Table of Contents

Gas Detection using a Multi-sensor Device with Pump Control and VOC Sensor 1
Sergej Johann, Reinhard Noske, Viktor Feller, and Matthias Bartholmai

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 5
Alphus Dan Wilson and Lisa Beth Forse

FBG/Intensity Based Hybrid Fiber Optic Sensor for Simultaneous Measurement of Strain and Temperature 12
Seong-Yong Jeong, Sang-Jin Choi, and Jae-Kyung Pan

Chalcogenide Glass Based Chemosensors 14
Winfried Vonau, Ute Enseleit, Monika Berthold, Claudia Feller, Uwe Partsch, and Stefan Koerner

SAW Temperature Sensors with Stable and Robust Electrical Response Versus Environmental Parameters 19
Marianne Sagnard, Thierry Laroche, and Sylvain Ballandras

Capillary Sensor with UV-Forced Degradation and Fluorescence Reading of Diesel and Biodiesel Fuel Chemical Stability 25
Michal Borecki, Michael L. Korwin-Pawlowski, Mateusz Geca, and Przemyslaw Prus

An Autonomous Time Synchronization Sensor Device Using a Chip Scale Atomic Clock for Earthquake Observation and Structural Health Monitoring 31
Narito Kurata

TomoSense: Towards Low Cost Multi-Device Aware Independent Planar Surface Sensing 37
Andrzej Romanowski, Przemyslaw Kucharski, Krzysztof Grudzien, and Laurent Babout

Fine-grained Indoor Localization: Visible Light Communication 41
Manuela Vieira, Manuel Augusto Vieira, Paula Louro, Pedro Vieira, and Alessandro Fantoni

Cu2O Photosensitive Thin Films for Solar Cell Application 47
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

Design of SiNx Optical Sensor Using Polygonal Resonator Structure 53
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

An Electrochemical Sensor for Environmental Detection Based on Reduced Graphene Oxide Modified Electrodes 55
Chiaying Chen, Yen-Chun Chen, and Yu-Ting Hong

Smart Vehicle Lighting System in the Visible Range: Vehicle-to-Vehicle Communication 57
Manuel Augusto Vieira, Manuela Vieira, Pedro Vieira, and Paula Louro

Aircraft Detection at Short Distances by GPS FSR System 63
Christo Kabakchiev, Ivan Garvanov, Vera Behar, and Dorina Kabakchieva

MyEyes - Automatic Combination System of Clothing Parts for Blind People: Prototype Validation 68
Vitor Carvalho, Daniel Rocha, Joaquim Goncalves, Filipe Azevedo, and Eva Oliveira

Development of a Blood Type Analyzer using Computer Vision and Machine Learning Techniques: A Review 74
Ana Ferraz, Vitor Carvalho, and Jose Machado

Design and Implementation of a Low Cost System to Determine the Composition of Biogas 76
Antonio Jose Calderon Godoy and Isaias Gonzalez Perez

Ultraviolet Photodetectors Fabricated on 4H-SiC 78
Andrzej Kociubinski, Mariusz Duk, Krzysztof Muzyka, and Michal Borecki

A Concept for Working Point Determination of Axial Compressors Based on Blade Deflection Measurements with Optical Sensors 81
Rocco Reinhardt, Daniel Lancelle, Olaf Magnor, Olaf Hagendorf, and Peter Duenow

Pose Identification and Updating in Autonomous Vehicles 87
Antoni Grau, Yolanda Bolea, and Rodrigo Munguia

A Portable Intelligent Bladder Irrigation Device Applied To Long-Term Care Management Center 93
Ming-Huang Chen, Ming-Chien Hung, and Chen-Hsun Weng

Self-monitoring the Breath for the Prevention of Cardio-metabolic Risk 96
Danila Germanese, Mario D'Acunto, Massimo Magrini, Marco Righi, and Ovidio Salvetti

Estimating Emotion for Each Personality to Prevent School Dropout 102
Emi Takemoto, Yusuke Kajiwara, and Hiromitsu Simakawa

Mobile Sensor System AGaMon for Breath Control: Thermo-cyclic Operation and Numerical Signal Analysis of Ternary Gas Mixtures 109
Rolf Seifert, Thorsten Conrad, Jens Peter, and Hubert Keller

Multichannel NDIR Methane Sensor for Soil Probes 115
Mariusz Duk, Andrzej Kociubinski, Tomasz Lizak, and Michal Borecki

Printed Textile Touchpad 118
Josue Ferri, Jorge Moreno, Gabriel Martinez, Jose Vicente Lidon-Roger, and Eduardo Garcia-Breijo

Printed, Microwave-based, Transmission-line Sensor for Investigating the Electromagnetic Behavior of Pure Bacteria Culture and Algae in Water 124
Mohammad Russel, Li Xiaomeng, Qu Meixue, and Thomas Mascow

Thick Film Sensors for Soil Measurements 129
Gerardo Espindola Garcia, John Karl Atkinson, and Joel Andrew Smethurst