5th Annual International Conference on Material Science and Engineering (ICMSE 2017)

IOP Conference Series: Materials Science and Engineering Volume 275

Xiamen, China 20 – 22 October 2017

Editors:

Roman Szewczyk Mariya Aleksandrova

ISBN: 978-1-5108-5531-1

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© (2017) 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. (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 Fax: 845-758-2633

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

Table of contents

Volume 275

5th Annual International Conference on Material Science and Engineering (ICMSE2017)

20-22 October 2017, Xiamen, Fujian, China

Accepted papers received: 16 November 2017

Published online: 5 January 2018

Preface

5th Annual International Conference on Material Science and Engineering (ICMSE2017)

Committees of ICMSE2017

Keynote Speakers of ICMSE2017

Peer review statement

Papers

Chapter 1: Nano-scale and Amorphous Materials

<u>Preparation and Adsorption Property of Imido-acetic Acid Type Chelating Nano-fibers</u> by Electro-spinning Technique

Jiali Yang, Lansi Lu, Zhu Zhang, Minhui Liao, Huirong He, Lingxing Li, Jida Chen and Shijin Chen.....1

The Research Progress of Zr Based Amorphous Composite Materials

Xiaohong Su, Huie Hu and Xiaodong Kong....13

Effects of Growth Temperature on Electrocatalytic Properties of Three-dimensional Sulfur-doped Graphene Foam

Jinhao Zhou and Yuanfu Chen....21

Divalent Metal Ions Induced Osteogenic Differentiation of MC3T3E1

Guoshou Wang, Wenta Su, Pohung Chen and Teyang Huang.....27

The Improvement of Utilization Ratio of Metal Organic Sources for the Low Cost Preparation of MOCVD-synthesized YBCO Films based on a Self-heating Technology

Ruipeng Zhao, Qing Liu, Yudong Xia, Bowan Tao and Yanrong Li....35

Synthesis and Characterization Carbon Nanotubes Doped Carbon Aerogels

Yuelong Xu, Meifang Yan and Zhenfa Liu....41

<u>Hydrothermal Synthesis</u>, <u>Characterization and Raman Vibrations of Chalcogenide SnS</u> Nanorods

Shujaat Ali, Fengping Wang, Saba Zafar and Tahir Iqbal....46

Chapter 2: Biomaterials

Rapid and Convenient Separation of Chitooligosaccharides by Ion-Exchange Chromatography

Yuxiao Wu, Wei-Peng Lu, Jianing Wang, Yunhua Gao and Yanchuan Guo.....51

Synthesis and Characterization of Hyaluronic Acid Modified Colloidal Mesoporous Silica Nanoparticles

Wenbiao Zhang, Yu Wang, Zhen Li, Wanxia Wang, Honghao Sun and Mingxing Liu.....57

Tao Dai, Jie Fang, Wen Yu and Guoming Xie.....61

<u>High Concentration of Benzyladenine Solution Stimulates Anthers for Inducing Callus in Ricinus Communis L.</u>

Ying Liu, Shuying Yan, Fuguang Yang, Dongliang Li, Jianian Tang, Guoxuan Liu, Shiwan Lin, Sufang Niu and Yali Yang.....66

Formation of Polyelectrolyte Complex Colloid Particles between Chitosan and Pectin with Different Degree of Esterification

Hui Wang, Hongyuan Sun and Jieyu He.....72

Anti-bacteria Effect of Active Ingredients of Cacumen Platycladi on the Spoilage Bacteria of Sauced Pork Head Meat

Xiao Li, Lingyi Xu, Yuqian Cui, Meixia Pang, Fang Wang and Jinghua Qi.....79

Antibacterial Activity of Anthraquinone from Aloe on Spiced Pig Head

Lingyi Xu, Xiao Li, Yuqian Cui, Meixia Pang, Fang Wang and Jinghua Qi.....85

Nitrite Contents in Fresh Vegetables of Different Families and Genus

Yuqian Cui, Xiao Li, Lingyi Xu, Meixia Pang, Jinghua Qi and Fang Wang.....91

Chapter 3: Functional and Structural Materials

Research on the Titaniferous Slag Smelting Process and Furnace

Wei Lin and Piyu Guo.....98

Effect of MUF/Epoxy	Microcapsules	on Mechanical	Properties	and Fractograp	hy of
Epoxy Materials	-		-		•

Zhuo Ni, Yuhao Lin and Xuexiao Du.....102

Self-Repairing Mechanism of MUF/Epoxy Microcapsules for Epoxy Material

Zhuo Ni, Yuhao Lin and Xiaobo Zhou.....110

Mix Proportion Design of Asphalt Concrete

Xianhu Wu, Lingling Gao and Shoujun Du....121

Research on Improving Low Rank Coal Caking Ability by Moderate Hydrogenation

Peng Huang....132

PIV Measurements of Gas Flow Fields from Burning End

Yifei Huang, Junzhang Wu, Jingsong Zeng, Darong Tang and Liang Du.....140

Research on a Sudden Explosion and its Environmental Impact

Maosheng Ye, Hui Ma and Qingwei Ni....144

The Method of Calculating the Shock Effect of Falling Rock Research

Kexuan Guo, Hongkai Chen and Tao Chen....153

Research on the Calculation Method of Internal Force of Combined Energy Dissipation Shed-tunnel Roof

