

Global Conference on Polymer and Composite Materials (PCM 2017)

IOP Conference Series: Materials Science and Engineering
Volume 213

Guangzhou, China
23 – 25 May 2017

ISBN: 978-1-5108-4415-5
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© (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. (2017)

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 213

**2017 Global Conference on Polymer and Composite Materials (PCM 2017)
23–25 May 2017, Guangzhou, China**

**Accepted papers received: 20 June 2017
Published online: 6 July 2017**

Preface

011001

OPEN ACCESS

[2017 Global Conference on Polymer and Composite Materials \(PCM 2017\)](#)

011002

OPEN ACCESS

[Peer review statement](#)

Papers

012001

OPEN ACCESS

[Effect of addition of Si on thermal and electrical properties of Al-Si-Al₂O₃ composites](#)

R Cao, J X Jiang, C Wu and X S Jiang.....1

012002

OPEN ACCESS

[Effect of EVA on thermal stability, flammability, mechanical properties of HDPE/EVA/Mg\(OH\)₂ composites](#)

R Cao, Z L Deng, Y H Ma and X L Chen.....9

012003

OPEN ACCESS

[Analysis of micro-failure behaviors in artificial muscles based on fishing line and sewing thread](#)

J B Xu, K F Cheng, S L Tu, X M He, C Ma, Y Z Jin, X N Kang, T Sun and Y Zhang.....17

012004

OPEN ACCESS

[Developing analytical solutions for transverse, matrix strain magnification and fibre strain reduction in uniaxially aligned continuous fibre reinforced composites, based on the principle of conservation of strain energy and the Reuss rule](#)

M Maringa and L M Masu.....25

012005

OPEN ACCESS

[Research of spin-orbit interaction in organic conjugated polymers](#)

H Li, M Y Zhou, S Y Wu and X R Liang.....48

012006

OPEN ACCESS

[Blasting methods for heterogeneous rocks in hillside open-pit mines with high and steep slopes](#)

Y J Chen, Z G Chang, X H Chao and J F Zhao.....54

012007

OPEN ACCESS

[Electrospinning chitosan blends for nonwovens with morphologies between nanofiber mat and membrane](#)

N Grimmelsmann, S V Homburg and A Ehrmann.....59

012008

OPEN ACCESS

[Effect of chain extenders on mechanical and thermal properties of recycled poly \(ethylene terephthalate\) and polycarbonate blends](#)

Y Srithep, D Pholharn, A Dassakorn and J Morris.....64

012009

OPEN ACCESS

[Synthesis and photoluminescence properties of ZnO nanohelices](#)

M Y Zhou, L S Qu and H Gao.....73

012010

OPEN ACCESS

[Surface modification by deformational cutting for improving the bonding strength of polymers and polymer composite materials with metals and with each other](#)

N N Zubkov and I V Bezin.....78

012011

OPEN ACCESS

[Effect of biobased fillers nature on biodeterioration of hybrid polyethylene composites by mold fungi](#)

E E Mastalygina, A A Popov and P V Pantyukhov.....87

012012

OPEN ACCESS

[Degradation kinetics of ethylene-octene copolymer/wood flour biocomposites in dependence to filler content](#)

A K Zykova, P V Pantyukhov, T V Monakhova and A A Popov.....95

012013

OPEN ACCESS

[Matching refractive indices of two fluids and finding interfacial tension for the purpose of fuel spray imaging](#)

Y H Liang.....101

012014

OPEN ACCESS

[Molecular dynamic simulations of selective self-diffusion of CH₄/CO₂/H₂O/N₂ in coal](#)

Y Song, B Jiang and F L Li.....108

012015

OPEN ACCESS

[Influence of drill helical direction on exit damage development in drilling carbon fiber reinforced plastic](#)

Y Bai, Z Y Jia, F J Wang, R Fu, H B Guo, D Cheng and B Y Zhang.....128

012016

OPEN ACCESS

[New multifunctional zirconia composite nanomaterials – from electronics to ceramics](#)

I Danilenko, O Gorban, A Shylo, L Akhkozov, M. Lakusta and T Konstantinova.....138

012017

OPEN ACCESS

[Core/shell nanocomposite for biomedicine and environmental safety](#)

O Gorban, I Danilenko, N Mitina, S Gorban, A Zaichenko and T Konstantinova.....146

012018

OPEN ACCESS

[Morphological and thermal properties of PLA/OMMT nanocomposites prepared via vane extruder](#)

Y Luo, H Y Liu, G Z Zhang and J P Qu.....153

012019

OPEN ACCESS

[Surface analysis of Fe-Co-Mo electrolytic coatings](#)

G Sh Yar-Mukhamedova, N D Sakhnenko, M V Ved', I Yu Yermolenko and S I Zyubanova.....162

012020

OPEN ACCESS

[Mixed alumina and cobalt containing plasma electrolytic oxide coatings](#)

G Sh Yar-Mukhamedova, M V Ved', A V Karakurkchi and N D Sakhnenko.....168

012021

OPEN ACCESS

[Microwave plasma assisted process for cleaning and deposition in future semiconductor technology](#)

S Altmannshofer, J Boudaden, R Wieland, I Eisele and C Kutter.....174

012022

OPEN ACCESS

[Effect of initiators on synthesis of poly\(L-lactide\) by ring opening polymerization](#)

D Pholharn, Y Srithep and J Morris.....182

012023

OPEN ACCESS

[Preparation of copper thin film mask by sputtering technique assisted by polymer mask photolithography](#)

C Pakpum.....190

012024

OPEN ACCESS

[Effect of annealing treatment on structure of Ag doped ZnO films deposited by thermal evaporation method](#)

