

4th Global Conference on Materials Science and Engineering (CMSE 2015)

IOP Conference Series: Materials Science and Engineering
Volume 103

Macau, China
3 – 6 August 2015

Editors:

Harry E. Ruda

Alexander Khotsianovsky

ISBN: 978-1-5108-1812-5
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.

Copyright© (2015) by the Institute of Physics
All rights reserved. The material featured in this book is subject to
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2016)

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: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

Table of contents

Volume 103

4th Global Conference on Materials Science and Engineering (CMSE 2015)
3–6 August 2015, Macau, China

Accepted papers received: 2 November 2015

Published online: 9 December 2015

Preface

011001

[4th Global Conference on Materials Science and Engineering \(CMSE 2015\)](#) OPEN ACCESS H E Ruda and A Khotsianovsky

011002

[Peer review statement](#) OPEN ACCESS

Papers

012001

[Influence of specimen size on autogenous volume deformation of concrete with magnesium oxide](#) OPEN ACCESS S L Yan and C L Chen""ri 03

012002

[Experimental study on the microstructure evolution of 55SiMnMo](#) OPEN ACCESS Y Q Zhao, H Y Qi, F F Liu, X G Wang and Z H Ma""ri 0:

012003

[Research on geometrical model and mechanism for metal deformation based on plastic flow](#) OPEN ACCESS H P An, Z Y Rui and X Li""ri 037

012004

[Analysis of the influence of advanced materials for aerospace products R&D and manufacturing cost](#) OPEN ACCESS A W Shen, J L Guo and Z J Wang""ri 045

012005

[A study on the influence of ultrasonic processing on microstructure during laser welding phases](#) OPEN ACCESS H D Liu, F Y Hu, A Y Cui and H B Li""ri 055

012006

[Structural and magnetic properties of \$\text{Pr}_{0.3}\text{Tb}_{0.7}\text{Fe}_{1.9-x}\text{Mn}_x\$ Ribbons](#) OPEN ACCESS Z Ren, L Chen, S Li, H Liu and Z Lu""ri 05;

012007

[Effect of rapid set binder on early strength and permeability of HES latex modified road repair pre-packed concrete](#) OPEN ACCESS J W Han, S K Lee, C Yu and C G Park""ri 066

012008

[Facile synthesis of silver-tin oxide electrical contact materials by in-situ decomposition of a uniform mixture precursor](#) OPEN ACCESS Z J Lin, X D Sun, S H Liu, M Xie, J L Chen and J G Li""ri 073

012009

[Tensile properties of glass/natural jute fibre-reinforced polymer bars for concrete reinforcement](#) OPEN ACCESS J W Han, S K Lee, K W Kim and C G Park""ri 07;

012010

[The enhancing effect of mesogen-jacketed liquid crystalline polymer PBPCS on epoxy resin](#) OPEN ACCESS C P Chai, X J Li, Y Zhu, Y X Gao, G P Li and Y J Luo""ri 088

012011

[Revealing the effect of electrode materials on the performance of low-voltage pentacene thin film transistor by in-situ surface potential measurement](#) OPEN ACCESS Q L Chen, M Ouyang, Q C Liu, H Y Jin and W G Xie""ri 094

012012

[Application of alcohol based spraying coating on green sand mould for steel casting](#) OPEN ACCESS Z L Xu, J Wang, S S Yang, Q L He and H Sh Xiong""ri 09:

012013

[The effect of adding SiO₂ on the pore structure and the color fastness to washing of PVA sponge](#) OPEN ACCESS Y I Chang, T Y Lin, W Y Cheng and L Jang""ri 0: 6

012014

[Economical evaluation of damaged vacuum insulation panels in buildings](#) OPEN ACCESS Y M Kim, H Y Lee, G S Choi and J S Kang""ri 0: 6

012015

[Effect of hydrogen storage alloy on combustion properties of ammonium perchlorate/glycidylazide polymer -based propellant](#) OPEN ACCESS G P Li, Y M Dou, C P Chai and Y J Luo""ri 0323

012016

[Preparation of CNTs rope by electrostatic and airflow field carding with high speed rotor spinning](#) OPEN ACCESS J F Dai, J F Liu, J T Zou and Y L Dai""ri 032:

012017

[A parametric design of ceramic faced composite armor subject to air weapon threats](#) OPEN ACCESS Y N Guo and Q Sun""ri 0336

012018

[Effect of turbine materials on power generation efficiency from free water vortex hydro power plant](#) OPEN ACCESS P Sritram, W Treedet and R Suntivarakorn""ri 0346

012019

[3D X-rays application for precision measurement of the cell structure of extruded polystyrene](#) OPEN ACCESS J Y Lim, K Y Kim, H S Shin, S Yeom and S E Lee""ri 0353

012020

[Effect of tool eccentricity on surface periodic banded structures in friction stir welding](#) OPEN ACCESS N Guo, M R Wang, Q Meng, L Zhou and D Y Tang""ri 0358

012021

[Effect of ageing on phase evolution and precipitation behaviour of duplex steel](#) OPEN ACCESS P Podany, M Kover and J Dlouhy""ri 0363

012022

[Effects of cryogenic treatment on mechanical property and microstructure of JIS SKH51 high-speed steel](#) OPEN ACCESS C C Wu, W C Chen and L H Chen""ri 036:

012023

[Improvement, characterization and use of waste corn cob ash in cement-based materials](#) OPEN ACCESS P Suwanmaneechot, T Nochaiya and P Julphunthong""ri 0378

012024

[Validity and reliability of estimated modulus of elasticity of cementitious materials](#) OPEN ACCESS N U Kockal""ri 0389

012025

[Accelerated carbide spheroidisation of 1.2343 tool steel by induction heating](#) OPEN ACCESS J Dlouhý and M Kövér""ri 0395

