# SCIENCE AND ENGINEERING OF COMPOSITE MATERIALS

### **EDITOR-IN-CHIEF**

Suong V. Hoa, Montreal, QC

### **EDITOR**

Hiroyuki Hamada, Kyoto, Japan

## **EDITORIAL BOARD**

Andrzej M. Brandt, Warsaw, Poland Nguyen Dinh Duc, Hanoi, Vietnam Gottfried W. Ehrenstein, Erlangen David Hui, New Orleans, LA L. James Lee, Columbus, OH Mamoun Medraj, Montreal, QC Asami Nakai, Kyoto Luigi Nicolais, Naples James C. Seferis, Seattle, WA Kiang Hwee Tan, Singapore Minh Tan Ton-That, Quebec, QC Xinran Xiao, Lansing, MI Masaru Zako, Osaka W. H. Katie Zhong, Pullman, WA

ABSTRACTED/INDEXED IN Baidu Scholar; Celdes; Chemical Abstracts Service (CAS); Chemical Abstracts Service (CAS) - SciFinder; CNKI Scholar (China National Knowledge Infrastructure); CNPIEC; EBSCO - TOC Premier; EBSCO Discovery Service; Elsevier - Compendex; Elsevier - Engineering Village; Elsevier - SCOPUS; Gale/Cengage; Google Scholar; Index Copernicus; Inspec; J-Gate; JournalTOCs; Naviga (Softweco); Paperbase; Pirabase; Polymer Library; Primo Central (ExLibris); ProQuest - Advanced Technologies Database with Aerospace; ProQuest - Aerospace Database; ProQuest - Aluminium Industry Abstracts; ProQuest - ANTE: Abstracts in New Technologies and Engineering; ProQuest - Ceramic Abstracts/World Ceramics Abstracts; ProQuest - Civil Engineering Abstracts; ProQuest - Computer and Information Systems Abstracts; ProQuest - Copper Technical Reference Library; ProQuest - Corrosion Abstracts; ProQuest - Earthquake Engineering Abstracts; ProQuest - Beletronics and Communications Abstracts; ProQuest - Engineered Materials Abstracts; ProQuest - Engineering Research Database; ProQuest - Materials Business File; ProQuest - Materials Research Database; ProQuest - Mechanical & Transportation Engineering Abstracts; ProQuest - METADEX (Metals Abstracts); ProQuest - Solid State and Superconductivity Abstracts; ProQuest - Technology Research Database; ReadCube; ResearchGate; SCImago (SJR); Summon (Serials Solutions/ProQuest); TDOne (TDNet); TEMA Technik und Management; Thomson Reuters - Current Contents/Engineering, Computing, and Technology; Thomson Reuters - Journal Citation Reports/Science Edition; Thomson Reuters - Science Citation Index Expanded; Ulrich's Periodicals Directory/ulrichsweb; WorldCat (OCLC)

The publisher, together with the authors and editors, has taken great pains to ensure that all information presented in this work (programs, applications, amounts, dosages, etc.) reflects the standard of knowledge at the time of publication. Despite careful manuscript preparation and proof correction, errors can nevertheless occur. Authors, editors and publisher disclaim all responsibility for any errors or omissions of liability for the results obtained from use of the information, or parts thereof, contained in this work.

The citation of registered names, trade names, trademarks, etc. in this work does not imply, even in the absence of a specific statement, that such names are exempt from laws and regulations protecting trademarks etc. and therefore free for general use.

ISSN 0792-1233 · e-ISSN 2191-0359

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/secm

**RESPONSIBLE EDITOR** Prof. Suong V. Hoa, Concordia Center for Composites, Department of Mechanical and Industrial Engineering, Concordia University, 1455 Demaisonneuve West # EV 4-145, Montreal, Quebec, Canada H3G 1M8, Tel.: +1-514-848-2424, Email: hoasuon@alcor.concordia.ca

JOURNAL MANAGER Dr. Maria Dorogova, De Gruyter, Jarzabka str. 22/123, 05500 Piaseczno, Poland, Tel.: +48-798-238-728, Email: secm.editorial@degruyter.com

