

4th International Conference on Material Engineering and Application (ICMEA 2017)

Advances in Engineering Research Volume 146

Wuhan, China
15 – 17 December 2017

Editors:

Arnulfo Luevanos Rojas
Amin Riad Maouche
Mamoun Fellah

ISBN: 978-1-5108-5619-6

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© (2018) by Atlantis Press
All rights reserved.
<http://www.atlantis-press.com/php/pub.php?publication=icmea-17>

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact the publisher:

Atlantis Press
Amsterdam / Paris

Email: contact@atlantis-press.com

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

SESSION: MATERIALS

EFFECTS OF $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$ ON FOAM GLASS-CERAMICS PREPARED FROM HIGH TITANIUM BLAST FURNACE SLAG	1
<i>Qingzhu Sun, Haibo Wang</i>	
RESEARCH ON MICROSTRUCTURE AND PROPERTIES OF BIMETAL COMPOSITE LAYER BETWEEN LAS AND HCCI	4
<i>Wenbing Zhang, Shumei Chen, Hui Gao, Yongchang Zhu</i>	
REVIEW AND DISCUSSION ON STANDARDS FOR SHORE-TO-SHIP POWER SUPPLY SYSTEM	8
<i>Juxiang He, Xin Li, Hongsheng Xu, Jinda Zhu, Pan Dai, Heli Chu</i>	
EFFECTS OF CONCENTRATION IN BASE SOLUTION ON THE STRUCTURE AND ELECTROCHEMICAL PROPERTIES OF $\text{LiNi}_{0.8}\text{CO}_{0.1}\text{Mn}_{0.1}\text{O}_2$	13
<i>Jing Wang, Ang Gao, Ran Wang, Yuefeng Su, Shi Chen, Feng Wu</i>	
ROUGH SETS AND GENETIC ALGORITHM FOR POWER CABLE JOINTS FAULT DIAGNOSIS	17
<i>Xin Li, Hongyi Zhou, Pan Dai, Zhihong Yang, Yan Chen, Yuanxin Chen</i>	
STRUCTURE AND SPACE CHARGE INHIBITION PERFORMANCE OF REACTIVE RF MAGNETRON SPUTTER DEPOSITED Al_2O_3 THIN FILM ON THE FIBRE SURFACE	21
<i>Jian Hao, Yanqing Li, Ruijin Liao, Chao Li, Lianpeng Wang, Shuaiwei Liang</i>	
THE FABRICATIONS AND OPTICAL PROPERTIES OF ALCRNO BASED SOLAR SELECTIVE ABSORBER COATINGS BY CATHODIC ARC ION PLATING	26
<i>Yingjie Xu, Dianqing Gong, Rui Niu, Zeqin Cui</i>	
STUDY ON A NEW TYPE OF EXOTHERMIC INSULATING RISER	31
<i>Nengwei Wang</i>	
EFFECT OF INTERVAL AGING MODE ON IMC GROWTH BETWEEN LOW AG CONTENT SN-0.3AG-0.7CU-0.5BI-NI AND CU SUBSTRATE	37
<i>Min Qu, Yan Cui, Fengbin Liu, Zhiwei Jiao, Yuan Liu, Jun Cheng</i>	

SESSION: MATERIAL ENGINEERING

THE SYNTHESIS OF 3,3'-DIMETHYL (P-GUANIDINO) DICYCLOHEXYLMETHANE	41
<i>Yongli Peng, Yajiao Zhang</i>	
STUDY ON THE HEAT GENERATION CHARACTERISTICS OF LITHIUM ION POWER BATTERY WITH NCM/SI-C COMPOSITE ANODE MATERIAL	45
<i>Chun Cheng Liu, Shiqiang Liu, Jing Wang, Chunjing Lin, Fang Wang, Yuefeng Su, Shi Chen, Feng Wu</i>	
STUDY OF THE PRECIPITATION BEHAVIOR AND STRENGTHENING OF CARBIDES DURING THE PARTITION PROCESS	50
<i>Peiyang Jiang, Fei Zhao</i>	
RESEARCH AND COMPARISON ON THE METHOD OF DETERMINING THE NONLINEARITY OF UNIVARIATE FUNCTION	55
<i>Qingbin Zhang, Wei Shen, Wenliang Fan, Xiaomeng Xie</i>	
EFFECTS OF WATER-HEAT WATER AGING ON EPOXY COMPOSITES CONTAINING NANO-PARTICLES OF ZNO	59
<i>Zhe Zhai, Lajun Feng</i>	
THE CRACK TIP FIELDS FOR ANTI-PLANE CRACK IN FUNCTIONALLY GRADED MAGNETOELECTROELASTIC MATERIALS	64
<i>Guangtu Shen, Xiao Chong, Peng Zhang, Yao Dai</i>	
RESEARCH ON THICKNESS DISTRIBUTION OF SUPER METAL FORMING OF SIMULATED ANNEALING GENETIC ALGORITHM	69
<i>Zhanjun Liu</i>	
EFFECT OF TAED ACTIVATED H_2O_2 BLEACHING ON THE PROPERTIES AND STRUCTURE OF JUTE FIBERS	73
<i>Long Wang, Zuoqiang Wen, Weiming Wang, Jinli Zhou</i>	

