

11th International Conference on Advanced Manufacturing Technology and Materials Engineering 2024

Journal of Physics: Conference Series Volume 2842

Guangzhou, China
22-23 May 2024

ISBN: 979-8-3313-0396-9
ISSN: 1742-6588

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. (2025)

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

Preface	
Peer Review Statement	
Experimental verification of characteristic parameter analysis method for pipeline leak before break	1
<i>Liming Zhang, Chen Wang, Tian Tan, Ling Chen, Yanlong Xu</i>	
Effect of Cr3C2 on wear behavior of Ni45 laser cladding coating.....	9
<i>Limeng Liang, Dawei Feng, Shuli Ma, Jie Zhang, Guohua Ding</i>	
Preparation and adsorptive performance study of amino modified-crosslinked composite aerogel for VOCs in wooden furniture.....	14
<i>Qian Li, Panpan Feng, Mingyuan Qian</i>	
Nanometer-thick Ga/Al substituted yttrium iron garnet ultra-thin films by liquid phase epitaxial method.....	20
<i>Yuanjing Zhang, Qinghui Yang</i>	
Adsorption of tryptophan by covalent organic frameworks	25
<i>Chen Li, Mengchu Feng</i>	
Study of the band alignment at the CZTS/ZrS2 interface based on first-principles calculation.....	32
<i>Haoning Li</i>	
Effect of surface state on wear performance of low alloy high strength marine steel	38
<i>Chaoyi Wang, Ling Yan, Xuetong Chang, Wenrui An</i>	
Lifetime prediction of EPDM sealing materials with thermal aging under constant compression.....	46
<i>Zhaonan Xie, Junhong Chen, Kai Zhang</i>	
Effect of surface micro-texture morphology on the wettability of aluminum alloy on B4C surface.....	52
<i>Yuchi Dai, Jia Liu, Yan Shi</i>	
Research on hydrogen distribution of electroless nickel plating on aluminum-based silicon carbide composites.....	59
<i>Nan Wang, Qingxin Cui, Sizhen Li, Jingrun Wang, Jiafeng Li, Xuguang Wang, Junjie Xu, Xiaobo Tong, Jun Wang</i>	
Study on the continuous cooling transformation behavior of X65 hydrogen transportation pipeline steel.....	67
<i>Tianyi Li, Wenyue Liu, Tao An, Liu Liu, Chunduo Dai, Meihui Sun</i>	
Study on the dilution mechanism of laser-cladding AlCoCrFeNi high-entropy alloy coatings.....	75
<i>Ying Li, Yongjun Shi</i>	
Effects of shapes on the deformation of thin-walled artifacts manufactured by selective laser melting.....	82
<i>Xiaona Tong, Weishi Li</i>	
The sealing performance of PTFE O-rings at low temperature	89
<i>Jing Wang, Haijun Hao</i>	