RESPONSIBLE FOR ADVERTISEMENTS Claudia Neumann, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany. Tel.: +49 (0)30.260 05-226, Fax: +49 (0) 30.260 05-264 Email: anzeigen@degruyter.com

© 2017 Walter de Gruyter GmbH, Berlin/Boston

TYPESETTING Compuscript Ltd., Shannon, Ireland

**PRINTING** Franz X. Stückle Druck und Verlag e.K., Ettenheim Printed in Germany



## **Contents**

# Original articles

Bo Zhang, Jiangong Yu, Abid A. Shah and Xiaodong Yang Wave propagation in functionally graded piezoelectric-piezomagnetic rectangular bars —— 317

Hairong Li, Chenglong Xu, Zongyi Chen, Ming Jiang and Chuanxi Xiong

Graphene/poly(vinylidene fluoride) dielectric composites with polydopamine as interface layers —— 327

Sikder Sunbeam Islam, Mohammd Rashed Iqbal Faruque and Mohammad Tariqul Islam

A novel biaxial double-negative metamaterial for electromagnetic rectangular cloaking operation —— 335

Abolfazl Alizadeh Sahraei, Hamidreza Naser Saeed,
Alireza Fathi, Majid Baniassadi, Sepehr Sima Afrookhteh
and Mohammad Kazem Besharati Givi
Formation of homogenous copper film on
MWCNTs by an efficient electroless deposition
process — 345

Long-Jiang Zhang, Feng Qiu, Jin-Guo Wang and Oi-Chuan liang

Nano-SiC $_p$ /Al2014 composites with high strength and good ductility —— 353

Md. Moinul Islam, Rabah Wasel Aldhaheri, Muntasir Mohammad Sheikh, Mohammad Tariqul Islam, Md. Samsuzzaman, Mohammad Rashed Iqbal Faruque and Norbahiah Misran

Microstrip line-fed monopole antenna on an epoxyresin-reinforced woven-glass material for super wideband applications —— 361

Yingshui Yu, Jinchuan Jie, Jianbo Sun and Tingju Li Influence of casting speed on fabricating Al-1%Mn and Al-10%Si alloy clad slab —— 371

Jinwei Wang, Yunpei Tian and Jin Zhang
Thermal insulating epoxy composite coatings
containing sepiolite/hollow glass microspheres
as binary fillers: morphology, simulation and
application — 379

Andrzej Katunin

Analysis of influence of fibre type and orientation on dynamic properties of polymer laminates for evaluation of their damping and self-heating —— 387

Ali Ghorbanpour Arani, Seyed Abolfazl Mortazavi and Zahra Khoddami Maraghi

Dynamic stability of nanocomposite viscoelastic cylindrical shells coating with a piezomagnetic layer conveying pulsating fluid flow —— 401

Ke Chun Shen, Guang Pan and JiangFeng Lu

Buckling and layer failure of composite laminated

cylinders subjected to hydrostatic pressure —— 415

Li Xiong, Xiangping Huang, Ya Liu and Liqing Pan One-step preparation and characterization of core-shell SiO<sub>2</sub>/Ag composite spheres by pulse plating —— 423

Geng Han, Zhidong Guan, Xing Li, Ruipeng Ji and Shanvi Du

The failure mechanism of carbon fiber-reinforced composites under longitudinal compression considering the interface —— 429

Zhang Peilei, Yan Hua, Li Chonggui, Yu Zhishui and Lu Qinghua

A thermal-plastic model of friction stir welding in aluminum alloy —— 439

Yuan Hui, Wen Weidong, Wang Yi, Zheng Zhenshan and Wu Xiong

A model for longitudinal tensile strength prediction of low braiding angle three-dimensional and four-directional composites —— 447

Pham Hong Cong, Pham Thi Ngoc An and Nguyen Dinh Duc

Nonlinear stability of shear deformable eccentrically stiffened functionally graded plates on elastic foundations with temperature-dependent properties —— 455

Xin Ning, Lin Tang, Junwei Gu, Chaobo Liang, Xiaokui Yue and Jianping Yuan

Design and multibody dynamics analyses of the novel force-bearing structures for variable configuration spacecraft —— 471