8th Conference on Material Science and Engineering (UgalMat 2018)

IOP Conference Series: Materials Science and Engineering Volume 485

Galati, Romania 11 - 13 October 2018

Editors:

Florentina Potecasu Gheorghe Gurau Mariana Busila

ISBN: 978-1-5108-8482-3

ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence. Licence details: http://creativecommons.org/licenses/by/3.0/.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact the Institute of Physics at the address below.

Institute of Physics Dirac House, Temple Back Bristol BS1 6BE UK

Phone: 44 1 17 929 7481 Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400

Phone: 845-758-0400 Fax: 845-758-2633

Email: curran@proceedings.com Web: www.proceedings.com

Table of contents

Volume 485

8th Conference on Material Science and Engineering (UgalMat 2018)

11-13 October 2018, Galati, Romania

Accepted papers received: 16 January 2019

Published online: 27 March 2019

Preface

8th Conference on Material Science and Engineering

Peer review statement

Papers

Neural network architecture optimization by analyse the mechanical characteristics of civil engineering materials

C I Alecu, L Judele, M Movila and D Lepadatu....1

Advanced systems for heat treatment controlling of electrical furnaces

I. Antonescu, C. I. Alecu and D. Lepadatu.....7

Studies and researches regarding the obtaining of multifunctional nanocomposites coatings

S Boiciuc and V Muşat....13

Thermomechanical processing effects on the structure and properties of Fe-based SMAs. I. Evolution of phase structure

V Bulbuc, B Pricop, Popa, E Mihalache, B Özkal and L G Bujoreanu.....21

Antibody functionalized magnetic nanoparticles for circulating tumor cells detection and capture using magnetophoresis

T A Burinaru, M Volmer, M Avram, V Tucureanu, A Avram, B Tîncu, C Mărculescu, A Matei, R Marinescu and M Militaru.....26

A study on specific heat of nanoparticle enhanced fluids

E I Chereches, M Chereches and A A Minea....32

Study on the changes induced by the Pressure-Assisted Thermal Processing (PATP) in polymer films used as packaging by the meat industry

V Filimon, D Borda, G Gurău, S Butan, P Alexe and M Stoica.....39

Fatigue analysis of the connecting rod in internal combustion engines

M Frătita, F Popescu, K Uzuneanu, V Mereută and I Ion....47

Achieving ultra-fine grained microalloyed steel by severe plastic process

G Gurau, C Gurau and L Gurau.....53

Formation of submicrocrystalline structure in a biodegradable Mg alloy

C Gurau, G Gurau, P Alexandru and V Basliu.....60

Quantitative image analysis in some iron powder metallurgy materials

M Marin and F B Marin.....67

Bearing failure prediction using audio signal analysis based on SVM algorithms

F B Marin, C Solomon and M Marin.....74

Photovoltaic	panels	cost	optimization	with	flexible	poly	mer	semiconductor	cells	using
fuzzy logic	-		*							

M Miron, D I Morariu, I Cucos, C I Alecu, L Judele and D Lepadatu.....81

Advanced tools for optimization and efficiently monitoring behaviour in service stage of buildings using renewable energy

D I Morariu, I Serbanoiu, M Miron and D Lepadatu....87

Tensile characteristics for a class of polymeric blends (PP + PA6)

A E Musteată, M Botan, G Pelin, L Deleanu and D Constantinescu.....93

Mathematical modelling and optimization of the thermomechanical treatment process applied to AlZn4.5Mg1Cu alloy

M I Neacsu, G Coman and A M Adam.....103

Thermodynamic properties of BCC interstitial alloy FeH under pressure

T H Nguyen, Q H Nguyen, G Coman, V Dinh Quang and C Tran Dinh.....109

Thermodynamic properties of FCC interstitial alloy AuSi with defects

T H Nguyen, Q H Nguyen, G Coman, C Tran Dinh and V Le Hong.....115

Glass fibers for impact protection systems. A review

G G Ojoc, C Pirvu, S Sandu and L Deleanu.....121

Effects of the application of a non-conventional treatment in magnetic field on a steel for industrial gearings

C P Papadatu, M Bordei and S Ciortan.....133

Aspects regarding the plasticity of the steel subjected to non-conventional tre

C P Papadatu and S Ciortan....141

Comparative study of vibration-absorbing materials to improve the comfort of the crew on a river ship

C L Picu and M E Picu....149

<u>Thermomechanical processing effects on the structure and properties of Fe-based SMAs.</u>
<u>II. Evolution of damping behavior</u>

M Popa, B Pricop, V Bulbuc, E Mihalache, B Özkal and L G Bujoreanu.....157

The structural analysis of the material resulting from the destruction by explosion of a compressed air cylinder

F Potecaşu and O Potecaşu.....163

The influence of vacuum degassing on improving the quality of ship's steels

F Potecasu, C Istrate and O Potecasu.....170

Magnetoelastic properties in polycrystalline Fe-Pd based ferromagnetic shape memory alloys

M Sofronie, B Popescu, AD Crisan, AR Lupu, F Tolea and M Valeanu....178

Graphene Post-Processing

B Tincu, A Avram, V Tucureanu, A Matei, C Marculescu, T Burinaru, F Comanescu, M Popescu and M Avram.....184

Effect of Cr, C, B and Mo substitutions on the structure and magnetic properties of Zr-Co Rare-Earth-free magnetic alloy

F. Tolea, P. Palade, M. Sofronie, B. Popescu and V. Kuncser.....190