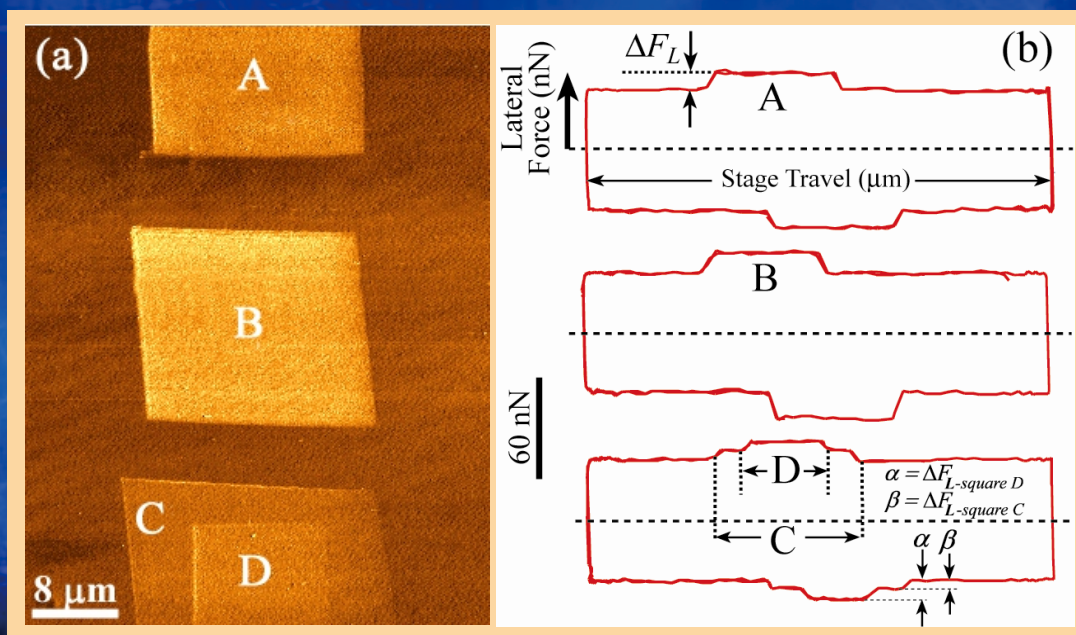




Special Issue on “Surface Probe Microscopy”

# Journal of Surface Engineered Materials and Advanced Technology



# Journal Editorial Board

ISSN 2161-4881(Print) ISSN 2161-489X (Online)

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

---

## Editor-in-Chief

**Dr. Bouzid Menaa**

Fluorotronics Inc., USA

## Editorial Board

**Prof. Adnane Abdelghani**

National Institute of Applied Science and Technology, Tunisia

**Dr. Vamsi Krishna Balla**

Central Glass and Ceramic Research Institute, India

**Prof. David M. Bastidas**

Spanish Council for Scientific Research (CENIM-CSIC), Spain

**Dr. Elena Binkauskienė**

Centre for Physical Science and Technology, Lithuania

**Dr. Gerardino D'Errico**

University of Naples "Federico II", Italy

**Prof. Eduardo Alfredo Favret**

Centro de Investigaciones en Recursos Naturales (CIRN), Argentina

**Prof. Bolesław Grzegorz Gireń**

Polish Academy of Sciences, Poland

**Dr. Anming Hu**

University of Waterloo, Canada

**Prof. Ahmed Ibrahim**

Farmingdale State College, USA

**Prof. Mark James Jackson**

Purdue University, USA

**Prof. Yuri P. Kalmykov**

University of Perpignan, France

**Prof. Zhixin Kang**

Guangdong Key Laboratory for Advanced Metallic

Materials Processing, China

**Dr. Hyunjung Kim**

Chonbuk National University, Korea (South)

**Dr. Xuan Tuan Le**

MiQro Innovation Collaborative Centre (C2MI), Canada

**Prof. Ioannis Liritzis**

University of the Aegean, Greece

**Dr. Abdel Salam H. Makhoul**

Central Metallurgical Research and Development Institute (CMRDI), Egypt

**Prof. Francisco M. Márquez-Linares**

Universidad del Turabo, USA

**Prof. Jukka Pekka Matinlinna**

The University of Hong Kong, Hong Kong (China)

