PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 7297

, "Front Matter: Volume 7297," Proc. SPIE 7297, Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies IV, 729701 (27 January 2009); doi: 10.1117/12.823894

SPIE.

Event: Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies IV, 2008, Constanta, Romania

PROCEEDINGS OF SPIE

Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies IV

**Paul Schiopu
Cornel Panait
George Caruntu
Adrian Manea**
Editors

**28–31 August 2008
Constanta, Romania**

Organized by
UPB-CCO—Politehnica University of Bucharest, Optoelectronics Research Center (Romania)
Constanta Maritime University (Romania)
SPIE Romania Chapter (Romania)

Sponsored by
SPIE Romania Chapter (Romania)
Romanian Ministry of Education and Research (Romania)
Electromagnetica Goldstar S.R.L. (Romania)
Nitech S.R.L. (Romania)
Electrica S.A. (Romania)

Published by
SPIE

Volume 7297

Proceedings of SPIE, 0277-786X, v. 7297

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers included in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. The papers published in these proceedings reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from this book:

Author(s), "Title of Paper," in *Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies IV*, edited by Paul Schiopu, Cornel Panait, George Caruntu, Adrian Manea, Proceedings of SPIE Vol. 7297 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 0277-786X

ISBN 9780819475596

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2009, Society of Photo-Optical Instrumentation Engineers

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/09/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc.

The CID number appears on each page of the manuscript. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

xiii	Conference Committees
xvii	Introduction

PLENARY SESSION

7297 02	Coloring effects of a beam traversing a light-scattering medium (Invited Paper) [7297-01] O. V. Angelsky, P. P. Maksimyak, A. P. Maksimyak, A. L. Negrych, Yuriy Fedkovych Chernivtsi National Univ. (Ukraine)
7297 03	New composite materials for optoelectronic applications (Invited Paper) [7297-02] M. S. Iovu, S. A. Buzurniuc, V. I. Verlan, I. P. Culeac, Y. H. Nistor, Institute of Applied Physics (Moldova)
7297 04	Diffraction experiments with the spatial light modulator: the boundary between physical and digital optics (Invited Paper) [7297-03] P. C. Logofatu, A. Sima, D. Apostol, National Institute for Lasers, Plasma and Radiation Physics (Romania)
7297 05	About the new architecture of quantum communication (Invited Paper) [7297-04] N. A. Enaki, Institute of Applied Physics (Moldova)

ADVANCED MATERIALS AND NEW TECHNOLOGIES

7297 06	The dynamics of optical bistability layer crystals [7297-05] C. Yu. Zenkova, Chernivtsi National Univ. (Ukraine)
7297 07	Simulations of dilute nitride quantum well InGaAsN semiconductor lasers [7297-06] A. Drăgulescu, Politehnica Univ. of Bucharest (Romania); A. Laakso, M. Dumitrescu, M. Guină, Tampere Univ. of Technology (Finland)
7297 08	Functionalized self-assembly of gold nanoparticles functionalized with amino acids and aleurone globular protein [7297-07] M. Tomoaia-Cotisel, A. Mocanu, O. Horovitz, Babes-Bolyai Univ. (Romania); E. Indrea, National Institute for Research and Development of Isotopic and Molecular Technologies (Romania); G. Tomoaia, Iuliu Hatieganu Univ. of Medicine and Pharmacy (Romania); I. Bratu, National Institute for Research and Development of Isotopic and Molecular Technologies (Romania)
7297 09	The replacing material for axial washer at the planetary reduction gears for actuators [7297-08] V. Nasui, North Univ. of Baia Mare (Romania)

