



“中国期刊方阵”双效期刊
中国科学引文数据库(CSCD)收录期刊
全国中文核心期刊
中国科技核心期刊
RCCSE中国核心学术期刊
中国知网(CNKI)收录期刊
万方数据(CHINAINFO)收录期刊
维普资讯(VIP INFORMATION)收录期刊
国外多家知名数据库收录期刊

ISSN 0253-6099

CN 43-1104/TD

矿冶工程

MINING AND METALLURGICAL ENGINEERING

主办单位：长沙矿冶研究院有限责任公司 中国金属学会

ISSN 0253-6099



1

2023年2月

VOL 43

目次

采 矿

- 深海采矿中继站底部 Y 形管流动状态研究 吴 卓,郑 皓,吉成才,关英杰,黎 宙(1)
- 基于谐响应分析的扬矿泵安装位置的研究 邓旭辉,蒙俞辛(6)
- 强降雨条件下隧道洞口边坡开挖渗流特征以及支护方案研究 谢 韬,蔡 军,范理云,许胜才(12)
- 基于 CFD-DEM 方法的矿浆泵磨损特性研究 李 钟,金 伟,王子琪,杨 浩,张 明,彭赛锋(16)
- 基于 3D-DIC 系统的白砂岩单轴压缩应变率效应的力学性能试验研究 张春阳,张宇超,李小双(21)
- 深井扇形组合孔短延时爆破裂纹扩展模拟研究 温 晨,乔秋秋,邱贤阳,史秀志,陈 辉(26)
- 露天矿山石灰岩边坡爆破振动特性及规律研究 付 俊,周 罕,徐继刘,郁华嘉,徐桥良,黄英华(32)
- 泥-砂岩混合地层隧道施工围岩稳定性数值模拟分析 周军强,凌 涛,龙明华,彭学军,孙望成(35)
- 多因素影响下石膏-石英砂类相似材料强度特性变化规律研究 朱明德,王剑波,安 龙,程 力,侯奎奎(40)

选 矿

- 超声处理对水玻璃和油酸钠体系中方解石浮选行为的影响及其机理研究 ... 施 佳,李茂林,杨哲辉,姚 伟,崔 瑞(45)
- 钙镁质磷矿石粒级解离特性对其浮选行为的影响研究 杨 俊,邱跃琴,卯 松,张 章(50)
- 某含泥高银铅锌硫化矿高效综合利用研究 蔡锦鹏,苏 超,申培伦,刘殿文(55)
- 湖南某钨矿山中部采集样重介质预抛及白钨常温浮选试验研究 袁代军,郭江旭,曾志飞,曾海涛(59)
- 基于 MLA 分析的某铜矿石选矿工艺初步研究 张 晶,唐 鑫,吕向文,简 胜,张 琳(63)
- 浑浊红球菌对锡石的浮选性能及作用机理 蓝丽红,马忻狄,郑锡瀚,杨 卓,杜慧聪,蓝 平,柳 春(67)
- 某铜铅锌硫化矿浮选分离试验研究 段胜红,姜亚雄,周光浪(72)
- 俄罗斯某高硫铋金混合精矿降硫提质试验研究 丁林芳,刘有才,符剑刚,张钰睿,蔺 玥,赵元超,华绪雨(77)
- 某白钨加温浮选尾矿回收萤石试验研究 肖文工,吴 迪,王洪岭,孟庆波,高玉德(80)

冶 金

- 高铁氧化锰矿还原过程中铁锰氧化物同步还原动力学研究 张汉泉,杨 帆,许 鑫,路漫漫(84)
- 稳恒磁场下白云鄂博矿形貌变化及热分解分析 蒋锦韬,金永丽(89)
- MgO 掺杂对高炉渣熔融调质钢渣物相组成及结构的影响 郝 帅,罗果萍,陈银胜,柴轶凡,安胜利,宋 巍(95)
- 铌精矿配碳球团熔分过程与元素迁移试验研究 马 壮,赵增武,郭文涛(99)
- 预浓缩强化江汉盆地卤水吸附提锂的研究 王梳桐,赵云良,陈立才,董广峰,温 通,马松亮,张婷婷(105)
- 氢氧化镍中间品与硫化镍中间品的联合浸出 ... 付海阔,沈恒冠,刘 一,赵喜太,段 辉,陈 龙,姜言清,廖玉俐(110)
- 碳酸氢钠沉淀法制备大粒度高纯度氧化镨钕研究
..... 叶 毅,李益民,曾纪术,周志伟,秦健春,李 宽,潘务霞,江泽佐,何 琦(114)
- 含镍料液中硝酸铵和硝酸镍的分离研究 李 雅,王启伟,赵宇婧,刘晨明(118)

