

# 工矿自动化

第47卷 第9期 2021年9月

## 目 次

### • “矿井智能通风与防灭火技术”专题 •

- 近距离煤层复合采空区煤自燃综合防治技术 ..... 秦波涛 高远 史全林 时国庆(1)  
矿井煤自燃监测预警技术研究现状及智能化发展趋势 ..... 仲晓星 王建涛 周昆(7)  
矿井局部通风智能调控系统及关键技术研究 ..... 程晓之 王凯 郝海清 陈瑞鼎 吴建宾(18)  
矿井分区域通风系统优化设计 ..... 刘昆轮 韩耀中 秦存利 王刚(25)  
突出灾变后瓦斯风压诱致风流振荡机理研究 ..... 周爱桃 胡嘉英 王凯 杜昌昂 雷欢(32)  
改进遗传算法优化的矿井局部通风机模糊 PID 控制器设计 ..... 胡业林 邓想 郑晓亮(38)  
掘进工作面长压短抽通风出风口风流调控参数研究 .....  
..... 龚晓燕 彭高高 宋涛 冯雄 陈菲 刘辉 谢沛 薛河(45)  
基于 YOLOv5 的矿井火灾视频图像智能识别方法 .....  
..... 王伟峰 张宝宝 王志强 张方智 任浩 王京(53)  
煤低温氧化动力学参数测试方法对比研究 ..... 候飞 曹威虎 王艺 仲晓星(58)  
矿井火灾环境信息动态感知与应急隔离系统 ..... 肖国强 范新丽 马砾 骆伟 吴明明(65)  
矿井通风系统健康评价研究 ..... 任子晖 陈泽彭 吴新忠 钱晓喻 李昂(70)  
基于 FCE-AHP 的矿井通风质量动态评价 ..... 靳红梅 党琪 李洪安 李占利(77)  
高温热源表面点燃甲烷和煤尘实验研究 ..... 王毅 王海燕 张雷 胡浪(85)  
热-应力耦合作用下不同粒径煤自燃氧化升温特性 .....  
..... 刘泽健 徐永亮 吕志广 吴晋东 李敏杰(91)  
重力热管布置方式对煤堆高温点的影响研究 .....  
..... 殷鹏程 田兆君 鲁义 张胜媛 欧艳萍 孙凯 杨轶涵(96)

### • “智能矿山建设构思与实践”专栏 •

- 煤矿安全智能化及其关键技术 ..... 武福生 卜滕滕 王璐(108)  
面向无人驾驶的井下行人检测方法 ..... 刘备战 赵洪辉 周李兵(113)

### • 分析研究 •

- 孤岛工作面水侵沿空巷道围岩稳控技术研究 ..... 刘鑫(118)  
井下金属结构等效接收天线的放电火花安全性研究 .....  
..... 刘晓阳 马新彦 田子建 陈伟 王帅 胡宗群(126)

### • 广告索引 •

公益广告(后插一); 精英数智科技股份有限公司(后插二、三); 《工矿自动化》征订启事(后插四)

# INDUSTRY AND MINE AUTOMATION

Vol. 47 No. 9 September 2021

## CONTENTS

### • Special of Intelligent Mine Ventilation and Fire Prevention Technology •

Comprehensive prevention and control technology of coal spontaneous combustion in compound goaf of close distance coal seam .....	QIN Botao GAO Yuan SHI Quanlin SHI Guoqing(1)
Monitoring and early warning technology of coal spontaneous combustion in coal mines: research status and intelligent development trends .....	ZHONG Xiaoxing WANG Jiantao ZHOU Kun(7)
Research on intelligent regulation and control system and key technology of mine local ventilation .....	CHENG Xiaozhi WANG Kai HAO Haiqing CHEN Ruiding WU Jianbin(18)
Optimization design of mine regional ventilation system .....	LIU Kunlun HAN Yaozhong QIN Cunli WANG Gang(25)
Study on the mechanism of gas wind pressure induced wind flow oscillation after outburst disaster .....	ZHOU Aitao HU Jiaying WANG Kai DU Chang'an LEI Huan(32)
Design of fuzzy PID controller for mine local ventilator optimized by improved genetic algorithm .....	HU Yelin DENG Xiang ZHENG Xiaoliang(38)
Study on air flow control parameters of long-pressure and short-extraction ventilation air outlets in heading face	GONG Xiaoyan PENG Gaogao SONG Tao FENG Xiong CHEN Fei LIU Hui XIE Pei XUE He(45)
Intelligent identification method of mine fire video images based on YOLOv5 .....	WANG Weifeng ZHANG Baobao WANG Zhiqiang ZHANG Fangzhi REN Hao WANG Jing(53)
Comparative study on test methods of coal low-temperature oxidation kinetic parameters .....	HOU Fei CAO Weihu WANG Yi ZHONG Xiaoxing(58)
Dynamic information perception and emergency isolation system for mine fire environment .....	XIAO Guoqiang FAN Xinli MA Li LUO Wei WU Mingming(65)
Research on health evaluation of mine ventilation system .....	REN Zihui CHEN Zepeng WU Xinzhang QIAN Xiaoyu LI Ang(70)
Dynamic evaluation of mine ventilation quality based on FCE-AHP .....	JIN Hongmei DANG Qi LI Hong'an LI Zhanli(77)
Experimental study on ignition of methane and coal dust on the surface of high temperature heat source .....	WANG Yi WANG Haiyan ZHANG Lei HU Lang(85)
Temperature rise characteristics of spontaneous combustion and oxidation of coal with different particle sizes under the effect of thermal-stress coupling .....	LIU Zejian XU Yongliang LYU Zhiguang WU Jindong LI Minjie(91)
Study on the effect of gravity heat pipe arrangement on high temperature point of coal pile .....	YIN Pengcheng TIAN Zhaojun LU Yi ZHANG Shengyuan OU Yanping SUN Kai YANG Yihan(96)
Experimental study on the displacement of oxygen in coal with different particle sizes by inert gas .....	FANG Xiyang YAO Haifei(101)

### • Column of Conception and Practice of Intelligent Mine Construction •

Coal mine safety intelligence and key technologies .....	WU Fusheng BU Tengteng WANG Lu(108)
Unmanned driving-oriented underground mine pedestrian detection method .....	LIU Beizhan ZHAO Honghui ZHOU Libing(113)

### • Analysis Research •

Research on stability control technology of surrounding rock along goaf roadway with water intrusion in isolated island working face .....	LIU Xin(118)
Research on discharge spark safety of equivalent receiving antenna of underground metal structure .....	U Xiaoyang MA Xinyan TIAN Zijian CHEN Wei WANG Shuai HU Zongqun(126)