- 7297 0A **Singularities of the Poynting vector azimuth in heterogeneously polarized vector fields** [7297-09]
I. Mokhun, R. Khrobatin, Ju. Viktorovskaya, Chernivtsi National Univ. (Ukraine)
- 7297 0B **Study of the transitory formation of α_1 bainite, as a precursor of α -phase in tempered SMAs** [7297-10]
L. G. Bujoreanu, S. Stanciu, P. Bârsănescu, N. M. Lohan, Gh. Asachi Technical Univ. of Iași (Romania)
- 7297 0C **A structural-morphological study of a $\text{Cu}_{63}\text{Al}_{26}\text{Mn}_{11}$ shape memory alloy** [7297-11]
S. Stanciu, L. G. Bujoreanu, I. Ioniță, Gh. Asachi Technical Univ. of Iași (Romania);
A. V. Sandu, Romanian Inventors Forum (Romania); A. Enache, Gh. Asachi Technical Univ. of Iași (Romania)
- 7297 0D **Flat lens made of metamaterials** [7297-12]
G. Gavriloaia, Univ. of Pitesti (Romania); T. S. cel Mare, Military Technical Academy (Romania); R. Fumarel, Oncologic Institute of Bucharest (Romania)
- 7297 0E **Jitter measurements in a 1550 nm mode-locked laser** [7297-13]
A. Drăgulescu, Politehnica Univ. of Bucharest (Romania); R. Herda, M. Guină, Tampere Univ. of Technology (Finland)
- 7297 0F **Simulations of 462 nm InGaN quantum well semiconductor lasers** [7297-14]
A. Drăgulescu, Politehnica Univ. of Bucharest (Romania); A. Laakso, M. Dumitrescu, M. Guină, Tampere Univ. of Technology (Finland)
- 7297 0G **Hydrotalcite-like anionic clays substituted with iron / laccase, composites for biosensors applications** [7297-15]
G. Carja, G. Ciobanu, G. Apostolescu, S. Dranca, N. Apostolescu, Gh. Asachi Technical Univ. of Iași (Romania)
- 7297 0H **Advanced new materials with various applications** [7297-16]
F. Radu-Claudiu, I. Rodica-Mariana, D. Irina, National Institute for Research and Development for Chemistry and Petrochemistry (Romania) and Valahia Univ. (Romania)
- 7297 0I **The physicochemical properties of polyurethane membranes determined by swelling measurements** [7297-17]
G. Ciobanu, G. Carja, G. Apostolescu, N. Apostolescu, Gh. Asachi Technical Univ. of Iași (Romania)
- 7297 0J **Pin-in-paste DFM constraints in vapor phase soldering technology for optoelectronic components** [7297-18]
I. Plotog, Politehnica Univ. of Bucharest (Romania); G. Varzaru, C. Turcu, Intrarom S.A. (Romania); T. C. Cucu, P. Svasta, A. Vasile, Politehnica Univ. of Bucharest (Romania)
- 7297 0K **Atomic absorption spectrophotometry for the analysis of metal contents in tobacco samples** [7297-19]
O. Iancu, P. Schiopu, I. Cristea, V. Voinea, N. Grosu, A. Craciun, Politehnica Univ. of Bucharest (Romania)

- 7297 OL **The activation energy and kinetic of the nanocrystallization process of $\text{Al}_{85}\text{Ni}_9\text{Nd}_4\text{Co}_2$ amorphous alloy** [7297-20]
V. A. Serban, C. Codrean, C. Opris, D. Utu, M. Lita, Politehnica Univ. of Timisoara (Romania)
- 7297 OM **Preparation of titanium dioxide films by sol-gel route for gas sensors** [7297-21]
V. Schiopu, A. Matei, I. Cernica, C. Podaru, National Institute for Research and Development in Microtechnologies (Romania)
- 7297 ON **Load capacitance effect on frequency-temperature characteristics of AT-cut quartz crystals** [7297-22]
A. Anghelescu, Rom-Quartz (Romania)
- 7297 OO **Preparation and characterization of TiO_2 -polymer composite films** [7297-23]
A. Matei, I. Cernica, V. Schiopu, National Institute for Research and Development in Microtechnologies (Romania)
- 7297 OP **New actuation systems based on shape memory alloys** [7297-24]
D. Măndru, I. Lungu, S. Noveanu, O. Tătar, Technical Univ. of Cluj-Napoca (Romania)
- 7297 OQ **Synthesis and characterization of photochromic polymeric materials** [7297-25]
I. Ioniță, Univ. Valahia din Târgoviște (Romania); A.-M. Albu, Politehnica Univ. of Bucharest (Romania) and Ctr. for Organic Chemistry (Romania); C. T. Mihăilă, Politehnica Univ. of Bucharest (Romania); C. Rădulescu, E. I. Moater, Univ. Valahia din Târgoviște (Romania)
- 7297 OR **Material removal by the electrical microdischarges** [7297-26]
L. Slătineanu, M. Coteață, O. Dodun, D. Anton, A. Iosub, Gh. Asachi Technical Univ. of Iași (Romania)
- 7297 OS **New coordination compounds of Cr(III) used in leather tanning** [7297-27]
M. Crudu, Bucuresti Sucursala Institutul de Cercetare Pielarie (Romania); D. Sibiescu, I. Rosca, D. Sutiman, M. Vizitiu, G. Apostolescu, Gh. Asachi Technical Univ. of Iași (Romania)
- 7297 OT **Studies of obtaining and stability in aqueous medium of new complex compounds of Ti(IV) and Zr(IV) used in ecological leather tanning** [7297-28]
M. Crudu, Bucuresti Sucursala Institutul de Cercetare Pielarie (Romania); D. Sibiescu, I. Rosca, D. Sutiman, M. Vizitiu, Gh. Asachi Technical Univ. of Iași (Romania)
- 7297 OU **Electrochemical atomic force microscopy in supporting the control of diffusion process** [7297-29]
M. Mîndroiu, I. Demetrescu, Politehnica Univ. of Bucharest (Romania)
- 7297 OV **Influence of the light irradiation on optical characteristics of $\text{As}_2(\text{S}_x\text{Se}_{1-x})_3$ thin films obtained from chemical solutions** [7297-30]
M. S. Iovu, S. A. Buzurniuc, V. I. Verlan, A. Prisacari, L. Malahov, Institute of Applied Physics (Moldova)
- 7297 OW **The kinetic of the two-photon lasing with one and two quanta cavity losses** [7297-32]
N. Enaki, M. Țurcan, Institute of Applied Physics (Moldova)

