

JOURNAL OF THE MECHANICAL BEHAVIOR OF MATERIALS

EDITOR-IN-CHIEF

E.C. Aifantis, Thessaloniki, ITMO, BUCEA and Houghton (MI)

ASSOCIATE EDITORS

H. Askes, Sheffield
S. Forest, Paris
J. de Hosson, Groningen
A. Ngan, Hong Kong
A. Romanov, St. Petersburg
P. Sharma, Houston
P. Steinmann, Erlangen
M. Zaiser, Fürth

EDITORIAL BOARD

A. Aljinaidi, Jeddah
R. Ballarini, Minneapolis
S. Bargmann, Hamburg
D. Bigoni, Trento
E. Bitzek, Erlangen
S. Bordas, Cardiff
E. Busso, Paris
X. Feng, Beijing
G. Frantzikonis, Tucson
J. Ganghoffer, Nancy
M. Geers, Eindhoven
I. Groma, Budapest
K. Hackl, Bochum
P. Isaksson, Uppsala
G. Kang, Chengdu
O. Kraft, Karlsruhe
N. Kringos, Stockholm
A. Korsunsky, Oxford
H. Muhlhaus, Queensland
C. Niordson, Lyngby
I. Ovid'ko, St. Petersburg
C. di Prisco, Milano
N. Pugno, Trento
C. Ru, Edmonton
H.M. Shodja, Tehran
B. Straumal, Chernogovolka
D. Sumarac, Belgrade
B. Sun, Cape Town
D. Theodorou, Athens
T. Tsakalakos, Piscataway
K. Xu, Shanghai
H. Zbib, Pullman
Q. Zheng, Beijing

ADVISORY BOARD

A. Bakai, Kharkov
A. Boccaccini, Erlangen
V. Bulatov, Livermore
N. Fleck, Cambridge
N. Ghoniem, Los Angeles
G. Holzappel, Graz
K. Kishimoto, Tokyo
N. Morozov, St. Petersburg
F. Oka, Kyoto
H. Rafii-Tabar, Tehran
K. Ravi-Chandar, Austin
B.D. Reddy, Cape Town
J. Gil Sevillano, San Sebastián
Z. Suo, Cambridge, MA
V. Tvergaard, Lyngby
R. Valiev, Ufa
G. Z. Voyiadis, Baton Rouge
G. Weng, Piscataway
W. Yang, Hangzhou
A. Wazzan, Jeddah

HONORARY EDITORS

A.S. Argon, Cambridge, MA
R. Armstrong, College Park
M. Ashby, Cambridge
W. Gerberich, Minneapolis
J. Hutchinson, Cambridge, MA
L. Kubin, Châtillon
J.C.M. Li, Rochester
G. Maugin, Paris
M. Meyers, San Diego
H. Mughrabi, Erlangen
G. Saada, Châtillon
J. Willis, Cambridge

MANAGING EDITORIAL TEAM

K.E. Aifantis, Thessaloniki and Tucson
I. Karapanagiotis, Thessaloniki
A. Konstantinidis, Thessaloniki

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 or 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 0334-8938 · e-ISSN 2191-0243

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

RESPONSIBLE EDITOR Professor Elias C. Aifantis, Aristotle University of Thessaloniki, Thessaloniki 54124, Greece,

Email: mom@mom.gen.auth.gr

ITMO University, St. Petersburg 197101, RU/Togliatti State University, Togliatti 445020, RU/BUCEA University, Beijing 100044, China

Michigan Technological University, Houghton, MI 49931, USA

JOURNAL MANAGER Lissy Czolbe, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany,

Tel.: +49 (0)30 260 05 – 380, Fax: +49 (0)30 260 05 – 250.

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. Stücker Druck und Verlag e.K., Ettenheim

Printed in Germany

Cover Illustration: liquidlibrary/Thinkstock



Contents

Baljeet Singh and Baljinder Kaur

Propagation of Rayleigh waves in an incompressible rotating orthotropic elastic solid half-space with impedance boundary conditions — 73

Mohammad Ashjari and Mohammad Reza Khoshnavan

Multi-objective optimization of a functionally graded sandwich panel under mechanical loading in the presence of stress constraint — 79

Vijay Choyal and Shailesh I. Kundalwal

Interfacial characteristics of hybrid nanocomposite under thermomechanical loading — 95

P. Prabhuraj, S. Rajakumar, A.K. Lakshminarayanan and V. Balasubramanian

Evaluating stress corrosion cracking behaviour of high strength AA7075-T651 aluminium alloy — 105

S. Gnanasekaran, G. Padmanaban, V. Balasubramanian, Hemant Kumar and Shaju K. Albert

Optimizing the laser parameters to attain maximum hardness in nickel based hardfacing surfaces — 113

A.M. Rameshbabu, P. Parameswaran, V. Vijayan and R. Panneer

Diffraction, microstructure and thermal stability analysis in a double phase nanocrystalline $\text{Al}_{20}\text{Mg}_{20}\text{Ni}_{20}\text{Cr}_{20}\text{Ti}_{20}$ high entropy alloy — 127

C.B. Jagadeesha

The combined theoretical and experimental approach to arrive at optimum parameters in friction stir welding — 133