



Ei Compendex核心期刊  
RCCSE中国权威学术期刊

ISSN 1005-3026  
CN 21-1344/T  
CODEN DDXKEZ

东北大学学报

# 东北大学学报

## 自然科学版

Vol.42 No.10

自然科学版

Vol.42 No.10



JOURNAL OF  
NORTHEASTERN UNIVERSITY  
NATURAL SCIENCE

ISSN 1005-3026



9 771005 302215

1.0>

中国·沈阳  
Shenyang China

10  
2021

2021-10-15

# 东北大学学报(自然科学版)

Dongbei Daxue Xuebao (Ziran Kexue Ban)

第 42 卷 第 10 期 (总第 373 期) 2021 年 10 月

## 目 次

### 信息与控制

- 基于实例迁移的磨煤机过程监测建模..... 常玉清, 赵炜炜, 刘乐源, 康孝云(1369)
- 阶次自适应 AR 等效电路模型的锂电池 SOC 滑模观测 ..... 刘 芳, 李 卓, 苏卫星, 刘 阳(1376)
- 介电泳效应的液滴聚结过程与分布..... 胡 晟, 陈悦江, 吕晓永, 吴东旭(1386)
- 结合 DNA 编码的快速混沌图像加密算法..... 周红亮, 刘洪娟(1391)

### 材料与冶金

- 亚稳奥氏体对高强度海洋工程用钢力学性能的影响..... 周 成, 刘文鹏, 叶其斌, 王昭东(1400)
- 车轴钢高温黏塑性本构模型及流变行为分析..... 刘 干, 宁新禹, 李天祥, 李海军(1407)
- 调质工艺对 V 微合金油井管用钢力学性能的影响 ..... 蔡志辉, 文光奇, 韩阿康, 张开华(1414)
- 轧制态下 Cu 含量对泡沫铝泡孔结构的影响 ..... 魏 宥, 罗洪杰, 卢晓通, 杨世杰(1421)

### 机 械 工 程

- 基于混合样条曲线的换刀机器人换刀轨迹规划研究..... 钱文学, 宋 帅, 李 昊, 王英华(1427)
- 基于回转运输试验的煤散料离散元接触参数修正..... 李 博, 王子升, 梁 超, 王学文(1435)
- 基于 Kriging 和 MCMC 的结构可靠性主动学习算法 ..... 张灏岩, 毕秋实, 李 勃, 郭广勇(1444)

### 资源与土木工程

- 微波辐射对变粒岩孔隙结构及抗拉强度的影响..... 于洪雯, 安 龙, 李元辉, 高传波(1451)
- 岩体裂隙中宾汉姆流体渗流模型..... 王者超, 张皓炜, 龙求喜, 刘 杰(1459)
- 胞外聚合物的提取及其吸附性能 ..... 徐小惠, 魏德洲, 张兰河(1467)
- 基于稳定函数的支撑结构系统临界力计算方法..... 王述红, 姚 骞, 张 超, 王鹏宇(1475)
- 氯盐干湿循环下尾矿球凝土气体渗透性与孔轴线可靠性 ..... 李 艺, 李少锋, 高 炎(1483)
- 基于 F-K 理论的抛光铝粉自燃特性及自燃临界条件 ..... 王鑫阳, 李 刚(1491)

### 管 理 科 学

- 基于在线评论的产品竞争力分析方法 ..... 田金霓, 尤天慧, 袁 媛(1498)
- 考虑不适应成本的软件产品销售渠道策略研究..... 张翠华, 邹宇峰, 李志堂, 马 勇(1506)
- 心理模拟会让顾客欣喜吗? 一个中介调节模型 ..... 张跃先, 于佩玉, 杨 勇(1514)