- 7297 0X **New hot wire anemometer with alternate current and synchronic detection** [7297-33]
M. Stoian, Constanta Maritime Univ. (Romania); A. Rachek, M. Chirtoc, Reims Univ. Champagne-Ardenne (France)
- 7297 0Y **Nanostructured systems which exhibit a fairly large magnetoresistance near room temperature** [7297-34]
C. Doroftei, A.I. Cuza Univ. (Romania); E. Rezlescu, N. Rezlescu, P. D. Popa, National Institute of Research and Development for Technical Physics (Romania)
- 7297 0Z **Expert system for molded polymeric material** [7297-35]
A. Nita, Constanta Maritime Univ. (Romania)
- 7297 10 **Interference of cooperative resonant fluorescence from two distant systems of atoms** [7297-36]
E. Galeamov, N. Enaki, Institute of Applied Physics (Moldova)
- 7297 11 **Optical absorption and photoconductivity of $\text{As}_2\text{Se}_3\text{:Sn}$ and $\text{Sb}_2\text{Se}_3\text{:Sn}$ thin film structures** [7297-37]
M. A. Iovu, M. S. Iovu, I. A. Vasiliev, D. V. Harea, I. A. Cojocaru, E. P. Colomeico, Institute of Applied Physics (Moldova); O. I. Shpotyuk, Scientific Research Co. Carat (Ukraine)
- 7297 12 **Restoration of the scalar field on the base of the analysis of stationary points network** [7297-38]
Yu. Galushko, I. Mokhun, Chernivtsy National Univ. (Ukraine)

DIFFRACTIVE, MICRO OPTICS AND OPTICAL SIGNAL PROCESSING

- 7297 13 **Human body thermal images generated by conduction or radiation heat** [7297-39]
G. Gavriloaia, E. Sofron, Univ. of Pitesti (Romania); R. Fumarel, Oncologic Institute of Bucharest (Romania)
- 7297 14 **On polarization manifestations of correlation (intrinsic coherence) of optical fields** [7297-40]
O. V. Angelsky, S. B. Yermolenko, C. Yu. Zenkova, A. O. Angelskaya, Chernivtsi National Univ. (Ukraine)
- 7297 15 **Conversion from a spectral image to HDR image** [7297-41]
T. Florin, National Institute for Research and Development of Isotopic and Molecular Technologies (Romania)
- 7297 16 **Color processing in a digital camera pipeline** [7297-42]
T. Florin, National Institute for Research and Development of Isotopic and Molecular Technologies (Romania)
- 7297 17 **Photoluminescence properties of CdS/PVA nanocomposite thin films** [7297-43]
I. Caraman, Bacau Univ. (Romania); S. Robu, P. Gaşin, Moldova State Univ. (Moldova); I. Lazar, G. Lazar, M. Stamate, Bacau Univ. (Romania)
- 7297 18 **IntelliWave interferometric analysis software in laser interferometry laboratory** [7297-44]
B. Ionita, M. Rosu, D. Apostol, A. Sima, V. Damian, National Institute for Laser Plasma and Radiation Physics (Romania); I. Cristea, Politehnica Univ. of Bucharest (Romania)

