

# **International Conference on Optoelectronic Science and Materials 2019**

IOP Conference Series: Materials Science and Engineering  
Volume 711

Hefei, China  
20 - 22 September 2019

ISBN: 978-1-7138-2570-8  
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.**

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. (2021)

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](mailto: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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

EVOLUTION OF MICROSTRUCTURE AND PROPERTIES OF ZYK530 MAGNESIUM ALLOY DURING EXTRUSION-FORGING COMPOUND FORMING .....	1
<i>Fenghong Cao, Chang Chen, Yaohui Xu</i>	
ROS-BASED ROBOT OFFLINE PLANNING SIMULATION SYSTEM .....	9
<i>Zhiheng Liu, Jian Chen, Zhen Mei, Chao Li</i>	
RESEARCH ON PRODUCTIVITY EFFECT OF MANUFACTURING CAPITAL ACCUMULATION—AN EMPIRICAL STUDY BASED ON DATA OF MANUFACTURING ENTERPRISES IN BEIJING, TIANJIN AND HEBEI .....	17
<i>Xiaonan Fan, Qiyue Li, Chong Feng</i>	
COMPARISON AND ANALYSIS OF ELECTROMAGNETIC CHARACTERISTICS OF NEW QUADRUPOLE TRACK ELECTROMAGNETIC LAUNCHER .....	24
<i>Tao Shu, Qingrong Chen, Gang Feng, Shaowei Liu, Mengyang Cui</i>	
DYNAMIC PERFORMANCE ANALYSIS OF THE MICRO-HOLE EDM MACHINE TOOL .....	34
<i>Jian-Yong Liu, Min Wang, Jian-Fei Hu, Peng Qin, Long Shi, Yanhua Cai</i>	
DESIGN AND APPLICATION OF INTELLIGENT LIVE CLEANING DEVICE FOR SUBSTATION PILLAR INSULATOR .....	42
<i>Qiang Chen, Jian Li, Jianxiang Li, Zhenli Wang, Xu Dong, Jizhi Liu, Tao Li</i>	
FLEXIBLE CONNECTION OF COCKPIT CANOPY DEFECT DETECTION DEVICE BASED ON MACHINE VISION .....	48
<i>Pengfei Wang, Xiaojia Lu, Jian Chen, Ping Zhang</i>	
STUDY ON THE PREDICTION METHOD OF SUPPORTING FORCE DISTRIBUTION AND EXPERIMENT .....	58
<i>Hongfeng Ma, Gaojie Liu</i>	
EFFECT OF STARTING MICROSTRUCTURE IN HIGH SPEED STEEL ON THE GRAIN REFINEMENT POTENCY OF ELECTROPULSING TREATMENT .....	65
<i>Jiatao Zhang, Penglei Hu, Xiongqi Li</i>	
FINITE ELEMENT ANALYSIS OF THE MAINTENANCE ROBOT WITH CHARGED USED IN SUBSTATION .....	72
<i>Xu Dong, Jianxiang Li, Jian Li, Qiang Chen, Jizhi Liu, Tao Li</i>	
THE STUDY OF INDUSTRIAL DESIGN: THE TRANSFORMATION OF WELDER BASED ON TANDEM DOUBLE-WIRE MIG WELDING .....	78
<i>Xue Lin, Zhisheng Zhang</i>	
EXPERIMENTAL RESEARCH ON EXPLOSION RESISTANCE OF MASONRY STRUCTURES REINFORCED WITH MODIFIED POLYUREA ELASTOMER .....	83
<i>Xigui Tao, Yifan Jia, Chengfei Fan</i>	
DESIGN OF FULL AUTOMATIC INSPECTION ROBOT AND OPTIMIZED MODIFICATION OF OVERHEAD GROUND TRANSMISSION LINE .....	89
<i>Lei Cao, Rui Guo, Jianxiang Li, Feng Zhang, Dazhou Zhou, Juan Jia, Shibin Lu</i>	
RESEARCH STATUS AND DEVELOPMENT TREND OF 3D PRINTING TECHNOLOGY .....	95
<i>Yiran Yuan</i>	

