

主管单位: 中华人民共和国应急管理部
主办单位: 应急管理部天津消防研究所
中国标准连续出版物号: CN 12-1311/TU

中文核心期刊·中国科技核心期刊

消防科学与技术®

XIAOFANG KEXUE YU JISHU

(月刊·1982年创刊)

2020年第10期(总第39卷第305期)

目次

《消防科学与技术》编辑委员会

主任: 周天

副主任: 范维澄(院士) 王玉忠(院士)

委员:(按姓氏笔画为序)

王中铮 元莫进 方正 东靖飞
代旭日 戎贤 朱国庆 闫胜利
孙金华 孙金杰 李国强 李炎锋
闵永林 汪永明 宋波 张全灵
张昊 赵长征 袁宏永 高宁宇
徐放 徐志胜 黄晓家 梁栋
蒋军成 薛林 罗伯特·迪尔托普(英国)
托马斯·莱昂纳特(德国)

《消防科学与技术》编辑部

总编辑: 宋波

常务副总编辑: 肖磊

副总编辑: 余威

主编: 邱培芳

常务副主编: 马建琴

副责任编辑: 姜钢 兵 陈那秀军 董里

责任编辑: 梁星 邢玉军 董里

毛星 李艳娜

编辑: 杜玉龙 彭燕华

编辑出版:

《消防科学与技术》编辑部

编辑部地址: 天津市南开区卫津南路110号

邮政编码: 300381

编辑部电话: (022)23383612 23920225

传真: (022)23387274

投稿邮箱: fire@xfkj.com.cn

网址: http://www.xfkj.com.cn

广告发行部电话: (022)23387276

电子信箱: guanggao@xfkj.com.cn

国内发行: 《消防科学与技术》编辑部

国外发行: 中国国际图书贸易集团有限公司

国外发行代号: M1508

印刷: 天津环球磁卡股份有限公司

出版日期: 2020年10月15日

发行范围: 国内外公开发刊

定价: 40.00元/册 480.00元/全年

国外定价: 15.00美元/册

准予广告发布登记: 002号

本刊发表全部文章和图片版权均属《消防科学与技术》编辑部所有, 如需转载请与本刊编辑部联系, 未经授权不得以任何形式转载。

消防理论研究

烟雾遮挡下的射流轨迹识别研究 潘禄、李伟、张帅帅,等(1331)
基于模糊偏好规划与云计算的商场火灾安全评价模型 陈佳(1334)
厂房顶盖与侧墙耦合对天然气泄爆的影响 杨凯、胡倩然、任佳奇,等(1339)
基于QPSO-BP神经网络的火灾预警算法 高建丰、王焱、金卷华(1345)
环境风诱发中尺度方形油池火旋风试验研究 官宝宁、张光辉、梁勇,等(1349)
火灾下双层油品储罐热响应规律研究 王雅真、刘迪、张杰东(1354)
过负荷PVC导线发热及引燃特性研究 郭子东(1358)
高温对高炉炉渣混凝土力学性能的影响试验研究 陈诗林(1363)
爆炸荷载下预应力混凝土梁抗爆性能数值模拟 肖霞、崔磊、刘进朝(1366)

建筑防火设计

基于物联网技术的建筑火灾风险动态评估 黄俊斌、张国维、闫肃,等(1371)
自然通风隧道不同竖井结构形式火灾试验研究 黄天荣、张银屏、宋飞(1376)
基于贝叶斯网络的商场火灾概率估算研究 杨世全、黄晓家、谢水波,等(1380)
某大型国际会展中心消防设计难点分析 韩玉平(1384)
依托单位消防水池建设公共消防取水口研究 孟宪赫、梅英亭(1387)
地铁轨顶排热系统协同站台火灾排烟方案研究 邱少辉(1390)
多层式下沉广场人员疏散设计分析 阙强、崔海浩(1394)
基于公共安全三角形理论的某建筑灰空间案例安全分析 顾加、马哲、朱兴飞,等(1397)

消防设备研究

安保复位型双电源电动执行机构的开发 聂建军、杨辉、鄢鸿楦(1401)
基于活动强度的空气呼吸器耗气率预测 张宏远、李梦琪(1404)

灭火剂与阻燃材料

AFFF对航空煤油油池火的抑灭有效性研究 贾井运、邹晓龙、孟亚伟,等(1409)
无机水合物掺杂热固复合聚苯板的燃烧性能 惠飞、丛波、江黎丽,等(1412)
换流变阀侧套管封堵结构耐火极限研究 刘晓圣、姬军、张彩有,等(1415)
汽油喷灯对EPS保温材料引燃条件实验研究 程志冉(1418)
壳聚糖/海藻酸钠涂层及其阻燃涤纶织物研究 管崇生、李振华(1421)