- 7297 19 **Simulation of the optical part of an image capture system** [7297-45]
T. Florin, National Institute for Research and Development of Isotopic and Molecular Technologies (Romania)
- 7297 1A **Combinational logical circuits into ternary logic** [7297-46]
V. Degeratu, Ș. Degeratu, O2Micro Romania (Romania) and Politehnica Univ. of Bucharest (Romania); P. Șchiopu, C. Șchiopu, Politehnica Univ. of Bucharest (Romania)
- 7297 1B **Nano- β -tricalcium phosphate/collagen materials with improved biostability for bone replacement applications** [7297-47]
O. Craciunescu, National Institute for Biological Sciences (Romania); C. Tardei, ICPE SA (Romania); L. Moldovan, National Institute for Biological Sciences (Romania)
- 7297 1C **Experimental study aiming to establish specific characteristics of stationary optical processes** [7297-48]
C. Gruescu, Politehnica Univ. Timisoara (Romania); C. Dumache, S.C. Optica Timisoara (Romania); I. Nicoara, Politehnica Univ. Timisoara (Romania); E. Tonea, Univ. of Agricultural Sciences Banatul Timisoara (Romania)
- 7297 1D **Binary neuron with optical devices** [7297-49]
V. Degeratu, Ș. Degeratu, O2Micro Romania (Romania) and Politehnica Univ. of Bucharest (Romania); P. Șchiopu, C. Șchiopu, Politehnica Univ. of Bucharest (Romania)
- 7297 1E **Modelling of the Bragg gratings fabricated on Er^{3+} -doped Ti:LiNbO_3 optical waveguides** [7297-50]
L. A. Puscas, E. M. Rotar, Institute for Electrotechnics (Romania); R. Galatus, Univ. Tehnica Cluj-Napoca (Romania); N. N. Puscas, Politehnica Univ. of Bucharest (Romania)
- 7297 1F **Surface structure of CdS layer at the interface of CdS-SnO₂ junction and the diagram of surface states** [7297-51]
I. Caraman, I. Lazar, M. Caraman, D. Rusu, Univ. din Bacau (Romania)
- 7297 1G **Nano-metrology of macro-systems** [7297-52]
F. Garoi, D. Apostol, National Institute for Laser, Plasma and Radiation Physics (Romania); P. Schiopu, Univ. Politehnica Bucuresti (Romania); P. C. Logofatu, V. Damian, National Institute for Laser, Plasma and Radiation Physics (Romania)
- 7297 1H **White light interferometry applications in nanometrology** [7297-53]
V. Damian, M. Bojan, Institutul National Institute for Laser, Plasma and Radiation Physics (Romania); P. Schiopu, Politehnica Univ. of Bucharest (Romania); I. Iordache, B. Ionita, D. Apostol, National Institute for Laser, Plasma and Radiation Physics (Romania)
- 7297 1I **High accuracy length measuring set up for optical encoder calibration** [7297-54]
I. Iordache, National Institute for Laser, Plasma and Radiation Physics (Romania); O. Iancu, P. Schiopu, Politehnica Univ. of Bucharest (Romania); D. Apostol, National Institute for Laser, Plasma and Radiation Physics (Romania)
- 7297 1J **Quasi-periodic structure analysis by digital holography** [7297-55]
M. Mihailescu, A. Preda, Politehnica Univ. of Bucharest (Romania); A. Sobetkii, S.C. Opticoat SRL (Romania); E. Scarlat, L. Preda, Politehnica Univ. of Bucharest (Romania)

- 7297 1K **Wideband array processing with constant beam pattern beyond the spatial sampling limit** [7297-56]
A. Shapoury, Physical Optics Corp. (United States); E. Serpedin, Texas A&M Univ. (United States)

