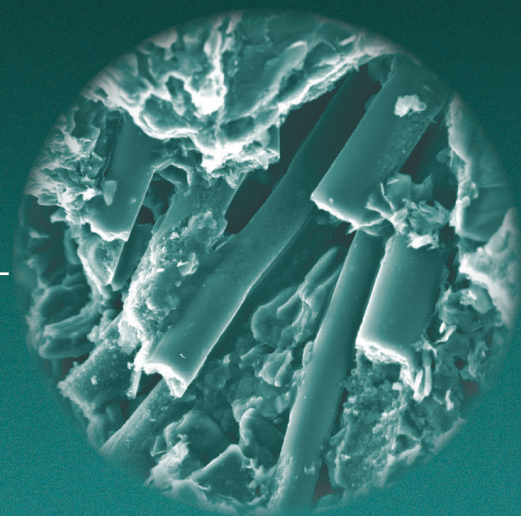


复合材料学报



Acta Materialiae Compositae Sinica

复合材料学报



Acta Materialiae Compositae Sinica

第二十九卷 第二期

二〇二二年二月



2022. 2

北京航空航天大学 主办
中国复合材料学会

Vol.39 No.2 2022

目 次

综 述

湿热环境下纤维增强树脂基复合材料疲劳性能研究进展 杜永, 马玉娥 (431)

碳纤维复合材料液压缸研究现状与发展趋势 徐兵, 纵怀志, 张军辉, 张堃, 黄信菩, 陆振宇, 贺电 (446)

MXene 与纤维基材料复合应用研究进展 杨开勋, 张吉振, 谭姪, 方剑 (460)

Ti₃C₂T_xMXene 材料的制备、组装及应用研究进展 罗大军, 高进, 田鑫, 祁沛熙, 鲍青倩, 张学亮, 秦舒浩 (467)

基于 VOCs 传感器敏感材料的研究进展 林秉群, 赵国敏, 潘明珠 (478)

石墨烯/高分子功能复合材料制备与应用研究进展 朱世东, 赵乾臻, 王星海, 李金灵, 戚东涛, 孔鲁诗 (489)

碳/金属氧化物复合材料的合成及催化应用研究进展 张通, 宋焕玲, 丑凌军 (502)

锂离子电池正极材料研究进展 李仲明, 李斌, 冯东, 曾天标 (513)

纳米碳材料/热塑性树脂层间增韧热固性树脂基复合材料研究进展 姚佳伟, 冯瑞瑄, 牛一凡, 牛康民 (528)

聚合物/无机纳米粒子复合微球化学制备的研究进展 何晓英, 韩锐, 李光照, 王中最, 陈刚, 古良鸿 (544)

树脂和高分子复合材料

芳纶纤维增韧碳纤维增强环氧树脂复合材料-铝蜂窝夹芯结构界面性能和增韧机制 刘浩洋, 吕超雨, 石姗姗, 孙直 (559)

磷酸盐离子液体和水滑石对膨胀阻燃热塑性聚氨酯弹性体复合材料性能的影响 高野, 张胜, 谷晓昱, 孙军, 李洪飞 (568)

基于等参梯度单元分析界面层属性对石墨烯/环氧树脂复合材料弹性性能的影响 黄立新, 杨绍钊, 梁福安, 黄君 (577)

梯形格栅结构增强泡沫夹芯复合材料平压性能 石昌, 王继辉, 朱俊, 倪爱清, 李想 (590)

MAH-GO/MBMI-E51 复合材料的微观结构及力学性能 陈宇飞, 赵辉, 滕成君 (601)

吸湿对单向亚麻纤维复合材料力学性能的影响 贾云龙, FIEDLER Bodo (608)

功能复合材料

聚苯并噁嗪基三维超疏水涂层的制备及抗磨损腐蚀性能 曹祥康, 孙晓光, 肖松, 蔡光义, 张欣欣, 董泽华 (617)

g-C₃N₄-Ag/SiO₂ 复合材料光催化降解甲醛的应用 刘权锋, 彭炜东, 钟承韡, 江吟莹, 余江 (628)

SiO₂ 溶胶对 P(St-MAA) 光子晶体生色结构的稳固性增强作用 李壮, 金梦婷, 须秋洁, 柴丽琴, 周岚, 刘国金 (637)