综合减灾与应急救援

云南省森林火灾时空聚集性研究 魏建珩、李智、马泽南,等(1425)
建筑火灾中人员疏散响应过程推理与评估模型研究 颜峻、疏学明、胡俊,等(1430)
电池储能系统火灾预警与灭火系统设计 胡振恺、李勇琦、彭鹏(1434)
江西省森林火灾发生特点及防治对策研究 彭徐剑、吴建国(1439)
森林(草原)-城镇交界域消防安全探讨 郑泽勋、李强、李金梅,等(1442)
基于容量有限的嵌套型消防站层次覆盖选址模型 陈振南、张鹏、吴立志,等(1447)
烟气环境中人员沿楼梯上行移动行为的实验研究 李俊梅、王泽航、董启伟,等(1452)
浅析新能源电动汽车火灾调查方法 张玉斌、张熠欣、程婧园(1456)
基于锥形量热仪的锂离子电池电解液火灾危险性研究 刘木敬、朱鹏、汪东东,等(1459)

应急管理研究

基于“一张图”的消防产品认证大数据可视化服务平台 余威、胡群明、张晓颖,等(1462)
火电厂消防设计中冷凝器污垢累积规律的神经网络预测模型 周广宏、任万英(1465)
户外变电站(换流站)用典型降噪材料火灾特性及改进现状 聂京凯、张嵩阳、吕中宾,等(1469)
中西部地区县域消防事业发展“十四五”规划编制研究 刘婧(1473)

期刊基本参数: CN12-1311/TU * 1982 * b * A4 * 145 * zh * P * ¥40.00 * 8500 * 37 * 2020-10

Fire Science and Technology

(monthly)

Founded in 1982

Vol.39, No.10, October 2020

Unit in Charge: Ministry of Emergency Management of the People's Republic of China

Sponsor: Tianjin Fire Science and Technology Institute of MEM

Editorial Board

Director: Zhou Tian

Vice Director: Fan Weicheng (Academician), Wang Yuzhong (Academician)

Editorial Office

Editor-in-Chief: Song Bo

Executive Editor-in-Chief: Xiao Lei

Assistant Editor-in-Chief: Yu Wei

Chief Editor: Qiu Peifang

Executive Chief Editor: Ma Jianqin

Assistant Chief Editor: Wang Wangang
Chen Fang

Executive Editors: Liang Bing, Xing Yujun,
Dong Li, Mao Xing, Li Yanna

Editors: Du Yulong, Peng Yanhua

Publisher: Editorial Office of Fire Science and Technology, 110 South Weijin Road, Tianjin 300381, China

Tel: (86-22)23383612/23920225

Fax: (86-22)23387274

E-mail: fire@xfkj.com.cn

URL: http://www.xfkj.com.cn

Advertisement/Distribution Department

Tel: (86-22)23387276

E-mail: guanggao@xfkj.com.cn

Domestic Distributor: Editorial Office of Fire Science and Technology

Overseas Distributor: China International book Trading Corporation(M1508)

CSSN: ISSN 1009-0029

CSSN: CN 12-1311/TU

Publishing Date: 2020-10-15

Price: ¥40.00

Overseas Price: \$ 15.00

CONTENTS

Fire theory study

- Research on jet trajectory recognition under smoke cover PAN Lu, LI Wei, ZHANG Shuai-shuai, *et al.*(1331)
- Fire safety evaluation of mall based on fuzzy preference planning and cloud model CHEN Jia(1334)
- Effect of the coupling of roof and side wall of a building on vented natural-gas explosion YANG Kai, HU Qian-ran, REN Jia-qi, *et al.*(1339)
- Fire early warning algorithm based on QPSO-BP neural network GAO Jian-feng, WANG Yan, JIN Juan-hua(1345)
- Fire whirls experiment research induced by environment wind in middle scale square oil pool GUAN Bao-ning, ZHANG Guang-hui, LIANG Yong, *et al.*(1349)
- Research on the thermal response behavior of double-layer oil storage tanks in fire WANG Ya-zhen, LIU Di, ZHANG Jie-dong(1354)
- Study on the heating and ignition characteristics of PVC conductor under overload GUO Zi-dong(1358)
- Experimental study on effect of high temperature on mechanical properties of blast furnace slag concrete CHEN Shi-lin(1363)
- Numerical analysis of anti-explosion property of prestressed concrete beams under explosion load XIAO Xia, CUI Lei, LIU Jin-zhao(1366)