NANOSCIENCE/NANOENGINEERING AND NANOTECHNOLOGIES

- 7297 1L **Nanopolishing: parameters and techniques** [7297-57]
A. O. I. Trufasu, Politehnica Univ. of Bucharest (Romania); V. Maduta, S. ProOptica S.A. (Romania); C. L. Trufasu, Edmond Nicolau College (Romania)
- 7297 1M **Guided and leaky modes in hexagon-type silicon-on-insulator slabs** [7297-58]
C. G. Bostan, P. Schiopu, O. Mita, Politehnica Univ. of Bucharest (Romania)
- 7297 1N **Heat transfer in minichannels and microchannels CPU cooling systems** [7297-59]
I. C. Mihai, Stefan cel Mare Univ. (Romania)
- 7297 1O **Experimental measuring of solitonic pulse stability for different configurations of the ring** [7297-60]
I. R. Schiopu, Politehnica Univ. of Bucharest (Romania) and Chalmers Univ. of Technology (Sweden); M. Karlsson, M. Westlund, Chalmers Univ. of Technology (Sweden); C. Schiopu, Politehnica Univ. of Bucharest (Romania)
- 7297 1P **Braided artificial muscles: modeling and experimental validation** [7297-61]
L. Dragan, H. Cioban, Univ. de Nord Baia Mare (Romania)
- 7297 1Q **Nanostructure of ion channels** [7297-62]
M. Latu, Gh. Asachi Technical Univ. of Iași (Romania)
- 7297 1R **On the nonlocal simulation of nanoindentation problems** [7297-63]
V. Chiroiu, L. Munteanu, D. Dumitriu, Institute of Solid Mechanics of Romanian Academy (Romania); P. P. Teodorescu, Univ. of Bucharest (Romania)
- 7297 1S **Shallow acceptors in a quantum well under intense laser fields** [7297-64]
A. Radu, E. C. Niculescu, L. M. Burileanu, Politehnica Univ. of Bucharest (Romania)
- 7297 1T **Mössbauer backscattering measurements on Sn** [7297-65]
I. Bibicu, Institute for Materials Physics (Romania); G. Nicolescu, Horia Hulubei National Institute of Physics and Nuclear Engineering (Romania); C. Cretu, Transilvania Univ. (Romania)
- 7297 1U **Effects of laser field on the energy spectra in GaAs parabolic quantum wells** [7297-66]
L. M. Burileanu, E. C. Niculescu, A. Radu, Politehnica Univ. of Bucharest (Romania)
- 7297 1V **A two paths mode-locked fiber laser** [7297-67]
I. R. Schiopu, Politehnica Univ. of Bucharest (Romania) and Chalmers Univ. of Technology (Sweden); M. Karlsson, M. Westlund, Chalmers Univ. of Technology (Sweden); C. Schiopu, Politehnica Univ. of Bucharest (Romania)

- 7297 1W **The modern instrumentation used for monitoring and controlling the main parameters of the regenerative electro-mechano-hydraulic drive systems** [7297-68]
C. Cristescu, P. Drumea, P. Krevey, National Institute of Research & Development for Optoelectronics (Romania)
- 7297 1X **On-line interactive virtual experiments on nanoscience** [7297-69]
M. Kadar, I. Ileana, C. Hutanu, 1 Decembrie 1918 Univ. (Romania)
- 7297 1Y **Development methods using nanorobotics and fractal geometry** [7297-71]
G. T. Raicu, P. C. Arsenie, Constanta Maritime Univ. (Romania)
- 7297 1Z **Advanced concepts in nanomanipulations** [7297-72]
G. T. Raicu, C. I. Stanca, Constanta Maritime Univ. (Romania)

INSTRUMENTS, SENSORS, AND MICROSYSTEMS

- 7297 20 **A new approach to RF MEMS shunt switch modeling from K-band up to W-band** [7297-73]
V. Puyal, D. Dragomirescu, R. Plana, Toulouse Univ. (France)
- 7297 21 **Dual mode 1.25–2.5 Gb/s CMOS limiting amplifier circuit for optical receivers** [7297-74]
C. M. Albina, GME mbH (Germany)
- 7297 22 **Microwave power divider based on metamaterials** [7297-75]
G. Gavriloaia, Univ. of Pitesti (Romania); A. Voiculescu, Military Technical Academy (Romania); R. Fumarel, Oncologic Institute of Bucharest (Romania)
- 7297 23 **Photonic metallic nanostructures in photodynamic therapy** [7297-76]
R.-M. Ion, R. C. Fierascu, I. Dumitriu, Institutul National de Cercetare (Romania) and Valahia Univ. (Romania)
- 7297 24 **Developing a miniaturized continuous flow electrochemical cell for biosensor applications** [7297-77]
M. Ilie, Consiglio Nazionale delle Ricerche (Italy) and Politehnica Univ. of Bucharest (Romania); E. Ovreiu, Politehnica Univ. of Bucharest (Romania); R. Dejana, V. Foglietti, Consiglio Nazionale delle Ricerche (Italy); L. Nardi, A. Masci, B. Lanza, L. Della Seta, M.-R. Montereali, W. Vastarella, R. Pilloton, ENEA (Italy)
- 7297 25 **Implementation of a high resolution velocity sensor using an optical quadrature shaft encoder for electromechanical linear actuators** [7297-78]
V. Nasui, A. Buchman, Univ. de Nord Baia Mare (Romania)
- 7297 26 **Clock offset estimation in wireless sensor networks using robust M-estimation** [7297-79]
J. Lee, J. Kim, K. Qaraqe, E. Serpedin, Texas A&M Univ. (United States)
- 7297 27 **Wireless sensor network for remote monitoring of parameters in distribution points of district utilities for heat and water** [7297-80]
A. Drumea, Politehnica Univ. of Bucharest (Romania); I. Ilie, Institute for Hydraulics and Pneumatics (Romania); A. Vasile, P. Svasta, A. Tapu, Politehnica Univ. of Bucharest (Romania)

