

IEEE SENSORS JOURNAL

A PUBLICATION OF THE IEEE SENSORS COUNCIL

WWW.IEEE.ORG/SENSORS

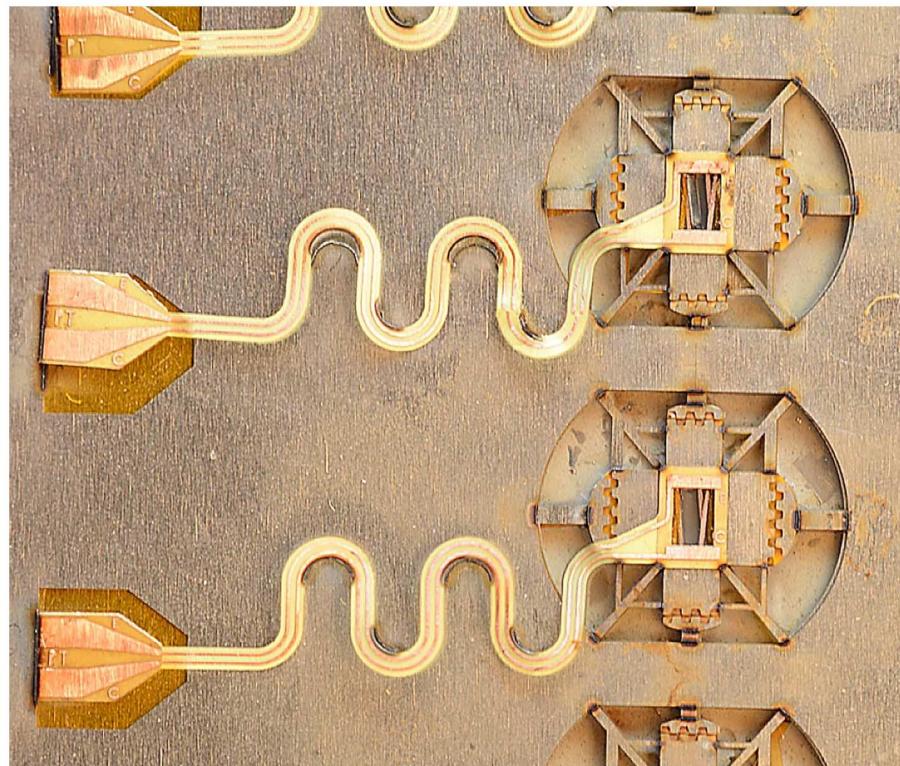
FEBRUARY 1, 2016

VOLUME 16

NUMBER 3

ISJEAZ

(ISSN 1558-1748)



Batch fabricated mm-scale force sensors, suitable for surgical robots, prior to release and self-assembly into the final 3D shape.

IEEE SENSORS JOURNAL

A PUBLICATION OF THE IEEE SENSORS COUNCIL

WWW.IEEE.ORG/SENSORS

FEBRUARY 1, 2016

VOLUME 16

NUMBER 3

ISJEAZ

(ISSN 1558-1748)

SENSORS PAPERS

<i>Chemical and Biological Sensors</i>		
Response Prediction of an Insect's Olfactory Receptor Neuron by Using Structural Parameters of Odorant and Self-Organizing Map	Y. Harada, K. Tomoki, R. Kanzaki, and T. Nakamoto	580
Capacitive Biosensing of Bacterial Cells: Sensitivity Optimization	N. Couniot, A. Afzalian, N. Van Overstraeten-Schlögel, L. A. Francis, and D. Flandre	586
<i>Sensor Materials and Solid-State Sensors</i>		
Irradiation Wavelength-Dependent Photocurrent Sensing Characteristics of AuNPs/P3HT Composites on Volatile Vapor	B. Chen, M. Mokume, C. Liu, and K. Hayashi	596
<i>Thermal Sensors</i>		
A Linearization Scheme for Thermistor-Based Sensing in Biomedical Studies	S. Bandyopadhyay, A. Das, A. Mukherjee, D. Dey, B. Bhattacharyya, and S. Munshi	603
<i>Mechanical Sensors</i>		
Comparison of Three Automatic Mode-Matching Methods for Silicon Micro-Gyrosopes Based on Phase Characteristic	L. Xu, H. Li, C. Yang, and L. Huang	610
Design of a Tunable PDMS Force Delivery and Sensing Probe for Studying Mechanosensation	T. Dattoma, A. Qualtieri, K. D. Karavitzki, D. P. Corey, M. De Vittorio, and F. Rizzi	620
The Development and Performance Characterization of Turbine Prototypes for a MEMS Spirometer	U. Göreke, S. Habibiabadi, K. Azgin, Y. S. Doğrusöz, and M. İ. Beyaz	628
Microfabricated Electromagnetic Energy Harvesters With Magnet and Coil Arrays Suspended by Silicon Springs	Q. Zhang and E. S. Kim	634
Obstacle Detection on Railway Tracks Using Vibration Sensors and Signal Filtering Using Bayesian Analysis	D. Sinha and F. Feroz	642
Microelectromechanical Systems-Based Electrochemical Seismic Sensors With Insulating Spacers Integrated Electrodes for Planetary Exploration	T. Deng, D. Chen, J. Chen, Z. Sun, G. Li, and J. Wang	650
A Resettable, Wireless and Passive Fall-Down Recorder Using a Magnetic Droplet With an LC Circuit	C.-Y. Huang, P. Sun, M.-S. Lee, S.-Y. Wu, Y.-C. Shieh, and W. Hsu	654
<i>Magnetic Sensors</i>		
Tunable Magnetoelectric Bending Resonance for Sensing Static Magnetic Fields	X. Zhuang, M.-T. Yang, M. Lam Chok Sing, C. Dolabdjian, P. Finkel, J. Li, and D. Viehland	662
<i>Optoelectronic/Photonic Sensors</i>		
MgO/GaSe _{0.5} S _{0.5} Heterojunction as Photodiodes and Microwave Resonators	A. F. Qasrawi, H. K. Khanfar, and N. M. Gasany	670
Recovery of Absolute Absorption Line Shapes in Tunable Diode Laser Spectroscopy Using External Amplitude Modulation With Balanced Detection	J. R. P. Bain, M. Lengden, G. Stewart, and W. Johnstone	675

