1301
<i>B. Schlatt-Masuth, U. Hempel, R. Lucklum and P. Hauptmann</i>	

Table of Contents

Fabrication of Micromachined Quartz-Crystal Resonators Using Surface Activated Bonding of Silicon and Quartz Wafers	1305
<i>Akihiro Takahashi, Takahito Ono, Yu-Ching Lin and Masayoshi Esashi</i>	
Distributed Tactile Sensors for Tracked Robots.....	1309
<i>Daisuke Inoue, Masashi Konyo and Satoshi Tadokoro</i>	
Polysilicon Piezoresistive Tactile Sensor Array Fabricated by PolyMUMPs Process	1313
<i>Tanom Lomas, Adisorn Tuantranont and Anurat Wisitsoraat</i>	
Design and Fabrication of Non-Silicon-Based Piezoresistive MEMS Tactile Sensor	1317
<i>A. Wisitsoraat, V. Patanasetagul, A. Tuantranont and N. Poonnikorn</i>	
Development of 4-DOF Soft-Contact Tactile Sensor and Application to Gripping Operation of Robotics Fingers	1321
<i>Dzung Viet Dao and Susumu Sugiyama</i>	
Inertial Force Sensing System for Partner Robots	1325
<i>Y. Nonomura, M. Fujiyoshi and H. Sugihara</i>	
Multifunctional CMC/Silicone Composite Sensor Elements As the Tactile and Proximity Sensors.....	1329
<i>H. Natsuhara, T. Katsuno, X. Chen, S. Yang, S. Motojima, T. Kuzuya and K. Kawabe</i>	
Energy Loss Mechanisms in a Bulk-Micromachined Tuning-Fork Gyroscope	1333
<i>Zhili Hao, Mohammad Faisal Zaman, Ajit Sharma and Farrokh Ayazi</i>	
A High Speed, High Bandwidth On-Chip Current and Voltage Sensor	1337
<i>J. Kruppa and D. Hesidenz</i>	
Liquid Crystal Sensors with Capacitive Transduction.....	1341
<i>Robert G. Lindquist, Alaeddin Abu-Abed and Woo-Hyuck Choi</i>	
Nano-Resolution Reconstruction of Magnetic Fields Near a Magnetic Probe Using a Thin-Film Magnetic Sensor.....	1345
<i>Shinichi Yamakawa, Kenji Amaya and M. Parameswaran (Ash)</i>	
Traceable Dynamic Calibration for High Temperature Sensors Using CO2 Laser	1349
<i>Zhou Hanchang, Hao Xiaojian, Chen Weili and Huang Liang</i>	
Fabrication and Characterization of 2-DOF Micro Convective Accelerometer	1353
<i>Dzung V. Dao, Van T. Dau, M. Hayashida, T.X. Dinh, T. Shiozawa and S. Sugiyama</i>	
Performance Trade-offs of an Interferometric Micro-g Resolution Accelerometer	1357
<i>Maximillian Perez and Andrei M. Shkel</i>	
Wafer-Level Packaged Accelerometer with Solderable SMT Terminals	1361
<i>Tom Kwa</i>	
High-Q Silicon Flexural Resonators for Vibrating Inertial Sensors: Investigation of the Limiting Damping Mechanisms.....	1365
<i>Le Foulgoc B., Le Traon O., Masson S., Parent A., Bourouina T., Marty F., Bosseboeuf A., Parrain F., Mathias, H. and Gilles J.-P.</i>	
Development of a Dual Axis Convective Gyroscope with Embedded Heater and Low Thermal-Stress Thermistors	1369
<i>Van T. Dau, Dzung V. Dao, T. Shiozawa, H. Kumagai and S. Sugiyama</i>	
Temperature Compensation of Novel NDIR CO2 Gas Sensor	1373
<i>SeungHwan Yi, JongSeon Park and JeongMin Park</i>	
A Novel Method Based on Gas Microsensors to Analyze Diesel Engine Oil Contaminated by Diluent Unburned Diesel Fuel.....	1377
<i>Simonetta Capone, Mauro Epifani, Luca Francioso, Dominique S. Presicce, Pietro Siciliano and Paolo Carlucci</i>	
Integration of a SAW Sensor System Into Penetration Cones for In-Situ Soil Gas Analysis	1381
<i>Aleksandr Skrypnik, Achim Voigt and Michael Rapp</i>	