- 7297 28 **Hardware simulator of a tin dioxide sensor array for urban pollution monitoring** [7297-81]
F. Caldararu, Ecosen Ltd. (Romania); A. Vasile, Politehnica Univ. of Bucharest (Romania); S. Caldararu, National Agency for Dangerous Substances (Romania)
- 7297 29 **Nanodetection of the disinfection by-products on GC-MS techniques** [7297-82]
D. Ristoiu, M. Haydee, Babes-Bolyai Univ. (Romania); T. Ristoiu, Technical Univ. of Cluj-Napoca (Romania)
- 7297 2A **Smart data acquisition system for utilities metering** [7297-83]
I. Ileana, M. Risteiu, A. Tulbure, M. Rusu, 1 Decembrie 1918 Univ. (Romania)
- 7297 2B **The Fuzzy System Classifier using an intelligent mattress** [7297-84]
M. Hnatiuc, G. Caruntu, Constanta Maritime Univ. (Romania); V. Sarbu, Ovidius Univ. of Constantza (Romania)
- 7297 2C **Coupling devices for smart transducers with optical fiber link used in automotive industry** [7297-85]
A. Vasile, Politehnica Univ. of Bucharest (Romania); I. Vasile, Romtelecom (Romania); F. Caldararu, Ecosen Ltd. (Romania); P. Schiopu, A. Drumea, A. Tapu, Politehnica Univ. of Bucharest (Romania)
- 7297 2D **Experimental research upon accommodating the functional parameters of a laser controlled system designed for a grading machinery with the actual operating conditions of the grading machinery** [7297-86]
T. C. Popescu, M. Blejan, G. Sovăială, National Institute of Research & Development for Optoelectronics (Romania)
- 7297 2E **Signal conditioner for LVDT displacement sensors** [7297-87]
M. Blejan, I. Ilie, M. Comes, B. Lupu, National Institute of Research & Development for Optoelectronics (Romania)
- 7297 2F **Mechatronic module for monitoring the hydraulic parameters of the industrial production equipments** [7297-88]
M. Blejan, P. Drumea, National Institute of Research & Development for Optoelectronics (Romania); A. Mirea, SC ROMFLUID SA (Romania); I. Ilie, National Institute of Research & Development for Optoelectronics (Romania)
- 7297 2G **Recent developments in surface acoustic wave sensors** [7297-89]
P. Schiopu, I. Cristea, N. Grosu, A. Craciun, Politehnica Univ. of Bucharest (Romania)
- 7297 2H **A method for reliability estimation of heterogeneous systems** [7297-90]
A. Mihalache, Univ. d'Angers (France) and Politehnica Univ. of Bucharest (Romania); F. Guerin, M. Barreau, A. Todskoff, Univ. d'Angers (France); I. Bacivarov, A. Bacivarov, Politehnica Univ. of Bucharest (Romania)
- 7297 2I **Magnetic/temperature sensors and their electrical transport properties** [7297-91]
D. Luca, Gh. Asachi Technical Univ. of Iasi (Romania); M. L. Craus, National Institute of Research & Development for Technical Physics (Romania) and Joint Institute of Nuclear Research (Russian Federation); C. Mita, N. Cornei, Al. I. Cuza Univ. (Romania); M. Lozovan, National Institute of Research & Development for Technical Physics (Romania); G. Paicu, Gh. Asachi Technical Univ. of Iasi (Romania)

