

ISSN: 2153-117X Vol. 2, No. 1, January 2011



Scientific  
Research

# Materials Sciences and Applications



ISSN: 2153-117X



[www.scirp.org/journal/msa](http://www.scirp.org/journal/msa)

# Journal Editorial Board

ISSN 2153-117X (Print) ISSN 2153-1188 (Online)

<http://www.scirp.org/journal/msa>

---

## Editor-in-Chief

**Prof. Young W. Kwon**

Naval Postgraduate School, USA

## Editorial Board

**Prof. Alaa S. Abd-El-Aziz**

The University of British Columbia, Canada

**Prof. Samir A. Abdel-Latif**

Helwan University, Egypt

**Prof. Alexander Bagatur'yants**

Russian Academy of Sciences, Russia

**Prof. Huan-Tsung Chang**

National Taiwan University, Taiwan (China)

**Dr. Dianying Chen**

Sulzer Metco, USA

**Prof. Ram N. P. Choudhary**

IIT Kharagpur, India

**Prof. Jean Ebothé**

Université de Reims Champagne Ardenne, France

**Prof. Rob Krams**

Imperial College, UK

**Prof. Qiming Liu**

Wuhan University of Technology, China

**Prof. Athanasios G. Mamalis**

National Technical University of Athens, Greece

**Prof. Paolo Maria Mariano**

University of Florence, Italy

**Dr. Eugene N. Matveev**

Russian Academy of Sciences, Russia

**Prof. Bouzid Menaa**

Fluorotronics, Inc., USA

**Prof. Chunxu Pan**

Wuhan University, China

**Prof. Su-Seng Pang**

Louisiana State University, USA

**Prof. Alexander A. Potapov**

Russian Academy of Sciences, Russia

**Dr. Raj Pal Singh**

National Chemical Laboratory, India

**Prof. Anupam Srivastav**

College of Engineering & Technology, India

**Prof. Deepak Srivastava**

H. B. Technological Institute, India

**Prof. Mustafa Ubeyli**

TOBB University of Economics and Technology, Turkey

**Prof. Gayle E. Woloschak**

Northwestern University, USA

**Prof. Dongfeng Xue**

Dalian University of Technology, China

**Dr. Raghvendra Singh Yadav**

University of Allahabad, India

**Dr. Fei Zhang**

Michigan State University, USA

## Editorial Assistant

**Nancy Fang**

Scientific Research Publishing Email: [msa@scirp.org](mailto:msa@scirp.org)

---

## Guest Reviewers

**Oja Acika**

**Huseyin Derin**

**Syed Moiz**

**Faheem A. Sheikh**

**Akinola Akinlabi**

**Mel Maizirwan**

**Abdelhakim NAFIDI**

**Jian-Yih Wang**

**Ilsin An**

**Michele Marini**

**Makanjuola Oki**

**Shiqing Xu**

**Weike An**

**Zaibi Med-Ali**

**S.E. Park**

**Yu Zuo**

## TABLE OF CONTENTS

Volume 2 Number 1

January 2011

<b>Crystallinity, Microstructure and Mechanical Strength of Yttria-Stabilized Tetragonal Zirconia Ceramics for Optical Ferrule</b>	
S.-D. Kim, K.-S. Hwang.....	1
<b>Forming Stages of Polycrystalline TiN Films Depending on the Nitrogen Concentration in Mixed Gas</b>	
A. L. Kameneva.....	6
<b>Synthesis of TiO<sub>2</sub>/Al-MCM-41 Composites with Coal-Measure Kaolin and Performance in Its Photocatalysis</b>	
Q. S. Wu, S. P. Li.....	14
<b>Carbon Nanotube Addition to Simultaneously Enhance Strength and Ductility of Hybrid AZ31/AA5083 Alloy</b>	
M. Paramsothy, M. Gupta, J. Chan, R. Kwok.....	20
<b>Rheological Properties of Polymers: Structure and Morphology of Molten Polymer Blends</b>	
O. S. Agboola, E. R. Sadiku, A. T. Adegbola, O. F. Biotidara.....	30
<b>Electrochemical and Microstructural Study of Ni-Cr-Mo Alloys Used in Dental Prostheses</b>	
J. W. J. Silva, L. L. Sousa, R. Z. Nakazato, E. N. Codaro, H. D. Felipe.....	42
<b>Activated Carbons Containing Dispersed Metal Oxide Particles for Removal of Methyl Mercaptan in Air</b>	
H. Tamai, M. Nakamori, M. Nishikawa, T. Shiono.....	49
<b>Determination of the Pozzolanic Properties of Olotu Marine Clay and Its Potentials for Cement Production</b>	
J. M. Akande, C. Arum, F. M. Omosogbe.....	53

---

The figure on the front cover is from the article published in *Materials Sciences and Applications (MSA)*, 2011, Vol. 2, No. 1, pp. 1-5, by Sung-Dai Kim and Kyu-Seog Hwang.