CAUSE ANALYSIS AND SUGGESTION ON CORROSION LEAKAGE OF PIPE IN ATMOSPHERIC AND VACUUM PRESSURE UNIT .....	102
<i>Liang Du, Qingjin Wang, Xuan Li, He Yan</i>	
ANALYSIS OF CENTROID VARIATION OF THREE-FLOATING GYROSCOPE BASED ON ERROR SENSITIVITY .....	108
<i>Jialun Zhang, Yi Li, Faping Zhang</i>	
UNDERSTANDING OF THE MODELING METHOD IN ADDITIVE MANUFACTURING .....	114
<i>Zhuojun Chen</i>	
INTEGRATED PREPARATION OF LONG-LIFE HYDROGEN STORAGE ALLOY FILM/NI FOIL COMPOSITE ELECTRODE MATERIAL .....	120
<i>Ying Chen, Zi Wen</i>	
RESEARCH ON LOCATION DETECTION OF RAILWAY TRACK SPIKE BASED ON NEURAL NETWORK .....	126
<i>Chen Lu, Yong Shen</i>	
RESEARCH ON THE DEVELOPMENT MODE OF GENERAL EXCLUSIVE PARTS FOR SPACECRAFT INTEGRATION .....	131
<i>Chen Zou, Lei Zhang, Jiandong Zheng, Shuang Zou</i>	
TENSILE CONSTITUTIVE MODEL OF REACTIVE POWDER CONCRETE BASED ON FLEXURAL EXPERIMENT .....	136
<i>Wangwang Li, Wenyu Ji, Yonghua Su, Xinlin Ban</i>	
DESIGN OF THE REMOTE-CONTROL SYSTEM FOR PM2.5 CAPTURE DEVICE .....	142
<i>Wan Wang, Yanlin Lu, Zuo Zhang, Tianzhi Wang</i>	
ON THE INFLUENCE OF PLATFORM ECONOMY ON TRANSFORMATION AND UPGRADING OF CHINESE TRADITIONAL MANUFACTURING INDUSTRY - A CASE STUDY OF RED COLLAR GROUP .....	148
<i>Hanyu Song, Mengyun Liu</i>	
CHAMU: AN EFFECTIVE APPROACH FOR IMPROVING THE RECYCLING OF TEA WASTE .....	156
<i>Pin Gao, Yoshito Ogata</i>	
STUDY ON PERFORMANCE OF INTEGRATED PIPELINE VIBRATION ISOLATOR .....	166
<i>Xingsheng Lao, Yong Liu, Chunhui Dai, Jun Wu, Weijian Lyu</i>	
PREPARATION OF PESTICIDE MICROSPHERES BASED ON POLYLACTIC ACID: OPTIMIZED BY RESPONSE SURFACE METHODOLOGY .....	171
<i>Yan Li, Jiakun Dai, Duo Cao, Yu Ma, Lisha Zhen, Fan Chang</i>	
RESEARCH ON LASER WELDING ORGANIZATION PERFORMANCE OF FE-MN-SI ALLOY .....	178
<i>Linlin Liu, Huaqun Dong, Xiaochi Wang, Chaoyu Zhou</i>	
PROTECTION OF MAGNESIUM MELT BY HEXAFLUOROPROPYLENE/AIR ATMOSPHERE .....	182
<i>Hongli Jiang, Hukui Chen, Jie Huang, Xiaxia Mu, Yu Jiang, Yangyang Jie</i>	
DOUBLE-OBJECTIVE OPTIMIZATION SIMULATION AND ORTHOGONAL EXPERIMENT OF SHREDDING ROLLER FOR SILAGE MACHINE .....	188
<i>Yingshuai Jiang, Guoping Li, Xiangfang Zhang</i>	