Table of Contents

Penetrating Microelectrode Sensor for <i>In Situ</i> Dissolved Oxygen Measurements.....	1385
<i>Jin-Hwan Lee, Tae-Sun Lim and Ian Papautsky</i>	
Bomb Detection in Magnetic Soils: AC Versus DC Methods.....	1389
<i>P. Ripka, J. Včelák, P. Kašpar and A.M. Lewis</i>	
Pressure Sensor Based Tsunami Detection System: A Laboratory Study.....	1392
<i>K.R. Viveka, S. Ramgopal, Praveen N, K .Rajanna and M.M. Nayak</i>	
Carbon Nanotubes - Towards Artificial Nose Implementation.....	1395
<i>Antal A. Koos, Krisztian Kertesz, Maria Adam, Csaba Ducso, Zsolt E. Horvath, Laszlo P. Biro, Istvan Barsony, Jozsef Gyulai, Zoltan Konya and Imre Kiricsi</i>	
Single-Walled Carbon Nanotube Based Gas Sensor with Nanoscale Electrode Interval Using Sacrificial Oxide Layer.....	1400
<i>Jinwoo Lee, Kyongsoo Lee, Woosung Cho and Byeongkwon Ju</i>	
Simplified Identification of Compounding Ratio and Dispersion of Carbon Nano-Tube / Polymer Composite Material.....	1403
<i>Hiroyuki Wakiwaka, Yoichi Kumakura and Morinobu Endo</i>	
Telescoping Self-Aligned Metal-Catalyzed Carbon Nanotube Piezoresistors As Starin Gauges	1407
<i>Yan Xie and Massood Tabib-Azar</i>	
Determining Thermal Properties of Liquids: Membrane-Based Versus Bridge-Based Micromachined Sensors.....	1411
<i>J. Kuntner, A. Jachimowicz, F. Kohl and B. Jakoby</i>	
A Novel Converter for Sinusoidal Encoders.....	1415
<i>Mohieddine Benammar, Lazhar Ben-brahim, Mohd. A. Alhamadi and Mohamed El-Naimi</i>	
A Micromachined Electrostatic Field Sensor with Vertical Thermal Actuator.....	1419
<i>Chao Ye, Chunrong Peng, Xianxiang Chen and Shanhong Xia</i>	
A Novel Lift Off Process and its Application for Capacitive Tilt Sensor.....	1422
<i>Jinxing Liang, Fusao Kohsaka, Takahiro Matsuo and Toshitsugu Ueda</i>	
Design Optimization of Scanning Resistive Microscopy (SRM) Probe for Spatial Resolution Improvement.....	1426
<i>Hyoungsoo Ko, S. Hong, H. Park, C. Park, J. Jung, D.-K. Min, S. H. Choa, H. Shin and H. Lee</i>	
Residual Stress and Membrane Deflection Influences on the Ultrasonic Sensor Device.....	1428
<i>Seung-Mock Lee, Tsunehisa Tanaka and Koji Inoue</i>	
Microfabricated Platform for Nanoscale Flow Sensing and Control.....	1432
<i>Jason Shih, Yu-Chong Tai, Yunan Miao and Terry D. Lee</i>	
Highly Sensitive Sensor for Flow Velocity and Flow Direction Measurement.....	1436
<i>Franz Keplinger, Jochen Kuntner, Artur Jachimowicz, Franz Kohl and Bernhard Jakoby</i>	
High-Sensitivity Bi-Directional Flow Sensor Based on Biological Inspiration of Animal Haircell Sensors	1440
<i>Craig Tucker, Nannan Chen, Jonathan Engel, Yingchen Yang, Saunvit Pandya and Chang Liu</i>	
SPICE Model with Lumped Circuits for a Thermal Flow Sensor.....	1444
<i>Guang-Ping Shen Min Qin, Qing-An Huang</i>	
Gas Flow Sensing with a Piezoresistive Micro-Cantilever	1448
<i>Yu-Hsiang Wang, Chia-Yen Lee and Rong-Hua Ma, Lung-Ming Fu</i>	
Commercialized CMOS Compatible Micro Anemometer	1452
<i>Yu-Jen Fang, Jen-Yi Chen, Hsin-Li Lee, Kai-Hsiang Yen and Chih-Hung Wang</i>	
A Robust Depth Imaging Sensor Based on Signal Separation Coding	1456
<i>Sukhan Lee, Seungsub Oh, Daesik Kim and Jongmoo Choi</i>	
Artificial Ear for Robots	1460
<i>SUNG MOK HWANG, KI-HOON SHIN and YOUNGJIN PARK</i>	