# **Materials Sciences and Applications (MSA)**

## **Journal Information**

### **SUBSCRIPTIONS**

The *Materials Sciences and Applications* (Online at Scientific Research Publishing, [www.SciRP.org](http://www.SciRP.org)) is published monthly by Scientific Research Publishing, Inc., USA.

#### **Subscription rates:**

Print: \$50 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: [sub@scirp.org](mailto:sub@scirp.org)

### **SERVICES**

#### **Advertisements**

Advertisement Sales Department, E-mail: [service@scirp.org](mailto:service@scirp.org)

#### **Reprints (minimum quantity 100 copies)**

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

E-mail: [sub@scirp.org](mailto:sub@scirp.org)

### **COPYRIGHT**

Copyright©2011 Scientific Research Publishing, Inc.

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as described below, without the permission in writing of the Publisher.

Copying of articles is not permitted except for personal and internal use, to the extent permitted by national copyright law, or under the terms of a license issued by the national Reproduction Rights Organization.

Requests for permission for other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works or for resale, and other enquiries should be addressed to the Publisher.

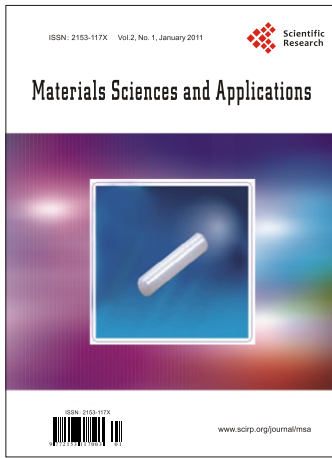
Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any 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: [msa@scirp.org](mailto:msa@scirp.org)

# Call for Papers



## Materials Sciences and Applications

ISSN 2153-117X (Print) ISSN 2153-1188 (Online)  
<http://www.scirp.org/journal/msa>

Materials Sciences and Applications (MSA) is an international refereed journal dedicated to the latest advancement of materials. The goal of this journal is to keep a record of the state-of-the-art research and promote the research work in these fast moving areas.

### *Editor-in-Chief*

**Prof. Young W. Kwon**

Naval Postgraduate School, USA

### *Editorial Board*

Prof. Alaa S. Abd-El-Aziz  
Prof. Samir A. Abdel-Latif  
Prof. Alexander Bagatur'yants  
Prof. Huan-Tsung Chang  
Dr. Dianying Chen  
Prof. Ram N. P. Choudhary  
Prof. Jean Ebothe  
Prof. Rob Krams  
Prof. Qiming Liu  
Prof. Athanasios G. Mamalis  
Prof. Paolo Maria Mariano  
Dr. Eugene N. Matveev

Prof. Bouzid Menaa  
Prof. Chunxu Pan  
Prof. Su-Seng Pang  
Prof. Alexander A. Potapov  
Dr. Raj Pal Singh  
Prof. Anupam Srivastav  
Prof. Deepak Srivastava  
Prof. Mustafa Ubeyli  
Prof. Gayle E. Woloschak  
Prof. Dongfeng Xue  
Dr. Raghvendra Singh Yadav  
Dr. Fei Zhang

### *Subject Coverage*

This journal invites original research and review papers that address the following issues in materials sciences and applications. Topics of interest include, but are not limited to:

- Biological, Biomechanical and Biomedical Materials
- Composite Materials
- Electrical and Electronics Materials
- Fibers and Matrix Materials
- Functional Materials, including Shape Memory Materials, Self Healing Materials, etc.
- Light Emitting Material
- Magnetic Material
- Materials Chemistry
- Metals and Alloys
- Nanocomposites
- Nanomaterials including Nanostructured and Nanoscale Materials
- Nanosensors
- Nanostructured Materials
- Organic Materials
- Physics, Chemistry, Mechanics and Applications in Materials Science
- Rubber/Elastomeric Materials
- Semiconductor Materials
- Textile Materials
- Thin Film and Coatings

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.

### *Website and E-Mail*

<http://www.scirp.org/journal/msa>

E-mail: [msa@scirp.org](mailto:msa@scirp.org)