

CHINA MEASUREMENT & TEST

中国测试

ZHONGGUO CESHI

第45卷 总第256期 2019年11月

ISSN 1674-5124
CN 51-1714/TB

11
November
2019



中文核心期刊

中国科技核心期刊

中国科技论文统计源期刊

中国学术期刊综合评价数据库全文收录期刊

中国期刊（光盘版）全文收录期刊

《万方数据——数字化期刊群》全文收录期刊

RCCSE中国核心学术期刊（A）

美国《化学文摘》（CA）收录期刊

美国《剑桥科学文摘（工程技术）》（CSA）收录期刊

美国《剑桥科学文摘（自然科学）》（CSA）收录期刊

俄罗斯《文摘杂志》收录期刊

美国《乌利希期刊指南》收录期刊

万方数据

主管：中国测试技术研究院



目 次

测试理论

油气管道聚乙烯层粘接缺陷的红外热成像检测方法和信号增强技术研究	刘祚时, 周继雯, 俞跃, 等	1
小波域 BM3D 滤波算法高炉回旋区温度场测量	崔桂梅, 姚艳清, 张勇	9
改进型 LSTM 网络光伏发电功率预测研究	叶兴, 薛家祥	14
基于安装误差的导引头隔离度测量值修正	周永恒, 崔少辉, 方丹	21

测试方法

物理测试

非道路柴油机不同稳态排放循环测试结果对比	崔焕星, 李刚, 季宝峰, 等	26
基于近场声全息的目标反射声场重建方法研究	陈新宁	31
多线结构光堆积物三维测量方法研究	杨以铁, 郭天太, 孔明	35
金属掩埋物的主动磁探测方法	鲁伟俊, 李斌	40
一种基于 Guard 技术的皮安级电流校准方法	李灏, 郑世棋, 乔玉娥, 等	45

化学与生物测试

基于体外抑菌作用的金莲花系列制剂谱 – 效关系研究	伍利华, 钟林江, 杨俊莉, 等	51
车用陶瓷催化剂能力验证标准样品的研制	姚慧, 刘涛	57
全自动固相萃取 – 气相色谱质谱法监测地表水中的 5 种有机磷类农药残留量	安静	61
高效液相色谱法同时测定食品中纳他霉素和脱氢乙酸的含量	刘斯琪	66

测试仪器

基于 PCA-KELM 和 AT 的互感器故障诊断	王昕, 曹文彬, 曹敏, 等	72
光谱共焦技术精密几何量测量台研制	汪钦臣, 方益民	79
U 型电磁超声换能器三维仿真研究	王倩, 张斌, 王桔, 等	84
烟用层流流量传感器测量准确性研究	崔廷, 苗芊, 苏东瀛, 等	90
基于 PSO-BP 模型的扩散硅压力传感器温度补偿	崔萌洁, 卢文科, 左锋	95

测控技术

基于 SVM 的载波通信调制信号识别方法研究	董重重, 何行, 孙秉宇, 等	101
高速列车齿轮箱轴承故障诊断的自适应 TQWT 方法	龙莹, 苏燕辰, 高扬, 等	108
球杆系统基于二阶滑模的分级滑模控制	于涛, 王益博, 杨昆, 等	114
基于神经网络专家系统的智能变电站检修测试安措自动生成方法研究	杨向飞, 赵子涵, 郑中, 等	120
面向智能维护的通信机房机柜图像语义分割技术	赵迪, 刘桂雄	126

性能测试

无人机高光谱载荷性能交叉验证	田文忠, 赵庆展, 胡浩伟, 等	131
基于 PLS-SVR 的电站锅炉 NO _x 排放特性建模	马宁, 董泽	138
DOC+CDPF 对燃用 F-T 柴油的防爆柴油机排放性能影响	陈东东, 张翠平, 张瑞亮	143
机械式停车设备框架结构模态分析与试验研究	马舜, 周俊坚, 陈笑建, 等	149
耦合太阳能辅热的 AA-CAES 系统储热特性分析及优化	张营, 张伟江, 李晓光	155