SiO₂ 粒子的尺度因素对聚乙烯基复合材料的结晶行为及电学性能的影响 姜洪涛, 张晓虹, 高俊国, 郭宁 (645)

TiO₂/石墨烯夹层结构复合材料的制备及光催化性能 曾雄丰, 王梦幻, 王建省, 赵英娜, 张文丽 (656)

定向加压过滤法制备碳纳米管/聚苯胺纸基复合电极材料及其电化学性能
..... 蔡艳芝, 李璇, 任璇璇, 成来飞, 李阳, 刘婷婷, 黄少华 (664)
溶剂热法制备 $\text{Bi}_2\text{O}_3/\text{BiOI}$ 复合光催化材料及对四环素的降解应用 ... 高艳林, 景红霞, 李龙祥, 王旭, 杨晓峰 (677)

土木建筑复合材料

聚丙烯纤维灌浆料及其钢筋套筒连接受力性能试验研究 ... 陈萌, 赵伦, 李攀杰, 许世展, 张普, 郭辉, 于吉星 (685)
玄武岩纤维平纹织物约束建筑固体废弃物颗粒力学性能及吸能特性 周宏元, 于鸿鑫, 王小娟, 石南南 (695)
体外预应力无腹筋超高性能混凝土梁的抗剪性能试验探索 ... 姜海波, 冯家辉, 肖杰, 田月强, 孙向东, 陈志荣 (707)

生物和纳米复合材料

机械力诱导双重交联各向异性纤维素水凝胶的制备与性能 张坤杰, 徐朝阳 (718)
偕胺肟化聚丙烯腈- β -环糊精纳米纤维膜的制备及其吸附性能 刘兰, 林晓艳, 梁力丽, 龚红英, 罗学刚 (726)
 CaC_2O_4 -直接枣红 B/壳聚糖复合材料的制备及对乙基紫的吸附性能
..... 赵丹华, 张少丽, 陈作义, 柳晓俊, 王柯, 王峰倩, 雷月清 (736)

金属基和陶瓷基复合材料

锈蚀对钢板表面特性及 CFRP 板-锈蚀钢板界面黏结性能的影响 李安邦, 徐善华 (746)
石墨鳞片-碳纤维协同增强铜基复合材料的制备与热物理性能
..... 黄焱晨, 缪国栋, 陈友明, 欧云, 郭世柏, 刘骞 (759)
 $\text{CF-B}_4\text{C}/\text{Al}$ 中子吸收复合材料的微观组织及力学行为 孙致平, 张翠英, 陈洪胜 (769)

复合材料细观力学

基于冲击损伤的复合材料气瓶铺层顺序优化设计 耿发贵, 李强, 宋薛思, 刘岩, 刘培启, 杨燕 (777)
冲击位置对复合材料加筋板冲击后压缩行为影响试验 任涛, 彭昂, 吴大可, 陆方舟, 蔡登安, 周光明 (788)
任意角度复合材料厚壁管的轴对称问题分析方法 顾付伟, 朱晓磊, 陆晓峰, 刘杨, 方岱宁, 李鲤 (802)
螺栓拧紧过程中工况对复合材料连接结构夹紧力的影响 蔡跃波, 安鲁陵, 王楚凡, 岳烜德, 杨浩然 (812)
基于单轴拉伸有机硅凝胶超弹性性能参数的确立及结构有限元仿真
..... 俞星辰, 倪爱清, 李小阳, 王继辉, 丁安心 (823)
基于 $\text{PFC}^{3\text{D}}$ 的机床床身用树脂矿物复合材料损伤性能细观研究 ... 郭润兰, 范雅琼, 王广书, 史方青, 黄华 (834)
一种含目视几乎不可见损伤 (BVID) 复合材料层压板面内失效准则的双轴加载验证 ... 邱雪琼, 陈琳, 李永行 (845)
复合材料防撞梁低速碰撞优化设计 任明伟, 洪治国, 周玉敬, 殷莎, 田宇黎, 马赛, 陈蕴博, 范广宏 (854)