Table of Contents

Temperature Sensor Array for a Tactile Sensation Using FBG Sensors	1464
<i>Jin-Seok Heo, Jung-Ju Lee</i>	
Development of Tactile Sensor with Functions of Contact Force and Thermal Sensing for Attachment to Intelligent Robot Finger Tip	1468
<i>Jong-Ho Kim, Woo-Chang Choi, Hyun-Joon Kwon and Dae-Im Kang</i>	
Wide Dynamic Range Vision for Robot Eye Based on Double Capturing Scheme	1473
<i>Sung-Kee Park and Jin Heon Kim</i>	
MEMS Accelerometer with Screen Printed Piezoelectric Thick Film	1477
<i>C. C. Hindrichsen, E. V. Thomsen R. Lou-Møller and T. Bove</i>	
An Axial-Beam Piezoresistive Accelerometer for High-Performance Crash Detection of Automotive Industry	1481
<i>Peitao Dong, Xinxin Li, Yuelin Wang, Songlin Feng and Shengyi Li</i>	
One Bulk Micromachined Single-Chip Inertial Measurement Unit	1485
<i>Honglong Chang, Weizheng Yuan, Jinqiang Cui, Qinghua Jiang, Peng Zhang, Qian Li and Fang Yang</i>	
Integrated Optical Sensor Platform Based on Evanescent Field Coupling for Biochemical Sensor Applications	1489
<i>Hyungseok Pang, Patrick LiKamWa and Hyoung J. Cho</i>	
CMOS Schottky Diodes for Photo-Detector and Thermal Detector Applications	1493
<i>Ji-Hun Han, Woochul Jeon and John Melngailis</i>	
New Embedded ASIC Integrated Measurement System for Control Responses from TFT Sensors	1497
<i>P. Steffan, R. Vrba and M. Pavlik</i>	
Low Power Programmable Prototype Sensor for Remotely Pressure Monitoring	1502
<i>Khalil Arshak, Essa Jaf, David Waldron and Arousiyan Arshak</i>	
Metal Embedded Micro Sensors for Manufacturing Applications	1506
<i>Xudong Cheng, Arindom Datta, Hongseom Choi and Xiaochun Li</i>	
A 2D Ternary Barcode Detection System with a Dual Threshold	1511
<i>Hiroo Wakaumi and Chika Nagasawa</i>	
ThermalSkin: a Distributed Sensor for Anemotaxis Robot Navigation	1515
<i>Lino Marques and Anibal T. de Almeida</i>	
Wearable Sensing Clothes Embedding a Hetero-core Optic Fiber for Recognizing Arm Segment Posture and Motion	1519
<i>Michiko Nishiyama, Hiroyuki Sasaki and Kazuhiro Watanabe</i>	