



SENSORDEVICES 2011

The Second International Conference on Sensor Device Technologies and Applications

WISH 2011

The First International Workshop on Intelligent Sensor Hub

August 21-27, 2011

Nice/Saint Laurent du Var, France

SENSORCOMM 2011 Editors

Sergey Yurish, IFSA - Barcelona, Spain

Thomas Herzog, Fraunhofer Institute for Non-Destructive Testing IZFP - Dresden,
Germany

Henning Heuer, Fraunhofer Institute for Non-Destructive Testing IZFP - Dresden,
Germany

Vítor Carvalho, Minho University, Portugal

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© (2011) by International Academy, Research, and Industry Association (IARIA)
Please refer to the Copyright Information page.

Printed by Curran Associates, Inc. (2012)

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: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

SENSORDEVICES 1: SENSOR DEVICES I

Microcondensation Sensors for Field Tests and for Simulation of Environments in Climate Chambers	1
<i>Thomas Frank, Michael Hintz, Barbara March, Arndt Steinke</i>	
Silver Gate Field Effect Transistor for Oxygen Gas Sensor	5
<i>Keiji Tsukada, Daisuke Kiriake, Kenji Sakai, Toshihiko Kiwa</i>	
Dynamic Calibration of Force Transducers Using Sinusoidal Excitations	8
<i>Christian Schlegel, Gabriela Kiekenap, Bernd Glockner, Rolf Kumme</i>	
Detection of Ice Formation over a Road Surface	14
<i>Amedeo Troiano, Eros Pasero, Luca Mesin</i>	

SENSORDEVICES 2: SENSOR DEVICES II

An Overview Over Yarn Mass Parameterization Methods	18
<i>Vitor Carvalho, Nuno Goncalves, Filomena Soares, Michael Belsley, Rosa Vasconcelos</i>	
Embedded Sensor for Solid-State Hydrogen Storage Devices	25
<i>Denis Marcotte, Frederic Domingue</i>	
Analytical Technique of Spectroscopic Ellipsometry for Studying Protein-Protein Interaction	29
<i>A. Nobok, V. Kriechbaumer, M. K. Mustafa, B. Abell, D. Smith, A. Tsargorodskaya</i>	
Optimized Mini Search Coil Magnetometer Suited To Large Bandwidth Applications	34
<i>M. Timofeeva, G. Allegre, D. Robbes, J. Gasnier, S. Flament</i>	

SENSORDEVICES 3: SENSOR DEVICES SIGNAL

Smart and Intelligent Optoelectronic Sensor Systems: OEM Design Approach	38
<i>Sergey Y. Yurish</i>	
Energy Efficient Embedded Wireless System Used For Localisation In Indoor Environments	44
<i>Nicolas Fourty, Yoann Charlon, Eric Campo</i>	

SENSOR DEVICES 4: SENSORS DOMAIN-ORIENTED DEVICES, TECHNOLOGIES, AND APPLICATIONS

Multimodal Water Content and Nutrient Concentration Sensor for On-Site Soil Monitoring	50
<i>Masato Futagawa, Iqramul Hussain, Keita Kamado, Fumihiko Dasai, Makoto Ishida, Kazuaki Sawada</i>	
Love Wave Sensors Functionalized with Cobalt Corroles or Metalloporphyrines Applied to the Detection of Carbon Monoxide	54
<i>Meddy Vanotti, Virginie Blongeau-Patissier, Sylvain Ballandras, Sylvain Ballandras</i>	
Distributed Chemical Sensor Networks for Environmental Sensing	58
<i>Fiachra Collins, Dylan Orpen, Damien Maher, John Cleary, Cormac Fay, Dermot Diamond</i>	
Potentialities Of $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ Thin Films For Magnetic And Temperature Sensors At Room Temperature	63
<i>Sheng Wu, Dalal Fadil, Shuang Liu, Ammar Aryan, Benoit Renault, Jean-Marc Routoure, Bruno Guillet, Stephane Flament, Pierre Langlois, Laurence Mechin</i>	

SENSORDEVICES 5: SENSOR DEVICE TECHNOLOGIES

MEMS-based Ethanol Sensor Using Zinc Oxide Nanostructured Films	69
<i>Hardik Jeetendra Pandya, Sudhir Chandra, Anoop Lal Vyas</i>	
Towards Flexible Biocompatible Pressure Sensors: Covering Polymeric Films with a Highly Piezoresistive Organic Molecular Metal	75
<i>Elena Laukhina, Vladimir Laukhin, Victor Lebedev, Concepcio Rovira, Jaume Veciana</i>	
Development and Application of Nanoscale Polymeric Platforms for Advanced Protein Sensors	81
<i>Sheng Song, Jong-In Hahn</i>	