- 7297 2J **The $\text{La}_{0.54}\text{Sm}_{0.11}\text{Ca}_{0.35}\text{MnO}_3$ perovskites doped with Cu for the sensor** [7297-92]
D. Luca, Gh. Asachi Technical Univ. of Iași (Romania); M. L. Craus, National Institute of Research and Development for Technical Physics (Romania) and Joint Institute of Nuclear Research (Russian Federation); N. Cornei, Al.I. Cuza Univ. (Romania); C. Foscau, Gh. Asachi Technical Univ. of Iași (Romania); C. Mița, Al.I. Cuza Univ. (Romania); M. Lozovan, National Institute of Research and Development for Technical Physics (Romania)
- 7297 2K **Simulation by FEM of sheet metal electromagnetic forming processes** [7297-93]
D. Luca, Gh. Asachi Technical Univ. of Iași (Romania)
- 7297 2L **Quality assurance and management in microelectronics companies: ISO 9000 versus Six Sigma** [7297-94]
R. Lupan, Univ. d'Angers (France) and Politehnica Univ. of Bucharest (Romania); A. Kobi, C. Robledo, Univ. d'Angers (France); I. Bacivarov, A. Bacivarov, Politehnica Univ. of Bucharest (Romania)
- 7297 2M **The optimization of bipolar magnetotransistor structures** [7297-95]
M. Hnatiuc, G. Cărunțu, Constanta Maritime Univ. (Romania)
- 7297 2N **The offset equivalent magnetic induction for Hall microsensors** [7297-96]
G. Cărunțu, C. Panait, Constanta Maritime Univ. (Romania)
- 7297 2O **On the stability of MOS Hall devices** [7297-97]
G. Cărunțu, C. Panait, Constanta Maritime Univ. (Romania)
- 7297 2P **The noise main characteristic for magnetic microsensors structures** [7297-98]
C. Panait, Constanta Maritime Univ. (Romania); V. Sârbu, Univ. Ovidius Constanta (Romania); G. Cărunțu, Constanta Maritime Univ. (Romania)
- 7297 2Q **Two basic types unipolar and bipolar for stepper motor driving** [7297-99]
C. V. Vali, Constanta Maritime Univ. (Romania)
- 7297 2R **Measuring of a fuel injector in a supersonic air stream** [7297-100]
L. Stan, Constanta Maritime Univ. (Romania); I. Calimanescu, Kalion Consulting (Romania); N. Buzbuchi, Constanta Maritime Univ. (Romania)
- 7297 2S **Testing of a fuel injector in a supersonic air stream** [7297-101]
L. Stan, Constanta Maritime Univ. (Romania); I. Calimanescu, Kalion Consulting (Romania); N. Buzbuchi, Constanta Maritime Univ. (Romania)
- 7297 2T **The MBOC modulation** [7297-102]
C. I. Stanca, R. G. Bejan, A. E. E. Varsami, G. R. T. Sivriu, Constanta Maritime Univ. (Romania)
- 7297 2U **Recovery energy from ship propulsion system based on microelectronic technology** [7297-103]
F. Iordanoaia, Constanta Maritime Univ. (Romania); M. Nicorescu, Daewoo Mangalia (Romania)

Author Index

Conference Committees

Conference General Manager

Ionica Cristea, Politehnica University of Bucharest, Optoelectronic Research Center (Romania)

Conference Chairs

Paul Schiopu, Politehnica University of Bucharest, Optoelectronic Research Center (Romania)

Cornel Panait, Constanta Maritime University (Romania)

George Caruntu, Constanta Maritime University (Romania)

Adrian Manea, Politehnica University of Bucharest, Optoelectronic Research Center (Romania)

Scientific and Program Committee

Oleg Angelsky, National University of Chernovtsy (Ukraine)

Dan Apostol, National Institute for Laser, Plasma and Radiation Physics (Romania)

Henri Arsenault, Laval Université (Canada)

Ileana Cernica, National Institute for R&D in Microtechnologies IMT (Romania)

Dan Cojoc, Politehnica University of Bucharest (Romania)

Dana Cristea, National Institute for R&D in Microtechnologies IMT (Romania)

Eugene Curatu, Alcon Laboratories (United States)

Vasile Dorogan, Technical University of Moldova (Moldova)

Erchin Serpedin, Texas A&M University (United States)

Daniela Reyna, LAAS-CNRS INSA (France)

Philippe Arguel, LAAS-CNRS INSA (France)

Tiberiu Tudor, University of Bucharest (Romania)

Cornel Panait, Maritime University of Constanta (Romania)

Alexandru Stancu, Alexandru Ioan Cuza University (Romania)

Ciupina Victor, Ovidius University (Romania)

Vasile Sârbu, Ovidius University (Romania)

Marin Dragulinescu, Politehnica University of Bucharest (Romania)

Carlos Ferreira, University of Valencia (Spain)