012026

[Preparation of oxide powder by continuous oxidation process from recycled Fe-77Ni alloy scrap](#) OPEN ACCESS J Y Yun, D H Park, G J Jung and J P Wang""ri 03: 2

012027

[Infrared spectroscopy for a quantitative determination of \$\text{CH}_{3-n}\text{Cl}_n\text{COCl}\$ in \$\text{TiCl}_4\$](#) OPEN ACCESS B Yang, Y Wang, H Tan, J He and G Song""ri 03: 8

012028

[The experiments for mechanical properties of 20Cr2Ni4 steel and the coefficient definition of constitutive equation](#) OPEN ACCESS L Pang, G C Liu and J P Lu""ri 03; 3

012029

[Spring-back of flexible roll forming bending process](#) OPEN ACCESS Y Zhang, D H Kim and D W Jung""ri 03; :

012030

[Experimental study on improving cement quality with oxygen- enriched combustion technology](#) OPEN ACCESS Y Q Liu, A M Zhang, S Qing, F S Li, S P Yang and Z F Yang""ri 0426

012031

[Numerical simulation of flexible blank drawer formation](#) OPEN ACCESS L C Li and M Z Li""ri 0433

012032

[Influence of process parameters to composite interface organization and performance of liquid/solid bimetal](#) OPEN ACCESS S F Rong, Y C Zhu, Y H Wu, P H Yang, X L Duan and H T Zhou""ri 0439

012033

[Atomistic modeling determination of placeholder binding energy of Ti, C, and N atoms on a-Fe \(100\) surfaces](#) OPEN ACCESS X J Wei, Y P Liu and S P Han""ri 0445

012034

[Artificial neural networks application for modeling of friction stir welding effects on mechanical properties of 7075-T6 aluminum alloy](#) OPEN ACCESS E Maleki""ri 0453

012035

[Study on springback of high tension steel following various temperature and local pre-heating in the roll forming process](#) OPEN ACCESS D H Kim, D W Jung, D H Yoon and Y Zhang""ri 0468

012036

[Accurate prediction model of bead geometry in crimping butt of the laser brazing using generalized regression neural network](#) OPEN ACCESS Y M Rong, Y Chang, Y Huang, G J Zhang and X Y Shao""ri 0479

012037

[Effects of process parameters on microstructural evolution and properties of AZ61 alloy during hot extrusion](#) OPEN ACCESS Y L Lu, X C Li, W T Xu, D Wu and M Yang""ri 0488

012038

[FEM analysis of dynamic behavior of asphalt pavement structure weakened by grassroots with account of hydraulic and vehicle load coupling effects](#) OPEN ACCESS J Huang, X Pan, S B Dai and Y Cai""ri 0495

012039

[The effect of the model posture on the forming quality in the CNC incremental forming](#) OPEN ACCESS H Zhu, W Zhang, J L Bai, C Yu and Y F Xing""ri 04: 2

012040

[Simulation and design of ECT differential bobbin probes for the inspection of cracks in bolts](#) OPEN ACCESS S W Ra, K H Im, S G Lee, H J Kim, S J Song, S K Kim, Y T Cho, Y D Woo and J A Jung""ri 04: 7

012041

[Load and wear experiments on the impact hammer of a vertical shaft impact crusher](#) OPEN ACCESS J H Yang, H Y Fang and M Luo""ri 04; 7

012042

[Enhanced mercury removal from fix-bed reactor by lamella manganese oxide sorbents](#) OPEN ACCESS H W Cheng and C T Yu""ri 0524

012043

[Using magnetorheological fluids in an innovative hybrid bicycle damper](#) OPEN ACCESS Y J Shiao and T S Nguyen""ri 0529

012044

[Electrochemical way of molybdenum extraction from the Bimetallic systems of Mo-W](#) OPEN ACCESS L K Kudreeva, M K Nauryzbaev, A P Kurbatov, D H Kamysbaev, A O Adilbekova and Z S Mukataeva""ri 0537

012045

[Theoretical and experimental investigations of thickness- stretch modes in 1-3 piezoelectric composites](#) OPEN ACCESS Z T Yang, D P Zeng, M He and H Wang""ri 0542

012046

[A study of factors affecting properties of AM/AMPS/NVP terpolymeric microspheres prepared by inverse suspension polymerization](#) OPEN ACCESS J F Jiang, Q Zhao, M Q Lin, Y F Wang, S M Dang and F F Sun""r i 0548

012047

[Estimating surface hardening profile of blank for obtaining high drawing ratio in deep drawing process using FE analysis](#) OPEN ACCESS C J Tan, A Aslian, B Honarvar, J Puborlaksono, Y H Yau and W T Chong""r i 0558

012048

[Experimental Study and Dynamic Modeling of Metal Rubber Isolating Bearing](#) OPEN ACCESS Ke Zhang, Yanguo Zhou and Jian Jiang""r i 0564

012049

[Tribological behavior of HM1 steel fabricated by precision spray forming under high temperature](#) OPEN ACCESS Y Q Cheng, P Zhang, M D Zhu and Y S Sun""r i 056;

012050

[Shear strength and structural behaviours of HPRWO with web openings with circular steel tubes](#) OPEN ACCESS S J Lee and J M Park""r i 0577

012051

[Effects of specimen width and rolling direction on the mechanical properties of beryllium copper alloy C17200](#) OPEN ACCESS W C Lee and Z R Liu""r i 0586

012052

[High-temperature tribological properties of NiCoCrAlY-WSe₂-BaF₂·CaF₂ solid lubricant coatings prepared by plasma spraying](#) OPEN ACCESS X H Chen, X J Yuan, J Xia and Z H Yu""r i 0593