

IEEE SENSORS JOURNAL

A PUBLICATION OF THE IEEE SENSORS COUNCIL

WWW.IEEE.ORG/SENSORS

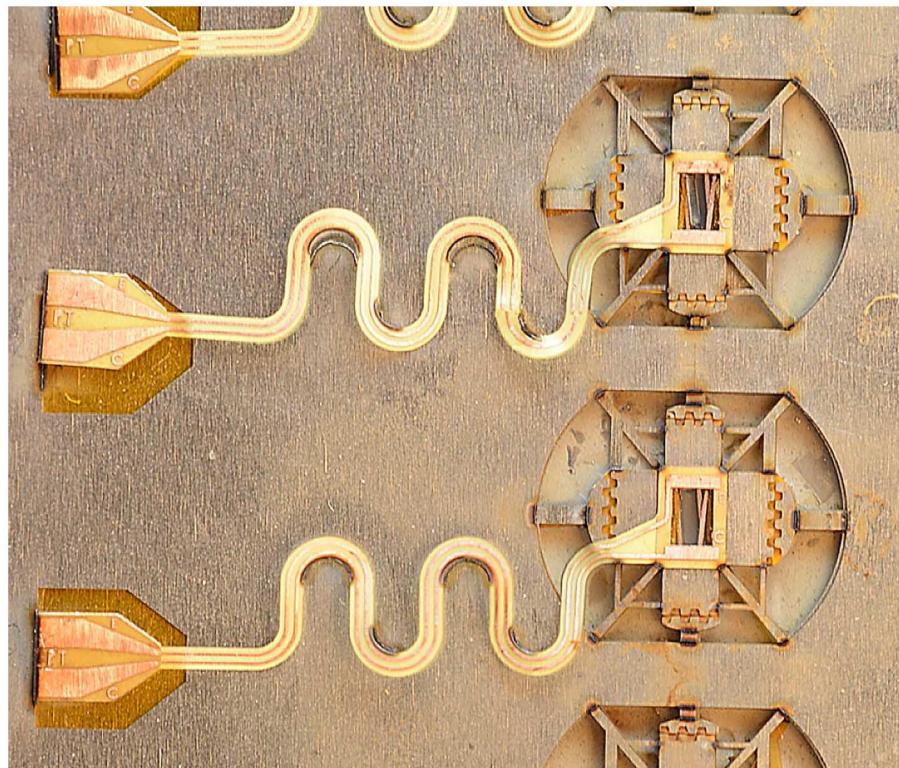
APRIL 15, 2016

VOLUME 16

NUMBER 8

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

APRIL 15, 2016

VOLUME 16

NUMBER 8

ISJEAZ

(ISSN 1558-1748)

SENSORS LETTERS

<i>Chemical and Biological Sensors</i>	
A Flexible Vanadium Oxide Thermistor Array for Localized Temperature Field Measurements in Brain	2211
..... <i>M. W. Billard, H. A. Basantani, M. W. Horn, and B. J. Gluckman</i>	
<i>Sensor Phenomena and Characterization</i>	
Active Control of the Surface Potential of Nanostructured Layers	2213
..... <i>M. Dominguez-Pumar, L. Kowalski, E. Llobet, and R. Calavia</i>	
<i>Applications</i>	
Image-Based Monitoring of Jellyfish Using Deep Learning Architecture	2215
..... <i>H. Kim, J. Koo, D. Kim, S. Jung, J.-U. Shin, S. Lee, and H. Myung</i>	
<i>Sensors System Networks</i>	
PKC-Based DoS Attacks-Resistant Scheme in Wireless Sensor Networks	2217
<i>D. Kim and S. An</i>	