材 料

- 锂电池正极废料选择性解离与高效分选技术研究 康 飞,王天雅,赵玉娟,濮永全,何明明,孙 峙(123)
- Fe/Al₂O₃ 金属陶瓷复合材料的研究进展 李运刚,张 快,李 帅,严红燕(129)
- 应变速率对 Al_{0.4}CoCrFeNi 高熵合金绝热剪切敏感性的影响 刘小刚,姜丽红,刘 征,杨 亮,郭正华(133)
- 激光熔覆 TiC 增强镍基熔覆层的微观组织与耐磨性研究 王志东,张佳豪,王明静,刘二勇(137)
- 6061-T4 铝合金激光焊接接头组织与力学性能研究 王 森,李天景,曾一达,李明亮,林兆擎(141)
- 预热对 27SiMn 钢激光熔覆热影响区显微组织和力学性能的影响 郭长辉,李聪玮,杨 辉,杜双明,刘二勇(145)
- CMT 堆焊巴氏合金堆焊层组织及力学性能 郑军武,陈 绍,李富坤(150)

企业经济与管理

- 湖矿区分布式生态系统运行机理研究 鞠 萍,李宜伟,于晓燕,任一鑫(154)

CONTENTS

MINING

- Flow State of Y-shaped Pipe at Bottom of Buffer Station in Deep-Sea Mining
..... WU Zhuo, ZHENG Hao, JI Chengcai, GUAN Yingjie, LI Zhou(1)
- Installation Position of Lifting Pump Based on Harmonic Response Analysis DENG Xuhui, MENG Yuxin(6)
- Seepage Characteristics of Slope at Tunnel Entrance Under Heavy Rainfall and Its Support Scheme
..... XIE Tao, CAI Jun, FAN Liyun, XU Shengcai(12)
- Research on Wear Characteristics of Slurry Pump Based on CFD-DEM Method
..... LI Zhong, JIN Wei, WANG Yuqi, YANG Hao, ZHANG Ming, PENG Saifeng(16)
- Experimental Study on Mechanical Properties of White Sandstone Under Uniaxial Compression with Different Strain Rate Based on 3D-DIC System ZHANG Chunyang, ZHANG Yuchao, LI Xiaoshuang(21)
- Simulation of Crack Propagation Induced by Short Delay Blasting with Blastholes in a Combined Fan Pattern for Deep Well
..... WEN Chen, QIAO Qiuqiu, QIU Xianyang, SHI Xiuzhi, CHEN Hui(26)
- Study on Characteristics and Law of Blasting Vibration for Open-Pit Slopes in Limestone Mine
..... FU Jun, ZHOU Han, XU Jiliu, YU Huajia, XU Qiaoliang, HUANG Yinghua(32)
- Numerical Simulation of Surrounding Rock Stability During Construction of Tunnel with Mud-Containing Sandstone Stratum
..... ZHOU Junqiang, LING Tao, LONG Minghua, PENG Xuejun, SUN Wangcheng(35)
- Influence of Multi-factor on Variation Rule of Strength Characteristics of Similar Rock Material Prepared with Gypsum and Quartz Sand
..... ZHU Mingde, WANG Jianbo, AN Long, CHENG Li, HOU Kuikui(40)

MINERAL PROCESSING

- Influence of Ultrasonic Treatment on Flotation Behavior of Calcite in Sodium Silicate and Sodium Oleate Systems and Mechanism
..... SHI Jia, LI Maolin, YANG Zhehui, YAO Wei, CUI Rui(45)
- Influence of Particle Liberation Characteristics of Calcium-Magnesium Phosphate Ore on Its Flotation Behavior
..... YANG Jun, QIU Yueqin, MAO Song, ZHANG Qin(50)
- High-Efficient Comprehensive Utilization of Mud-Bearing High-Silver Lead-Zinc Sulfide Ore
..... CAI Jinpeng, SU Chao, SHEN Peilun, LIU Dianwen(55)
- Pre-discarding by Heavy Medium Separation Plus Ambient Temperature Flotation for Scheelite Sample from Middle-Layer Mining Zone of a Tungsten Mine in Hunan Province YUAN Daijun, GUO Jiangxu, ZENG Zhifei, ZENG Haitao(59)
- Preliminary Study on Mineral Processing Technology of Copper Ore Based on MLA
..... ZHANG Jing, TANG Xin, LÜ Xiangwen, JIAN Sheng, ZHANG Lin(63)
- Flotation Performance and Separation Mechanism of Cassiterite with *Rhodococcus Opacus*
..... LAN Lihong, MA Xindi, ZHENG Xihan, YANG Zhuo, DU Huichong, LAN Ping, LIU Chun(67)
- Experimental Study on Flotation Separation of Copper-Lead-Zinc Sulfide Ore
..... DUAN Shenghong, JIANG Yaxiong, ZHOU Guanglang(72)
- Sulfur Reduction and Upgrading of High-Sulfur Antimony-Gold Bulk Concentrate from Russia
..... DING Linfang, LIU Youcai, FU Jianguang, ZHANG Yurui, LIN Yue, ZHAO Yuanchao, HUA Xuyu(77)
- Recovery of Fluorite from Tailings After Hot Flotation of Scheelite
..... XIAO Wengong, WU Di, WANG Hongling, MENG Qingbo, GAO Yude(80)