CONTENTS

Test Theories

Research on infrared thermal imaging detection method and signal enhancement technology for bonding defects of polyethylene layer in oil and gas pipeline	LIU Zuoshi, ZHOU Jiwen, YU Yue, et al	1
Measurement of temperature field in blast furnace raceway based on BM3D filtering algorithm in wavelet domain	CUI Guimei, YAO Yanqing, ZHANG Yong	9
Research on photovoltaic power generation prediction based on improved LSTM network	YE Xing, XUE Jiaxiang	14
Research on the method of measuring the angle rate accuracy of infrared seeker	ZHOU Yongheng, CUI Shaohui, FANG Dan	21

Test Methods

Physics

Comparison of different steady-state emission cycle test results of non-road diesel engine	CUI Huanxing, LI Gang, JI Baofeng, et al	26
Research on reconstruction of target reflected sound field based on near-field acoustical holography	CHEN Xinning	31
Three-dimensional measurement method of deposit based on multi-line structured light	YANG Yitie, GUO Tiantai, KONG Ming	35
Method of active magnetic detection for metal burial	LU Weijun, LI Bin	40
A current calibration method of pA-level based on Guard technique	LI Hao, ZHENG Shiqi, QIAO Yu'e, et al	45

Chemistry and Biology

Study on the spectrum-effect relationship of Jinlianhu series preparations based on <i>in vitro</i> bacteriostasis	WU Lihua, ZHONG Linjiang, YANG Junli, et al	51
Development of reference material of vehicle ceramic catalyst for proficiency testing	YAO Hui, LIU Tao	57
Automatic SPE-GC/MS method for determination of 5 organophosphorus pesticides residues in surface water	AN Jing	61
Simultaneous determination of natamycin and dehydroacetic acid in foods by high performance liquid chromatography	LIU Sisi	66

Test Instruments

Transformer fault diagnosis based on PCA-KELM and AT	WANG Xin, CAO Wenbin, CAO Min, et al	72
Design of precise geometric measuring system based on spectrum confocal technology	WANG Qinchen, FANG Yimin	79
Research on 3D simulation of U-shaped electromagnetic ultrasonic transducer	WANG Qian, ZHANG Bin, WANG Ju, et al	84
Research on measuring accuracy of tobacco laminar flow transducer	CUI Ting, MIAO Qian, SU Dongying, et al	90
Temperature compensation of diffused-silicon pressure sensor based on PSO-BP	CUI Mengjie, LU Wenke, ZUO Feng	95

Measurement and Control Technologies

Research on carrier signal modulation signal recognition method based on support vector machine	DONG Chongchong, HE Xing, SUN Bingyu, et al	101
Fault diagnosis of gearbox bearings of high-speed train applying adaptive TQWT	LONG Ying, SU Yanchen, GAO Yang, et al	108
Hierarchical sliding mode control of a ball and beam system based on second order sliding mode	YU Tao, WANG Yibo, YANG Kun, et al	114
Research on automatic generation of safety measures for intelligent substation maintenance and testing based on neural network and expert system	YANG Xiangfei, ZHAO Zihan, ZHENG Zhong, et al	120
Image semantic segmentation method for cabinets of carrier hotel for intelligent maintenance	ZHAO Di, LIU Guixiong	126

Performance Tests

Cross-validation of performance about UAV hyperspectral load	TIAN Wenzhong, ZHAO Qingzhan, HU Haowei, et al	131
Modeling of NO _x emission characteristics of coal-fired boiler based on PLS-SVR	MA Ning, DONG Ze	138
Effect of DOC+CDPF on emission performance of explosion-proof diesel fuel F-T diesel engine	CHEN Dongdong, ZHANG Cuiping, ZHANG Ruiliang	143
Modal analysis and experimental study on frame structure of mechanical parking equipment	MA Shun, ZHOU Junjian, CHEN Xiaojian, et al	149
Analysis and optimization of thermal storage characteristics of AA-CAES system coupled with solar heating	ZHANG Ying, ZHANG Weijiang, LI Xiaoguang	155