(Contents Continued on Page 579)

<i>Integrated Optics/Fiber Optical Devices</i>		
Optical MEMS Pressure Sensors Incorporating Dual Waveguide Bragg Gratings on Diaphragms	V. Neeharika and P. K. Pattnaik	681
A Fiber Optic Temperature Sensor Based on the Combination of Two Materials With Different Thermo-Optic Coefficients	W. Wildner and D. Drummer	688
<i>Sensor-Actuators</i>		
Corrosion Monitoring of Reinforcement Steel Using Galvanostatically Induced Potential Transients	Y. Abbas, J. S. Nutma, W. Olthuis, and A. van den Berg	693
<i>Sensor Phenomena and Characterization</i>		
Stability and Control of a Metal Oxide Gas Sensor in Simulated Wind	K. L. Dorsey and A. P. Pisano	699
Inspection of Cylindrical Structures Using the First Longitudinal Guided Wave Mode in Isolation for Higher Flaw Sensitivity	P. S. Lowe, R. M. Sanderson, N. V. Boulgouris, A. G. Haig, and W. Balachandran	706
High-Resolution, Far-Field, and Passive Temperature Sensing up to 700 °C Using an Isolated ZST Microwave Dielectric Resonator	J.-M. Boccard, T. Aftab, J. Hoppe, A. Yousaf, R. Hütter, and L. M. Reindl	715
Bias Contribution Modeling for a Symmetrical Micromachined Coriolis Vibratory Gyroscope	Q. Shen, H. Li, Y. Hao, W. Yuan, and H. Chang	723
Error-Compensation Method for Inclination Measurement Under the Influence of the Dynamic Interference	Y. Zhang, Y. Guo, K. Li, C. Pei, and M. Li	734
<i>Sensor Signal Processing and Array Sensor Fusion</i>		
Automatic Sensor-Based Detection and Classification of Climbing Activities	J. Boulanger, L. Seifert, R. Héault, and J.-F. Coeurjolly	742
Online Chemical Sensor Signal Processing Using Estimation Theory: Quantification of Binary Mixtures of Organic Compounds in the Presence of Linear Baseline Drift and Outliers	K. Sothivelr, F. Bender, F. Josse, E. E. Yaz, A. J. Ricco, and R. E. Mohler	750
A Blind Source Separation Framework for Monitoring Heart Beat Rate Using Nanofiber-Based Strain Sensors	L. Zou, X. Chen, A. Servati, S. Soltanian, P. Servati, and Z. J. Wang	762
<i>Sensor Systems</i>		
A Real-Time Human Action Recognition System Using Depth and Inertial Sensor Fusion	C. Chen, R. Jafari, and N. Kehtarnavaz	773
Differential Sensor Measurement With Rotating Current Excitation for Evaluating Multilayer Structures	C. Ye, Y. Huang, L. Udupa, and S. S. Udupa	782
A Wearable and Modular Inertial Unit for Measuring Limb Movements and Balance Control Abilities	G. M. Bertolotti, A. M. Cristiani, P. Colagiovio, F. Romano, E. Bassani, N. Caramia, and S. Ramat	790
<i>Applications</i>		
Temperature Compensation for a Six-Axis Force/Torque Sensor Based on the Particle Swarm Optimization Least Square Support Vector Machine for Space Manipulator	Y. Sun, Y. Liu, and H. Liu	798
AutoDietary: A Wearable Acoustic Sensor System for Food Intake Recognition in Daily Life	Y. Bi, M. Lv, C. Song, W. Xu, N. Guan, and W. Yi	806
3D Trajectory Reconstruction From Monocular Vision Based on Prior Spatial Knowledge	C. Liu and Y. Zhang	817
<i>Sensors System Networks</i>		
A Two-Tier Adaptive Data Aggregation Approach for M2M Group-Communication	A. Riker, E. Cerqueira, M. Curado, and E. Monteiro	823
A Lightweight Authenticated Communication Scheme for Smart Grid	Y. Liu, C. Cheng, T. Gu, T. Jiang, and X. Li	836
3D Real-Time Routing Protocol With Tunable Parameters for Wireless Sensor Networks	S. F. Al Rubeai, M. A. Abd, B. K. Singh, and K. E. Tepe	843
<hr/> COMMENTS AND CORRECTIONS		
Corrections to “Improved Capacitive Pressure Sensors Based on Liquid Alloy and Silicone Elastomer”	J. Choi, S. Kim, J. Lee, and B. Choi	854
Corrections to “A Smart Sensor Network for Sea Water Quality Monitoring”	F. Adamo, F. Attivissimo, C. G. C. Carducci, and A. M. L. Lanzolla	855