SENSORS PAPERS

<i>Chemical and Biological Sensors</i>	
Application of Modified Carbon Quantum Dots/Multiwall Carbon Nanotubes/Pencil Graphite Electrode for Electrochemical Determination of Dextromethorphan	2219
..... <i>B. Rezaei, N. Irannejad, A. A. Ensafi, and M. Dinari</i>	
On the Physical Design of Molecular Communication Receiver Based on Nanoscale Biosensors	2228
..... <i>M. Kuscu and O. B. Akan</i>	
Realization of Conductometry on a Digital Microfluidic Platform for Real-Time Monitoring of <i>Bacillus Atrophphaeus</i> Endospore Germination	2244
..... <i>W. J. Wu, S. L. Liu, and P. T. Yung</i>	
<i>Thermal Sensors</i>	
A Novel Infrared Motion Sensing System for Compressive Classification of Physical Activity	2251
..... <i>Q. Guan, X. Yin, X. Guo, and G. Wang</i>	
Earth Sensor Based on Thermopile Detectors for Satellite Attitude Determination	2260
..... <i>A. García Sáez, J. M. Quero, and M. Angulo Jerez</i>	
A 1.1 μ W CMOS Smart Temperature Sensor With an Inaccuracy of ± 0.2 °C (3σ) for Clinical Temperature Monitoring	2272
..... <i>M.-K. Law, S. Lu, T. Wu, A. Bermak, P.-I. Mak, and R. P. Martins</i>	
<i>Mechanical Sensors</i>	
Particle Sensor Using Solidly Mounted Resonators	2282
..... <i>S. Thomas, F. H. Villa-López, J. Theunis, J. Peters, M. Cole, and J. W. Gardner</i>	
A Capacitive-Type Novel Six-Axis Force/Torque Sensor for Robotic Applications	2290
..... <i>D.-H. Lee, U. Kim, H. Jung, and H. R. Choi</i>	

(Contents Continued on Page 2208)

A Simple Approach to Design a Binary Coded Absolute Shaft Encoder	S. Das, T. S. Sarkar, B. Chakraborty, and H. S. Dutta	2300
A New Capacitive Displacement Sensor With Nanometer Accuracy and Long Range	X. Liu, K. Peng, Z. Chen, H. Pu, and Z. Yu	2306
Liquid-Surface-Level Sensing Based on Transverse Pulse Train Technique	B. Liu, D. Y. Wang, and A. Wang	2317
<i>Magnetic Sensors</i>		
Class H Power Amplifier for Power Saving in Fluxgate Current Transducers	G. Velasco-Quesada, M. Román-Lumbreras, R. Pérez-Delgado, and A. Conesa-Roca	2322
Magnetoresistive Sensor With Magnetic Balance Measurement for Inspection of Defects Under Magnetically Permeable Fasteners	C. Ye, Y. Huang, L. Udupa, S. Udupa, and A. Tamburrino	2331
<i>Microwave/Millimeter Wave Sensors</i>		
A Passive RF Sensor for Detecting Simultaneous Partial Discharge Signals Using Time–Frequency Analysis	E. M. Amin and N. C. Karmakar	2339
Spectrum Sensing of OFDM Signals Over Multipath Fading Channels and Practical Considerations for Cognitive Radios	W.-L. Chin, C.-W. Kao, and Y. Qian	2349
Millimeter-Wave Imaging for Recycled Paper Classification	S. Shylo and S. W. Harmer	2361
<i>Optoelectronic/Photonic Sensors</i>		