EFFECT OF FRICTION STIR WELDING ON MECHANICAL PROPERTIES AND FRACTURE MECHANISM OF 7B52 AL LAMINATED COMPOSITE	77
<i>Yushan Chen, Qi Zhou, Hao Xia, Hongyu Sun, Xinrui Ma, Shubiao Qiu, Chongbin Tang</i>	
EFFECT OF REACTION TIME ON THE MORPHOLOGY OF TUNGSTEN DISULFIDE NANOSHEETS BY SOLVOTHERMAL METHOD	84
<i>Deqing Zhang, Tingting Liu</i>	
GROOVING PHENOMENON ANALYSIS OF SERIES-CONNECTED AUGMENTED SEXTUPOLE RAILS MATERIAL	88
<i>Xinpeng Xue, Tao Shu, Ming Liu, Zhiyong Yang</i>	
EFFECT OF THERMAL AGING ON THE PROPERTIES OF INSULATING PAPER	93
<i>Mengzhao Zhu, Yufeng Chen, Chao Gu, Wenbing Zhu, Xiaozhuang Ma, Xin Wang</i>	
UTILIZATION OF IRON ORE TAILING FOR THE PREPARATION OF $\hat{I}\pm$-FE2O3 NANOPARTICLES.....	96
<i>Xiaodong Xu, Yanxi Deng</i>	
ANALYSIS OF DYNAMIC SYSTEM RELIABILITY BASED ON ADAPTIVE RESPONSE SURFACE METHOD	100
<i>Wei Shen, Qingbin Zhang, Wenliang Fan</i>	
GROWTH MORPHOLOGY OF CUMG₂ IN LASER FORMING OF ALCOCRCUFENI COATING ON MG	104
<i>Guanghui Meng, Xiaoting Liu, Jun Qiu, Bo Wang, Kun Zhao</i>	
ARTIFICIAL NEURAL NETWORK MODEL FOR FRP SHEAR CONTRIBUTION OF RC BEAMS STRENGTHENED WITH EXTERNALLY BONDED FRP COMPOSITES	108
<i>Weiwen Li, Xiaoli Ren, Chengyue Hu</i>	
A STUDY ON ADHESIVE PROPERTIES BETWEEN GFRP TUBE AND STEEL TUBE.....	112
<i>Mingqiao Zhu, Yao Wang, Ziwei Zhang, Jiaoping Liu</i>	
CA_{0.5}MG_{0.5}CO₂O₄ NANOSHEETS COMPRISED OF NANOPARTICLES, SYNTHESIS, CHARACTERIZATION AND THEIR CATALYTIC ACTIVITY IN THE HYDROLYSIS OF AMMONIA BORANE FOR HYDROGEN PRODUCTION.....	117
<i>Liling Li, Xiuxia Feng, Jinyun Liao, Guiqiang Diao, Xibin Zhang, Hao Li</i>	
RELIABILITY ANALYSIS ON THE RECTANGULAR ORTHOTROPIC MEMBRANE UNDER CONCENTRATED IMPACT LOAD	121
<i>Zhoulian Zheng, Xiaomeng Xie, Dong Li</i>	
DESIGN OPTIMIZATION OF LIGHT METAL IRRIGATION CHANNELS.....	127
<i>Honggang Zheng, Yanqiong Li, Jianxin Yu</i>	
TRIBOLOGICAL PERFORMANCE OF GRAPHENE-COPPER-IRON COMPOSITE COATING	132
<i>Zengrong Hu, Feng Chen, Xueliang Fan, Shaoxiong Guo, Jiale Xu</i>	
SURFACE MOLECULAR IMPRINTED ELECTROCHEMICAL SENSOR FOR LYSOZYME BASED ON METAL COORDINATE TECHNOLOGY	138
<i>Zhonghe Chen, Mingbo Bao, Yuchuan Li, Zhi Chen</i>	
TEST OF DESERT SAND PVA FIBER ENGINEERED CEMENTITIOUS COMPOSITES.....	142
<i>Quanwei Li, Jialing Che, Caixia Ma, Guansheng Han, Lijun Liu, Ning An</i>	
THE STUDY OF AFFECT FACTOR ON BEARING GRIND COEFFICIENT CONTAINED METAL LINK BURNED.....	146
<i>Zhanjun Liu</i>	
EFFECTIVE CONDUCTIVITY OF GRAPHENE QUANTUM DOTS SOLUTION.....	150
<i>Ruxia Chen, Yufeng Peng, Mingjie Li, Xueyun Han</i>	
PREPARATION AND ANTICORROSION PROPERTIES OF POLYDIMETHYLSILOXANE (PDMS) COATING	156
<i>Xiaokun Cui, Guiyu Zhu, Yufeng Pan, Yue Zhang</i>	
EFFECT OF THE THERMOMECHANICAL TREATMENT ON THE MICROSTRUCTURES OF CLAM STEEL	159
<i>Zheng Sun, Fei Zhao, Fang Hhuang, Wenyuan Ding, Peiyang Jiang</i>	
VERY HIGH CYCLE FATIGUE BEHAVIOR OF TI-6AL-4V ALLOY	162
<i>Nu Yan, Xin Zhu, Donggui Han, Fang Liu, Yonghua Yu</i>	
CHLORIDE ION PENETRATION RESISTANCE AND PORE STRUCTURE OF MAGNESIUM SILICATE HYDRATE (M-S-H) MORTARS.....	166
<i>Tingting Zhang, Ziming He, Zhenlin Wu, Junnan Han</i>	