METALLURGY

- Kinetics of Simultaneous Reduction of Iron and Manganese Oxides During Reduction of High-Iron Manganese Oxide Ore
..... ZHANG Hanquan, YANG Fan, XU Xin, LU Manman(84)

- Morphology Change and Thermal Decomposition Analysis of Baiyun Obo Ore Under Stable Magnetic Field
 JIANG Jintao, JIN Yongli(89)
- Effect of MgO Doping on Phase Composition and Structure of Molten Mixture of Steel Slag and Blast Furnace Slag
 HAO Shuai, LUO Guoping, CHEN Yinsheng, CHAI Yifan, AN Shengli, SONG Wei(95)
- Experimental Study on Melting Separation and Element Migration of Carbon-Containing Pellets of Niobium Concentrate
 MA Zhuang, ZHAO Zengwu, GUO Wentao(99)
- Pre-concentration to Enhance Lithium Extraction by Brine Adsorption in Jiangnan Basin
 WANG Shutong, ZHAO Yunliang, CHEN Licai, DONG Guangfeng, WEN Tong, MA Songliang, ZHANG Tingting(105)
- Leaching of Intermediate of Nickel Hydroxide with Synergetic Effect of Nickel Sulfide
 FU Haikuo, SHEN Hengguan, LIU Yi, ZHAO Xitai, DUAN Hui, CHEN Long, JIANG Yanqing, LIAO Yuli(110)
- Preparation of Large-Sized High-Purity Praseodymium and Neodymium Oxide by Precipitation with Sodium Bicarbonate
 YE Yi, LI Yimin, ZENG Jishu, ZHOU Zhiwei, QIN Jianchun, LI Kuan, PAN Wuxia, JIANG Zezuo, HE Qi(114)
- Separation of Ammonium Nitrate and Nickel Nitrate from Nickel-Containing Feed Solution
 LI Ya, WANG Qiwei, ZHAO Yujing, LIU Chenming(118)

MATERIALS

- Selective Dissociation and Efficient Separation of Cathode Material of Spent Lithium-ion Batteries
 KANG Fei, WANG Tianya, ZHAO Yujuan, PU Yongquan, HE Mingming, SUN Zhi(123)
- Research Progress of Fe/Al₂O₃ Cermet Composites LI Yungang, ZHANG Kuai, LI Shuai, YAN Hongyan(129)
- Effect of Strain Rates on Adiabatic Shear Sensitivity of Al_{0.4}CoCrFeNi High-Entropy Alloy
 LIU Xiaogang, JIANG Lihong, LIU Zheng, YANG Liang, GUO Zhenghua(133)
- Microstructure and Wear Resistance of TiC Reinforced Ni-Based Coating by Laser Cladding
 WANG Zhidong, ZHANG Jiahao, WANG Mingjing, LIU Eryong(137)
- Microstructure and Mechanical Properties of Laser Welded Joint of 6061-T4 Aluminum Alloy
 WANG Miao, LI Tianjing, ZENG Yida, LI Mingliang, LIN Zhaoqing(141)
- Effects of Preheating on Microstructures and Mechanical Properties of Heat Affected Zone of 27SiMn Steel After Laser Cladding Process
 GUO Changhui, LI Congwei, YANG Hui, DU Shuangming, LIU Eryong(145)
- Microstructure and Mechanical Properties of CMT Surfacing Layer of Babbitt Alloy ... ZHENG Junwu, CHEN Shao, LI Fukun(150)

BUSINESS ECONOMY AND MANAGEMENT

- Function Mechanism of Distributed Ecosystems in Lake Mining Area JU Ping, LI Yiwei, YU Xiaoyan, REN Yixin(154)

Responsible by Changsha Research Institute of Mining
and Metallurgy Co Ltd

Sponsored by Changsha Research Institute of Mining and
Metallurgy Co Ltd; The Chinese Society for Metals

Edited and Published by Journal of Mining & Metallurgical
Engineering (Changsha) Co Ltd

Chief Editor: ZENG Wei-yong

Deputy Editor: LIU Hong-ping

Editor: HUANG Xiao-fang, ZHOU Yang

Address: No966, Lushan South Road, Changsha,
Hunan, PRC

Tel: (0731)88657070, 88657176, 88657173

Fax: (0731)88657186

Website: <http://www.kygczz.com>

E-mail: kuangyegongchengzz@163.com

Distributed by China International Book Trading
Corporation (PO Box 399, Beijing, PRC)

International Distribution Code: Q4212

China Standard Serial Number: $\frac{\text{ISSN } 0253-6099}{\text{CN } 42-1104/\text{TD}}$