Analysis and Modeling of the Light-Dependent Full Well Capacity of the 4-T Pixel in CMOS Image Sensors	Z. Gao, J. Xu, Y. Zhou, and K. Nie	2367
Liquid Level Sensor Using Fiber Bragg Grating Assisted by Multimode Fiber Core	M. Shao, X. Qiao, X. Zhao, Y. Zhang, and H. Fu	2374
Toward Community Sensing of Road Anomalies Using Monocular Vision H.-T. Chen, C.-Y. Lai, and C.-A. Shih	2380	
Intraband Absorption Coefficient in Organic–Inorganic Hybrid Nanocomposite—A Pathway to Room-Temperature, Mid- and Long-Wavelength Infrared Detection	H. Dehdashti Jahromi, N. Taghinejad, and M. H. Sheikhi	2389
An Arrayed Liquid Crystal Fabry–Perot Infrared Filter for Electrically Tunable Spectral Imaging Detection	J. Lin, Q. Tong, Y. Lei, Z. Xin, X. Zhang, A. Ji, H. Sang, and C. Xie	2397
CdSe Quantum Dots Embedded in Matrices: Characterization and Application for Low-Pressure and Temperature Sensors	T.-T. Ke, Y.-L. Lo, T.-W. Sung, and C.-C. Liao	2404
A Non-Invasive Remote Pressure Sensor Design for Extreme Environments Using Tunable Optics With Conventional Manometry	A. Anjum, S. A. Reza, and M. A. Ahsan	2411
<i>Integrated Optics/Fiber Optical Devices</i>		
Designing a Biosensor Using a Photonic Quasi-Crystal Fiber	M. S. Aruna Gandhi, S. Sivabalan, P. Ramesh Babu, and K. Senthilnathan	2425
Elimination of Light Intensity Noise Using Dual-Channel Scheme for Fiber MZI-Based FBG Sensor Interrogation	V. Chandra, U. Tiwari, and B. Das	2431
Quantum Dots-Based Multiplexed Fiber-Optic Temperature Sensors	W. Wang, X. Yin, J. Wu, Y. Yu, Y. Geng, X. Tan, Y. Du, X. Hong, and X. Li	2437
Low-Temperature Cross-Sensitivity Refractive Index Sensor Based on Single-Mode Fiber With Periodically Modulated Taper	Y. Miao, Y. He, X. Ma, H. Zhang, B. Song, X. Yang, L. Xue, B. Liu, and J. Yao	2442
Multipoint Hydrogen Sensing of Hetero-Core Fiber SPR Tip Sensors With Pseudorandom Noise Code Correlation Reflectometry	A. Hosoki, M. Nishiyama, H. Igawa, and K. Watanabe	2447
High Intrinsic Sensitivity Etched Polymer Fiber Bragg Grating Pair for Simultaneous Strain and Temperature Measurements	K. Bhowmik, G.-D. Peng, Y. Luo, E. Ambikairajah, V. Lovric, W. R. Walsh, and G. Rajan	2453
Temperature Sensitivity Enhancement of the Nano-Film Coated Long-Period Fiber Gratings	F. Zou, Y. Liu, S. Zhu, C. Deng, Y. Dong, and T. Wang	2460
<i>Sensor Phenomena and Characterization</i>		
Image Reconstruction for ECT Based on Extended Sensitivity Matrix	J. Ye, M. Mao, H. Wang, and W. Yang	2466
Effective Ammonia Detection Using n-ZnO/p-NiO Heterostructured Nanofibers	K. Lokesh, G. Kavitha, E. Manikandan, G. K. Mani, K. Kaviyarasu, J. B. B. Rayappan, R. Ladchumananandasivam, J. Sundeep Aanand, M. Jayachandran, and M. Maaza	2477