Anti-icing performance and influencing factors of super-lubricated surface in simulated glaze icing.....	96
<i>Bo Li, Jie Bai, Lusong Zhang, Huiying Xiang, Yuan Yuan</i>	
Effect of Ag coatings prepared by magnetron sputtering on the wear properties of Ti6Al4V alloy.....	101
<i>Xinyu Huang, Wenjuan Rong, Jialin Wang</i>	
Impact of adding Na ₂ SiF ₆ on the crystal phase and copper valence state in glass ceramics made from leftover granite for use as architectural ornamentation.....	110
<i>Minghong Ma, Yongqian Huang</i>	
Enhanced hydrolysis of spiramycin in aqueous solution using SiO ₂ /SO ₃ H	117
<i>Hongyu Lyu, Shuai Chen, Rong Zhang, Chunliang Zhang, Ruiruo Jiang, Wen Yang</i>	
Different temperature-dependent fluorescence properties of CsPbBr ₃ nanorods and nanowires.....	122
<i>Fengjiao Chen, Liting Li, Xiong Shen, Jing Zhang, Siyu Ma, Yue Wang, Limin An</i>	
Influence of replacement ratios of spontaneous-combustion coal gangue aggregate on the compressive strength of concrete	127
<i>Bo Gao, Dadong Xia, Xiuqing Liang, Tirui Zhang, Qinghe Wang</i>	
Physically crosslinked polyvinyl alcohol hydrogel for electromagnetic shielding.....	133
<i>Zian Liu, Yufeng Wu, Zheng Zhang, Xinyu Xie, Wanting Cao, Jianchun Xu, Kai Huang</i>	
Formation mechanism of Hf-based ceramic particles in tungsten alloys	139
<i>Jincheng Li, Xiang Wei, Lin Gao, Longhui Lou, Benzhe Sun, Yongli Liu</i>	
Study on porous carbon materials derived from Chitosan.....	147
<i>Shasha Wang, Zhi Tian, Jianlin Zhao, Yuelong Xu, Yangguang Zhang, Lihui Zhang</i>	
Spreading modeling of prepreg tape used for manufacturing of variable angle tow composites	152
<i>Siyu He, Zhao Feng, Qiang Zhang</i>	
Study on preparation of ettringite-based fireproofing material for cable trench and its fireproofing mechanism.....	158
<i>Jianguo Yuan, Jun Ji, Youchun Li, Jingkai Nie, Xuming Fan, Hui Liu, Yihang Zhang</i>	
Ionic gels with high mechanical strength enabled by supramolecular interactions between small molecular solvents and polymer chains.....	163
<i>Zhaoqiang He, Chenyang Xing, Zhengchun Peng</i>	
Nucleation promotion for the atomic layer deposition of HfO ₂ onto carbon nanotubes for device applications.....	169
<i>Bingxian Li</i>	
The research of electrochemical performance of Mg-doped NaNi _{1/3} Mn _{1/3} Fe _{1/3} O ₂ positive electrode materials.....	181
<i>Xue Bai, Aijia Wei, Rui He, Xiaohui Li, Lihui Zhang, Zhenfa Liu</i>	
Experimental study on activation of coal gangue and preparation of cementing materials.....	186
<i>Guangliang Wang, Xingmei He, Youliang Yang, Mingzhou Xiong, Yonghua Ji, Bingke Qin</i>	
Synthesis of amino silicone oil for use in oil agent in carbon fiber.....	192
<i>Junsha Wang, Xianwen Huang, Cheng Zhang</i>	
Research on moisture absorption characterization of wound composites based on surface concentration modified model.....	197
<i>Zilong Yang, Yuxia Hu, Wusheng Li, Fujiang Yang</i>	

Influence of secondary peak temperature on simulated ICCGHAZ microstructure and toughness of high-strength low-alloy steels.....	205
<i>Liangliang Bao, Yanhong Xu, Xinming Zhang, Jun Jiang</i>	
Analysis of thermal stability and enthalpy in SSD systems with various thickening agents	213
<i>Rui Duan, Jinning Wang, Ao Zhang</i>	
Comparison of high temperature oxidation behaviour of high speed steel and Hi-Cr steel	225
<i>Wanli Li, Yujing Ou</i>	
Evaluation of the mechanical properties of stiffened composite panels under consideration of water load.....	233
<i>Junchao Yang, Xiangming Chen, Zhe Wang, Peng Zou, Qiang Zhu</i>	
Experimental and simulation study on mechanical properties of ZK60 magnesium alloy after accumulative roll bonding	242
<i>Shaojie Li, Jianfeng Jin, Yongbo Wang, Hucheng Pan, Gaowu Qin</i>	
Effect of thermal deformation on the microstructure and tensile property of the TiZrAl medium entropy alloy	247
<i>Rong Guo, Jiaxiang Cui, Bang Dou, Qian Zhao, Shihai Sun, Liang Wang, Yunfei Xue</i>	
Application of instrument indentation test for residual stress characterization of 5083 aluminium alloy.....	252
<i>Zhuotong Du, Rutao Zhao, Chen Gao, Pei Chen, Kuilong Xu</i>	
Study on the effect of heat treatments on microstructure and mechanical properties of nano SiC reinforced AlSi7Mg alloy	258
<i>Tianchun Zou, Zhe Song, Minying Chen</i>	
Continuous cooling transformation behavior of V microalloyed hot-bent X80 pipeline steel	264
<i>Tao An, Wenyue Liu, Tianyi Li, Yan Zang, Jiangwen Li</i>	
Study on the mechanism of pressure-induced erosion in molten pool of EDM metal.....	272
<i>Chao Chen, Shoudong Ni, Fouad Ben Mhahe</i>	
Prediction of flow stresses for a typical Nickel-Based superalloy during hot deformation based on constitutive equation.....	278
<i>Jianxiao Liu, Chao Jiang, Yuwen Zhai, Leyu Zhou, Haiyu Zong, Huizhen Wang, Yuheng Zhan</i>	
Analysis of electrothermal damage in a radome exposed to electromagnetic radiation	287
<i>Zhongxiang Gui, Ruoxuan Xia, Shengwen Wei</i>	
Molecular dynamics simulation of irradiation damage accumulation in α -Fe and model alloy FeMn1.4Ni0.7	293
<i>Wenqing Zhang, Jiaxin Wu, Feng Zhou, Jinhong Chen, Fei Zhu, Ligang Song, Xianfeng Ma</i>	
Outer spiral drill rod lunar soil sampling resistance moment simulation study.....	298
<i>Dehui Li, Haitao Luo, Yuxin Li, Yuming Dong</i>	
The impact of induction heating time on the temperature distribution of high-temperature alloy discs.....	305
<i>Tuermengke, Weidong Zhu, Yuwen Zhai</i>	

