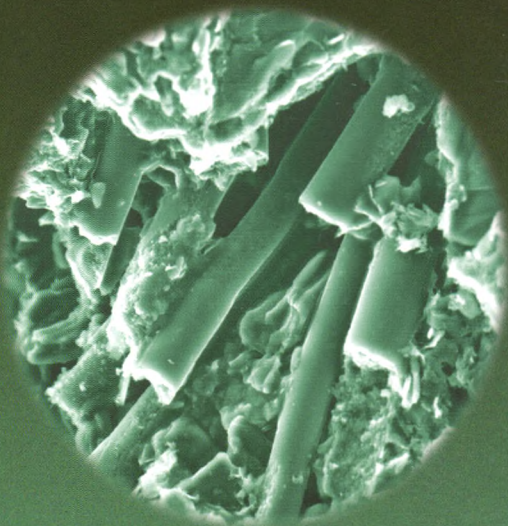


# 复合材料学报

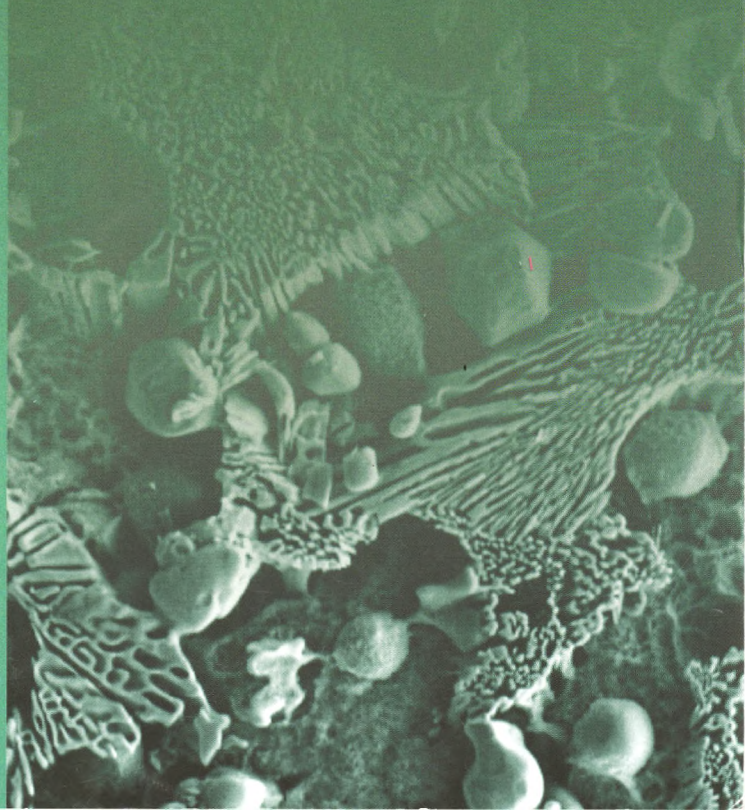


Acta Materiae  
Compositae  
Sinica



2015. 5

北京航空航天大学 主办  
中国复合材料学会





目 次

石墨烯基有序介孔金属氧化物复合材料的制备及研究进展 ..... 黄徽, 杨平 (1233)

三维多向编织复合材料宏观力学性能有限元分析研究进展 ..... 张超, 许希武, 许晓静 (1241)

微米六方 BN-KH550/聚丁二酸丁二醇酯耐热性复合膜的制备及性能 .....  
..... 张敏, 张驰, 许小玲, 苗妮娜, 王蕾 (1252)

热氧老化对碳纤维织物增强聚合物基复合材料弯曲性能的影响 ..... 樊威, 李嘉禄 (1260)

纳米细菌纤维素/聚乙烯醇复合水凝胶在模拟体液中的疲劳行为 .....  
..... 乔堃, 郑裕东, 李佳琪, 许铎, 王彩, 姜小荷, 万颖琦 (1271)

基于 CO<sub>2</sub> 连续激光器模拟的氮化物填充聚四氟乙烯复合材料耐烧蚀性能 .....  
..... 陈卓, 张晖, 袁端鹏, 郝留成, 张忠 (1279)

