

ISSN 1726-5479

SENSORS & TRANSDUCERS

vol. 100
1 /09

vol.
100



Sensor Instrumentation, DAQ and Virtual Instruments

International Frequency Sensor Association Publishing





Sensors & Transducers

Volume 100
January 2009

www.sensorsportal.com

ISSN 1726-5479

Editor-in-Chief: professor Sergey Y. Yurish, phone: +34 696067716, fax: +34 93 4011989, e-mail: editor@sensorsportal.com

Editors for Western Europe

Meijer, Gerard C.M., Delft University of Technology, The Netherlands
Ferrari, Vittorio, Università di Brescia, Italy

Editors for North America

Datskos, Panos G., Oak Ridge National Laboratory, USA
Fabien, J. Josse, Marquette University, USA
Katz, Evgeny, Clarkson University, USA

Editor South America

Costa-Felix, Rodrigo, Inmetro, Brazil

Editor for Eastern Europe

Sachenko, Anatoly, Ternopil State Economic University, Ukraine

Editor for Asia

Ohyama, Shinji, Tokyo Institute of Technology, Japan

Editorial Advisory Board

- Abdul Rahim, Ruzairi**, Universiti Teknologi, Malaysia
Ahmad, Mohd Noor, Nothern University of Engineering, Malaysia
Annamalai, Karthigeyan, National Institute of Advanced Industrial Science and Technology, Japan
Arcega, Francisco, University of Zaragoza, Spain
Arguel, Philippe, CNRS, France
Ahn, Jae-Pyoung, Korea Institute of Science and Technology, Korea
Arndt, Michael, Robert Bosch GmbH, Germany
Ascoli, Giorgio, George Mason University, USA
Atalay, Selcuk, Inonu University, Turkey
Atghiaee, Ahmad, University of Tehran, Iran
Augutis, Vyngantas, Kaunas University of Technology, Lithuania
Avachit, Patil Lalchand, North Maharashtra University, India
Ayesh, Aladdin, De Montfort University, UK
Bahreyni, Behraad, University of Manitoba, Canada
Baoxian, Ye, Zhengzhou University, China
Barford, Lee, Agilent Laboratories, USA
Barlingay, Ravindra, RF Arrays Systems, India
Basu, Sukumar, Jadavpur University, India
Beck, Stephen, University of Sheffield, UK
Ben Bouzid, Sihem, Institut National de Recherche Scientifique, Tunisia
Benachaiba, Chellali, Universitaire de Bechar, Algeria
Binnie, T. David, Napier University, UK
Bischoff, Gerlinde, Inst. Analytical Chemistry, Germany
Bodas, Dhananjay, IMTEK, Germany
Borges Carval, Nuno, Universidade de Aveiro, Portugal
Bousbia-Salah, Mounir, University of Annaba, Algeria
Bouvet, Marcel, CNRS – UPMC, France
Brudzewski, Kazimierz, Warsaw University of Technology, Poland
Cai, Chenxin, Nanjing Normal University, China
Cai, Qingyun, Hunan University, China
Campanella, Luigi, University La Sapienza, Italy
Carvalho, Vitor, Minho University, Portugal
Cecelja, Franjo, Brunel University, London, UK
Cerda Belmonte, Judith, Imperial College London, UK
Chakrabarty, Chandan Kumar, Universiti Tenaga Nasional, Malaysia
Chakravorty, Dipankar, Association for the Cultivation of Science, India
Changhai, Ru, Harbin Engineering University, China
Chaudhari, Gajanan, Shri Shivaji Science College, India
Chen, Jiming, Zhejiang University, China
Chen, Rongshun, National Tsing Hua University, Taiwan
Cheng, Kuo-Sheng, National Cheng Kung University, Taiwan
Chiang, Jeffrey (Cheng-Ta), Industrial Technol. Research Institute, Taiwan
Chiriac, Horia, National Institute of Research and Development, Romania
Chowdhuri, Arijit, University of Delhi, India
Chung, Wen-Yaw, Chung Yuan Christian University, Taiwan
Corres, Jesus, Universidad Publica de Navarra, Spain
Cortes, Camilo A., Universidad Nacional de Colombia, Colombia
