

SENSORDEVICES 2017

The Eighth International Conference on Sensor Device Technologies and Applications

September 10 - 14, 2017

Rome, Italy

SENSORDEVICES 2017 Editors

Winfried Vonau, Kurt-Schwabe-Institut für Mess- und Sensortechnik e.V. Meinsberg, Germany

Paulo E. Cruvinel, Embrapa Instrumentation, Brazil
Irinela Chilibon, National Institute of Research and Development for
Optoelectronics, Romania

Vítor Carvalho, Ph.D., IPCA & Algoritmi Research Centre, Portugal Marios Sophocleous, University of Cyprus - Nicosia, Cyprus

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (4239) by International Academy, Research, and Industry Association (IARIA) Please refer to the Copyright Information page.

Printed by Curran Associates, Inc. (4239)

International Academy, Research, and Industry Association (IARIA) 412 Derby Way Wilmington, DE 19810

Phone: (408) 893-6407 Fax: (408) 527-6351

petre@iaria.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA

Phone: 845-758-0400 Fax: 845-758-2633

Email: curran@proceedings.com Web: www.proceedings.com

Table of Contents

Gas Detection using a Multi-sensor Device with Pump Control and VOC Sensor Sergej Johann, Reinhard Noske, Viktor Feller, and Matthias Bartholmai	1
Discrimination Between Pseudogymnoascus Destructans, Other Dermatophytes of Cave-dwelling Bats, and Related Innocuous Keratinophilic Fungi based on Electronic-nose/GC Signatures of VOC-Metabolites Produced in Culture Alphus Dan Wilson and Lisa Beth Forse	5
FBG/Intensity Based Hybrid Fiber Optic Sensor for Simultaneous Measurement of Strain and Temperature Seong-Yong Jeong, Sang-Jin Choi, and Jae-Kyung Pan	12
Chalcogenide Glass Based Chemosensors Winfried Vonau, Ute Enseleit, Monika Berthold, Claudia Feller, Uwe Partsch, and Stefan Koerner	14
SAW Temperature Sensors with Stable and Robust Electrical Response Versus Environmental Parameters Marianne Sagnard, Thierry Laroche, and Sylvain Ballandras	19
Capillary Sensor with UV-Forced Degradation and Fluorescence Reading of Diesel and Biodiesel Fuel Chemical Stability Michael Borecki, Michael L. Korwin-Pawlowski, Mateusz Geca, and Przemyslaw Prus	25
An Autonomous Time Synchronization Sensor Device Using a Chip Scale Atomic Clock for Earthquake Observation and Structural Health Monitoring <i>Narito Kurata</i>	31
TomoSense: Towards Low Cost Multi-Device Aware Independent Planar Surface Sensing Andrzej Romanowski, Przemyslaw Kucharski, Krzysztof Grudzien, and Laurent Babout	37
Fine-grained Indoor Localization: Visible Light Communication Manuela Vieira, Manuel Augusto Vieira, Paula Louro, Pedro Vieira, and Alessandro Fantoni	41
Cu2O Photosensitive Thin Films for Solar Cell Application Ornulf Nordseth, Bengt Gunnar Svensson, Raj Kumar, Irinela Chilibon, S. E. Foss Foss, Cristina Vasiliu, Raluca Iordanescu, Laurentiu Baschir, Dan Savastru, Laurentiu Fara, Adrian Kiss, and Anca Parau	47
Design of SiNx Optical Sensor Using Polygonal Resonator Structure Jun-Hee Park, Su-Jin Jeon, Ji-Hoon Kim, Eudum Kim, Sun-Ho Kim, Young-Wan Choi, Kwang Ryong Oh, Chil- Min Kim, and Kyung-Jin Choi	53
An Electrochemical Sensor for Environmental Detection Based on Reduced Graphene Oxide Modified Electrodes Chiaying Chen, Yen-Chun Chen, and Yu-Ting Hong	55

Smart Vehicle Lighting System in the Visible Range: Vehicle-to-Vehicle Communication Manuel Augusto Vieira, Manuela Vieira, Pedro Vieira, and Paula Louro	57
Aircraft Detection at Short Distances by GPS FSR System Christo Kabakchiev, Ivan Garvanov, Vera Behar, and Dorina Kabakchieva	63
MyEyes - Automatic Combination System of Clothing Parts for Blind People: Prototype Validation Vitor Carvalho, Daniel Rocha, Joaquim Goncalves, Filipe Azevedo, and Eva Oliveira	68
Development of a Blood Type Analyzer using Computer Vision and Machine Learning Techniques: A Review Ana Ferraz, Vitor Carvalho, and Jose Machado	74
Design and Implementation of a Low Cost System to Determine the Composition of Biogas Antonio Jose Calderon Godoy and Isaias Gonzalez Perez	76
Ultraviolet Photodetectors Fabricated on 4H-SiC Andrzej Kociubinski, Mariusz Duk, Krzysztof Muzyka, and Michal Borecki	78
A Concept for Working Point Determination of Axial Compressors Based on Blade Deflection Measurements with Optical Sensors Rocco Reinhardt, Daniel Lancelle, Olaf Magnor, Olaf Hagendorf, and Peter Duenow	81
Pose Identification and Updating in Autonomous Vehicles Antoni Grau, Yolanda Bolea, and Rodrigo Munguia	87
A Portable Intelligent Bladder Irrigation Device Applied To Long-Term Care Management Center Ming-Huang Chen, Ming-Chien Hung, and Chen-Hsun Weng	93
Self-monitoring the Breath for the Prevention of Cardio-metabolic Risk Danila Germanese, Mario D'Acunto, Massimo Magrini, Marco Righi, and Ovidio Salvetti	96
Estimating Emotion for Each Personality to Prevent School Dropout Emi Takemoto, Yusuke Kajiwara, and Hiromitsu Simakawa	102
Mobile Sensor System AGaMon for Breath Control: Thermo-cyclic Operation and Numerical Signal Analysis of Ternary Gas Mixtures Rolf Seifert, Thorsten Conrad, Jens Peter, and Hubert Keller	109
Multichannel NDIR Methane Sensor for Soil Probes Mariusz Duk, Andrzej Kociubinski, Tomasz Lizak, and Michal Borecki	115
Printed Textile Touchpad Josue Ferri, Jorge Moreno, Gabriel Martinez, Jose Vicente Lidon-Roger, and Eduardo Garcia-Breijo	118

Printed, Microwave-based, Transmission-line Sensor for Investigating the Electromagnetic Behavior of Pure Bacteria Culture and Algae in Water Mohammad Russel, Li Xiaomeng, Qu Meixue, and Thomas Mascow	124
Thick Film Sensors for Soil Measurements Gerardo Espindola Garcia, John Karl Atkinson, and Joel Andrew Smethurst	129