纳米 Al<sub>2</sub>O<sub>3</sub> 分布对 Al<sub>2</sub>O<sub>3</sub>/PE-EVA 复合材料导热性能与力学性能的影响 .....  
..... 陈金, 王春锋, 王永亮, 韩宝忠, 韩志东 (1286)

细菌纤维素/聚乳酸互穿网络复合材料的结晶与熔融 ..... 李红月, 卢秀萍, 杨华, 胡静雯 (1294)

尼龙无纺布增韧 RTM 复合材料的湿热老化性能 ... 张朋, 刘刚, 张利, 李伟东, 包建文, 益小芬 (1301)

氧化石墨烯纳米片/环氧树脂复合材料的制备与性能 .....  
..... 周宏, 朴明昕, 李芹, 密鑫, 杨玉森, 魏东阳, 齐兵 (1309)

γ 辐照对玻璃布/环氧树脂层压板压缩性能的影响 ..... 郑莉芳, 邹江, 乔志明, 陈良敏 (1316)

导电炭黑改性 PE-RT 防静电复合材料的形貌与性能 ..... 于金平, 陈满健, 曹振东, 严长浩, 张明 (1321)

超声振动对玻纤增强聚丙烯复合材料注射成型特性的影响 ..... 姜开宇, 李豪, 左军超, 吉智 (1330)

SMA 丝表面纳米 SiO<sub>2</sub> 改性对 SMA/环氧树脂复合材料界面粘结强度的影响 .....  
..... 杨斌, 雷红帅, 王振清, 章继峰, 周利民 (1341)

拉伸条件下液态 Sn/熔融聚乙烯复合体系中 Sn 的纤维化及其机制 .....  
..... 邹明晶, 马寒冰, 贺江平, 徐翔 (1349)

多壁碳纳米管/聚偏氟乙烯高介电常数复合材料的制备与性能 .....  
..... 王金龙, 王文一, 史菁元, 李艳玲, 高宁宁, 刘正鑫, 连伟涛 (1355)

SiO<sub>2</sub> 包覆改性纳米 TiO<sub>2</sub> 粒子对聚丙烯拉伸流变性能和结晶行为的影响 .....  
..... 郝萍华, 张顺花, 毛雄亮, 张如心, 杨勉 (1361)

稀土元素钇对 Al-30wt% Mg<sub>2</sub>Si 复合材料组织和力学性能的影响 ..... 任玉艳, 刘桐宇, 李英氏 (1367)

表面渗铝改性镁合金的轧制组织性能 ..... 楚志兵, 吕阳阳, 唐宾, 黄庆学, 马立峰 (1374)

La<sub>2</sub>O<sub>3</sub> 和 Y<sub>2</sub>O<sub>3</sub> 掺杂 ZrO<sub>2</sub> 复合材料的高温相稳定性、抗烧蚀性及热导率 .....  
..... 苏正夫, 刘怀菲, 王雅雷 (1381)