**Prof. Elena Dimitrova Mileva**

Bulgarian Academy of Sciences, Bulgaria

**Dr. Faizal B. Mustapha**

Universiti Putra Malaysia, Malaysia

**Prof. Hideo Nakajima**

Osaka University, Japan

**Prof. K. A. Natarajan**

Indian Institute of Science, India

**Prof. Takeo Oku**

The University of Shiga Prefecture, Japan

**Dr. Gary R. Pickrell**

Virginia Polytechnic Institute and State University, USA

**Dr. Vilas Pol**

Argonne National Laboratory (ANL), USA

**Prof. Nicola Pugno**

Politecnico di Torino, Italy

**Dr. M. V. Reddy**

National University of Singapore (NUS), Singapore

**Prof. Zhifeng Ren**

Boston College, USA

**Prof. Maria Richert**

AGH University of Science & Technology, Poland

**Prof. Juan M. Ruso**

University of Santiago de Compostela (USC), Spain

**Prof. Cristina Satriano**

University of Catania, Italy

**Prof. Young-Seok Shon**

California State University, USA

**Prof. Hiroaki Tada**

Kinki University, Japan

**Prof. Rafael Tadmor**

Lamar University, USA

**Prof. Valentin Valtchev**

University of Caen, France

**Prof. Yaohua Zhu**

The Hong Kong Polytechnic University, Hong Kong (China)

## Guest Reviewers

**Li Chen**

**Yuhang Cheng**

**C.T. Liu**

## TABLE OF CONTENTS

**Volume 2    Special Issue**

**July 2012**

**Metal Nanoparticle Modified Polysulfone Membranes for Use in Wastewater Treatment: A Critical Review**

H. L. Richards, P. G. L. Baker, E. Iwuoha.....183

**A First Principles Simulation Framework for the Interactions between a Si(001) Surface and a Scanning Probe**

D. Q. Ly, C. Makatsoris.....194

**Transverse Vibration Analysis of Single-Walled Carbon Nanotubes Embedded in an Elastic Medium Using Bernoulli-Fourier Method**

T.-L. Horng.....203

**Joint Operation of Atomic Force Microscope and Advanced Laser Confocal Microscope for Observing Surface Processes in a Protein Crystal**

S.-i. Yanagiya, N. Goto.....210

**Laser Surface Annealing of Plasma Sprayed Coatings**

A. Ibrahim, Y. Hung.....215

**Synthesis of PMMA-co-PMAA Copolymer Brush on Multi-Wall Carbon Nanotubes**

P. Slobodian, P. Svoboda, P. Riha, R. Boruta, P. Saha.....221

**Microstructure, Adhesion and Wear of Plasma Sprayed AlSi-SiC Composite Coatings**

S. Tailor, V. K. Sharma, R. M. Mohanty, P. R. Soni.....227

**Lithography and Fabrication of Frictional Tiers on Poly(Dimethylsiloxane) Using Atomic Force Microscopy**

G. S. Watson, J. A. Watson.....233

**Elucidation and Identification of Double-Tip Effects in Atomic Force Microscopy Studies of Biological Structures**

Y. Chen.....238

---

The figure on the front cover is from the article published in *Journal of Surface Engineered Materials and Advanced Technology*, 2012, Vol. 2, Special Issue, pp. 233-237 by Gregory S. Watson and Jolanta A. Watson.

# **Journal of Surface Engineered Materials and Advanced Technology (JSEMAT)**

## **Journal Information**

### **SUBSCRIPTIONS**

The *Journal of Surface Engineered Materials and Advanced Technology* (Online at Scientific Research Publishing, [www.SciRP.org](http://www.SciRP.org)) is published quarterly by Scientific Research Publishing, Inc., USA.

#### **Subscription rates:**

Print: \$39 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©2012 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.