Study on quasi-static tensile mechanical properties of biomimetic helicoidal composite laminates.....	311
<i>Shutong Huang, Xiaoli Jia, Hengxiang Liu, Jianfeng He, Qingyu Yang, Liaoliang Ke, Jie Yang, Sritawat Kitipornchai</i>	
Effects of Co and Mo on the microstructure properties of GH4282 and the mechanical properties of metal bellows.....	317
<i>Zhuoliang Li, Dalin Zhang, Linhong Song, Xianglin Yu, Songhan Wang, Zhaoxia Shi</i>	
Study on spring-back characteristics of magnesium alloy plate in multi-point forming	324
<i>Mengjun Zhao, Dongxiong Lv, Skib, Pengcheng Zhu, Zan Liu</i>	
Simulation and study of the flow field in a kettle-type reactor for ethylene polymerization.....	330
<i>Hou Ji, Zhang Hong, Ren Xinhua, Zhang Jia, Peng Chen</i>	
Theoretical investigation of Cu influence on the stability characteristics of T-phase in crossover alloys	340
<i>Boyu Xue, Wei Xiao, Xiwu Li, Guanjun Gao, Xiaowu Li, Hongwei Yan, Lizhen Yan, Yongan Zhang, Baiqing Xiong</i>	
Investigation of high field breakdown characteristics in CNTFETs.....	346
<i>Weihao Zeng, Zijie Zhou</i>	
Nonlinear damage dynamics modeling and characteristics simulation of bevel gear set	352
<i>Jiao Hu, Lun Tang, Xingshu Liu, Jian Shen</i>	
Multipack ultraviolet lasing based on F-P mode from in-situ ZnO nanowire	360
<i>Ying Zhang, Ruibin Liu</i>	
Preparation of carbon nanotube composite solder and analysis of the thermal properties	366
<i>Shizhong Cui, Wenfan Miao, Yang Ding, Bin Ju</i>	
Low cycle fatigue behavior and failure mechanism of 34CrNiMo6 steel used as connecting rod for diesel engine	371
<i>Zengquan Wang, Guangshuo Zhao, Guoxi Jing, Liqiang Zhang, Yexing Hou, Jianchao Pang</i>	
Analysis of the temperature rise process of carbon ceramic axle-mounted brake disc.....	384
<i>Qingfeng Qiao, Mingchen Xia</i>	
Preliminary study on smelting micro-carbon ferromanganese alloy by electro silicon thermal one-step process.....	390
<i>Yaoxin Song, Jianming Pang, Lingen Luo, Chongfeng Yue</i>	
Research on the influence of applying counterweight on the deflection and stability of cantilever beam of machine tool	398
<i>Xinguo Jiang, Xifeng Fang, Zhiduo Li, Shengwen Zhang</i>	
The influence of heat treatment on AlSi-polymer abradable coating	405
<i>Caiyan Liu, Zhengping Mao, Xiaojie Xu</i>	
Fast determination of thermal conductivity of aluminum alloy by laser-induced breakdown spectroscopy	410
<i>Yuheng Shan, Ruibin Liu</i>	
Determination of stress triaxiality by experiment-simulation and obtaining of johnson-cook damage criterion for Al-Mn alloy	417
<i>Wei Wang, Yongbo Hu, Dashuai Zhang, Dao Chi, Guobin Wang</i>	