Building fire protection design

- Dynamic assessment of building fire risk based on Internet of Things technology HUANG Jun-bin, ZHANG Guo-wei, YAN Su, *et al.*(1371)
- Fire tests of different shaft structures in natural ventilation tunnel HUANG Tian-rong, ZHANG Yin-ping, SONG Fei(1376)
- Research on estimation of fire probability in Shopping Mall based on Bayesian network YANG Shi-quan, HUANG Xiao-jia, XIE Shui-bo, *et al.*(1380)
- Analysis of difficulties in fire design of a large international convention and exhibition center HAN Yu-ping(1384)
- Study on relying on unit fire pool to construct public fire water intake MENG Xian-he, MEI Ying-ting(1387)
- Scheme study on rail top heat exhaust system cooperating with platform fire smoke exhaust QIU Shao-hui(1390)
- Analysis of evacuation design of multi-storey sunken square KAN Qiang, CUI Hai-hao(1394)
- Safety analysis of a building gray space case based on the public security triangular theory GU Jia, MA Zhe, ZHU Xing-fei, *et al.*(1397)

Study of fire equipment

- Development of security reset double power electric actuator NIE Jian-jun, YANG Hui, YAN Hong-zhen(1401)
- Method for predicting air consumption rate of air respirator based on activity intensity ZHANG Hong-yuan, LI Meng-qi(1404)

Fire agent and flame retardant material

- Study on effectiveness of aqueous film forming foam extinguishing agent on suppression of aviation kerosene pool fires JIA Jing-yun, ZOU Xiao-long, MENG Ya-wei, *et al.*(1409)
- Combustion performance of inorganic hydrate doped thermosetting composite polystyrene plate HUI Fei, CONG Bo, JIANG Li-li, *et al.*(1412)
- Study on the fire resistance rating of the plugging structure of the converter valve side sleeve LIU Xiao-sheng, JI Jun, ZHANG Cai-you, *et al.*(1415)
- Experimental study on the ignition condition of EPS external insulation material by gasoline torch CHENG Zhi-ran(1418)
- Study on the chitosan/sodium alginate coatings and flame retardant polyester fabric GUAN Chong-sheng, LI Zhen-hua(1421)

Comprehensive disaster reduction and emergency rescue

- Study on spatial and temporal aggregation of forest fire in Yunnan province WEI Jian-heng, LI Zhi, MA Ze-nan, *et al.*(1425)
- Research on evacuation response process reasoning and assessment model in building fire YAN Jun, SHU Xue-ming, HU Jun, *et al.*(1430)
- Design of fire warning system and fire extinguishing system of battery energy storage system HU Zhen-kai, LI Yong-qi, PENG Peng(1434)
- Study on forest fire characteristics and governance countermeasures in Jiangxi Province PENG Xu-jian, WU Jian-guo(1439)
- Research on the fire safety of Wildland-Urban Interface ZHENG Ze-xun, LI Qiang, LI Jin-mei, *et al.*(1442)
- Nested hierarchical coverage location model for fire station with limited capacity CHEN Zhen-nan, ZHANG Peng, WU Li-zhi, *et al.*(1447)
- Experimental study on the behavior of walking upstairs in smoky environment LI Jun-mei, WANG Ze-hang, DONG Qi-wei, *et al.*(1452)
- Investigation method of new energy electric vehicle fire ZHANG Yu-bin, ZHANG Yi-xin, CHENG Jing-yuan(1456)
- Fire risk analysis of lithium ion battery based on cone calorimeter LIU Shu-jing, ZHU Peng, WANG Dong-Dong, *et al.*(1459)

Emergency management study

- Big data visual service platform for fire product certification based on "one map" YU Wei, HU Qun-ming, ZHANG Xiao-ying, *et al.*(1462)
- A neural network predicting model for condenser scaling cumulative law in fire protection design of coal power station ZHOU Guang-hong, REN Wan-ying(1465)
- Fire characteristics and improvement of typical noise reducing materials in outdoor substation (Converter station) NIE Jing-kai, ZHANG Song-yang, LV Zhong-bin, *et al.*(1469)
- Study on the compilation of the 14th five year plan for fire protection development in county areas of Midwest China LIU Jing(1473)