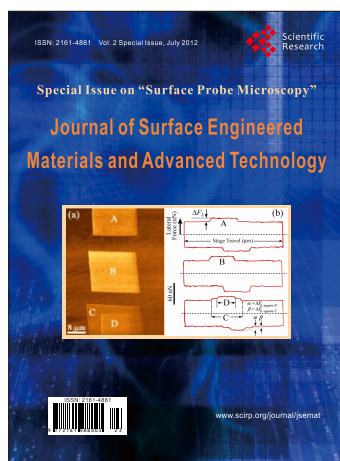
Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any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





**Call for Papers**

# Journal of Surface Engineered Materials and Advanced Technology (JSEMAT)

ISSN Print: 2161-4881 ISSN Online: 2161-489X  
<http://www.scirp.org/journal/jsemat>

**Journal of Surface Engineered Materials and Advanced Technology (JSEMAT)** is an international, specialized, English-language journal devoted to publication of original contributions concerning surface sciences, surface properties, techniques of characterization and generated applications.

It is an open-access, peer-reviewed journal describing scientific and technological advances that cover the basic sciences, engineering aspects and applied technology of surface chemistry, surface materials sciences and engineering studies for applications in nanotechnology, biomaterials, optics, environment, architectural restoration including all kind of materials surfaces.

## Subject Coverage

The journal publishes the highest quality original full articles, communications, notes, reviews, special issues and books, covering both the experimental and theoretical aspects including but not limited to:

Adsorption Process and Principles	Surface Corrosion
Advances in Adhesion Sciences	Surface Crystallization
Interface Sciences and Applications	Surface Hydration at Solid/Liquid Interface
Intermolecular Interactions	Surface Interactions at Bio-Interfaces
Kinetics and Thermodynamics at Surfaces	Surface Interactions at the Nanoscale
Modeling Theory of Surface Chemistry	Surface Microscopy (SEM, AFM, High Speed AFM, STM...)
Single Molecule Force Spectroscopy	Surface Molecules Self-Assembly
Surface Biocompatibility	Surface Nanopatterning
Surface Characterization and Advanced Techniques	

Papers are acceptable provided they report important findings, novel insights or useful techniques within the scope of the journal. All manuscript must be prepared in English, and are subjected to a rigorous and fair peer-review process. Accepted papers will immediately appear online followed by prints in hard copy. It will be available through <http://www.scirp.org/journal/jsemat/>.

## 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/jsemat> E-mail: [jsemat@scirp.org](mailto:jsemat@scirp.org)

## TABLE OF CONTENTS

**Volume 2    Special Issue**

**July 2012**

**Metal Nanoparticle Modified Polysulfone Membranes for Use in Wastewater Treatment:  
A Critical Review**

H. L. Richards, P. G. L. Baker, E. Iwuoha..... 183

**A First Principles Simulation Framework for the Interactions between a Si(001) Surface  
and a Scanning Probe**

D. Q. Ly, C. Makatsoris..... 194

**Transverse Vibration Analysis of Single-Walled Carbon Nanotubes Embedded in  
an Elastic Medium Using Bernoulli-Fourier Method**

T.-L. Horng..... 203

**Joint Operation of Atomic Force Microscope and Advanced Laser Confocal Microscope  
for Observing Surface Processes in a Protein Crystal**

S.-i. Yanagiya, N. Goto..... 210

**Laser Surface Annealing of Plasma Sprayed Coatings**

A. Ibrahim, Y. Hung..... 215

**Synthesis of PMMA-co-PMAA Copolymer Brush on Multi-Wall Carbon Nanotubes**

P. Slobodian, P. Svoboda, P. Riha, R. Boruta, P. Saha..... 221

**Microstructure, Adhesion and Wear of Plasma Sprayed AlSi-SiC Composite Coatings**

S. Tailor, V. K. Sharma, R. M. Mohanty, P. R. Soni..... 227

**Lithography and Fabrication of Frictional Tiers on Poly(Dimethylsiloxane) Using  
Atomic Force Microscopy**

G. S. Watson, J. A. Watson..... 233

**Elucidation and Identification of Double-Tip Effects in Atomic Force Microscopy  
Studies of Biological Structures**

Y. Chen..... 238