NONLINEAR CONDUCTIVITY OF ZNO MATERIALS INDUCED BY X RAY .....	194
<i>Xiaoning Yang, Yuming Liu, Zhihao Wang, Yu Li, Jinghu Wang, Yongtai Zhang</i>	
ANALYSIS AND RESEARCH OF MOLTEN COPPER SLOSHING IN MOULD OF ANODE BASED ON VOF METHOD .....	200
<i>Jie Zheng, Guoping Li, Xinyi Teng, Zefeng Qiu</i>	
MODELING AND SIMULATION OF VIBRATING ONLINE VISCOMETER SYSTEM.....	206
<i>Pengcheng Li, Liheng Wang</i>	
IMPLEMENTATION OF MEDICAL PENDANT INTERACTIVE SYSTEM BASED ON VIRTUAL REALITY TECHNOLOGY .....	212
<i>Hanyang Li, Dini Duan, Zhisheng Zhang</i>	
ANALYSIS OF WEAK POINT OF FLUID MATERIAL TANK BASED ON FLUENT .....	217
<i>Yongqiang Li, Zhiyuan He</i>	
RESEARCH AND IMPLEMENTATION OF INDOOR LOCATION FOR HOME SERVICE ROBOT .....	223
<i>Haifei Si, Xingliu Hu, Li Xu</i>	
RESEARCH ON PATH PLANNING OF LOCALLY ADDED PATH FACTOR DIJKSTRA ALGORITHM FOR MULTIPLE AGV SYSTEMS .....	231
<i>Guorong Wu, Xuan Sun</i>	
ANALYSIS OF CIRCULAR STEEL TUBULAR COLUMNS UNDER THE COUPLING OF FIRE AND IMPACT.....	237
<i>Tingwei Yuan, Chunting Li, Qiuyue Zhang</i>	
BEARING MECHANISM AND BEARING CAPACITY ANALYSIS OF BIDIRECTIONAL CRIMPING UPLIFT PILE.....	244
<i>Haichao Wang, Qiuyue Zhang, Zhou Fang, Zhuang Zhang</i>	
THE DAMPING EFFECT ANALYSIS OF VISCOUS DAMPER IN ECCENTRIC CONCRETE FRAME STRUCTURE .....	249
<i>Zhou Fang, Qiuyue Zhang, Chongge Wang, Zhichuang Liu</i>	
GREEN INTELLIGENT LOGISTICS SORTING SYSTEM IN BIG DATA ENVIRONMENT.....	255
<i>Xinyue Gao, Lei Liu</i>	
RESEARCH ON BEARING FAULT DIAGNOSIS OF SUBMERSIBLE PUMP MOTOR BASED ON LMD AND SVDD .....	259
<i>Zhengtao Yuan, Fangzhen Song, Renjie Dou</i>	
CREEP RUPTURE STRENGTH OF F12 STEEL WELDED JOINT AFTER LONG-TERM SERVICE .....	265
<i>Zhongwen Zhang, Xinmei Li, Duqing Zhang, Baoshuai Du</i>	
STRESS RUPTURE PROPERTIES OF WELDED JOINTS OF AUSTENITIC HEAT- RESISTANT SUPER304H STEEL AT 650 °C .....	271
<i>Xinmei Li, Zhongwen Zhang, Baoshuai Du, Shuai Suo, Wen Li</i>	
DESIGN AND FABRICATION OF A HIGH PRECISION CONSTANT CURRENT SOURCE CURRENT GENERATOR .....	277
<i>Xiulian Li</i>	