Courtois, Christian, Universite de Valenciennes, France
Cusano, Andrea, University of Sannio, Italy
D'Amico, Arnaldo, Università di Tor Vergata, Italy
De Stefano, Luca, Institute for Microelectronics and Microsystem, Italy
Deshmukh, Kiran, Shri Shivaji Mahavidyalaya, Barshi, India
Dickert, Franz L., Vienna University, Austria
Dieguez, Angel, University of Barcelona, Spain
Dimitropoulos, Panos, University of Thessaly, Greece
Ding Jian, Ning, Jianguo University, China
Djordjevich, Alexander, City University of Hong Kong, Hong Kong
Ko, Sang Choon, Electronics and Telecommunications Research Institute, Korea
Donato, Nicola, University of Messina, Italy
Donato, Patricio, Universidad de Mar del Plata, Argentina
Dong, Feng, Tianjin University, China
Drljaca, Predrag, Instersema Sensoric SA, Switzerland
Dubey, Venketesh, Bournemouth University, UK
Enderle, Stefan, University of Ulm and KTB Mechatronics GmbH, Germany
Erdem, Gursan K. Arzum, Ege University, Turkey
Erkmen, Aydan M., Middle East Technical University, Turkey
Estelle, Patrice, Insa Rennes, France
Estrada, Horacio, University of North Carolina, USA
Faiz, Adil, INSA Lyon, France
Fericean, Sorin, Balluff GmbH, Germany
Fernandes, Joana M., University of Porto, Portugal
Francioso, Luca, CNR-IMM Institute for Microelectronics and Microsystems, Italy
Francis, Laurent, University Catholique de Louvain, Belgium
Fu, Weiling, South-Western Hospital, Chongqing, China
Gaura, Elena, Coventry University, UK
Geng, Yanfeng, China University of Petroleum, China
Gole, James, Georgia Institute of Technology, USA
Gong, Hao, National University of Singapore, Singapore
Gonzalez de la Rosa, Juan Jose, University of Cadiz, Spain
Granel, Annette, Goteborg University, Sweden
Graff, Mason, The University of Texas at Arlington, USA
Guan, Shan, Eastman Kodak, USA
Guillet, Bruno, University of Caen, France
Guo, Zhen, New Jersey Institute of Technology, USA
Gupta, Narendra Kumar, Napier University, UK
Hadjiloucas, Sillas, The University of Reading, UK
Hashsham, Syed, Michigan State University, USA
Hernandez, Alvaro, University of Alcala, Spain
Hernandez, Wilmar, Universidad Politecnica de Madrid, Spain
Homentcovschi, Dorel, SUNY Binghamton, USA
Horstman, Tom, U.S. Automation Group, LLC, USA
Hsiai, Tzung (John), University of Southern California, USA
Huang, Jeng-Sheng, Chung Yuan Christian University, Taiwan
Huang, Star, National Tsing Hua University, Taiwan
Huang, Wei, PSG Design Center, USA
Hui, David, University of New Orleans, USA
Jaffrezic-Renault, Nicole, Ecole Centrale de Lyon, France
Jaime Calvo-Galleg, Jaime, Universidad de Salamanca, Spain
James, Daniel, Griffith University, Australia
Janting, Jakob, DELTA Danish Electronics, Denmark
Jiang, Liudi, University of Southampton, UK
Jiang, Wei, University of Virginia, USA
Jiao, Zheng, Shanghai University, China
John, Joachim, IMEC, Belgium
Kalach, Andrew, Voronezh Institute of Ministry of Interior, Russia
Kang, Moonho, Sunmoon University, Korea South
Kaniusas, Eugenijus, Vienna University of Technology, Austria
Katake, Anup, Texas A&M University, USA
Kausel, Wilfried, University of Music, Vienna, Austria
Kavasoglu, Nese, Mugla University, Turkey
Ke, Cathy, Tyndall National Institute, Ireland
Khan, Asif, Aligarh Muslim University, Aligarh, India
Kim, Min Young, Koh Young Technology, Inc., Korea South
Sandacci, Serghei, Sensor Technology Ltd., UK
Sapozhnikova, Ksenia, D.I.Mendeleyev Institute for Metrology, Russia