SESSION: MATERIAL ENGINEERING

PARTICLE IN-FLIGHT BEHAVIOR AND ITS DETERMINING THE MICROSTRUCTURE AND MECHANICAL PROPERTIES OF ZIRCONIA BASED THERMAL BARRIER COATINGS	170
<i>Kun Liu, Jun Ma, Yu Bai</i>	
AN AUTOMATIC ALGORITHM BASED ON ARTIFICIAL NEURAL NETWORK IS APPLIED IN TAXI TARGET PREDICTION.....	175
<i>Zhaosheng Wang, Shiyu Li</i>	
PREDICTION OF COMPONENT LIFE BASED BY DAMAGE MECHANICS-EFFECTIVE STRESS METHOD ON ANSYS	178
<i>Wenfeng Tan, Xinxing Ding</i>	
SYNTHESIS OF N-ALKYLATED CHITOSAN AND ITS AGGREGATION BEHAVIOR	182
<i>Ying Zhang, Liandong Deng, Jing Guan, Shujie Huang, Jian Yang, Jimin Wu, Zhihong Li</i>	
APPLICATION OF COMPACT TYPE COMPOSITE CROSS ARM IN TOWER DESIGN.....	186
<i>Haowei Pei, Qingfeng Zhang, Liang Zhang, Fei Zhou, Chen Chen, Kai Niu</i>	
EFFECT OF HOT ROLLING PARAMETERS ON TEXTURE AND ANISOTROPY OF X65MO OFFSHORE PIPELINE STEEL.....	190
<i>Tao Niu, Chenggang An, Xin-Lang Wu, Caixia Zhang, Chen Yu</i>	
STUDY ON THE INFLUENCE LAW OF VARIOUS FACTORS ON VOLCANIC AUTOCLAVED AERATED CONCRETE	196
<i>Huaizhuo Zhang, Xinghua Fu, Wenhong Tao, Shuangshuang Hou</i>	
CHLORIDE PENETRATION RESISTANCE OF CEMENT PASTE CONTAINING DIFFERENT CONTENTS OF CARBON NANOTUBES	200
<i>Weiwen Li, Meiyuan Lu, Yongping Huang, Ziqing Tang, Feng Xing</i>	
EXPERIMENTAL STUDY ON THE SEISMIC BEHAVIOR OF RC ROUND COLUMNS STRENGTHENED BY HIGH PERFORMANCE FERROCEMENT LAMINATES.....	204
<i>Longmin Jiang, Wenjing Liu, Xiang Yi</i>	
PREDICTIONS OF CONCRETE COMPRESSIVE STRENGTH BASED A HYBRID ALGORITHM OF GA-BP	213
<i>Rendong Shi, Wei Zhong, Hong Zhang, Huangbin Chen, Xu Ji</i>	
ADVANTAGE ANALYSIS OF COMPOSITE GIRDER WITH CORRUGATED STEEL WEB COMPARED WITH CONCRETE GIRDER IN CONTINUOUS RIGID FRAME BRIDGE	219
<i>Guangling Li, Yanchi Wu, Zhiyong Zhao</i>	
A DETECTION METHOD FOR DDOS ATTACK AGAINST SDN CONTROLLER	222
<i>Linhai Meng</i>	
STUDY ON THE TRIAL-MIX AND BASIC PROPERTIES OF DESERT SAND STEEL-PVA FIBER HIGH PERFORMANCE CONCRETE.....	227
<i>Quanwei Li, Jialing Che, Caixia Ma, Lijun Liu</i>	
STRUCTURAL CHARACTERISTICS AND APPLICATION IN CIGARETTE FILTER OF CASTOR BASED POROUS MATERIALS	231
<i>Ling Zhang, Tiandong Zhang, Bo Cai, Qianxu Yang, Jing Li</i>	
STUDY ON PROCESSING OF HIGH PRECISION GRAPHITE BALL WITH FOUR AXIS BALL GRINDER	236
<i>Bin Zhou, Yinan Xia</i>	
SHAKING TABLE TEST STUDY OF ROCK FALLS OF SLOPE BASED ON ORTHOGONAL DESIGN.....	240
<i>Bo Song, Miao Shuang</i>	
PUMPING PERFORMANCE ANALYSIS ON CRUSHED SAND CONCRETE.....	245
<i>Lei Yu, Lei Chen, Zhaolei Liu</i>	
STUDY ON BUCKLING FAILURE CRITERION FOR COMPRESSION-SHEAR SLIDING UNSTABLE ROCK.....	247
<i>Jinhao Zhang, Hongkai Chen, He Wang, Renjie Wu</i>	
ANION CONCENTRATION DISTRIBUTION AND TOURISM RESOURCES ANALYSIS OF GUIZHOU PROVINCE.....	253
<i>Yueai Chen, Qingshan Li, Yanmin Qian, Jinqiong Luo, Dawei Wu</i>	
DAMAGE AND FAILURE MECHANISM OF BULLETS IMPACT SAPPHIRE BASED ON LS-DYNA	257
<i>Siyu Liu, Zhipeng Qv, Mingyun Lv, Guangyuan Ma</i>	
MECHANICAL AND PRESSURE-SENSITIVE PROPERTIES OF CEMENT PASTE WITH NANO-Fe_2O_3	262
<i>Yiqin Fang, Yaru Sun, Meiyuan Lu, Feng Xing, Weiwen Li</i>	

