

1956年创刊

EI 收录期刊

中文核心期刊

ISSN 1001-4381

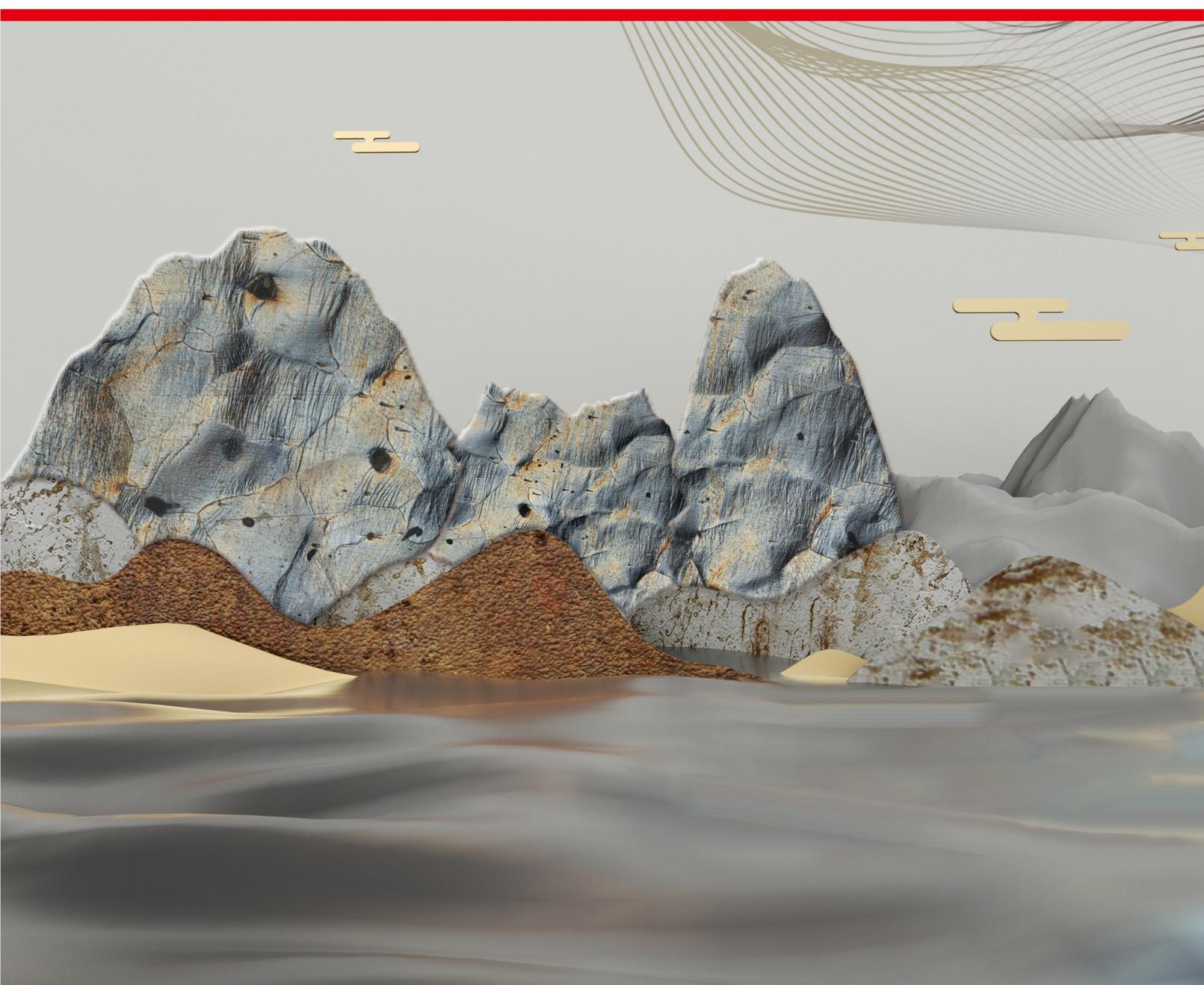
CODEN CAGOEW

# 材料工程

## 10 2022

JOURNAL OF MATERIALS ENGINEERING

第50卷 | Vol.50



ISSN 1001-4381



中国航发北京航空材料研究院 主办

2022 年第 50 卷第 10 期 (总第 473 期)