Korea South
Kockar, Hakan, Balikesir University, Turkey
Kotulska, Malgorzata, Wroclaw University of Technology, Poland
Kratz, Henrik, Uppsala University, Sweden
Kumar, Arun, University of South Florida, USA
Kumar, Subodh, National Physical Laboratory, India
Kung, Chih-Hsien, Chang-Jung Christian University, Taiwan
Lacnjevac, Caslav, University of Belgrade, Serbia
Lay-Ekuakille, Aime, University of Lecce, Italy
Lee, Jang Myung, Pusan National University, Korea South
Lee, Jun Su, Amkor Technology, Inc. South Korea
Lei, Hua, National Starch and Chemical Company, USA
Li, Genxi, Nanjing University, China
Li, Hui, Shanghai Jiaotong University, China
Li, Xian-Fang, Central South University, China
Liang, Yuanchang, University of Washington, USA
Liawruangrath, Saisunee, Chiang Mai University, Thailand
Liew, Kim Meow, City University of Hong Kong, Hong Kong
Lin, Hermann, National Kaohsiung University, Taiwan
Lin, Paul, Cleveland State University, USA
Linderholm, Pontus, EPFL - Microsystems Laboratory, Switzerland
Liu, Aihua, University of Oklahoma, USA
Liu Changgeng, Louisiana State University, USA
Liu, Cheng-Hsien, National Tsing Hua University, Taiwan
Liu, Songqin, Southeast University, China
Lodeiro, Carlos, Universidade NOVA de Lisboa, Portugal
Lorenzo, Maria Encarnacio, Universidad Autonoma de Madrid, Spain
Lukaszewicz, Jerzy Pawel, Nicholas Copernicus University, Poland
Ma, Zhanfang, Northeast Normal University, China
Majstorovic, Vidosav, University of Belgrade, Serbia
Marquez, Alfredo, Centro de Investigacion en Materiales Avanzados, Mexico
Matay, Ladislav, Slovak Academy of Sciences, Slovakia
Mathur, Prafull, National Physical Laboratory, India
Maurya, D.K., Institute of Materials Research and Engineering, Singapore
Mekid, Samir, University of Manchester, UK
Melnyk, Ivan, Photon Control Inc., Canada
Mendes, Paulo, University of Minho, Portugal
Mennell, Julie, Northumbria University, UK
Mi, Bin, Boston Scientific Corporation, USA
Minas, Graca, University of Minho, Portugal
Moghavvemi, Mahmoud, University of Malaya, Malaysia
Mohammadi, Mohammad-Reza, University of Cambridge, UK
Molina Flores, Esteban, Benemérita Universidad Autónoma de Puebla, Mexico
Moradi, Majid, University of Kerman, Iran
Morello, Rosario, DIMET, University "Mediterranea" of Reggio Calabria, Italy
Mounir, Ben Ali, University of Sousse, Tunisia
Mukhopadhyay, Subhas, Massey University, New Zealand
Neelamegam, Periasamy, Sastra Deemed University, India
Neshkova, Milka, Bulgarian Academy of Sciences, Bulgaria
Oberhammer, Joachim, Royal Institute of Technology, Sweden
Ould Lahoucine, Cherif, University of Guelma, Algeria
Pamidighanta, Sayanu, Bharat Electronics Limited (BEL), India
Pan, Jisheng, Institute of Materials Research & Engineering, Singapore
Park, Joon-Shik, Korea Electronics Technology Institute, Korea South
Penza, Michele, ENEA C.R., Italy
Pereira, Jose Miguel, Instituto Politecnico de Setebal, Portugal
Petsev, Dimiter, University of New Mexico, USA
Pogacnik, Lea, University of Ljubljana, Slovenia
Post, Michael, National Research Council, Canada
Prance, Robert, University of Sussex, UK
Prasad, Ambika, Gulbarga University, India
Prateepasen, Asa, Kingmoungut's University of Technology, Thailand
Pullini, Daniele, Centro Ricerche FIAT, Italy
Pumera, Martin, National Institute for Materials Science, Japan
Radhakrishnan, S., National Chemical Laboratory, Pune, India
Rajanna, K., Indian Institute of Science, India
Ramadan, Qasem, Institute of Microelectronics, Singapore
Rao, Basuthkar, Tata Inst. of Fundamental Research, India
Raouf, Kosai, Joseph Fourier University of Grenoble, France
Reig, Candid, University of Valencia, Spain
Restivo, Maria Teresa, University of Porto, Portugal
Robert, Michel, University Henri Poincare, France
Rezazadeh, Ghader, Urmia University, Iran
Royo, Santiago, Universitat Politècnica de Catalunya, Spain
Rodriguez, Angel, Universidad Politécnica de Cataluna, Spain
Rothberg, Steve, Loughborough University, UK
Sadana, Ajit, University of Mississippi, USA
Sadeghian Marnani, Hamed, TU Delft, The Netherlands