A Rapid Modeling and Prototyping Technique for Piezoelectric Energy Harvesting Systems	86
<i>Aldo Romani, Enrico Sangiorgi, Marco Tartagni, Rudi P. Paganelli</i>	

SENSORDEVICES 6: INFRARED

Standard VHDL Modeling and Top-Simulation for the Development of an Integrated Smart-Bolometer	91
<i>M. Denoual, P. Attia</i>	
Real-time Detection of Infrared Radiation by Position-sensitive Superconducting Bolometer	95
<i>Francesco Laviano, Roberto Gerbaldo, Gianluca Ghigo, Laura Gozzelino, Enrica Mezzetti, Luca Mesin, Alberto Rovelli</i>	
PIR Sensor Array for Hand Motion Recognition	99
<i>Piotr Wojtczuk, Alistair Armitage, T. David Binnie, Tim Chamberlain</i>	

SENSORDEVICES 7: PHOTONICS

Group IV Photonic Slot Structures for Highly Efficient Gas Sensing in Mid-IR	103
<i>Vittorio M. N. Passaro, Benedetto Troia, Francesco De Leonardis</i>	
Statistical Analysis of Dark Current in Silicon Photomultipliers	109
<i>Giuseppina Valvo, Alfio Russo, Delfo Sanfilippo, Roberto Pagano, Sebania Libertino, Salvatore Lombardo, Beatrice Carbone, Piergiorgio Fallica</i>	
Nanoparticles with Conductive Polymer as Photosensing Applications	113
<i>Si-Han Zeng, Shin-Hung Tsai, Guo-Dung J. Su</i>	
Effect of the Optical Bias on the a-Si:H Optical Demultiplexer Device	118
<i>Miguel Fernandes, Manuela Vieira, Manuel A. Vieira, Paula Louro</i>	

SENSORDEVICES 8: ULTRASONIC AND PIEZOSENSORS

Acoustic Emission Sensing of Structures	123
<i>Irinela Chilibon, Marian Mogildea, George Mogildea</i>	
Investigations On Aluminum Nitride Thin Film Properties And Design Considerations For Smart High Frequency Ultrasound Sensors	129
<i>Susan Walter, Thomas Herzog, Henning Heuer</i>	
Reactive Pulse Magnetron Sputtering For Deposition Of Piezoelectric AlN Layers	135
<i>D. Glob, H. Bartzsch, M. Gittner, P. Frach, T. Herzog, S. Walter, H. Heuer</i>	
New Ultrasonic Sensor for a Simultaneous Mechanical and Electrical Characterization for the Contact Quality of a Mechanically Loaded Interface	139
<i>Naima Alaoui-Ismaili, Franck Augereau, Gilles Despoux</i>	

SENSORDEVICES 9: MEDICAL DEVICES AND SENSORS APPLICATIONS I

A Microelectrode-Cell Sensor Model for Real Time Monitoring	143
<i>Alberto Yufera, Daniel Canete, Paula Daza</i>	
Cell Chip to Analyze Cell lines and Cell Cycle Stages Based on Electrochemical Method	147
<i>Md. Abdul Kafi, Tae-Hyung Kim, Jeong-Woo Choi</i>	

SENSORDEVICES 10: MEDICAL DEVICES AND SENSORS APPLICATIONS II

Flexible All-organic Highly Tenzo-resistive Bi Layer Films as Weightless Strain and Pressure Sensors for Medical Devices	151
<i>Vladimir Laukhin, Elena Laukhina</i>	
Building a Prototype for a Magnetic Nanoparticle Bead Based Biosensing Device	155
<i>Wen Yaw Chung, Kimberly Jane Uy, Yi Ying Yeh, Ting Ya Yang, Hao Chun Yang, Hsi Wen Li</i>	
An Automatic System for Bilayer Lipid Membrane Formation and Monitoring	160
<i>Michele Rossi, Federico Thei, Marco Tartagni</i>	

WISH: INTELLIGENT SENSOR HUB

Smart Sensor Magnetometer Based Virtual Gyroscope..... 165
Baptiste Delporte, Laurent Perroton, Thierry Grandpierre, Jacques Trichet

Consistency and Distributed Sensor Data Processing..... 171
Laurent-Frederic Ducreux, Suzanne Leseq, Francois Pacull, Stephanie Riche

Author Index