期刊基本参数: CN 11-1801/TB*1984*m*A4*433*zh*P*¥60.00*500*40*2022-2

编辑:李博涵

审校:吴红丽 万玉敏

CONTENTS**Review**

- Fatigue performance of fiber reinforced polymer composites under hygrothermal environment—A review DU Yong, MA Yu'e (431)
- Research status and development trend of carbon fiber reinforced polymer hydraulic cylinder
..... XU Bing, ZONG Huaizhi, ZHANG Junhui, ZHANG Kun, HUANG Hsinpu, LU Zhenyu, HE Dian (446)
- Research progress of MXene/fibrous material composites YANG Kaixun, ZHANG Jizhen, TAN Ya, FANG Jian (460)
- Research and developing in preparation, assembly and applications of $Ti_3C_2T_x$ MXene materials
..... LUO Dajun, GAO Jin, TIAN Xin, QI Peixi, BAO Qingqian, ZHANG Xueliang, QIN Shuhao (467)
- Research progress of sensing materials for VOCs detection LIN Bingqun, ZHAO Guomin, PAN Mingzhu (478)
- Research progress in preparation and application of graphene/polymer functional composite materials
..... ZHU Shidong, ZHAO Qianzhen, WANG Xinghai, LI Jinling, QI Dongtao, KONG Lushi (489)
- Research progress in synthesis and catalytic application of carbon/metal oxide composites
..... ZHANG Tong, SONG Huanling, CHOU Lingjun (502)
- Research progress of cathode materials for lithium-ion battery LI Zhongming, LI Bin, FENG Dong, ZENG Tianbiao (513)
- Research progress of the interleaved thermoset composites by carbon nanomaterials/thermoplastic resin
..... YAO Jiawei, FENG Ruixuan, NIU Yifan, NIU Kangmin (528)
- Research progress in chemical preparation of polymer/inorganic nanoparticle composite microspheres
..... HE Xiaoying, HAN Rui, LI Guangzhao, WANG Zhongzui, CHEN Gang, GU Lianghong (544)

Resin and Polymer Composite

- Interfacial toughening and toughening mechanism of aramid staple fiber to carbon fiber reinforced epoxy resin composite-aluminum
honeycomb sandwich structure LIU Haoyang, LV Chaoyu, SHI Shanshan, SUN Zhi (559)
- Influence of phosphomolybdic acid-based ionic liquid and layered double hydroxide on the properties of intumescent flame-retardant
thermoplastic polyurethane elastomer composites GAO Ye, ZHANG Sheng, GU Xiaoyu, SUN Jun, LI Hongfei (568)
- Effects of interfacial layer properties on elastic properties of graphene/epoxy composites based on isoparametric graded element
..... HUANG Lixin, YANG Shaozhao, LIANG Fuan, HUANG Jun (577)
- Flatwise compression properties of trapezoidal lattice-web reinforced foam core sandwich composites
..... SHI Chang, WANG Jihui, ZHU Jun, NI Aiqing, LI Xiang (590)
- Microstructure and mechanical properties of MAH-GO/MBMI-E51 composites CHEN Yufei, ZHAO Hui, TENG Chengjun (601)
- Influence of moisture absorption on the mechanical properties of unidirectional flax fibre composites JIA Yunlong, FIEDLER Bodo (608)

Functional Composite

- Preparation and anti-wearing and anti-corrosion properties of 3D superhydrophobic coating based on poly-benzoxazine
..... CAO Xiangkang, SUN Xiaoguang, XIAO Song, CAI Guangyi, ZHANG Xinxin, DONG Zehua (617)
- Application of photocatalytic degradation of formaldehyde by g- C_3N_4 -Ag/SiO₂ heterostructure composites
..... LIU Quanfeng, PENG Weidong, ZHONG Chengwei, JIANG Yinying, YU Jiang (628)
- Stability enhancement of P(St-MAA) photonic crystals with structural colors by using SiO₂ Sol
..... LI Zhuang, JIN Mengting, XU Qiuji, CHAI Liqin, ZHOU Lan, LIU Guojin (637)
- Influence of SiO₂ particle size factors on the crystallization behavior and electrical properties of polyethylene matrix composites
..... JIANG Hongtao, ZHANG Xiaohong, GAO Junguo, GUO Ning (645)
- Preparation and photocatalytic properties TiO₂/graphene nanocomposites with sandwich structure
..... 万方数据 ZENG Xiongfeng, WANG Menghuan, WANG Jiansheng, ZHAO Yingna, ZHANG Wenli (656)