Saxena, Vibha, Bhabha Atomic Research Centre, Mumbai, India
Schneider, John K., Ultra-Scan Corporation, USA
Seif, Selemani, Alabama A & M University, USA
Seifter, Achim, Los Alamos National Laboratory, USA
Sengupta, Deepak, Advance Bio-Photonics, India
Shankar, B. Baliga, General Monitors Transnational, USA
Shearwood, Christopher, Nanyang Technological University, Singapore
Shin, Kyuho, Samsung Advanced Institute of Technology, Korea
Shmaliy, Yuriy, Kharkiv National University of Radio Electronics, Ukraine
Silva Girao, Pedro, Technical University of Lisbon, Portugal
Singh, V. R., National Physical Laboratory, India
Slomovitz, Daniel, UTE, Uruguay
Smith, Martin, Open University, UK
Soleymanpour, Ahmad, Damghan Basic Science University, Iran
Somani, Prakash R., Centre for Materials for Electronics Technol., India
Srinivas, Talabattula, Indian Institute of Science, Bangalore, India
Srivastava, Arvind K., Northwestern University, USA
Stefan-van Staden, Raluca-Ioana, University of Pretoria, South Africa
Sumriddetchka, Sarun, National Electronics and Computer Technology Center, Thailand
Sun, Chengliang, Polytechnic University, Hong-Kong
Sun, Dongming, Jilin University, China
Sun, Junhua, Beijing University of Aeronautics and Astronautics, China
Sun, Zhiqiang, Central South University, China
Suri, C. Raman, Institute of Microbial Technology, India
Sysoev, Victor, Saratov State Technical University, Russia
Szewczyk, Roman, Industrial Research Institute for Automation and Measurement, Poland
Tan, Ooi Kiang, Nanyang Technological University, Singapore
Tang, Dianping, Southwest University, China
Tang, Jaw-Luen, National Chung Cheng University, Taiwan
Teher, Kasif, Frostburg State University, USA
Thumbavanam Pad, Kartik, Carnegie Mellon University, USA
Tian, Gui Yun, University of Newcastle, UK
Tsiantos, Vassilios, Technological Educational Institute of Kaval, Greece
Tsigara, Anna, National Hellenic Research Foundation, Greece
Twomey, Karen, University College Cork, Ireland
Valente, Antonio, University, Vila Real, - U.T.A.D., Portugal
Vaseashta, Ashok, Marshall University, USA
Vazquez, Carmen, Carlos III University in Madrid, Spain
Vieira, Manuela, Instituto Superior de Engenharia de Lisboa, Portugal
Vigna, Benedetto, STMicroelectronics, Italy
Vrba, Radimir, Brno University of Technology, Czech Republic
Wandelt, Barbara, Technical University of Lodz, Poland
Wang, Jiangping, Xi'an Shiyong University, China
Wang, Kedong, Beihang University, China
Wang, Liang, Advanced Micro Devices, USA
Wang, Mi, University of Leeds, UK
Wang, Shinn-Fwu, Ching Yun University, Taiwan
Wang, Wei-Chih, University of Washington, USA
Wang, Wensheng, University of Pennsylvania, USA
Watson, Steven, Center for NanoSpace Technologies Inc., USA
Weiping, Yan, Dalian University of Technology, China
Wells, Stephen, Southern Company Services, USA
Wolkenberg, Andrzej, Institute of Electron Technology, Poland
Woods, R. Clive, Louisiana State University, USA
Wu, DerHo, National Pingtung University of Science and Technology, Taiwan
Wu, Zhaoyang, Hunan University, China
Xiu Tao, Ge, Chuzhou University, China
Xu, Lisheng, The Chinese University of Hong Kong, Hong Kong
Xu, Tao, University of California, Irvine, USA
Yang, Dongfang, National Research Council, Canada
Yang, Wuqiang, The University of Manchester, UK
Ymeti, Aurel, University of Twente, Netherland
Yong Zhao, Northeastern University, China
Yu, Haihu, Wuhan University of Technology, China
Yuan, Yong, Massey University, New Zealand
Yufera Garcia, Alberto, Seville University, Spain
Zagnoni, Michele, University of Southampton, UK
Zeni, Luigi, Second University of Naples, Italy
Zhong, Haoxiang, Henan Normal University, China
Zhang, Minglong, Shanghai University, China
Zhang, Quintao, University of California at Berkeley, USA
Zhang, Weiping, Shanghai Jiao Tong University, China
Zhang, Wenming, Shanghai Jiao Tong University, China
Zhou, Zhi-Gang, Tsinghua University, China
Zorzano, Luis, Universidad de La Rioja, Spain
Zourab, Mohammed, University of Cambridge, UK