Co <sup>2+</sup> 掺杂石墨烯/LiFePO <sub>4</sub> 锂离子电池复合正极材料的制备与表征 .....	邓凌峰, 余开明, 严忠, 彭辉艳 (1390)
超声化学原位合成纳米 Al <sub>2</sub> O <sub>3</sub> /6063Al 复合材料组织及高温蠕变性能 .....	赵玉涛, 林伟立, 怯喜周, 刘晓君, 王春梅 (1399)
热压烧结制备 SiC 增强石墨复合材料及其性能 .....	韩永军, 燕青芝 (1408)
CFRP 筋粘结型锚固系统数值模拟及失效分析 .....	朱元林, 刘礼华, 张继文, 朱维军, 王奕, 周祝兵 (1414)
复合材料多钉连接钉载矢量传感器 .....	张建宇, 刘丰睿, 山美娟, 赵丽滨 (1420)
采用数字图像相关方法的莫来石纤维增强气凝胶复合材料力学试验 .....	吕双祺, 石多奇, 杨晓光, 孙燕涛, 冯坚 (1428)
碳纤维复丝压缩性能测试方法 .....	周雷, 顾轶卓, 邱学仕, 李敏, 王绍凯, 李艳霞, 张佐光 (1436)
多层级蜂窝材料面内模量对孔壁弯曲的缺陷敏感性 .....	王博, 石云峰, 陈友伟, 莫怡华 (1445)
多层阻尼薄膜嵌入的共固化复合材料结构动力学性能 .....	梁森, 李雪, 王东山, 张术国 (1453)
漂珠/AZ91D 镁合金复合材料的高温压缩变形行为 .....	于思荣, 黄志求 (1461)
碳纤维增强复合材料单向层合板直角自由切削热特性试验 .....	文亮, 姜丽萍, 张烘州, 蔡晓江, 安庆龙, 陈明 (1469)
片状石墨粉/受阻酚小分子-丁腈橡胶共混物动态力学性能 .....	张林, 左孔成, 朱旻昊, 蔡振兵, 周琰, 彭金方 (1480)
采用等效有限元模型的复合材料机翼结构优化 .....	王宇, 欧阳星, 余雄庆 (1487)
上浆量对碳纤维的立体织造损伤及其复合材料拉伸性能的影响 .....	焦亚男, 祁小芬, 吴宁, 纪高宁, 王静 (1496)
Na <sub>2</sub> HPO <sub>4</sub> 活化木材液化物碳纤维孔隙结构与表面化学结构 .....	VU Thi Trang, 刘文静, 赵广杰 (1503)
铂-全氟磺酸复合材料的传感性能 .....	顾娜, 安逸, 熊克, 裘进浩 (1510)
夹杂及弹性耦联对手性蜂窝复合材料吸振带隙的影响 .....	苏继龙 (1517)
矿化柞蚕丝胶膜表面粗糙度的调控及其对骨髓间充质干细胞生长行为的影响 .....	帅亚俊, 张璨, 邓连霞, 朱良均, 杨明英 (1527)
碳化与氯盐复合作用下水泥浆体的微结构演变 .....	柳俊哲, 袁伟静, 贺智敏, 巴明芳, 陈剑斌 (1536)
《复合材料学报》征稿简则 .....	(封三)

期刊基本参数: CN 11-1801/TB \* 1984 \* b \* A4 \* 314 \* zh \* P \* ¥80.00 \* 1100 \* 39 \* 2015-10

