

目次 CONTENTS

专题——电磁功能材料

Special Topic—Electromagnetic Functional Materials

1 绿色建筑与电磁屏蔽材料

Green Architecture and Electromagnetic Shielding Materials

曹茂庆

CAO Mao-qing

12 智能电磁材料与结构综述

Review of Smart Electromagnetic Materials and Structures

宋维力

SONG Wei-li

18 特色研究报告：低维电磁功能材料研究进展

Low-dimensional Electromagnetic Functional Materials

王希晰, 曹茂盛

WANG Xi-xi, CAO Mao-sheng

29 石墨烯基电磁功能材料

Graphene-based Electromagnetic Functional Materials

疏金成, 曹茂盛

SHU Jin-cheng, CAO Mao-sheng

41 高性能铁电吸波材料

High-performance Ferroelectric Microwave Absorption Materials

李雍, 杨会静, 郝喜红, 曹茂盛

LI Yong, YANG Hui-jing, HAO Xi-hong, CAO Mao-sheng

56 Co_3O_4 /Biomass-rGO 异质结构纳米片的微波吸收性能

Microwave Absorption Properties of Co_3O_4 /Biomass-rGO Heterostructure Nanosheets

张德庆, 刘婷婷, 张慧斌, 程俊业, 曹茂盛

ZHANG De-qing, LIU Ting-ting, ZHANG Hui-bin, CHENG Jun-ye, CAO Mao-sheng

61 不同结构磁性四氧化三铁纳米材料的介电特性和微波吸收性能

Dielectric Properties and Microwave Absorption Properties of Magnetic Ferroferric Oxide Nanocomposites with Different Structures

王殿杰, 侯志灵

WANG Dian-jie, HOU Zhi-ling

68 钴-铁沉积碳化硅颗粒及其吸波性能

Co-Fe Deposited SiC Microparticles and Its Microwave Absorbing Properties

王庆禄, 王莉, 李雍, 杨会静, 曹茂盛

WANG Qing-lu, WANG Li, LI Yong, YANG Hui-jing, CAO Mao-sheng

75 剥离的碳化钛 ($d\text{-Ti}_3\text{C}_2\text{T}_x$) 纳米片吸波性能

Microwave Absorption Properties of Delaminated Titanium Carbide ($d\text{-Ti}_3\text{C}_2\text{T}_x$) Nanosheet

何朋, 蔡永珠, 曹茂盛

HE Peng, CAI Yong-zhu, CAO Mao-sheng

81 $(\text{SiC})_p$ 表面修饰及吸波性能研究

Surface Modification and Microwave Absorption Properties of $(\text{SiC})_p$

宿辉, 曹茂盛

XU Hui, CAO Mao-sheng

88 纺锤状 ZnO/还原氧化石墨烯异质结构及其微波吸收性能

Microwave Absorption Performance of Spindle-Shaped ZnO/Reduced Graphene Oxide Heterostructure

贺军哲, 孙新, 疏金成, 杨轩, 曹茂盛

HE Jun-zhe, SUN Xin, SHU Jin-cheng, YANG Xuan, CAO Mao-sheng

95 不同形貌羰基铁的复合对电磁特性及吸波性能的影响

Electromagnetic Characteristics and Microwave Absorption Properties of Carbonyl Iron Composites with Different Morphologies

卢明明, 刘甲, 宫元勋, 赵宏杰, 曹茂盛

LU Ming-ming, LIU Jia, GONG Yuan-xun, ZHAO Hong-jie, CAO Mao-sheng

100 轻质 CB/RGO 复合涂层的制备及其吸波性能研究

Preparation and Microwave Absorption Properties of Lightweight CB/RGO Composite Coating

汤进, 林斌, 王勇, 侯根良, 刘朝辉, 李浩, 林阳阳, 毕松

TANG Jin, LIN Bin, WANG Yong, HOU Gen-liang, LIU Chao-hui, LI Hao, LIN Yang-yang, BI Song

研究综述 Review

109 超疏水表面在金属防护中应用的研究进展

Research Advance in Application of Superhydrophobic Surfaces in Corrosion Protection of Metals

蒋帆, 赵越, 胡吉明

JIANG Fan, ZHAO Yue, HU Ji-ming

124 金属表面腐蚀层及涂层的激光干式清洗研究进展

Research Progress in Dry Laser Cleaning on Corrosion and Coating Layers of Metal Surfaces