Contents

Volume 100
Issue 1
January 2009

www.sensorsportal.com

ISSN 1726-5479

Editorial

- International Frequency Sensor Association (IFSA) Celebrates the 10th Anniversary** 1
Sergey Y. Yurish

Research Articles

- A Log Amplifier Based Linearization Scheme for Thermocouples**
Nikhil Mondal, A. Abudhahir, Sourav Kanti Jana, Sugata Munshi and D. P. Bhattacharya 1
- Uncertainty Analysis of Thermocouple Circuits**
B. Vasuki, M. Umapathy, S. K. Velumani 11
- Calibration System for Thermocouple Testing**
Dragan R. Milivojevic, Visa Tasic, Marijana Pavlov, Zoran Andjelkovic 16
- Embedded Processor Based Automatic Temperature Control of VLSI Chips**
Narasimha Murthy Yayavaram, Saritha Chappidi, Sukanya Velamakuri 27
- Field of Temperature Measurement by Virtual Instrumentation**
Libor Hargaš, Dušan Koniar, Miroslav Hrianka, Jozef Čuntala 45
- Analyzing Electroencephalogram Signal Using EEG Lab**
Mukesh Bhardwaj and Avtar. K. Nadir 51
- New Aspects in Respiratory Epithelium Diagnostics Using Virtual Instrumentation**
Dušan Koniar, Libor Hargaš, Miroslav Hrianka, Peter Bánovčín 58
- A PC-based Technique to Measure the Thermal Conductivity of Solid Materials**
Alety Sridevireddy, K. Raghavendra Rao 65
- A New Wide Frequency Band Capacitance Transducer with Application to Measuring Metal Fill Time**
Wael Deabes, Mohamed Abdelrahman, and Periasamy K. Rajan 72
- A Novel Hall Effect Sensor Using Elaborate Offset Cancellation Method**
Vlassis N. Petoussis, Panos D. Dimitropoulos and George Stamoulis 85
- A Review of Material Properties Estimation Using Eddy Current Testing and Capacitor Imaging**
Mohd. Amri Yunus, S. C. Mukhopadhyay and G. Sen Gupta 92
- Surface Plasmon Resonance Based Fiber Optic Sensor with Symmetric and Asymmetric Metallic Coatings: a Comparative Study**
Smita Singh, Rajneesh K. Verma and B. D. Gupta 116

