



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

## 自然科学版

Vol.43 No.12



JOURNAL OF  
NORTHEASTERN UNIVERSITY  
NATURAL SCIENCE

ISSN 1005-3026



9 771005 302222

中国·沈阳  
Shenyang China

**12**  
**2022**

# 东北大学学报(自然科学版)

Dongbei Daxue Xuebao (Ziran Kexue Ban)

第 43 卷 第 12 期 (总第 387 期) 2022 年 12 月

## 目 次

### 信息与控制

- 带有输入饱和的 TCP/AQM 网络系统事件触发控制 ..... 井元伟, 刘彦彤, 谢海修(1673)
- 带输入饱和的奇异摄动双线性系统的无源控制 ..... 张秀华, 任佳旭(1680)
- 基于深度学习图像分析的晶体特性反馈控制 ..... 王良勇, 朱耀龙, 淦晨阳(1688)
- $\text{In}_2\text{O}_3$  多孔有序薄膜的制备及其对丁酮气敏特性 ..... 苑振宇, 郭忠明, 封怡超, 李泽宇(1694)
- 一种基于安全索引的位置隐私保护方法 ..... 张 晶, 李传文(1702)
- 基于双字典自适应学习算法的低采样率 CT 重建 ..... 栾 峰, 杨 帆, 蔡睿智, 杨 晨(1709)
- 基于注意力特征融合稠密网络的图像去雾算法 ..... 孟红记, 刘沛谚, 胡振伟(1717)

### 机 械 工 程

- 非线性振动下卸载系统动力学及运动学特性分析 ..... 周世华, 王云贺, 陈 雨, 任朝晖(1724)
- 直升机主减典型部件故障动力学建模与仿真 ..... 胡 蛟, 胡葛庆, 沈 建, 罗 鹏(1732)
- 动车组车轮辋裂损伤容限和剩余寿命评估 ..... 丛 韬, 陈 刚, 吴 斯, 赵 飒(1740)
- 喷砂机模型气固两相流数值模拟及 PIV 实验验证 ..... 黄 思, 唐梓睿, 欧晨希(1748)
- 低雷诺数下椭圆翼型层流分离研究 ..... 张志君, 李天歌, 司腾飞, 孙霖宇(1753)
- 微织构刀具三维超声振动车削 304 不锈钢研究 ..... 方 锐, 邹 平, 段经纬, 张 硕(1761)

### 材 料 与 冶 金

- 真空离心铸造冷却速率对 7055 铝合金组织和力学性能的影响 ..... 王 胤, 李 勇, 钱晓明, 张博四(1769)
- 磨矿介质对方铅矿氧化浸出行为的影响 ..... 赵前飞, 佟琳琳, 杨洪英, 金瑞鹏(1777)

### 资源与土木工程

- 基于裂纹扩展作用下的岩石损伤力学模型 ..... 彭志雄, 曾亚武(1784)
- 型钢框架 - 锚索 - 岩土体耦合蠕变行为 ..... 高 幸, 王维玉, 贾金青(1792)
- 化学抑尘剂对铜尾矿库区草本植物适生性的影响 ..... 魏作安, 谢金鑫, 赵药康, 路 停(1799)

# JOURNAL OF NORTHEASTERN UNIVERSITY

## ( NATURAL SCIENCE )

Volume 43 Number 12 ( Sum 387 ) December 2022

### CONTENTS

#### Information & Control

- Event Triggering Control of TCP/AQM Network System with Input Saturation ..... *JING Yuan-wei, LIU Yan-tong, XIE Hai-xiu*(1673)
- Passive Control of Singularly Perturbed Bilinear Systems with Input Saturation ..... *ZHANG Xiu-hua, REN Jia-xu*(1680)
- Feedback Control of Crystal Characteristics Based on Deep Learning Image Analysis .....  
..... *WANG Liang-yong, ZHU Yao-long, GAN Chen-yang*(1688)
- Preparation of Porous Ordered Films of  $\text{In}_2\text{O}_3$  and Its Gas Sensitive Characteristics to Butanone .....  
..... *YUAN Zhen-yu, GUO Zhong-ming, FENG Yi-chao, LI Ze-yu*(1694)
- A Location Privacy Protection Method Based on Secure Index ..... *ZHANG Jing, LI Chuan-wen*(1702)
- Low Sampling Rate CT Reconstruction Based on Dual Dictionary Adaptive Learning Algorithm .....  
..... *LUAN Feng, YANG Fan, CAI Rui-zhi, YANG Chen*(1709)
- Image Dehazing Algorithm Based on Attentional Feature Fusion and Dense Network .....  
..... *MENG Hong-ji, LIU Pei-yan, HU Zhen-wei*(1717)

#### Mechanical Engineering

- Dynamic and Kinematic Characteristics Analysis for Unloading System Under Nonlinear Vibration .....  
..... *ZHOU Shi-hua, WANG Yun-he, CHEN Yu, REN Zhao-hui*(1724)
- Fault Dynamic Modeling and Simulation for Typical Components of Helicopter Main Reducers .....  
..... *HU Jiao, HU Niao-qing, SHEN Jian, LUO Peng*(1732)
- Damage Tolerance and Remain Fatigue Life Evaluation of Shattered Rim of EMU Wheels .....  
..... *CONG Tao, CHEN Gang, WU Si, ZHAO Sa*(1740)
- Numerical Simulation and PIV Experimental Validation of Gas-Solid Two-Phase Flow in Sandblasting Machine Model .....  
..... *HUANG Si, Tang Zi-ru, OU Chen-xi*(1748)
- Study on Laminar Flow Separation of Elliptic Airfoils at Low Reynolds Numbers .....  
..... *ZHANG Zhi-jun, LI Tian-ge, SI Teng-fei, SUN Ji-yu*(1753)
- Research on Three-Dimensional Ultrasonic Vibration Turning of 304 Stainless Steel with Micro-texture Tools .....  
..... *FANG Rui, ZOU Ping, DUAN Jing-wei, ZHANG Shuo*(1761)

#### Materials & Metallurgy

- Effect of the Cooling Rate of Vacuum Centrifugal Casting on Microstructure and Mechanical Properties of 7055 Aluminum Alloy .....  
..... *WANG Yin, LI Yong, QIAN Xiao-ming, ZHANG Bo-si*(1769)
- Effect of Grinding Media on Cyanide Leaching Behavior of Galena .....  
..... *ZHAO Qian-fei, TONG Lin-lin, YANG Hong-ying, JIN Rui-peng*(1777)

#### Resources & Civil Engineering

- Microcrack Propagation-Based Damage Mechanics Model of Rock ..... *PENG Zhi-xiong, ZENG Ya-wu*(1784)
- Coupled Creep Behavior in Steel Frame-Anchor Cables-Rock and Soil Mass ..... *GAO Xing, WANG Wei-yu, JIA Jin-qing*(1792)
- Effect of Chemical Dust Suppressants on Suitability of Herbaceous Plants in Copper Tailings Ponds .....  
..... *WEI Zuo-an, XIE Jin-xin, ZHAO Jun-kang, LU Ting*(1799)

Serial parameters: CN21 – 1344/T \* 1955 \* m \* A4 \* 152 \* zh \* P \* ¥ 15.00 \* 1000 \* 18 \* 2022 – 12

Editor of this issue: *LIN Qing-hua*