## 目 次

## 陶瓷基复合材料专栏

- 生物态碳-陶瓷基复合材料制备方法的研究现状 ..... 李国青, 杨丽霞, 余敏 (1)  
面向一体化热防护的陶瓷基复合材料轻量化结构研究进展与挑战  
..... 张路, 袁芳, 王文清, 董星杰, 何汝杰 (15)  
颗粒级配对  $\text{Si}_3\text{N}_{4w}/\text{Si}_3\text{N}_4$  复合材料弯曲强度与介电性能的影响  
..... 崔雪峰, 许泽水, 姚远洋, 李明星, 叶昉, 成来飞 (29)

## 综 述

- 锂离子电池厚电极结构设计的研究进展 ..... 何仁杰, 李书萍, 王许敏, 余创, 程时杰, 谢佳 (38)

## 研究论文

- 粉末冶金  $(\text{FeNiMnAl}_x)_{50}\text{Cu}_{50}$  中熵合金的微观组织与力学性能 ..... 陈维平, 陈焕达, 褚晨亮, 付志强 (55)  
基于  $\mu\text{CT}$  表征的 SLM 成形 GH3536 高温合金缺陷特征 ..... 高祥熙, 杨平华, 乔海燕, 张帅 (63)  
应变速率对热冲压淬火-配分钢显微组织与力学性能的影响 ..... 吴聰, 景财年, 林涛, 叶道珉, 雷启腾 (73)  
固溶冷却速率对全片层亚稳  $\beta$  钛合金  $\alpha$  相形貌的影响  
..... 信云鹏, 朱知寿, 王新南, 商国强, 王彦伟, 李明兵 (80)  
 $\text{Cu}$  对 Fe-NiAlMn 合金析出强化过程的影响 ..... 翟乾坤, 肖亚姣, 李嘉宝, 刘文庆 (87)  
3 Ah 高镍/硅氧碳软包电池循环容量衰减分析  
..... 刘智, 马天翼, 汪晨阳, 李翔, 常增花, 庞静, 云凤玲 (93)  
 $\text{Y}^{3+}$  掺杂  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  负极材料的电荷输运特性及电化学性能研究  
..... 吴冰, 刘磊, 王献志, 肖潇, 杨豹, 赵锦涛, 古成前, 马雷 (102)  
核-壳结构  $\text{Al}_2\text{O}_3@\text{CIPs}$  的制备及其抗氧化性能和吸波性能 ..... 于明飞, 姚伦标, 卿玉长, 马莉娅 (111)  
氧气等离子体处理对 CFRP 表面特性及胶接界面力学性能的影响 ..... 王大伟, 李晔, 巨乐章, 朱安安 (118)  
低热膨胀聚(苯并噁唑-酰亚胺)薄膜与铜黏结性能  
..... 崔超, 袁莉莉, 尹亮, 黄玉东, 孟令辉, 杨念群, 杨士勇 (128)  
聚芳醚酮树脂非等温结晶动力学及其复合材料湿热老化性能  
..... 张金栋, 孙洪霖, 刘刚, 姚佳楠, 陈春海, 王明 (139)  
PEO 基固态聚合物电解质膜的静电纺丝制备及性能 ..... 曹倩, 杨晶晶, 陈卫星, 王趁红, 吴新明, 雷亚萍 (148)  
 $\text{ZnO/g-C}_3\text{N}_4$  复合光催化剂的制备及光催化还原 U(VI) ..... 雷铭, 刘岳林, 谢水波, 葛玉杰, 刘迎九 (157)  
活化凹凸棒石合成多级孔钛硅分子筛及其光催化性能研究 ..... 张建民, 刘宇琦, 李红玑 (165)  
基于临界折射纵波递归定量分析的纯铁疲劳损伤无损评价 ..... 孟亦圆, 林莉, 陈军, 金士杰, 罗忠兵 (172)