本期编辑: 张广萌 王小辰

审校: 蔡 斐

## CONTENTS

- Preparation and research progress of graphene-based ordered mesoporous metal oxide composites ..... HUANG Hui, YANG Ping (1233)
- Research progress in finite element analysis on macro-meso mechanical properties of 3D multi-directional braided composites ..... ZHANG Chao, XU Xiwu, XU Xiaojing (1241)
- Preparation and properties of micron hexagonal BN-KH550/poly (butylene succinate) thermal endurance composite films ... ZHANG Min, ZHANG Chi, XU Xiaoling, MIAO Nina, WANG Lei (1252)
- Effects of thermo-oxidative aging on flexural properties of carbon fiber fabric reinforced polymer matrix composites ..... FAN Wei, LI Jialu (1260)
- Fatigue behavior of nano bacterial cellulose/poly (vinyl alcohol) composite hydrogels in simulated body fluid ..... QIAO Kun, ZHENG Yudong, LI Jiaqi, XU Duo, WANG Cai, JIANG Xiaohe, WAN Yingqi (1271)
- Ablation resistance property of nitride filled polytetrafluoroethylene composites based on CO<sub>2</sub> continuous laser simulation ... CHEN Zhuo, ZHANG Hui, YUAN Duanpeng, HAO Liucheng, ZHANG Zhong (1279)
- Effects of nano Al<sub>2</sub>O<sub>3</sub> distribution on thermal conductivity and mechanical property of Al<sub>2</sub>O<sub>3</sub>/PE-EVA composites ..... CHEN Jin, WANG Chunfeng, WANG Yongliang, HAN Baozhong, HAN Zhidong (1286)
- Crystallization and melting of bacterial cellulose/polylactic acid composites with interpenetrating network ..... LI Hongyue, LU Xiuping, YANG Hua, HU Jingwen (1294)
- Hygrothermal aging properties of RTM composites toughened by polyamide nonwoven fabric ..... ZHANG Peng, LIU Gang, ZHANG Li, LI Weidong, BAO Jianwen, YI Xiaosu (1301)
- Preparation and properties of graphene oxide nanosheets/epoxy composites ..... ZHOU Hong, PIAO Mingxin, LI Qin, MI Xin, YANG Yusen, WEI Dongyang, Qi Bing (1309)
- Effects of  $\gamma$  radiation on compression properties of glass-cloth/epoxy laminated sheet ..... ZHENG Lifang, ZOU Jiang, QIAO Zhiming, CHEN Liangmin (1316)
- Morphology and properties of PE-RT antistatic composites modified by conductive carbon black ..... YU Jinping, CHEN Xiaojian, CAO Zhendong, YAN Changhao, ZHANG Ming (1321)
- Effects of ultrasonic vibration on injection molding characteristics of glass fiber reinforced polypropylene composites ..... JIANG Kaiyu, LI Hao, ZUO Junchao, JI Zhi (1330)
- Effects of SMA filament surface nano SiO<sub>2</sub> modification on interface bonding strength of SMA/epoxy composites ..... YANG Bin, LEI Hongshuai, WANG Zhenqing, ZHANG Jifeng, ZHOU Limin (1341)
- Fibration of Sn in liquid Sn/molten polyethylene composite system under tensile condition and its mechanism ..... ZOU Mingjing, MA Hanbing, HE Jiangping, XU Xiang (1349)
- Preparation and properties of multi-walled carbon nanotubes/poly (vinylidene fluoride) high dielectric constant composites ... WANG Jinlong, WANG Wenyi, SHI Jingyuan, LI Yanling, GAO Ningning, LIU Zhengxin, LIAN Weitao (1355)
- Influences of SiO<sub>2</sub> coated modified nano-TiO<sub>2</sub> particles on extensional rheological property and crystallization behavior of polypropylene ..... YU Pinghua, ZHANG Shunhua, MAO Xiongliang, ZHANG Ruxin, YANG Mian (1361)
- Influence of rare earth element Y on microstructure and mechanical properties of Al-30wt% Mg<sub>2</sub>Si composites ..... REN Yuyan, LIU Tongyu, LI Yingmin (1367)