L N Wang, L Zhou, D Zhou, Y Yu, Z Q Luan, D L Tang, N Zhu, Z H Gao, N Liu and L Z Hu.....196

012025

OPEN ACCESS

[Morphology of polycaprolactone/needle-shaped hydroxyapatite \(PCL/HAN\) nanocomposite blends using ultrasound assisted melt blending](#)

S Akhbar, I Subuki, R W Sharudin and M H Ismail.....201

012026

OPEN ACCESS

[The effect of C₆₀ on the optical absorption properties of HPPH photosensitizer](#)

C H Zhou, Z H Sun, J C Zhang and G Fan.....206

012027

OPEN ACCESS

[The application of PA/CF in stab resistance body armor](#)

M Q Yuan, Y Liu, Z Gong and X M Qian.....212

012028

OPEN ACCESS

[Structural parameter effect of porous material on sound absorption performance of double-resonance material](#)

C Fan, Y Tian, Z Q Wang, J K Nie, G K Wang and X S Liu.....220

012029

OPEN ACCESS

[Synthesis, curing of hydroxyl-terminated liquid fluoroelastomer: thermal, chemical resistant and mechanical properties](#)

N Li, J J Wu, Y Q Wang, J H Wu, J J Zhang, J Z Huo and Y P Bai.....228

012030

OPEN ACCESS

[Prediction of elastic properties of pyrolytic carbon based on orientation angle](#)

Y S Song, L H Qi and Y X Li.....236

012031

OPEN ACCESS

[Experimental study on relationship between processing parameters and stress wave propagation during automated fiber placement process](#)

H Y Fu, W Q Li, S Z Sun and Z Y Han.....242

012032

OPEN ACCESS

[High performance UV and thermal cure hybrid epoxy adhesive](#)

C F Chen, S Iwasaki, M Kanari, B Li, C Wang and D Q Lu.....249

012033

OPEN ACCESS

[Effect of gas inlet angle on the gas-assisted extrusion forming of polymer melt](#)

Z Ren and X Y Huang.....255

012034

OPEN ACCESS

[The crystal morphology and mechanical properties based on poly\(l-lactic acid\)/silica nanocomposites](#)

Y H Cai.....260

012035

OPEN ACCESS

[Moisture absorption of starch based biocomposites reinforced with water hyacinth fibers](#)

H Abrial and J Hartono.....265

012036

OPEN ACCESS

[A study on PVDF-HFP gel polymer electrolyte for lithium-ion batteries](#)

W Liu, X K Zhang, F Wu and Y Xiang.....269

012037

OPEN ACCESS

[Study on epoxy resin modified by polyether ionic liquid](#)

X C Jin, L Y Guo, L L Deng and H Wu.....275

012038

OPEN ACCESS

[Dissolution behaviour of polyethersulfone in diglycidyl ether of bisphenol-A epoxy resins](#)

J L Zhou, C Cheng, H Zhang, Z Y Sun, S Zhu and M H Yu.....280

012039

OPEN ACCESS

[Structural ATR-IR analysis of cellulose fibers prepared from a NaOH complex aqueous solution](#)

Y P Yang, Y Zhang, Y X Lang and M H Yu.....288

012040

OPEN ACCESS

[Preparation and characterizations of flame retardant polyamide 66 fiber](#)

Y Y Li, K Liu and R Xiao.....295

012041

OPEN ACCESS

[Improved adhesion performances of aramid fibers with vinyl epoxy via supercritical carbon dioxide modification](#)

M L Qin, H J Kong, M H Yu and C Q Teng.....300

012042

OPEN ACCESS

[Effects of various power process parameters on deposition efficiency of plasma-sprayed Al₂O₃-40% wt.TiO₂ coatings](#)

Y J Wang, J Y Xu, Q H Zhao, Y Wang and B Gao.....308

012043

OPEN ACCESS

[Research on the corrosion inhibitors of zinc in hydrochloric acid](#)

C X Sun, Y M Chen, H W Xu, C S Huang, M Zhang, J Y Wu, M Chen and M Xue.....315

012044

OPEN ACCESS

[Molecular weight and distribution of ultra-high molecular weight poly \(p-phenyleneterephalamide\)](#)

H J Kong, X M Ding, M M Qiao, Y Wu and M H Yu.....321

012045

OPEN ACCESS

[Optimization of preparation process and characterization of carboxymethyl chitosan/sodium alginate hemostatic sponge](#)

Z Hu, Q Q Ouyang, Y Cheng, P Z Hong, M N Liao, F J Chen and S D Li.....327

012046

OPEN ACCESS

[Preparation and thermal properties of carbon Nanotubes/5-Amino-1H-Tetrazole energetic composites](#)

C H Jia, S T Wang, Y C Li and S P Pang.....334

012047

OPEN ACCESS

[Effect of the rotational speed of on the surface quality of 6061 Al-alloy welded joint using friction stir welding](#)

T T Feng, X H Zhang, G J Fan and L F Xu.....339

012048

OPEN ACCESS

[Rubber mixing process and its relationship with bound rubber and crosslink density](#)

A Hasan, Rochmadi, H Sulistyoyo and S Honggokusumo.....345

012049

OPEN ACCESS

[Flux pinning properties of GdBCO bulk through the infiltration and growth process](#)

Y F Zhang, J J Wang, X J Zhang, C Y Pan, W L Zhou, Y Xu, Y S Liu and M Izumi.....354

012050

OPEN ACCESS

[Polyazulene based materials for heavy metal ions detection](#)

A Oprisanu, E M Ungureanu, R Isopescu, L Birzan, M Mihai and C Vasiliu.....359