Influence of heat treatment process on the microstructure and hardness of Q345B steel	425
Yan Wang	
Analysis of conductive filament heat transfer in TiO ₂ -based RRAM device.....	434
Jing Li, Jinyan Pan, Qiao Huang, Ruotong He, Lunbo Xie	
Synthesis and thermophysical properties of rare-earth tantalate ZrO ₂ -Dy ₃ TaO ₇ ceramics.....	440
Dongbo Li, Ming Zhang, Ge Deng, Yuan Yang, Rong Gui, Guizhong Yang	
Effects of carbon content and heat treatment on wear-resistance and impact properties of novel cast steels with bainitic and martensitic structure.....	449
Xuefeng Tian, Guozhi Zhang, Kun Wang, Xiaobo Yang, Lulu Feng, Weiguang Yang	
Study on solidification organization and phase formation of Fe-6.5wt.%Si high silicon steel by arc melting and heat treatment	456
Yanxia Liu, Enbao Pan, Zhiwang Zhang, Qiuxin Ji, Xinyao Zhang	
The enhanced aging hardening behavior in Si-containing Al-5Zn-1Mg-1Cu alloys	462
Yi Lu, Shengping Wen, Zuoren Nie	
Research on the influence of finish rolling technique parameters on H ₂ S corrosion resistance behavior of pipeline steel in the thickness direction.....	468
Yanqiu Fan, Changwen Ma, Shaopo Li, Wenhua Ding, Longhe Wang, Yang Liu, Zhanjun Li	
Study on the influence of geometric parameters of typical titanium alloy power milling tools	478
Zhonglou Shi, Xiangjie Yang	
Research on reconfigurable systems in discrete manufacturing workshops.....	485
Hai He, Jian Zhou, Wenqiang Hu, Yuhui Wang	
A wireless and passive tool holder for online measurement of milling temperature	491
Xiang Sun, Qizhi Zhang, Zilin Tang, Hongrui Liu	
Design and performance research on metal-sprayed electrical heating films for aircraft wing anti-icing.....	499
Yuanyuan Ding, Zhimao Li, Zhefan Ren, Guangya Zhu, Bin Bai	
Innovative integration of maturity detection and robotic technology for enhanced litchi harvesting.....	507
Juntao Xiong, Qiyin Huang, Xinjing Jiang, Chengzhuo Zhou	
A model-adaptive compensation algorithm for additive-subtractive hybrid manufacturing	513
Yin Wang, Yukai Chen, Yu Lu, Junyao Wang, Qi Zhang	
Shape and roundness accuracy prediction of the roll grinding based on improved Elman neural network.....	519
Hui-Min Gao, Xin-Yi Ren, Hai-Wei Xu, Jiao-Jian Ai, Min Guo	
Research on the effect of manufacturing processes on the fatigue life of TC4 fasteners	526
Yanyun Ma, Zhaofeng Dou, Haoshan Li, Ruiyuan Wang, Yanfeng Xia, Qiu Gao, Weifang Zhang	
Research on the performance optimization of the cam linkage mechanism for marine diesel engines	535
Keke Wang, Na Meng, Sen Yang, Longfa Chen, Wenzheng Sun	
High-efficiency tandem red organic light-emitting diodes adopting exciplex hosts.....	543
Jiong Wang, Shengdong Zhang	

