

12th Hungarian Conference on Materials Science (HMSC12)

IOP Conference Series: Materials Science and Engineering
Volume 903

Balatonkenese, Hungary
13 - 15 October 2019

Editors:

K. Majlinger
P.J. Szabo

ISBN: 978-1-7138-3186-0
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/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2021)

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
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

NOVEL CONCEPTS FOR ESTABLISHING EXPERT SUPPORT SYSTEMS TO INVESTIGATE THE DEFECT OCCURRING IN METALLURGICAL PHASES IN THE TECHNOLOGY OF ISD DUNAFERR ZRT	1
<i>K Wizner, A Kovári</i>	
INVESTIGATION OF THE MELTING POINT DEPRESSION OF COPPER NANOPARTICLES	7
<i>L Somlyai-Sipos, D Janovszky, A Sycheva, P Baumli</i>	
EFFECT OF THE SAMPLING METHOD ON THE RESULTS OF MELT QUALITY ASSESSMENT OF ALUMINUM ALLOYS WITH COMPUTED TOMOGRAPHY	14
<i>G Gyarmati, Gy Fegyverneki, M Tokár, T Mende</i>	
DEVELOPMENT OF NEW CLADDING TYPES FOR NUCLEAR FUEL	22
<i>Z Hózer, T Novotny, E Perez-Feró, M Horváth, A Pintér Csordás, P Szabó, L Illés, M Schyns, R Delville, D Kim</i>	
THE SIMULATION OF THE STEADY-STATE CONDITIONS OF ALUMINIUM DIRECT-CHILL CASTING	30
<i>Daniel Molnar, Viktor Karpati, Imre Budavari</i>	
THE EFFECT OF PRIMARY PHASE GRAIN REFINEMENT OF AL-SI ALLOYS ON HEAT CRACKING	38
<i>M. Bubenko, D. Molnar, T. Monika, Gy. Fegyverneki</i>	
INVESTIGATION OF THE FORMABILITY OF POLYMERIC ELEMENTS IN DIFFERENT SOFTWARE ENVIRONMENTS FOR THE AUTOMOTIVE INDUSTRY	46
<i>Péter Zoltán Kovács, Bence Tóka</i>	
INFLUENCE OF 3D PRINTING PARAMETERS	53
<i>P Ficzere, N L Lukács</i>	
THE EFFECT OF TITANIUM DIOXIDE ON THE MOISTURE ABSORPTION OF POLYAMIDE 6 PREPARED BY T-RTM	59
<i>Orsolya Viktória Semperger, András Suplicz</i>	
MECHANICAL PROPERTY EVALUATION OF CLOSED AND OPEN-CELL FOAM STRUCTURES WITH FINITE ELEMENT METHOD	67
<i>K Kulcsár, J Kónya, I Zsoldos</i>	
DETECTION OF NEUTRON IRRADIATION INDUCED DEGRADATION OF REACTOR STEEL BY MAGNETIC METHOD	75
<i>G Vértesy, A Gasparics, I Uytdenhouwen, I Szenthe, F Gillemot, R Chaouadi</i>	
SEMI-CONTINUOUS CASTING AND MICROSTRUCTURE INVESTIGATION OF THE ALSI12 ALLOY	81
<i>Agota Kazup, Viktor Karpati, Balazs Hegedus, Zoltan Gacsi</i>	
FRACTURE MECHANICAL ANALYSES OF HIGH STRENGTH STEELS APPLYING EXPERIMENTS AND SIMULATION	89
<i>Zs Koncsik, Zs Lukács</i>	
MEASUREMENT POSSIBILITIES OF WATER CONTENT IN POLYAMIDE.....	97
<i>D V Terjék, E Kókai</i>	