Increasing of Excursion Range of Absolute Optical Sensors Intended for Positioners <i>Igor Friedland, Ioseph Gurwich, Amit Brandes</i>	125
Field-Effect-Transistor Behavior of a Multiwall Carbon Nano Fiber Directly Grown on Nickel Electrodes <i>L. W. Chang, P. S. Wu, J. T. Lue and Z. P. Chen</i>	137
Classification of Fiber-Optic Pressure Sensors with Amplitude Modulation of Optical Signal <i>Vladyslav Kondratov, Vitalii Redko</i>	146
 New e-Book	
Laboratories of Instrumentation for Measurement Maria Teresa Restivo, Fernando Gomes de Almeida, Maria de Fátima Chouzal, Joaquim Gabriel Mendes, António Mendes Lopes.....	161

Authors are encouraged to submit article in MS Word (doc) and Acrobat (pdf) formats by e-mail: editor@sensorsportal.com
Please visit journal's webpage with preparation instructions: <http://www.sensorsportal.com/HTML/DIGEST/Submission.htm>

Laboratories of Instrumentation for Measurement

**Maria Teresa Restivo, Fernando Gomes de Almeida, Maria de Fátima Chouzal,
Joaquim Gabriel Mendes, António Mendes Lopes**

University of Porto, Portugal, E-mail: trestivo@fe.up.pt

Preface

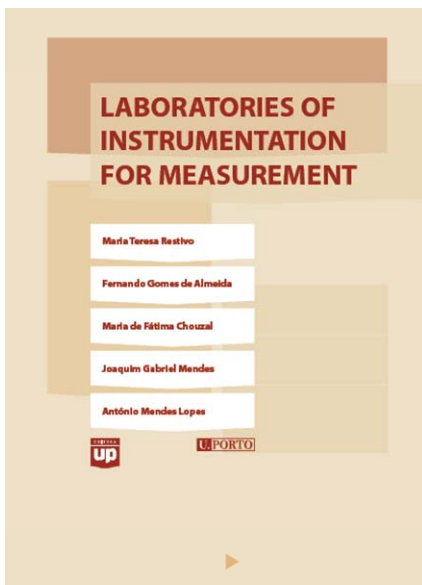


Fig. 1. Prizes winner e-book.

The creation of knowledge is one of the essential components of the University mission. But it is fundamental that this knowledge should not be kept imprisoned within the institution itself. It must be transmitted so that society can benefit from it.

The University of Porto, striving to be in the front line of universities at international level, claims full allegiance in its mission to these two components.

The publication of results of the work developed by members of our academic community is a source of enjoyment to U. Porto for the contribution it brings to the fulfillment of its mission.

Such publication deserves even higher prominence when it fills existing gaps in the available literature, while simultaneously opening excellent prospects for the dissemination of know-how, technologies and techniques not only to our own students but also to the public at large.

The multimedia edition of "Laboratories of Instrumentation for Measurement" fully satisfies these requisites, deserving therefore our warmest applause, appreciation and incentive.

This publication also possesses two special features that increase its added value. On one hand, it presents experimental and laboratory activities with an approach as close as possible to reality, even offering remote access to experiments, providing to the reader an excellent tool for learning laboratory

techniques and methodologies. On the other hand, the adoption of electronic format makes this work more easily available to a wider public.

The authors should be highly praised for their initiative, as well as for all the sustained effort that culminated in this publication. This e-book fulfils every condition to be a success and hence to contribute to the prestige and the standing of U. Porto, being therefore worthy of its full acknowledgment.

José Carlos D. Marques dos Santos
Rector

Foreword

Instrumentation is vital for the design and implementation of measuring, monitoring and actuation systems and in data acquisition and processing, playing nowadays a fundamental role in many technological areas, as well as in those of certification, control and information.