马玉山, 王鑫林, 何涛, 常占东, 孙奇, 刘海波, 王学朋, 邓德伟

MA Yu-shan, WANG Xin-lin, HE Tao, CHANG Zhan-dong,

SUN Qi, LIU Hai-bo, WANG Xue-peng, DENG De-wei

135 光热自修复涂层的研究进展

Research Progress of Photothermally Triggered Self-healing Coatings

范益, 王金科, 马菱薇, 张达威, 程学群, 李晓刚

FAN Yi, WANG Jin-ke, MA Ling-wei, ZHANG Da-wei, CHENG Xue-qun, LI Xiao-gang

表面摩擦磨损与润滑 Surface Friction Wear and Lubrication

143 基于微磨削方法的微织构刀具制备与切削性能研究

Fabrication and Cutting Performance of Micro-textured Tools Based on Micro-grinding

梁志强, 李蒙招, 陈碧冲, 周天丰, 李世迪, 颜培, 张素燕, 王西彬

LIANG Zhi-qiang, LI Meng-zhao, CHEN Bi-chong, ZHOU Tian-feng,

LI Shi-di, YAN Pei, ZHANG Su-yan, WANG Xi-bin

151 低温热循环处理 Fe 基非晶粉末对爆炸喷涂涂层摩擦学性能的影响

Effect of Cryogenic Thermal Cycling Treatment of Fe-based Amorphous Powder on Tribological Properties of Detonation Gun Sprayed Coatings

李旭强, 李文生, 翟海民, 汤鹏君

LI Xu-qiang, LI Wen-sheng, ZHAI Hai-min, TANG Peng-jun

158 不同角度晶界对单层多晶二硫化钼摩擦性能的影响

Influence of Grain Boundary at Different Angles on the Friction Properties of Monolayer Polycrystalline MoS₂

杨飞鹏, 郑学军, 张欢, 黄宽, 彭金峰

YANG Fei-peng, ZHENG Xue-jun, ZHANG Huan, HUANG Kuan, PENG Jin-feng

165 基于多重分形的可磨耗涂层相结构表征及高速刮磨行为分析

Phase Structure Characterization and High-speed Scraping Behavior Analysis of Abrasable Coatings Based on Multifractal

纪朝辉, 张帅, 马祥, 丁坤英, 程涛涛

JI Zhao-hui, ZHANG Shuai, MA Xiang, DING Kun-ying, CHENG Tao-tao

172 类金刚石膜对 CoCrMo 合金摩擦性能的影响

Effect of Diamond-like Coating on Tribological Behaviour of CoCrMo Alloy

郭飞飞, 胥光申, 任明基, 董光能

GUO Fei-fei, XU Guang-shen, REN Ming-ji, DONG Guang-neng

178 硅烷偶联剂对表面微坑复合 PTFE 的减摩及缓释性能影响研究

Effect of the Silane Coupling Agent on the Anti-friction and Sustained Release Properties of Surface with the Micro Dimple Filled with PTFE

付景国, 徐长旗, 朱新河, 刘耕硕, 傅云祥, 马春生

FU Jing-guo, XU Chang-qi, ZHU Xin-he, LIU Geng-shuo, FU Yun-yang, MA Chun-sheng

185 F51 双相不锈钢离子渗氮层的组织与性能

Microstructure and Properties of Plasma Nitrided F51 Duplex Stainless Steel

毛圣玫, 许晓磊, 于志伟

MAO Sheng-mei, XU Xiao-lei, YU Zhi-wei

表面失效及防护 Surface Failure and Protection

192 Al/Cr 复合涂层对 Ti₂AlNb 合金抗热腐蚀性能的影响

Effect of Al/Cr Composite Coating on Hot Corrosion Resistance of Ti₂AlNb Alloy

李阳, 缪强, 梁文萍, 林浩, 黄朝军, 赵子龙, 孙自旺

LI Yang, MIAO Qiang, LIANG Wen-ping, LIN Hao,

HUANG Chao-jun, ZHAO Zi-long, SUN Zi-wang

200 分布位错法研究钢轨表面边缘直裂纹的力学行为

Mechanical Behavior of Straight Crack on the Edge of Rail Surface by Distributed Dislocation Method