Constantin Grigoriu, National Institute of Laser, Plasma and Radiation Physics (Romania)

Ioan Ileana, University of Alba-Iulia (Romania)

Vasile Dorogan, Technical University of Moldova (Moldova)

Mihaela Cezarina Hîncu, Ovidius University (Romania)
Rodica Mehedinti, Ovidius University (Romania)
Mihai Iovu, Technical University of Moldova (Moldova)
Alexandru Lupascu, Politehnica University of Bucharest (Romania)
Adrian Manea, Politehnica University of Bucharest (Romania)
Neculai Grosu, Politehnica University of Bucharest (Romania)
Ion M. Popescu, Politehnica University of Bucharest (Romania)
Nicolae Puscas, Politehnica University of Bucharest (Romania)
Adrian Rusu, Politehnica University of Bucharest (Romania)
Paul Schiopu, Politehnica University of Bucharest (Romania)
George Stanciu, Politehnica University of Bucharest (Romania)

Local Organizing Committee

Violeta Ciucur, Constanta Maritime University (Romania)
Alina Tudor, Constanta Maritime University (Romania)
Mihaela Hnatiuc, Constanta Maritime University (Romania)
Marilena Dan, Politehnica University of Bucharest (Romania)
Madalina Dragan, Constanta Maritime University (Romania)
Alexandru Vasile, Politehnica University of Bucharest (Romania)
Elena Zburlea, Constanta Maritime University (Romania)
Alexandra Nita, Constanta Maritime University (Romania)

Session Chairs

Advanced Materials and New Technologies
Erchin Serpedin, Texas A&M University (United States)
C. Yu. Zenkova, Chernivtsi National University (Ukraine)
Adrian Manea, Politehnica University of Bucharest (Romania)
Nicolae Puscas, Politehnica University of Bucharest (Romania)

Diffractive, Micro Optics and Optical Signal Processing
Oleg V. Angelsky, Chernivtsi National University (Ukraine)
Mihai S. Iovu, Center of Optoelectronics (Moldova)
Dan Apostol, National Institute for Lasers, Plasma and Radiation
 Physics (Romania)
Ion Ileana, 1 Decembrie 1918 University of Alba Iulia (Romania)

Nanoscience/Nanoengineering and Nanotechnologies
Igor Mokhun, Chernivtsi National University (Ukraine)
George Caruntu, Constanta Maritime University (Romania)
Paul Schiopu, Politehnica University of Bucharest, Optoelectronic
 Research Center (Romania)
Neculai Grosu, Politehnica University of Bucharest (Romania)

Instruments, Sensors, and Microsystems

Cornel Panait, Constanta Maritime University (Romania)

Gheorghe Gavriloaia, University of Pitesti (Romania)

Emil Sofron, University of Pitesti (Romania)

Mihaela Hnatiuc, Constanta Maritime University (Romania)

Introduction

The Conference Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies IV, ATOM-N 2008 is hosted in Constanta, one of the most important academic, cultural, and industrial centres in Romania, is located in the historical region of Dobrogea. This year's conference sessions will mark eight years of Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies existence, during which it has permanently gathered the youth spirit, as well as the experience of the most appreciated scientists in the field of micro and nanotechnology in optoelectronics: a domain that has been instrumental in scientific applications worldwide.

Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies, ATOM-N 2008 has gathered a high number of papers. We have received over 140 abstracts from all over Europe and the United States. Due to the efforts of the Scientific and Program Committee, 104 papers by authors from 10 countries were selected for presentation: 4 invited lectures, 30 oral lectures, and 70 poster papers. We would like to express our thanks to the Organizing Committee for their enthusiastic and efficient work. We would like to extend our warmest thanks to all authors that attended the conference to present their scientific work.

In the name of the organizers, we are pleased to welcome you at the fourth edition of the Conference Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies, held at Maritime University. We wish to all the participants to this prestigious meeting, to have both an interesting professional experience as well as moments of relaxation, while discovering the multicultural aspects of the academic city of Constanta. We would like to thanks to the organizations that offered us assistance and support to organize the conference:

- Ministry of Education and Research, Bucharest (Romania)
- Electromagnetica-GoldStar, Bucharest (Romania)
- Nitech S.R.L., Bucharest (Romania)
- Electrica S.A., Bucharest (Romania)

Thanks also to Faculty of Electronics, Communications and Information Technology, for support, to all the staff of the Optoelectronics Research Center, and to Constanta Maritime University.

**Paul Schiopu
Cornel Panait
George Caruntu
Adrian Manea**