INVESTIGATION OF THE TRIBOLOGICAL PROPERTIES OF NANO-SCALED ZRO ₂ AND CUO ADDITIVE IN AUTOMOTIVE LUBRICANTS	102
<i>Á. D. Tóth, J. Knaup</i>	
EXAMINATION OF WELDED JOINT OF TITANIUM ALLOY USED IN ORAL SURGERY	110
<i>J Kónya, K Kulcsár, H Hargitai</i>	
SEMI-CONTINUOUS CASTING OF ALUMINIUM ALLOYS	116
<i>Viktor Karpati, Balazs Hegedus, Agota Kazup, Tibor Ferenczi, Daniel Molnar, Zoltan Gacsi</i>	
CHARACTERIZATION OF CHEMICALLY FOAMED POLY(LACTIC ACID)	122
<i>K Litauszki, Á Kmetty</i>	
DEFORMABILITY TESTS OF PURE NIOBIUM	129
<i>V Mertinger, I Aviles Santillana, M Benke, A Gallifa Terricabras, A Hlavács, D Janovszky, V Kárpáti, Gy Krállics, T Mikó, A B Palotás</i>	
ENHANCING THE FIREWORK ALGORITHM ECOSYSTEM FOR THE RECONSTRUCTION OF THE HTC FUNCTION	137
<i>Z Fried, I Felde, S Szénási</i>	
THE EFFECT OF MICROSTRUCTURE ON THE DYNAMIC MECHANICAL PROPERTIES OF CARBON FIBER AND CARBON NANOTUBE REINFORCED MULTI-SCALE COMPOSITES WITH A POLYAMIDE 6 MATRIX	145
<i>R Petrény, L Mészáros</i>	
MODELLING OF SEGREGATION DURING INJECTION MOULDING	153
<i>Dorottya Réka Fris, Ferenc Szabó</i>	
CHARACTERISATION OF INHOMOGENEOUS PLASTIC DEFORMATION OF ALMG SHEET METALS DURING TENSILE TESTS	161
<i>Sz Szalai, D Harangozó, I Czinege</i>	
MODELING THE DEFORMATION BEHAVIOR OF POLYMER SANDWICH STRUCTURES WITH INHOMOGENEOUS CORE	169
<i>Laszlo Takacs, Ferenc Szabó</i>	
DEVELOPMENT OF HIGH POWER FEMTOSECOND LASER MICROSTRUCTURES ON AUTOMOTIVE STAINLESS STEEL	177
<i>Ferenc Tajti, Miklós Berczeli</i>	
OPTIMIZATION OF MATERIAL REMOVAL PARAMETERS BY FEMTOSECOND LASER PULSES	185
<i>Miklós Berczeli, Ferenc Tajti</i>	
PRODUCING COMPRESSIVE STRESSES IN THE SURFACE LAYER OF SPHEROIDAL GRAPHITE CAST IRON BY LASER HARDENING	193
<i>Anna Maloveczky, Ádám Filep, Gábor Buza, Ádám Vida</i>	
APPLICATION OF RIETVELD REFINEMENT IN ORIENTATED MATERIAL STRUCTURES	199
<i>E Nagy, F Kristály, V Mertinger</i>	
THE EFFECTS OF THE STEEL'S SURFACE QUALITY ON THE PROPERTIES OF ANTI-CORROSION COATINGS	207
<i>B. Herbath, K. Kovacs</i>	

MICROSTRUCTURE EXAMINATION OF ADDITIVE MANUFACTURED 316L STEEL	215
<i>Kemény Dávid Miklós, Pammer Dávid, Kovács Dorina</i>	
CHARACTERIZATION OF SHORT FIBER-REINFORCED POLYLACTIC ACID COMPOSITES PRODUCED WITH FUSED FILAMENT FABRICATION (FFF).....	221
<i>Tóth Csenge, Krisztián Norbert Kovács</i>	
SIMULATION OF HOT ROLLING BY CELLULAR AUTOMATA.....	229
<i>T Hegyes, P Barkóczy</i>	
DETERMINING THE OPTIMUM HEATING TIME OF SMALL SIZED TEST SPECIMEN MADE FROM WELDABLE MILD STEEL	235
<i>F Tancsics, T Ibriksz</i>	
THE EFFECT OF DIFFERENT GRAIN SIZES AND HEAT INPUT ON THE GAS PRESSURE INSIDE ARTIFICIAL RESIN-BONDED SAND CORES.....	243
<i>L Mádi, I Budavári, L Varga</i>	
WETTING OF NON-REACTIVE AND REACTIVE METALLIC SUBSTRATES BY BRAZING LIQUIDS.....	251
<i>Z Weltsch</i>	
LIGHTWEIGHT MANUFACTURING OF AUTOMOTIVE PARTS.....	258
<i>T Wadas, M Tisza</i>	
CONSERVATION PURPOSE MATERIAL TESTING OF CORROSION PRODUCTS ON OUTDOOR BRONZE STATUES	269
<i>Szilvia Szilvia, Melinda Nagy, Laura Juhász, Tamás Bubonyi, Barkóczy Péter, György Forgács, Eszter Szatmáriné Bakonyi</i>	
COMPARISON OF CT AND METALLOGRAPHIC METHOD FOR EVALUATION OF MICROPOROSITIES OF DYE CAST ALUMINUM PARTS	277
<i>Tamás Bubonyi, Péter Barkóczy, Zoltán Gácsi</i>	
EFFECT OF THE HOMOGENIZATION AND COLD DEFORMATION ON THE MECHANICAL PERFORMANCE OF AL8006 ALUMINIUM ALLOY	283
<i>J Pázmán, K Fehér, V Gonda, B Verő</i>	
MAGNETO-ACOUSTIC INVESTIGATION ON STEEL SAMPLES.....	291
<i>O. Szabados, R. Baki, Zs. Csincsi, J. Molnar, Á. Pámer, P. Szabó, G. Por</i>	
DEFORMATION-SOFTENING IN ULTRAFINE-GRAINED MATERIALS	298
<i>Jenő Gubicza, Nguyen Quang Chinh</i>	
PREPARATION OF SOFT MAGNETIC COMPOSITE FROM FE-6.9WT%SI BY DIFFERENT HEAT TREATMENT STRATEGIES.	306
<i>Bence Kocsis, Lajos Károly Varga, Ibolya Zsoldos</i>	
ROOT CAUSE ANALYSIS OF METALLURGICAL DEFECTS IN CONTINUOUS CAST STEEL SLABS AT ISD DUNAFERR ZRT.....	312
<i>K Wizner, A Kovári</i>	
ON THE NECESSITY OF DOMESTIC RESEARCH ON NUCLEAR MATERIALS SCIENCE	320
<i>Peter Trampus</i>	