王强胜, 李孝滔, 管晓东, 生月, 江晓禹

WANG Qiang-sheng, LI Xiao-tao, ZAN Xiao-dong, SHENG Yue, JIANG Xiao-yu

212 DH36 钢在需钠弧菌、芽孢杆菌以及混菌腐蚀体系中的腐蚀行为

Corrosion Behavior of DH36 Steel in the Corrosion System of *Vibrio natriegens*, *Bacillus sp.* and *Vibrio natriegens-Bacillus sp.* Mixed Species

董硕, 贺小燕, 白秀琴, 袁成清

DONG Shuo, HE Xiao-yan, BAI Xiu-qin, YUAN Cheng-qing

220 硬脂酸添加剂对 AZ91D 镁合金阳极氧化膜耐蚀性的影响

Effect of Stearic Acid Additive on Corrosion Resistance of Anodized Film on AZ91D Magnesium Alloy

张新宇, 唐聿明, 赵旭辉, 左禹

ZHANG Xin-yu, TANG Yu-ming, ZHAO Xu-hui, ZUO Yu

227 强流脉冲电子束作用下镍基高温合金 GH3039 表面铬合金化及其抗高温氧化性能研究

Surface Chromium Alloying and High Temperature Oxidation Resistance of Nickel-based Superalloy GH3039 under High Current Pulsed Electron Beam

钱振, 杨帆, 吕鹏, 蔡杰, 李玉新, 关庆丰

QIAN Zhen, YANG Fan, LYU Peng, CAI Jie, LI Yu-xin, GUAN Qing-feng

235 硼对 AlMo_{0.5}NbTa_{0.5}TiZr 难熔高熵合金组织和高温氧化性能的影响

Effect of B Addition on Microstructure and High Temperature Oxidation Resistance of AlMo_{0.5}NbTa_{0.5}TiZr Refractory High-entropy Alloys

要玉宏, 梁霄羽, 金耀华, 王正品, 南條弘

YAO Yu-hong, LIANG Xiao-yu, JIN Yao-hua, WANG Zheng-pin, NANJO Hiroshi

243 开放环境下激光内送粉熔覆 TC4 钛合金的氧化行为

Oxidation of TC4 Titanium Alloy Processed by Laser inside Powder Feeding Technology in Open Environment

张津超, 石拓, 李刚, 史建军, 朱刚贤, 石世宏, 傅戈雁

ZHANG Jin-chao, SHI Tuo, LI Gang, SHI Jian-jun, ZHU Gang-xian, SHI Shi-hong, FU Ge-yan

252 激光选区熔化 Ti-6Al-4V 合金纳米压痕蠕变研究

Nanoindentation Creep of Ti-6V-4V Alloy Prepared by Selective Laser Melting

董广辉, 杨诗婷, 姜爱峰, 郎风超, 田宪会, 李继军

DONG Guang-hui, YANG Shi-ting, JIANG Ai-feng, LANG Feng-chao, TIAN Xian-hui, LI Ji-jun

260 S135 钻杆材料等离子喷涂 Al₂O₃-TiO₂ 涂层组织与性能

Microstructure and Properties of Plasma Sprayed Al₂O₃-TiO₂ Coatings on S135 Drill Pipe Material

吕东莉, 练章华, 龚颂

LYU Dong-li, LIAN Zhang-hua, GONG Song

265 防火泥涂覆 5052 铝管的快速点蚀穿孔研究

Accelerated Pitting Perforation of 5052 Aluminum Tube with Fireproofing Mud Coating

周海飞, 周飞梅, 汤翰博, 孙庆峰, 张杰, 陈明旭, 罗宏建

ZHOU Hai-fei, ZHOU Fei-mei, TANG Han-bo,

SUN Qing-feng, ZHANG Jie, CHEN Ming-xu, LUO Hong-jian

272 磁控溅射制备的 Cr/CrN 和 Cr/CrN/CrAlN 涂层耐腐蚀性能对比研究

Comparison of Corrosion Resistance of Cr/CrN and Cr/CrN/CrAlN Coatings Deposited by Magnetron Sputtering