Terahertz Plasmonic Structure With Enhanced Sensing Capabilities	R. Yahiaoui, A. C. Strikwerda, and P. U. Jepsen	2484
<i>Sensor Signal Processing and Array Sensor Fusion</i>		
Measurement Error Observer-Based IMM Filtering for Mobile Node Localization Using WLAN RSSI Measurement	S. Y. Cho	2489
Discrimination of Deception Targets in Multistatic Radar Based on Clustering Analysis	S. Zhao, N. Liu, L. Zhang, Y. Zhou, and Q. Li	2500
ISAR Imaging of Targets With Complex Motions Based on a Noise-Resistant Parameter Estimation Algorithm Without Nonuniform Axis	J. Zheng, H. Liu, G. Liao, T. Su, Z. Liu, and Q. H. Liu	2509
Real-Time Signal Processing of Massive Sensor Arrays via a Parallel Fast Converging SVD Algorithm: Latency, Throughput, and Resource Analysis	M. V. Athi, S. R. Zekavat, and A. A. Struthers	2519
Efficient Two-Dimensional Direction-of-Arrival Estimation for a Mixture of Circular and Noncircular Sources	H. Chen, C. Hou, W. Liu, W.-P. Zhu, and M. N. S. Swamy	2527
An Improved TERCOM-Based Algorithm for Gravity-Aided Navigation	Y. Han, B. Wang, Z. Deng, and M. Fu	2537
Indoor Pedestrian Tracking by On-Body Multiple Receivers	A. Correa, M. Barcelo Llado, A. Morell, and J. L. Vicario	2545
Compact North Finding System	J. Bojja, J. Collin, M. Kirkko-Jaakkola, M. Payne, R. Griffiths, and J. Takala	2554
Focus Improvement for Squint FMCW-SAR Data Using Modified Inverse Chirp-Z Transform Based on Spatial-Variant Linear Range Cell Migration Correction and Series Inversion	D. Li, H. Lin, H. Liu, H. Wu, and X. Tan	2564
ZM-SPECK: A Fast and Memoryless Image Coder for Multimedia Sensor Networks	N. R. Kidwai, E. Khan, and M. Reisslein	2575
<i>Sensor Systems</i>		
A Low-EMI Buck Converter Suitable for Wireless Sensor Networks With Spur-Reduction Techniques	J.-J. Chen, Y.-S. Hwang, J.-H. Yu, Y.-T. Ku, and C.-C. Yu	2588
Urban Air Pollution Monitoring System With Forecasting Models	K. Bashir Shaban, A. Kadri, and E. Rezk	2598
Multi-Element Strain Gauge Modules for Soft Sensory Skins	E. L. White, J. C. Case, and R. K. Kramer	2607
An Holistic Approach to e-Nose Response Patterns Analysis—An Application to Nondestructive Tests	M. Salvato, S. De Vito, E. Esposito, E. Massera, M. Miglietta, G. Fattoruso, and G. Di Francia	2617
The Lower Limbs Kinematics Analysis by Wearable Sensor Shoes	G. Li, T. Liu, J. Yi, H. Wang, J. Li, and Y. Inoue	2627
Continuously Adaptive Data Fusion and Model Relearning for Particle Filter Tracking With Multiple Features	J. Xiao, R. Stolk, M. Oussalah, and A. Leonardis	2639
Hot Wire Sensor-Based Data Acquisition System for Controlling the Laminar Boundary Layer Near Plant Leaves Within a Greenhouse	S. Makhlouf, M. Laghrouche, and A. El Hamid Adane	2650
Self-Adaptive Multi-Peak Detection Algorithm for FBG Sensing Signal	Y. Chen, K. Yang, and H.-L. Liu	2658
distratto: Impaired Driving Detection Using Textile Sensors	G. Singh, T. A. Chen, R. Robucci, C. Patel, and N. Banerjee	2666
<i>Applications</i>		
High-Sensitivity <i>In Situ</i> Soot Particle Sensing in an Aero-Engine Exhaust Plume Using Long-Pulsed Fiber-Laser-Induced Incandescence	D. McCormick, J. D. Black, Y. Feng, J. Nilsson, and K. B. Ozanyan	2674
Location Data Analytics in Wireless Lighting Systems	K. Warmerdam and A. Pandharipande	2683
Bilateral Photoplethysmography Analysis for Peripheral Arterial Stenosis Screening With a Fractional-Order Integrator and Info-Gap Decision-Making	J.-X. Wu, C.-M. Li, Y.-R. Ho, M.-J. Wu, P.-T. Huang, and C.-H. Lin	2691
Sensor-Free Stress Estimation Model for Steel Beam Structures Using a Motion Capture System	J. S. Park, B. K. Oh, S. W. Choi, and H. S. Park	2701
Liquid Water Content and Droplet Sizing Shadowgraph Measuring System for Wind Turbine Icing Detection	S. Rydblom and B. Thörnberg	2714
NIRS-Based Language Learning BCI System	K. Watanabe, H. Tanaka, K. Takahashi, Y. Niimura, K. Watanabe, and Y. Kurihara	2726
An 80 mV Startup Voltage Fully Electrical DC–DC Converter for Flexible Thermoelectric Generators	C. Veri, L. Franciosi, M. Pasca, C. De Pascali, P. Siciliano, and S. D’Amico	2735

<i>Sensors System Networks</i>		
Dynamic Cluster Head Selection Method for Wireless Sensor Network	D. Jia, H. Zhu, S. Zou, and P. Hu	2746
A Mobility Frame for 6LoWPAN WSN	X. Wang	2755
A Reinforcement Learning-Based Sleep Scheduling Algorithm for Desired Area Coverage in Solar-Powered Wireless Sensor Networks	H. Chen, X. Li, and F. Zhao	2763
Energy-Efficient Infrastructure Sensor Network for <i>Ad Hoc</i> Cognitive Radio Network	M. Usman, D. Har, and I. Koo	2775
Markov Decision Process-Based Switching Algorithm for Sustainable Rechargeable Wireless Sensor Networks	R. R. Rout, M. S. Krishna, and S. Gupta	2788