Fiao Liao, Deyu Meng, Zhiyong Yang, He Wang and Ranjie Wu....160

Ctude	r on Excitation	n tricared	Domogo	Machan	iam in	Davilous	Doole
Study	on Excitatio	n-u iggerea	Damager	viechan	18111 111	remous	NOCK

Hongkai Chen and Shengjuan Wang.....167

Failure Analysis of a Service Tube

Zhongdong Xie, Weiguo Cai, Zhenxing Li, YiMing Guan, Baocheng Zhang and XiaoTong Yang.....174

Analysis and Life Evaluation of CS₂ Reaction Tube

Zhenxin Li, Xiaofei Ding, Zhongdong Xie, Xiaotong Yang and Yiming Guan.....179

The Design and Analysis of the Hydraulic-pressure Seal of the Engine Box

Zhenya Chen, Xingquan Shen, Zhijie Xin, Tingting Guo and Kewei Liao.....184

<u>Investigation of Comfort Properties of Knitted Denim</u>

Abdul R Akbar, Siwei Su, Junaid Khalid, Yingjie Cai and Lina Lin.....190

Stability and Control of the Convergence Point for Two-strand Yarn Spinning

Wenyan Liu, Yanping Yu, Feng Li and Yajun Zhao.....196

<u>Theoretical Studies of the Electron Paramagnetic Resonance Parameters and Local Structure for VO²⁺ in Oxyfluoroborate Glasses</u>

Huaming Zhang, Xiaopeng Yu and Wenbo Xiao.....203

Microstructure, Thermal, Mechanical, and Dielectric Properties of BaO–CaO–Al₂O₃–B₂O₃–SiO₂ Glass-Ceramics

Bo Li, Haibo Bian and Yi Fang....208

Fabrication of PLA Filaments	and its Printable Performance
------------------------------	-------------------------------

Wenjie Liu, Jianping Zhou, Yuming Ma, Jie Wang and Jie Xu....214

Construction of a Dry Ash Dam with Soilbags and Slope Stability Analysis

Hui Li, Yingjun Song, Jiaorong Gao, Longhua Li, Yuqi Zhou and Hui Qi.....220

<u>Comparative Research on Characteristics of the Isolation Systems with Dry Friction</u>
Damping and with Vicious Damping under Base Excitation

Junfang Hou, Min jing, Weihua Zhang, Yahui Lu and Haiwen He....229

Welding Thermal Simulation and Corrosion Study of X-70 Deep Sea Pipeline Steel

Weipeng Zhang, Zhuoran Li, Jixiang Gao and Zhengwu Peng.....235

Effect of Ultra Fast Cooling Coiling Temperature on Microstructures and Properties of X80 Pipeline Steel

Zhou Feng, Li liejun, Gao Jixiang, Sun Haibo and Peng Zhengwu.....240

Effect of Different Connection Modes on Bolt Structural Properties of TC4 Alloy in Selective Laser Melting

Xiaodan Li, Shuangjun Huang, Liang Xu, Li Hui and Song Zhou.....247

Surface Alloying of Au Atoms on a Ni (110) Surface: a Theoretical Study

Xin Li, Tianfu Gao, Chunhai Jiang and Renzhong Huang.....253

Microstructure and Mechanical Properties of C/C Composite/TC17 Joints with Ag-Cu-Ti Brazing Alloy

Xiujie Cao, Ying Zhu, Wei Guo, Peng Peng and Kaituo Ma.....258

<u>High Strain Rate Response of 7055 Aluminum Alloy Subject to Square-spot Laser Shock</u> Peening

Rujian Sun, Ying Zhu, Liuhe Li, Wei Guo and Peng Peng.....266

Effect of Bamboo Viscose on the Wicking and Moisture Management Properties of Gauze

Abdul R Akbar, Siwei Su, Bilal Amjad, Yingjie Cai and Lina Lin....274

Chapter 4: Electronic, Optic and Magnetic Materials

The Optical Dielectric Model of Cu Thin Film and Its Verification

Guozhong Lai, Xiong Liang and Jing Lv....280

Application and Prospect of Superconducting High Gradient Magnetic Separation in Disposal of Micro-fine Tailings

Changqiao Yang, Suqin Li, Zijie Guo and Jiawei Kong.....285

Fabrication and Characteristics of Al/PTFE Multilayers and Application in Microinitiator

Yuxin Zhang, Hongchuan Jiang, Xiaohui Zhao, Wanli Zhang and Yanrong Li....292

Structure and Photoluminescence Properties of β-Ga2O3 Nanofibres Synthesized via Electrospinning Method

Chao Sun, Jinxiang Deng, Le Kong, Liang Chen, Zhen Shen, Yisen Cao, Hao Zhang and Xiaoran Wang.....297

Enhanced Light Absorptions of Pyramid Square Grating Structure for Crystalline Silicon Solar Cells

Lingxiao Wu, Aqing Chen, Zhenguo Ji and Qinan Mao.....304

<u>PLZT Ceramic Driving Rotary Micro-mirror Based on Photoelectric-electrostatic Mechanism</u>

Yujuan Tang, Zhong Yang, Yusong Chen and Xinjie Wang.....308