The increasing demand of experimental accuracy in all scientific areas makes Instrumentation for Measurement a crucial component, particularly in higher education curricula with a strong technological element, being also essential at research and development level.

The objectives of the present work are:

- to stimulate hands-on activity;
- to contribute to the uniform use of concepts and definitions based on the International Vocabulary of Metrology;
- to introduce the user to the manipulation of equipment and devices for experimental tasks and to methods and procedures for measuring physical quantities of general relevance;
- to promote the critical appraisal of measurement results;
- to explore the working principles and characteristics of the sensors and transducers more commonly used in laboratory and industrial applications;
- to clarify important features of signal conditioning and transmission and data acquisition and processing;
- to introduce the concept of virtual instrumentation together with web monitoring and actuation by providing access to remote experiments.

Nowadays printed technical manuals are often complemented with the inclusion of a CD-Rom. In the present case taking into account that “what I hear, I forget; what I see, I may remember; what I experience, I know for life”, the authors decided to adopt a completely electronic format which allows a more efficient and harmonious integration of a wide range of contents: text, images, sketches, videos, animations, simulations and remote experiments. The text can be easily printed if required.

Moreover, given the contributions of neuro-linguistic programming to education, the authors find that the format adopted is adequate to the diversity of psychological and learning profiles of the large target audience of the developed materials.

Finally, the authors' intention to further explore other topics within Laboratories of Instrumentation for Measurement makes the electronic edition the ideal option for easy and economic updating.

"Laboratories of Instrumentation for Measurement" comprises 13 modules. Each one presents a clearly defined learning objective, the essential concepts and a step-by-step guide for performing the experimental activity, various complementary multimedia contents and a final synthesis. The set of open questions that closes each module is intended to provide formative assessment.

The authors would like to encourage the users to undertake their own analyses and further elaboration of additional questions as an excellent way to achieve deeper learning.

The authors also hope to contribute to the dissemination of experimental activity in engineering education and to facilitate the conception, tuning and exploration of experimental systems for laboratory training. The full technical description of the equipment is provided to make the setups easily reproducible. In addition the access to remote experiments has been made available.

The authors

For more details please download (2.4 Mb): http://www.sensorsportal.com/DOWNLOADS/e_book.pdf

2009 Copyright ©, International Frequency Sensor Association (IFSA). All rights reserved.
(<http://www.sensorsportal.com>)

IRF'2009

INTEGRITY - RELIABILITY - FAILURE CHALLENGES AND OPPORTUNITIES

Third International Conference

Faculty of Engineering, University of Porto

Porto-Portugal, July 20-24, 2009

TOPICS OF INTEREST

The conference will address the following main topics:

Analytical and Numerical Tools	Surface and Interface Engineering
Instrumentation and Measurement	Modes of Failure
Testing and Diagnostics	Design Against Failure
Nanotechnologies and Nanomaterials	Energy and Environment

SUMMARY OF DEADLINES

Receipt of Abstracts	28 February, 2009
Acceptance Letters	21 March, 2009
Deadline for Early Registration	31 March, 2009
Receipt of Full Papers for CD	10 May, 2009

INTERNET ACCESS

All conference information, including titles, registration, hotels, social program, sessions and papers schedule is provided at the conference webpage:

<http://paginas.fe.up.pt/cheme/IRF2009/index.htm>

For additional information, please contact either of the Conference Chairs:

Prof. J.F. Silva Gomes Departamento de Engenharia Mecânica e Gestão Industrial Faculdade de Engenharia da Universidade do Porto Rua Dr. Roberto Frias, 4200-465 Porto, Portugal Tel: (351)-91 725 89 50; Fax: (351)-22 508 1774 E-mail: sg@fe.up.pt	Prof. Shaker A. Meguid Department of Mechanical and Industrial Engineering University of Toronto 5, King's College, Toronto ON, M5S 3G8, Canada Tel: (1)-416 978 5741; Fax: (1)-416 978 7753 E-mail: meguid@mie.utoronto.ca
--	---



IEEE SENSORS 2009 Conference October 25-28, 2009 Christchurch, New Zealand

Sponsored by:



IEEE SENSORS Council

Announcement and Call for Papers

IEEE Sensors Conference 2009 is intended to provide a common forum for researchers, scientists, engineers and practitioners throughout the world to present their latest research findings, ideas, developments and applications in the area of sensors and sensing technology. IEEE Sensors Conference 2009 will include keynote addresses by eminent scientists as well as special, regular and poster sessions.