封面照片：基于临界折射纵波递归定量分析的纯铁疲劳损伤无损评价（见孟亦圆等论文，第 174 页图 4）

责任编辑 刘丹阳

## CONTENTS

### CERAMIC MATRIX COMPOSITES COLUMN

- Research status in processing biomorphic carbon-ceramic matrix composites ..... LI Guoqing, YANG Lixia, YU Min( 1 )  
Progress and challenges in lightweight ceramic matrix composite structures towards integrated thermal protection structure ..... ZHANG Lu, YUAN Fang, WANG Wenqing, DONG Xingjie, HE Ruijie(15)  
Effect of particle gradation on flexural strength and dielectric property of  $\text{Si}_3\text{N}_{4w}/\text{Si}_3\text{N}_4$  composites ..... CUI Xuefeng, XU Zeshui, YAO Yuanyang, LI Mingxing, YE Fang, CHENG Laifei(29)

### REVIEW

- Research progress of lithium-ion batteries thick-electrode architectural design ..... HE Renjie, LI Shuping, WANG Xumin, YU Chuang, CHENG Shijie, XIE Jia(38)

### RESEARCH ARTICLE

- Microstructure and mechanical properties of  $(\text{FeNiMnAl}_x)_{50}\text{Cu}_{50}$  medium entropy alloy fabricated by powder metallurgy ..... CHEN Weiping, CHEN Huanda, CHU Chenliang, FU Zhiqiang(55)  
Defect characteristics within SLM-fabricated GH3536 superalloy dependence on  $\mu\text{CT}$  characterization ..... GAO Xiangxi, YANG Pinghua, QIAO Haiyan, ZHANG Shuai(63)  
Effect of strain rate on microstructure and mechanical properties of hot stamping quenching-partitioning steel ..... WU Cong, JING Cainian, LIN Tao, YE Daomin, LEI Qiteng(73)  
Effect of solid solution cooling rate on  $\alpha$  phase morphology of full lamellar metastable  $\beta$  titanium alloy ..... XIN Yunpeng, ZHU Zhishou, WANG Xinnan, SHANG Guoqiang, WANG Yanwei, LI Mingbing(80)  
Effect of Cu on precipitation strengthening process in Fe-NiAlMn alloy ..... ZHAI Qiankun, XIAO Yajiao, LI Jiabao, LIU Wenqing(87)  
Cycling capacity fade analysis of 3 Ah high nickel/ $\text{SiO}_x$ -C pouch cells ..... LIU Zhi, MA Tianyi, WANG Chenyang, LI Xiang, CHANG Zenghua, PANG Jing, YUN Fengling(93)  
Transport characteristics and electrochemical properties of  $\text{Y}^{3+}$  doped  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  as anode material ..... WU Bing, LIU Lei, WANG Xianzhi, XIAO Xiao, YANG Bao, ZHAO Jintao, GU Chengqian, MA Lei(102)  
Preparation of core-shell  $\text{Al}_2\text{O}_3@\text{CIPs}$  and its anti-oxidation properties and microwave absorbing performance ..... YU Mingfei, YAO Lunbiao, QING Yuchang, MA Liya(111)  
Effect of oxygen plasma treatment on surface performance and mechanical properties of bonding interface of CFRP ..... WANG Dawei, LI Ye, JU Yuezhang, ZHU Anan(118)  
Adhesion property between low-thermal-expansion poly(benzoxazole-imide) film and ion-implanted copper ..... CUI Chao, YUAN Lili, YIN Liang, HUANG Yudong, MENG Linghui, YANG Nianqun, YANG Shiyong(128)  
Non-isothermal crystallization kinetics of poly(aryl ether ketone) resin and hydrothermal aging properties of its composites ..... ZHANG Jindong, SUN Honglin, LIU Gang, YAO Jianan, CHEN Chunhai, WANG Ming(139)  
Preparation and properties of solid polymer electrolyte membranes based on PEO by electrospinning ..... CAO Qian, YANG Jingjing, CHEN Weixing, WANG Chenhong, WU Xinming, LEI Yaping(148)  
Preparation of  $\text{ZnO/g-C}_3\text{N}_4$  composite photocatalyst and photocatalytic reduction of U(VI) ..... LEI Ming, LIU Yuelin, XIE Shubo, GE Yujie, LIU Yingjiu(157)  
Synthesis of multistage porous titanium silicon molecular sieve by activated attapulgite and photocatalytic performance ..... ZHANG Jianmin, LIU Yuqi, LI Hongji(165)  
Nondestructive evaluation on fatigue damage of pure iron based on critically refracted longitudinal wave combined with recurrence quantification analysis ..... MENG Yiyuan, LIN Li, CHEN Jun, JIN Shijie, LUO Zhongbing(172)