OPTIMIZATION DESIGN OF GEAR REDUCER BASED ON MULTI-ATTRIBUTE DECISION MAKING AND RELIABILITY SENSITIVITY .....	285
<i>Cao Tong, Zhuang Tian</i>	
STUDY ON PREPARATION AND PROPERTIES OF LOW SENSITIVE POLYCARBOXYLATE SUPERPLASTICIZER.....	292
<i>Mengqin Guan, Xianghe Li, Zhuojun Jiang, Xinqi Guo</i>	
QUANTITATIVE ANALYSIS OF SATELLITE COUNTERWEIGHT AND INFLUENCING FACTORS .....	297
<i>Dong Zheng Jian, Chen Zou, Pi Li Xiao, Bi Jie Xue, Xian Zhong Hong, Lei Zhang, Shuang Zou, Wen Yang</i>	
ANALYSIS OF VEHICLE DYNAMIC PERFORMANCE UNDER MCAT EXCITATION.....	303
<i>Wenbiao Huo, Sheng Yang, Pingbo Wu</i>	
NUMERICAL RESEARCH ON SEALING PERFORMANCE OF HIGH SPEED AND HIGH PRESSURE CENTRIFUGAL COMPRESSOR SEAL .....	309
<i>Jun Wu, Zhenxing Zhao, Lu Dai, Xingsheng Lao, Weijian Lv</i>	
EXPERIMENTAL RESEARCH ON FRACTURE TOUGHNESS AND TENSILE STRENGTH OF RED SANDSTONE UNDER DIFFERENT MOISTURE CONTENT .....	315
<i>Chunting Li, Tingwei Yuan</i>	
EFFECT OF MECHANICAL JUICE EXTRACTION METHOD ON THE QUALITY OF FRESH-SQUEEZED APPLE JUICE.....	322
<i>Zhengchen Wang, Huanyong Cui, Shichao Fan</i>	
STUDY ON THE PREPARATION HIGH PERFORMANCE MICROFIBER GLASS BLANKET WITH HIGH WATER RESISTANCE FOR BUILDINGS .....	327
<i>Xiaotian Hao, Qingjiang Wang, Hailong Wang</i>	
PERFORMANCE STUDY ON ACRYLIC PRESSURE-SENSITIVE ADHESIVE MODIFIED WITH METAKAOLIN .....	333
<i>Junhao Zhang, Xuntian Zheng, Quanzhi Ma</i>	
SYSTEM DESIGN OF SMALL-SCALE SEAWATER DESALINATION DEVICE.....	340
<i>Lingzhi Feng, Yuanzhou Zheng, Aobo Zhang, Tianfu Lu, Tongyao Miao, Yunhui Peng</i>	
EFFECT OF CALCIUM CHLORIDE ON HYDRATION KINETICS AND PORE STRUCTURE OF HYDRATED TRICALCIUM SILICATE.....	350
<i>Qinfei Li, Wang Yang, Heng Chen, Pengkun Hou, Xin Cheng</i>	
STUDY OF PULPING TECHNOLOGY ON DISPOSABLE TABLEWARE USING WITHERED LEAVES AS RAW MATERIAL.....	356
<i>Bo-Fan Liu, Ming-Dan Liu, Peng Jin, Yi-Xin Zhong</i>	
OPTIMUM DESIGN OF TRANSMISSION COIL FOR GIANT MAGNETOSTRICTIVE ACTUATOR .....	363
<i>Fan Zeng, Feng Shi, Ying Hui</i>	
CORROSION BEHAVIOR OF 316L STAINLESS STEEL UNDER CL- CORROSION MEDIUM.....	369
<i>Jun Jun Xie, Heng Ningyu, Xu Sun, Jun Yang Zhan</i>	
THERMAL ANALYSIS OF DOUBLE MASS FLYWHEEL SECONDARY FLYWHEEL .....	375
<i>Zhengfeng Yan, Dale Yin, Kunpeng Zhou, Lei Chen</i>	

ANALYSIS OF FACTORS INFLUENCING THE RESISTANCE OF A TYPE OF AIR FILTER PAPER BASED ON SPSS .....	384
<i>Peiyun Qi, Chunxiao Yan, Chuanqin Zang, Jiayu Xu, Xingqi Huang, Xuezhi Dai, Yanren Jin, Ting Zhao</i>	
THEORETICAL ANALYSIS OF RESIDUAL HEAD VELOCITY AFTER THE JET PENETRATING THE MULTI-LAYER METAL-LIQUID COMPOSITE STRUCTURE .....	391
<i>Changfang Zhao, Jie Ren, Tengfei Kuai, Zhitan Zhou, Kebin Zhang, Xudong Zu, Guigao Le</i>	
A SEM STUDY ON SPACE ENVIRONMENT EFFECTS OF CARBON NANOTUBE ARRAYS .....	397
<i>Dongbo Tian, Yuming Liu, Man Li</i>	
DIAMOND FORMING TOOL INNOVATIVE DESIGN BASED ON SEGMENTS THICKNESS DIMENSION COMPENSATION .....	402
<i>Baoliang Xing, Chunying Zheng, Jing Wang, Shanshan Xue, Huiying Cao, Zhengmei Zhang</i>	
RESEARCH ON INFLUENCING FACTORS ON RHEOLOGICAL PROPERTIES OF CHITOSAN/STARCH FILM SLURRY .....	409
<i>Kaiqiang Sun, Jianyong Li, Fangyi Li, Xin Zhou, Zunyi Wang, Lei Wang, Xu Sun, Jinfeng Cui, Chuanwei Zhang</i>	
SIMULATION AND CALCULATION OF INTERIOR BALLISTIC OF A LARGE CALIBER ARTILLERY .....	416
<i>Dan-Yu Wang, Feng-Qiang Nan, Ping Du, Xin-Min Zhao, Zheng-Lun Wang</i>	
STUDY ON ENVIRONMENT-FRIENDLY PASSIVATION FOR HOT-DIP GALVANIZED STEEL WITH HIGH CORROSION RESISTANCE .....	422
<i>Xueqiang Dong, Taixiong Guo, Zhouyilin</i>	
EFFECT OF BASALT FIBER ON CHLORIDE ION PENETRATION OF REACTIVE POWDER CONCRETE .....	428
<i>HaiLong Zhao, LuLiang Wang, Dehong Wang, Junfeng Bai, Yunting Fan</i>	
STUDY ON THE FILM OF TI-SI-C-O OXIDES AND ITS APPLICATION IN MEMRISTOR .....	434
<i>Xin Zhao, Yuhan Yuan, Cheng Liu, Dongyang Li, Wei Li</i>	
EXPERIMENTAL STUDY OF TRANSMISSION TOWER DAMAGE DETECTION USING TIME SERIES MODEL .....	439
<i>Huiyong Guo, Zhihua Wang</i>	
PRELIMINARY STUDY ON THE INNOVATIVE DESIGN OF ORIGINAL BAMBOO FURNITURE BASED ON THE COORDINATION EVOLUTION RULES OF SUBSYSTEMS OF TRIZ THEORY .....	446
<i>Wenyong Dong, Xiangdong Dai, Jin Jin Yao, Yi Xiong</i>	
RESEARCH ON DYNAMIC INVERSE METHOD OF SURROUNDING ROCK MECHANICAL PARAMETERS OF LARGE UNDERGROUND CAVERNS IN EXCAVATION .....	453
<i>Shengjie Di, Ying Zhang, Heng Zhou, Jing Liu</i>	
MEASUREMENT OF IN-PLANE THERMAL CONDUCTIVITY OF SELF-SUSPENDED THIN FILMS .....	458
<i>Liqiang Xu</i>	
STUDY ON THE OUTBURST SCHEME OF A SHALLOW BURIED BIAS TUNNEL IN YUNNAN .....	464
<i>Jiaxian Wang, Ke Li, Hongyan Guo, Xiangyang Cui</i>	