MECHANICAL PROPERTIES OF ALSI10MNMG MATRIX SYNTACTIC FOAMS FILLED WITH LIGHTWEIGHT EXPANDED CLAY PARTICLES.....	328
<i>A Szlancsik, D Kincses, I N Orbulov</i>	
JOINING ALUMINIUM AND POLY(LACTIC ACID) SPECIMENS BY LASER BEAM – A FEASIBILITY STUDY.....	334
<i>T Temesi, T Czigany</i>	
INFLUENCE OF PACK CEMENTATION TIME ON THE MICROSTRUCTURE OF CU NANOFOAMS PROCESSED BY DEALLOYING.....	340
<i>Jenei Péter, Gigap Han, Pham Tran Hung, Heeman Choe, Jenő Gubicza</i>	
FLAME RETARDANCY OF RECYCLED PET FOAM.....	347
<i>V A Szabó, G Dogossy</i>	
INVESTIGATION OF THE INTERFACIAL ADHESION OF GLASS BEAD-FILLED MULTICOMPONENT INJECTION MOULDED COMPOSITES.....	355
<i>A Suplicz, R Boros, O V Semperger</i>	
FATIGUE TESTS OF ZINC ALUMINIUM MATRIX SYNTACTIC FOAMS FILLED WITH EXPANDED PERLITE.....	362
<i>A Kemény, B Katona, N Movahedi, T Fiedler</i>	
INVESTIGATION OF VVER-1200 REACTOR PRESSURE VESSEL'S MATERIAL.....	368
<i>Dorina Kovács, Dávid Kemény</i>	
NEUTRON IRRADIATION OF ZIRCONIUM ALLOYS IN THE BUDAPEST RESEARCH REACTOR.....	373
<i>I Szenthe, F Gillemot, M Horvath, Z Hózer</i>	
MANUFACTURING AND INVESTIGATION OF ALUMINIUM MATRIX BIMODAL METAL FOAMS.....	380
<i>B Leveles, A Kemény, I N Orbulov</i>	
EFFECT OF BERACHA-I TYPE COLOR ETCHANT ON THE FERRITE PHASE IN DIFFERENT TYPE FE-C ALLOYS.....	387
<i>József Bálint Renkó, Attila Bonyár, Péter János Szabó</i>	
NUMERICAL MODELLING OF THE THINNING BEHAVIOUR OF SHEET METAL PARTS.....	393
<i>V Gál, Zs Lukács</i>	
A COMPARATIVE ANALYSIS OF CHARACTERISTICS OF CUTTING FORCES AT MICRO-MILLING OF HARDENED STEELS.....	399
<i>B Z Balázs, M Takács</i>	
PREPARATION AND CHARACTERIZATION OF POLY(LACTIC ACID)/BOEHMITE ALUMINA COMPOSITES FOR ADDITIVE MANUFACTURING.....	407
<i>L Lendvai, I Fekete</i>	
THE INFLUENCE OF THE BASE MATERIAL - FILLER METAL PAIRING ON THE FATIGUE CRACK PROPAGATION OF 700 MPA STRENGTH CATEGORY WELDED JOINTS.....	414
<i>J Lukács, Hfh Mobark</i>	
INVESTIGATION OF THE ENERGY ABSORPTION PROPERTIES OF CROSS-LINKED POLYETHYLENE FOAMS.....	422
<i>M Tomin, Á Kmetty</i>	

EXAMINATION OF CORRELATION BETWEEN THE GRANULOMETRIC PROPERTIES OF
MOLDING AND CORE SAND MIXTURES AND THEIR PRODUCTION PARAMETERS..... 430
Henrietta Hudák, Dr. László Varga

Author Index