Study on no IMC Solid state bonding method for high-density 2.5D/3D integration	548
Zongyang Li, Zhibo Qu, Quanbin Yao, Pengrong Lin, Xiaochen Xie, Hengtong Guo, Jiaxing Wang, Pengyan Hou, Songzhao Gu	
Modelling of a thin-film transistor based on the carbon nanotubes network and ESD circuit simulation by SPICE	554
Xianghua Liao, Weihao Zeng, Hao Huang, Qinjin Wang, Zijie Zhou	
Effect of laser scanning frequency on the optical transmittance of the welded area in glass laser welding	562
Tianfeng Zhou, Ziwei Li, Peng Liu, Zihao Zeng, Peihuan Li, Zhikang Zhou	
Research on positioning accuracy of the swivel head of milling and turning complex machining center	567
Weizheng Si, Jianhao Tang, Jianhua Liu, Zijun Wei, Luyao Mao	
Analysis and optimal design of forging preforming for I-shaped forgings.....	577
Lili Huang, Qingyun Zhong	
Study on process optimization of electroless Ni-P plating on binderless WC	583
Xianyou Wu, Tianfeng Zhou, Zhaoqian Zhang, Peng Liu, Qian Yu, Bin Zhao	
Influence of substrate edge chamfer geometric features on the edge effect of spin-coating film.....	590
Naipeng He, Qiuyu Liu, Yan Ying, Zhou Ping	
Influence of multi-process parameter linkage on the formation of lack of fusion defects based on SYSWLED simulation analysis.....	597
Chen Yan, Die Yang, Laihui Han, Zhonggang Zhao, Zengzhen Li, Yongli Sui	
Optimization of the two-step coating formation process for ZK21 magnesium alloy.....	602
Ruochao Wang, Qing Liu, Hongtao Liu	
Comparative study on TD treatment for preparation of VC coating composite processes	610
Yutong Deng, Yongyue Liu, Haoxing Jin, Peng Jiang, Hao Chen	
Research on airspace filtering algorithm for trackside train bearings based on GSC-MVDR.....	616
Ziyu Yuan, Fang Liu, Xuewen Bao, Guangwen Ren, Guoqiang Zeng, Yongbin Liu	
Statistical regression analysis of bond splitting tensile properties of old and new concrete.....	621
Da Hou, Dongnan Yuan, Keqin Wang, Duo Liu	
Preparation of MnS/NiCo ₂ S ₄ composite nanosheets self-supported electrode and the performance in water-system asymmetric supercapacitors	627
Xiao Wang, Siheng Ren, Deqiang Kong, Chang Liu, Yuanhao Wu	
Highly sensitive and chemically resistant moisture sensor based on polyether sulfone and polyimide composite membrane for power transformer oil	635
Bin Zhu, Keqi Deng, Xiaojuan Li, Liguo Wen, Hongwei Shen, Dezhi Wu	
Application of optical homogeneity detection technology in glass quality control based on visual inspection technology	643
Xiaoyu Lun, Hui Wang	
Structural, magnetic, and electrical properties of LaMnO ₃ doped with Na by microwave-assisted synthesis method	654
Guohao Chen, Luwen Jiang, Chunlai Li, Yiqun Wei, Guoqing Hu, Yutao Yue, Xiaomeng Wang, Jin He	

Parametric analysis of vibration characteristics of laminated composite plate structures	659
<i>Yanchun Zhai, Xiaoxue Zhang, Yuesong Zhou, Zhiyuan Wan</i>	
Planar and non-planar hybrid printing trajectory generation method	665
<i>Li Xu, Zhiliang Shi</i>	
Parameter characterization of the PBM-DEM method in numerical simulation of shallow buried mine explosions	672
<i>Pengpeng Liu, Hui Ye, Gangfeng Deng, Juan Chen</i>	
Modeling and prediction of workpiece nonlinear physical quantities based on extended Kalman filter	680
<i>Mengdi Zhang, Jiping Lu, Faping Zhang</i>	
Simulation analysis and test of the spinning process of 304 stainless steel cylindrical parts	688
<i>Yaming Guo, Tao Huang, Yuan Zheng, Hengqiu Xu, Mingzhi Huang, Hongwei Chen, Nan Xia, Kai Chen</i>	
Bending stiffness analysis of regular polyhedron sandwich structures	695
<i>Yingjie Wang, Shenghang Cai, Qin Zhang</i>	
Electronic and transport properties of 2D α -AsP/ α -AsP van der Waals homojunction: A first principle study	703
<i>Wei Hong, Xiandong Zeng, Yuliang Mao</i>	
Working space planning for wheeled robot overturning stability	710
<i>Haoxin Xing, Tiejun Li, Jinyue Liu</i>	
Wearable photonic crystal double network hydrogel sensor based on structural color analysis.....	717
<i>Zhenye Liu, Wenxin Zhang, Yu Qiao, Lili Qiu, Zihui Meng</i>	

Author Index