STUDY ON KEY CONSTRUCTION PROCEDURES OF CRD METHOD FOR RE SHUITANG NO.3 TUNNEL .....	469
<i>Zhongwei Wang, Ruihuai Yang, Hongyan Guo, Ke Li</i>	
EXPERIMENT AND FINITE ELEMENT ANALYSIS STUDY ON THE DEFLECTION OF ALUMINUM EXTRUDED 6063-T5 HOLLOW STRUCTURAL BEAM.....	474
<i>Minghsiung Ho, Pinghui Lee, Chao Ye, Chipang Lin, Chenfu Huang</i>	
STUDY ON THE PREPARATION AND INFLUENCE OF ALKALI METAL OXIDES R2O ON PROPERTIES OF MICROFIBER GLASS WITH HIGH WATER RESISTANCE .....	481
<i>Xiaotian Hao, Qingjiang Wang, Hailong Wang</i>	
INFLUENCE OF ANNEALING TEMPERATURE ON PHOTOELECTRONIC PROPERTIES AND WETTABILITY OF TIO2 NANOTUBE ARRAYS.....	487
<i>Lei Yang, Yu Bao, Chaoqian Li, Yajuan Zhang, luyao Zhao, Zixiu Wang, Yiwen Sun, Minghuang Lin</i>	
FAST WAVE FRONT CORRECTION METHOD OF RECEPTION DIVERSITY LASER COMMUNICATION BASED ON THE ANALYSIS OF DISTORTED WAVE FRONT OF DIFFERENT RECEIVERS.....	493
<i>Chenlu Xu, Shiqi Hao, Yong Wang, Yujie Liu, Qingsong Zhao</i>	
RESEARCH ON LASER WATER VAPOR CONCENTRATION DETECTION TECHNOLOGY IN THE AIR-SEA FLUX OBSERVATION .....	502
<i>Ke-Ke Zhang, Xue-Yong Zheng, Shi-Zhe Chen, Xiao-Zheng Wan, Ji-Ming Zhang, Qiang Zhao, Bo Wang, Liang Qi</i>	
PERFORMANCE OF FREE SPACE OPTICAL COMMUNICATION BASE ON ORBITAL ANGULAR MOMENTUM WITH POINTING ERRORS.....	510
<i>Hubang Wang</i>	
STUDY ON DAMAGE OF POLYIMIDE TARGET IRRADIATED BY PULSED CO2 LASER .....	516
<i>Jiacheng Wu, Yue Hu, Xi Wang</i>	
STUDY ON A NEW MEASUREMENT METHOD OF SMALL POLARIZATION ROTATION USING THE COMMON-PATH HETERODYNE INTERFEROMETRY AND A HALF-WAVE PLATE .....	521
<i>Ming-Hung Chiu, Chih-Ting Tsai</i>	
MEASUREMENT OF RAISED PAVEMENT MARKER'S PHOTOMETRIC PERFORMANCE .....	531
<i>Huayang He, Zhengwei Leng, Yingqi Xue, Yishu Zhou</i>	
EFFECTIVE BACKBONE NETWORK FOR 3D OBJECT DETECTION IN POINT CLOUD .....	536
<i>Jun Xu, Yanxin Ma, Songhua He</i>	
DESIGN OF LARGE FIELD OF VIEW CURVED OPTICAL SYSTEM BASED ON ZEMAX.....	544
<i>Yuanlin Zhao, Xiangyang Peng, Shengli Chang, Wuming Wu</i>	
NEW METHOD FOR ELIMINATING BACKGROUND NOISE IN CHARACTERISTIC SPECTRAL IMAGING .....	550
<i>Xiaoli Xie, Zheng Wang, Wuming Wu, Chujun Zhao, Shengli Chang</i>	
SMALL TARGET DETECTION AND WINDOW ADAPTIVE TRACKING BASED ON CONTINUOUS FRAME IMAGES IN VISIBLE LIGHT BACKGROUND.....	556
<i>Zheng Wang, Jianping Zeng, Xiaoli Xie, Wuming Wu, Shengli Chang</i>	