Topics Covered:

- Phenomena, Modeling and Evaluation
- Biosensors
- Mechanical Sensors
- Sensor/Actuator Systems
- Applications
- Chemical and Gas Sensors
- Optical Sensors
- Physical Sensors
- Sensor Networks
- Special Focus Sessions

Authors are invited to submit a 2-page abstract in one or more of the areas identified above.

Important Dates:

- Special session proposal deadline – **January 31, 2009**
- Abstract Submission – **March 31st, 2009**
- Author Notification – **May 31st, 2009**
- Final Full Paper Submission (4 Pages) – **July 11th, 2009**
- Presenting Author Conference Registration – **July 11th, 2009**
- Early registration – **On or before July 31st, 2009**
- Advance registration – **August 1st, 2009 to September 15th, 2009**

General Chair: Subhas Mukhopadhyay, Massey University, New Zealand

Technical Programme Chair: Paddy French, Delft University of Technology, the Netherlands

<http://IEEE-SENSORS2009.org>

Guide for Contributors

Aims and Scope

Sensors & Transducers Journal (ISSN 1726-5479) provides an advanced forum for the science and technology of physical, chemical sensors and biosensors. It publishes state-of-the-art reviews, regular research and application specific papers, short notes, letters to Editor and sensors related books reviews as well as academic, practical and commercial information of interest to its readership. Because it is an open access, peer review international journal, papers rapidly published in *Sensors & Transducers Journal* will receive a very high publicity. The journal is published monthly as twelve issues per annual by International Frequency Association (IFSA). In addition, some special sponsored and conference issues published annually.

Topics Covered

Contributions are invited on all aspects of research, development and application of the science and technology of sensors, transducers and sensor instrumentations. Topics include, but are not restricted to:

- Physical, chemical and biosensors;
- Digital, frequency, period, duty-cycle, time interval, PWM, pulse number output sensors and transducers;
- Theory, principles, effects, design, standardization and modeling;
- Smart sensors and systems;
- Sensor instrumentation;
- Virtual instruments;
- Sensors interfaces, buses and networks;
- Signal processing;
- Frequency (period, duty-cycle)-to-digital converters, ADC;
- Technologies and materials;
- Nanosensors;
- Microsystems;
- Applications.

Submission of papers

Articles should be written in English. Authors are invited to submit by e-mail editor@sensorsportal.com 6-14 pages article (including abstract, illustrations (color or grayscale), photos and references) in both: MS Word (doc) and Acrobat (pdf) formats. Detailed preparation instructions, paper example and template of manuscript are available from the journal's webpage: <http://www.sensorsportal.com/HTML/DIGEST/Submission.htm> Authors must follow the instructions strictly when submitting their manuscripts.

Advertising Information

Advertising orders and enquires may be sent to sales@sensorsportal.com Please download also our media kit: http://www.sensorsportal.com/DOWNLOADS/Media_Kit_2008.pdf



**e-Impact Factor 2008:
205.767**



Subscription 2009

*Sensors & Transducers Journal (ISSN 1726-5479)
for scientists and engineers who need to be
at cutting-edge of sensor and measuring
technologies and their applications.*

*Keep up-to-date with the latest, most significant
advances in all areas of sensors and transducers.*

**Take an advantage of IFSA membership
and save **40 %** of subscription cost.**

Subscribe online:

http://www.sensorsportal.com/HTML/DIGEST/Journal_Subscription_2009.htm

e-mail: editor@sensorsportal.com

tel. +34 696 06 77 16

www.sensorsportal.com