宋肖肖, 欧阳俊杰, 赵婕宇, 胡登科, 陈亚军

SONG Xiao-xiao, OUYANG Jun-jie, ZHAO Jie-yu, HU Deng-ke, CHEN Ya-jun

膜层材料与技术 Coating Material and Technology

281 9%Cr 钢表面激光熔覆制备低 Cr 合金改性层组织及 Cr 含量分析

Preparation of Low Cr Alloy Coating by Laser Cladding and Analysis of Cr Content on 9% Cr Steel
陈智君, 丁玉明, 董刚, 沈红卫, 姚建华, 吴志伟, 沈磊
CHEN Zhi-jun, DING Yu-ming, DONG Gang, SHEN Hong-wei,
YAO Jian-hua, WU Zhi-wei, SHEN Lei

288 热处理对氮化铝化学镀铜组织性能的影响

Influence of Heat Treatment on the Microstructure and Properties of Electroless Copper Plating on AlN Substrate
郝洋洋, 林颖菲, 高唯, 郑开宏, 王海艳, 郑志斌, 陈恒
HAO Yang-yang, LIN Ying-fei, GAO Wei, ZHENG Kai-hong,
WANG Hai-yan, ZHENG Zhi-bin, CHEN Heng

295 Cu 掺杂类金刚石薄膜应力降低机制的第一性原理研究

First-principles on Stress Reduction Mechanism of Copper Doped Diamond-like Carbon Films
张而耕, 牛帅, 陈强, 潘文高, 李朝阳
ZHANG Er-geng, NIU Shuai, CHEN Qiang, PAN Wen-gao, LI Chao-yang

301 TC4 表面激光熔覆 Ni60 基涂层温度场热循环特性数值模拟研究

Numerical Simulation Study on Thermal Cycle Characteristics of Temperature Field of TC4 Surface Laser Cladding Ni60 Based Coating
赵盛举, 祁文军, 黄艳华, 雷靖峰
ZHAO Sheng-ju, QI Wen-jun, HUANG Yan-hua, LEI Jing-feng

表面质量控制及检测 Surface Quality Control and Detection

309 激光抛光表面形貌的误差复映规律

Error Remapping of Surface Morphology by Laser Polishing
李健, 杨叶, 金卫凤, 曾子涵, 严思琴
LI Jian, YANG Ye, JIN Wei-feng, ZENG Zi-han, YAN Si-qin

316 基于神经网络遗传算法的磁粒研磨 TC4 材料工艺参数优化

Optimization of Process Parameters of Magnetic Abrasive Finishing TC4 Material Based on Neural Network and Genetic Algorithm
赵传营, 赵玉刚, 刘宁, 宋盼盼, 高跃武, 张勇, 刘广新
ZHAO Chuan-ying, ZHAO Yu-gang, LIU Ning, SONG Pan-pan,
GAO Yue-wu, ZHANG Yong, LIU Guang-xin

322 高速内冷铣孔空蚀机理的数值模拟与实验研究

Numerical Simulation and Experiment of Cavitation Erosion Mechanism of High Speed Internal Cooling Milling Holes
沈灿, 李广慧, 尹凝霞, 徐红, 薛姣, 谭光宇
SHEN Can, LI Guang-hui, YIN Ning-xia, XU Hong, XUE Jiao, TAN Guang-yu

331 α -Al₂O₃ 纳米粒子抛光浆料稳定性及其对蓝宝石抛光性能的影响

Stability of α -Al₂O₃ Nanoparticles Polishing Slurry and Its Effect on Polishing Performance of Sapphire
张曼, 张启凯, 邹兰梅, 所世兴, 于少明
ZHANG Man, ZHANG Qi-kai, ZOU Lan-mei, SUO Shi-xing, YU Shao-ming

339 基于支持向量机的蠕墨铸铁表面粗糙度预测

Prediction of Surface Roughness for Compacted Graphite Cast Iron Based on Support Vector Machine
鲁娟, 张振坤, 吴智强, 马俊燕, 廖小平, 胡珊珊
LU Juan, ZHANG Zhen-kun, WU Zhi-qiang, MA Jun-yan, LIAO Xiao-ping, HU Shan-shan

347 连续激光高速抛光冷作模具钢的表面粗糙度及性能

Roughness and Property of CW Laser High Speed Polishing of Die Steel
周泳全, 张卫, 肖海兵, 徐晓梅, 朱颖
ZHOU Yong-quan, ZHANG Wei, XIAO Hai-bing, XU Xiao-mei, ZHU Ying

[期刊基本参数] CN 50-1083/TG*1972*m*A4*353*zh*P* ¥ 36.00*5000*44*2020-02