EFFECT OF GRAFTED CHAIN LENGTH ON HEMOSTATIC ACTIVITY OF N-ALKYLATED CHITOSAN	267
<i>Mengyuan Liu, Jian Yang, Jing Guan, Shujie Huang, Zhihong Li, Miaolei Jing</i>	
COMPARATIVE STUDY ON APPLICATION OF FIREPROOF POLYSTYRENE BOARD AND TRADITIONAL POLYSTYRENE BOARD IN EXTERNAL WALL INSULATION OF BUILDING	273
<i>Jiawei Yao, Zhaoming Hou, Yishu Yao</i>	
IMPACT ANALYSIS OF REPLACING BUSINESS TAX WITH VALUE-ADDED TAX ON WATER CONSERVANCY PROJECT COST	277
<i>Yongjia Song, Di Wu, Lin Yuan, Chao Ba</i>	
RESEARCH ON INFLUENCE OF INNOVATIVE WIND-RESISTANT ENERGY DISSIPATION DEVICES ON WIND PRESSURES OF LOW-RISE GABLE ROOF BUILDINGS BASED ON WIND TUNNEL TEST	281
<i>Kai He, Linsheng Huo, Gang Li</i>	
APPLICATION OF P-A FRACTAL MODEL IN THE RIVER NETWORK OF THE LANDSLIDES AREA	286
<i>Zhiwang Wang, Fangfang Zhou, Hao Cao</i>	
RESEARCH OF COMPENSATE FUZZY NERVE NET CONTROL ON STAINLESS STEEL GRIND COEFFICIENT OF ASSEMBLY TECHNOLOGY	289
<i>Zhanjun Liu</i>	
DISCUSSION ON THE APPLICATION OF STEEL PLATE CONCRETE IN TUNNEL ENGINEERING	293
<i>Xiaoming Li, Wenwen Dong</i>	
ANALYSIS AND EVALUATION OF NATURAL DIAMOND CUT BY WATER JET - GUIDED LASER	296
<i>Guangfeng Shi, Dongdong Han, Shukun Wang, Keke Zhu</i>	
SULFATE EROSION OF CARBON NANOTUBE CEMENT MORTAR	300
<i>Weiwen Li, Yaru Jia, Ruoxu Shen, Feng Xing, Jing Zheng</i>	
DEVELOPMENT AND APPLICATION OF FILM LAMINATED METAL COMPOSITE DECORATIVE PANEL	305
<i>Yujun Liu, Shuai Wu, Shunli Liu, Tingting Liu, Feilong Sun</i>	
HYDROTHERMAL SYNTHESIS OF CLEW-LIKE Bi₂Sn₂O₇ AND VISIBLE-LIGHT PHOTOCATALYTIC ACTIVITY	309
<i>Wei Huang, Chaohao Hu, Binqing Zhu, Yan Zhong, Huaiying Zhou</i>	
Author Index	