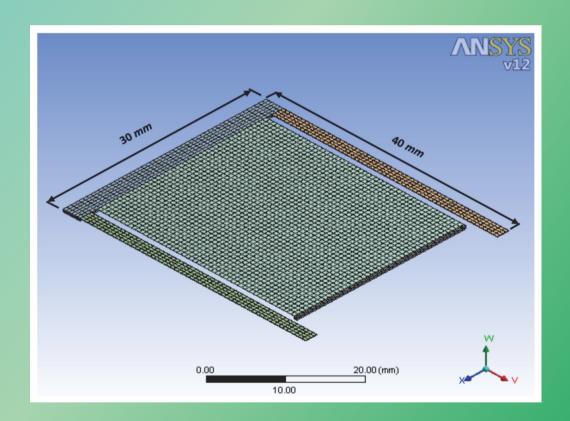


# Journal of Sensor Technology





# **Journal Editorial Board**

ISSN: 2161-122X (Print), ISSN: 2161-1238 (Online)

http://www.scirp.org/journal/jst

#### Editor-in-Chief

Prof. Ashok Srvastava Louisiana State University, USA

#### **Editorial Board**

**Dr. Bruno Andò**The University of Catania, Italy

Prof. Aytunç Ates Yildirim Beyazit University, Turkey

Dr. Nada Farouk Atta

University of Cairo, Egypt

Prof. Saad Belkhiat Setif University, Algeria

Prof. İsmail Hakkl Boyaci Hacettepe University, Turkey

Prof. Vinod Kumar Gupta Indian Institute of Technology, India

Prof. Chang-Sik Ha
Pusan National University, South Korea

Prof. Kamaruzaman Jusoff Universiti Putra Malaysia, Malaysia

Dr. Dae-Sik Lee Electronics and Telecommunications Research Institute, South Korea

Dr. Weihua Li
University of Wollongong, Austria

**Dr. Qingjun Liu** Zhejiang University, China

**Prof. Xiaobing Luo** Huazhong University of Science and Technology, China

**Dr. Graça M. H. Minas**University of Minho, Portugal

**Dr. Sandeep Negi** University of Utah, USA

**Prof. Yiqing Ni** The Hong Kong Polytechnic University, China

**Dr. Dongning Wang** The Hong Kong Polytechnic University, China

**Dr. Wenming Zhang** Shanghai Jiao Tong University, China

**Prof. Yong Zhang** Xi'an Jiaotong University, China

**Prof. Yong Zhao** Northeastern University, China



## **Table of Contents**

Volume 4 Number 2	June <b>201</b> 4
-------------------	-------------------

Design Methodology of a Micro-Scale 2-DOF Energy Harvesting Device for Low Frequency and Wide Bandwidth	
M. M. Magdy, A. M. R. F. El-Bab, S. F. M. Assal	37
Wormhole Attack Behaviour in Monte-Carlo Localization for Mobile Sensor Networks	
V. R. Kumari, A. Nagaraju, G. Pareek	48
The Effect of Temperature and Doping Level on the Characteristics of Piezoresistive Pressure Sensor	
B. Abdelaziz, K. Fouad, S. Kemouche	59
Flexible Impact Force Sensor	
C. Liu, Y. Fujimoto, Y. Tanaka	66
Application of Nanoparticles in Quartz Crystal Microbalance Biosensors	
S. Heydari, G. H. Haghayegh	81
A Quaternion Scaled Unscented Kalman Estimator for Inertial Navigation States Determination Using INS/GPS/Magnetometer Fusion	
W. Khoder, B. Jida	101

#### Journal of Sensor Technology (JST)

#### **Journal Information**

#### SUBSCRIPTIONS

The *Journal of Sensor Technology* (Online at Scientific Research Publishing, <a href="www.SciRP.org">www.SciRP.org</a>) is published quarterly by Scientific Research Publishing, Inc., USA.

#### **Subscription rates:**

Print: \$69 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: <a href="mailto:sub@scirp.org">sub@scirp.org</a>

#### **SERVICES**

#### Advertisements

Advertisement Sales Department, E-mail: <a href="mailto:service@scirp.org">service@scirp.org</a>

#### Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: sub@scirp.org

#### **COPYRIGHT**

#### COPYRIGHT AND REUSE RIGHTS FOR THE FRONT MATTER OF THE JOURNAL:

Copyright © 2014 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY). http://creativecommons.org/licenses/by/4.0/

#### COPYRIGHT FOR INDIVIDUAL PAPERS OF THE JOURNAL:

Copyright © 2014 by author(s) and Scientific Research Publishing Inc.

#### REUSE RIGHTS FOR INDIVIDUAL PAPERS:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

#### DISCLAIMER OF LIABILITY

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

#### PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: jst@scirp.org



# Journal of Sensor Technology (JST)

ISSN 2161-122X (Print) ISSN 2161-1238 (Online) http://www.scirp.org/journal/jst

**Journal of Sensor Technology** should be the international journal devoted to research on sensor technologies including sensor design, implementation, characterizations and application oriented technical development. It is an interdisciplinary journal serving professionals with an interest in the exploitation of biological materials and designs in novel sensor diagnostic, supervision (or surveillance), and electronic devices including sensors, DNA chips, electronic noses, lab-on-a-chip, etc. Research of physical effects, measurement, theory, modeling and simulation of sensors, is welcome.

#### Editor-in-Chief

Prof. Ashok Srvastava

Louisiana State University, USA

#### **Subject Coverage**

The journal publishes original papers including but not limited to the following fields:

- Arrayed Sensors
- Biosensors
- Flow Sensors
- Interferometry Based Sensors
- MEMS Pressure Sensors
- Micro Accelerometers Mems Gyroscopes
- Microelectromechanical Systems (MEMS)
- Multi-Sensor Data Fusion

- Nano-Photonic Based Sensors
- Optical Fiber Based Sensors
- Sensor Fabrication and Packaging Techniques
- Sensor Networks
- Sensor Signal Processing
- Surface Enhanced Raman Scattering (SERS) Sensors
- Surface Plasmon Based Sensors
- Ultrasonic Transducers

We are also interested in: 1) Short reports—2-5 page papers where an author can either present an idea with theoretical background but has not yet completed the research needed for a complete paper or preliminary data; 2) Book reviews—Comments and critiques.

### **Notes for Intending Authors**

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

E-mail: jst@scirp.org

#### Website and E-mail

#### What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science, by delivering superior scientific publications and scientific information solution provider that enable advancement in scientific research.

#### What is Open Access?

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, world-wide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- •High visibility for maximum global exposure with open access publishing model
- •Rigorous peer review of research papers
- Prompt faster publication with less cost
- •Guaranteed targeted, multidisciplinary audience





Website: http://www.scirp.org Subscription: sub@scirp.org Advertisement: service@scirp.org