# JOURNAL OF NORTHEASTERN UNIVERSITY

## ( NATURAL SCIENCE )

Volume 42 Number 10 ( Sum 373 ) October 2021

### CONTENTS

#### Information & Control

- Modeling of Coal Mill Process Monitoring Based on Instance-based Transfer Learning .....  
..... *CHANG Yu-qing, ZHAO Wei-wei, LIU Le-yuan, KANG Xiao-yun*(1369)
- Sliding Mode Observer of Lithium Battery SOC Based on Order Adaptive AR Equivalent Circuit Model .....  
..... *LIU Fang, LI Zhuo, SU Wei-xing, LIU Yang*(1376)
- Process and Distribution of Droplet Coalescence Based on Dielectrophoresis Effect .....  
..... *HU Sheng, CHEN Yue-jiang, LYU Xiao-yong, WU Dong-xu*(1386)
- Fast Chaotic Image Encryption Algorithm Combined with DNA Encoding ..... *ZHOU Hong-liang, LIU Hong-juan*(1391)

#### Materials & Metallurgy

- Effect of Metastable Austenite on Mechanical Properties of High-Strength Steel in Oceanengineering .....  
..... *ZHOU Cheng, LIU Wen-peng, YE Qi-bin, WANG Zhao-dong*(1400)
- High-Temperature Viscoplastic Constitutive Model and Rheological Behavior Analysis for Axle Steel .....  
..... *LIU Gan, NING Xin-yu, LI Tian-xiang, LI Hai-jun*(1407)
- Effect of Quenching and Tempering Treatment on Mechanical Properties of V-microalloyed Steel for Oil Well Pipe .....  
..... *CAI Zhi-hui, WEN Guang-qi, HAN A-kang, ZHANG Kai-hua*(1414)
- Effect of Cu Content on Pore Structure of Aluminum Foams After Rolling Process .....  
..... *WEI You, LUO Hong-jie, LU Xiao-tong, YANG Shi-jie*(1421)

#### Mechanical Engineering

- Research on Tool-Changing Trajectory Planning of Tool-Changing Robots Based on Hybrid Spline Curves .....  
..... *QIAN Wen-xue, SONG Shuai, LI Hao, WANG Ying-hua*(1427)
- Modification of Discrete Element Contact Parameters of Coal Bulks Based on Rotary Transport Test .....  
..... *LI Bo, WANG Zi-sheng, LIANG Chao, WANG Xue-wen*(1435)
- Active Learning Algorithm of Structural Reliability Based on Kriging and MCMC .....  
..... *ZHANG Hao-yan, BI Qiu-shi, LI Bo, GUO Guang-yong*(1444)

#### Resources & Civil Engineering

- Effect of Microwave Radiation on Pore Structure and Tensile Strength of Metagranulite .....  
..... *YU Hong-wen, AN Long, LI Yuan-hui, GAO Chuan-bo*(1451)
- Bingham Fluid Seepage Model in Rock Fractures ..... *WANG Zhe-chao, ZHANG Hao-wei, LONG Qiu-xi, LIU Jie*(1459)
- Extraction and Adsorption Properties of Extracellular Polymeric Substances ..... *XU Xiao-hui, WEI De-zhou, ZHANG Lan-he*(1467)
- Calculation Method of the Critical Force of Support Structure System Based on Stability Function .....  
..... *WANG Shu-hong, YAO Qian, ZHANG Chao, WANG Peng-yu*(1475)
- Air Permeability and Pore Axis Reliability of Tailing Ball Concrete Under Chloride Salt Dry-Wet Cycle .....  
..... *LI Yi, LI Shao-feng, GAO Yan*(1483)
- Spontaneous Combustion Characteristics and Critical Conditions of Spontaneous Combustion of Polished Aluminum Powder Based on the  
F-K Theory ..... *WANG Xin-yang, LI Gang*(1491)

#### Management Science

- Product Competitiveness Analysis Method Based on Online Reviews ..... *TIAN Jin-ni, YOU Tian-hui, YUAN Yuan*(1498)
- Research on Software Product Sales Channel Strategies Considering Maladjustment Costs .....  
..... *ZHANG Cui-hua, ZOU Yu-feng, LI Zhi-tang, MA Yong*(1506)
- Will Mental Simulation Make Customers Delighted? A Mediated Moderation Model ... *ZHANG Yue-xian, YU Pei-yu, YANG Yong*(1514)

**Serial parameters:** CN21 – 1344/T \* 1955 \* m \* A4 \* 152 \* zh \* P \* ¥ 15.00 \* 1000 \* 20 \* 2021 – 10

**Editor of this issue:** AN Bi-li