INFRARED CONTRAST CHARACTERISTIC OF SATELLITES .....	564
<i>Xiang-Yin Lv, Wei Jin</i>	
AUTOMATIC CLASSIFICATION FOR GROUND TARGETS UNDER COMPLEX BACKGROUND BASED ON BAG OF WORDS MODEL .....	571
<i>Wei Jin, Yunsong Feng</i>	
SECURITY STUDY OF LASER MEASURING METHODS ON HIGH EXPLOSIVES .....	577
<i>Zheng-Ming Gao, Juan Zhao, Su-Ruo Li</i>	
STUDY ON THE INTERACTION BETWEEN CHANNELS OF IMAGE INTENSIFIER .....	583
<i>Yuntao Xie, Yang Liu, Xiaoquan Sun</i>	
SYSTEM DESIGN OF AN INFRARED DUAL-BAND SEEKER .....	590
<i>Yan-Kai Mao, Zhen-Yu Zhao</i>	
LOW NOISE VCSEL DRIVER FOR SERF ATOMIC MAGNETOMETER.....	599
<i>Feihu Wang, Zhaohui Hu, Xin Liu</i>	
SIMULTANEOUS ANALYSIS ON PHENOLIC SUBSTANCE IN CLOUDY APPLE JUICE BY HPLC.....	610
<i>Danshi Zhu, Hao Fu, Yusi Shen, Xuehui Cao, He Liu</i>	
EFFECTS OF GRADIENT OPTIMIZER ON MODEL PRUNING .....	615
<i>Yang Zhang, Bin Zhu, Qi Ma, Huanan Wang</i>	
EFFECT OF AL CONTENT ON THE STABILITY OF MGF2 POWDER IN AIR AT HIGH TEMPERATURES.....	621
<i>Hukui Chen, Jie Huang, Hongli Jiang</i>	
RESEARCH OF PHOTON CORRELATION TECHNOLOGY .....	627
<i>Lianying Zou, Ning Gao, Qian Xiao</i>	
DESIGN AND RESEARCH OF GROUND CONTROL SYSTEM OF THE UAV-BORNE PHOTOELECTRIC PLATFORM .....	632
<i>Xinglong Zhao, Jingshan Zhao, Xing Zheng, Jian Cheng, Chuanmei Bao, Zhengwu Zhang, Xiaojin Fu, Yun Liu</i>	
DAMAGE CHARACTERISTICS OF VO <sub>2</sub> FILMS UNDER NANOSECOND/PICOSECOND LASER .....	638
<i>Yuan Lu, Yunsong Feng, LeiLei Chen, Chang Wu</i>	
A HIGH-EFFICIENCY AND REAL-TIME METHOD FOR QUALITY EVALUATION OF PPG SIGNALS .....	644
<i>Hongxing Li, Shizhao Huang</i>	
SIMULATION STUDY ON LASER DAMAGE OF IRON PLATE .....	650
<i>Tianyu Wang, Jintian Bian, Qing Ye, Xin Li, Xiaoquan Sun</i>	
SIMULATION ON MOLTEN POOL CHARACTERISTICS OF AL <sub>2</sub> O <sub>3</sub> LASER SELECTIVE MELTING BASED ON ENERGY INPUT MODEL .....	657
<i>Xiaobing Chen, Quan Sun, Quanping Sun, Haibing Wu, Qian Xu</i>	
PROPERTIES OF MODE-LOCKED ULTRAFAST FIBER LASERS .....	663
<i>Youwen Jia</i>	