- Preparation of carbon nanotubes/polyaniline buckypaper composite electrode by directional pressure filtration and its electrochemical properties CAI Yanzhi, LI Xuan, REN Xuanxuan, CHENG Laifei, LI Yang, LIU Tingting, HUANG Shaohua (664)
- Preparation of Bi₂O₃/BiOI composite photocatalytic material by solvothermal method and its application to the degradation of tetracycline GAO Yanlin, JING Hongxia, LI Longxiang, WANG Xu, YANG Xiaofeng (677)

Civil Construction Composite

- Experimental study on mechanical properties of polypropylene fiber grouting material and its rebar sleeve connection CHEN Meng, ZHAO Lun, LI Panjie, XU Shizhan, ZHANG Pu, GUO Hui, YU Jixing (685)
- Mechanical properties and energy absorption characteristics of basalt fiber plain woven fabric constrained building solid waste particles ZHOU Hongyuan, YU Hongxin, WANG Xiaojuan, SHI Nannan (695)
- Experimental study on shear behavior of externally prestressed ultra-high performance concrete beams without stirrups JIANG Haibo, FENG Jiahui, XIAO Jie, TIAN Yueqiang, SUN Xiangdong, CHEN Zhirong (707)

Biological and Nanocomposite

- Preparation and properties of mechanically induced double crosslinked anisotropic cellulose hydrogel ZHANG Kunjie, XU Zhaoyang (718)
- Synthesis of amidoxime-modified polyacrylonitrile- β -cyclodextrin nanofiber membranes and its adsorption properties LIU Lan, LIN Xiaoyan, LIANG Lili, GONG Hongying, LUO Xuegang (726)
- Preparation of CaC₂O₄-direct claret B/chitosan composite materials and adsorption properties for ethyl violet ZHAO Danhua, ZHANG Shaoli, CHEN Zuoyi, LIU Xiaojun, WANG Ke, WANG Fengqian, LEI Yueqing (736)

Metal and Ceramic Matrix Composites

- Effect of corrosion on the surface properties of steel plate and interfacial bonding properties between CFRP plate and corroded steel plate LI Anbang, XU Shanhua (746)
- Preparation and thermophysical properties of graphite flake-carbon fiber co-reinforced copper matrix composites HUANG Junchen, MIAO Guodong, CHEN Youming, OU Yun, GUO Shibo, LIU Qian (759)
- Microstructure and mechanical behavior of CF-B₄C/Al neutron absorbing composites SUN Zhiping, ZHANG Cuiying, CHEN Hongsheng (769)

Composite Micro-mechanics

- Optimal design of laying sequence of composite gas cylinders based on impact damage GENG Fagui, LI Qiang, SONG Xuesi, LIU Yan, LIU Peiqi, YANG Yan (777)
- Experimental study on the influence of impact positions on compression-after-impact behavior of composite stiffened panels REN Tao, PENG Ang, WU Dake, LU Fangzhou, CAI Deng'an, ZHOU Guangming (788)
- A method to analyze the axially symmetric problem of composite thick tubes with arbitrary angles GU Fuwei, ZHU Xiaolei, LU Xiaofeng, LIU Yang, FANG Daining, LI Li (802)
- Effect of operating conditions on the clamping force of composite material structure during bolt tightening process CAI Yuebo, AN Luling, WANG Chufan, YUE Xuande, YANG Haoran (812)
- Establishment of hyperelastic parameters and structural finite element simulation based on uniaxial tensile for silicone gel YU Xingchen, NI Aiqing, LI Xiaoyang, WANG Jihui, DING Anxin (823)
- Meso-scale study on damage performance of resin mineral composite material for machine tool bed based on PFC^{3D} GUO Runlan, FAN Yaqiong, WANG Guangshu, SHI Fangqing, HUANG Hua (834)
- Biaxial loading verification for an in-plane failure criterion of laminates with barely visible impact damages (BVID) QIU Xueqiong, CHEN Lin, LI Yonghang (845)
- Low-speed collision optimization design of composite bumper REN Mingwei, HONG Zhiguo, ZHOU Yujing, YIN Sha, TIAN Yuli, MA Sai, CHEN Yunbo, FAN Guanghong (854)