RESEARCH ON TEMPERATURE AND HUMIDITY DECOUPLING CONTROL OF CONSTANT TEMPERATURE AND HUMIDITY TEST CHAMBER .....	668
<i>Liheng Wang, Zhifeng Zhu</i>	
EFFECTS OF TYPICAL EMISSION WAVEFORM ON LASER REFLECTIVE TOMOGRAPHY IMAGING .....	675
<i>Xin-Yuan Zhang, Yi-Hua Hu, Nan-Xiang Zhao, Shi-Long Xu</i>	
DETECTION PERFORMANCE OF SINGLE PULSE PHOTON ACCUMULATION WITH TYPICAL EMISSION WAVEFORM .....	682
<i>A-Hui Hou, Yi-Hua Hu, Nan-Xiang Zhao</i>	
PREPARATION AND ELECTROCHEMICAL PROPERTIES OF LIMNPO <sub>4</sub> CATHODE MATERIAL WITH CONTROLLABLE MORPHOLOGY .....	689
<i>Zhongxu Wang, Tingting Li</i>	
FOURIER SINGLE-PIXEL IMAGING BASED ON EDGE ATTENUATION TECHNIQUE .....	696
<i>Yang-Di Hu, Zheng-Dong Cheng, Zhen-Yu Liang, Xiang-Zhai, Zhe-Wang</i>	
STUDY ON THE EFFECT OF STORAGE TIME ON THE QUALITY OF MUTTON OF DIFFERENT BRANDS BY LOW-FIELD NUCLEAR MAGNETIC RESONANCE.....	705
<i>Fang Yang, Qing Lin, Jiping Li, YuYan Huang, Jianmei Xu</i>	
NUMERICAL SIMULATION OF FLOWS FIELD CHARACTERISTICS OF HIGH ALTITUDE LIQUID ROCKET EXHAUST PLUME .....	711
<i>Qing Ye, Zunyang Liu, Jie Li, Rongyuan Su</i>	
DATA AUGMENTATION BASED ON WASSERSTEIN GENERATIVE ADVERSARIAL NETS UNDER FEW SAMPLES .....	718
<i>Yuchen Jiang, Bin Zhu, Qi Ma</i>	
HOT-WIRE ANEMOMETER BASED ON FROSTED FIBER BRAGG GRATING COATED WITH SILVER FILM .....	723
<i>Jing Yang, Xuke Chen, Xinyong Dong</i>	
INFLUENCES OF FEEDSTOCKS AND LASER REMELTING ON EROSION RESISTANCE OF AL <sub>2</sub> O <sub>3</sub> -13WT.%TiO <sub>2</sub> COATINGS PREPARED BY PLASMA SPRAYING.....	729
<i>Dongsheng Wang, Xinghua Zhou</i>	
STUDY ON MNOSPECTRAL PEAK IDENTIFICATION OF HARD TARGET BASED ON BREWSTER ANGLE .....	737
<i>Jia Xiang Liu, Jia Ju Liu, Zhi Zheng Zhu, Yong Hua Fang, Xiao Dong, Xin Yuan Zhang, Ying Pan</i>	
A NEW SINGLE PIXEL IMAGING SYSTEM BASED ON PAIRED ROTARY DIFFRACTION PLATES .....	743
<i>Qi Yang, Zhihao Yuan, Shaowu Wang, Jianjun Lai</i>	
NUMERICAL CALCULATION AND ANALYSIS OF INFRARED RADIATION CHARACTERISTICS OF STRATOSPHERIC AIRSHIP .....	748
<i>Yunsong Feng, Yuan Lu, Wei Jin</i>	

**Author Index**