Structure and properties on surface of aluminizing-modification magnesium alloy in rolling .....	CHU Zhibing, LYU Yangyang, TANG Bin, HUANG Qingxue, MA Lifeng (1374)
High temperature phase stability, sintering resistance and thermal conductivity of $\text{La}_2\text{O}_3$ and $\text{Y}_2\text{O}_3$ doped $\text{ZrO}_2$ composites .....	SU Zhengfu, LIU Huaifei, WANG Yalei (1381)
Preparation and characterization of $\text{Co}^{2+}$ doped graphene/ $\text{LiFePO}_4$ composite cathode materials for lithium battery .....	DENG Lingfeng, YU Kaiming, YAN Zhong, PENG Huiyan (1390)
Microstructure and high temperature creep properties of nano $\text{Al}_2\text{O}_3$ /6063Al composites by ultrasonic chemistry in-situ synthesis .....	ZHAO Yutao, LIN Weili, KAI Xizhou, LIU Xiaojun, WANG Chunmei (1399)
Fabrication and properties of SiC reinforced graphite composites by hot-pressing sintering .....	HAN Yongjun, YAN Qingzhi (1408)
Numerical simulation and failure analysis of adhesive anchorage system for CFRP tendon .....	ZHU Yuanlin, LIU Lihua, ZHANG Jiwen, ZHU Weijun, WANG Huan, ZHOU Zhubing (1414)
Instrumented bolt for load vector of composite multi-bolt joints .....	ZHANG Jianyu, LIU Fengrui, SHAN Meijuan, ZHAO Libin (1420)
Mechanical tests of mullite fiber reinforced aerogel composites using digital image correlation method .....	LYU Shuangqi, SHI Duoqi, YANG Xiaoguang, SUN Yantao, FENG Jian (1428)
Measuring method for compression property of carbon fiber multifilament .....	ZHOU Lei, GU Yizhuo, QIU Xueshi, LI Min, WANG Shaokai, LI Yanxia, ZHANG Zuoguang (1436)
Imperfection sensitivities of in-plane moduli of hierarchical lattice materials to cell edge waviness .....	WANG Bo, SHI Yunfeng, CHEN Youwei, MO Yihua (1445)
Dynamics property of co-cured composite structure with multilayer damping membranes embedded .....	LIANG Sen, LI Xue, WANG Dongshan, ZHANG Shuguo (1453)
High-temperature compression deformation behavior of fly ash cenosphere/AZ91D Mg alloy composites .....	YU Sirong, HUANG Zhiqiu (1461)
Test on thermal characteristics when orthogonally free machining carbon fiber reinforced plastic unidirectional laminates .....	WEN Liang, JIANG Liping, ZHANG Hongzhou, CAI Xiaojiang, AN Qinglong, CHEN Ming (1469)
Dynamic mechanic property of flake graphite powder/hindered phenol-nitrile butadiene rubber blends .....	ZHANG Lin, ZUO Kongcheng, ZHU Minhao, CAI Zhenbing, ZHOU Yan, PENG Jinfang (1480)
Structural optimization of composite wing using equivalent finite element model .....	WANG Yu, OUYANG Xing, YU Xiongqing (1487)
Effects of sizing amount on carbon fiber three-dimensional weaving damage and tensile properties of its composites .....	JIAO Yanan, QI Xiaofen, WU Ning, JI Gaoning, WANG Jing (1496)
Pore structure and surface chemical structure of $\text{Na}_2\text{HPO}_4$ activated liquefied wood carbon fibers .....	VU Thi Trang, LIU Wenjing, ZHAO Guangjie (1503)
Sensing performances of platinum-perfluorosulfonic acid composites .....	GU Na, AN Yi, XIONG Ke, QIU Jinhao (1510)
Influence of inclusion and elastic coupling on vibration absorbing band gap of chiral honeycomb composites .....	SU Jilong (1517)
Regulating of surface roughness of mineralized <i>Antheraea pernyi</i> silk sericin film and its effects on growth behavior of bone mesenchymal stem cells .....	SHUAI Yajun, ZHANG Can, DENG Lianxia, ZHU Liangjun, YANG Mingying (1527)
Microstructural evolution of cement paste under combined effect of carbonation and chloride salt .....	LIU Junzhe, YUAN Weijing, HE Zhimin, BA Mingfang, CHEN Jianbin (1536)

## 欢迎订阅《复合材料学报》

《复合材料学报》(双月刊)是中国复合材料领域的基础性、学术性科技期刊;主要刊载复合材料基础研究和应用研究方面具有创造性、高水平和有重要意义的最新研究成果的论文,以及由该领域专家亲自撰写的反映本学科最新发展状况的文献综述和信息性文章;所刊载的研究成果对科学研究具有参考价值,对生产实践具有指导作用。

《复合材料学报》的学术影响力和办刊质量不断提高,2008 年被评选为“中国精品科技期刊”,2009 年度入选“百种中国杰出学术期刊”,2012 年入选“中国最具国际影响力学术期刊”(TOP5%,共 175 种学术期刊)。目前,本刊已有 3 篇论文入选“中国百篇最具影响国内学术论文”。《复合材料学报》是美国工程索引《Ei》的核心检索收录刊;也是美国化学文摘《CA》、俄罗斯文摘杂志《AJ》、美国应用力学评论《Appl. Mech. Rev.》(《AMR》)、剑桥科学文摘(工程类)《CSA2》等国际检索系统用刊。

《复合材料学报》国内外公开发行人,邮发代号:80-413

刊号:ISSN 1000-3851;CN 11-1801/TB

每期定价 80 元,全年定价 480 元

## 复合材料学报

Fuhe Cailiao Xuebao 双月刊,1984 年创刊

第 32 卷 第 5 期 2015 年 10 月出版

Bimonthly, Started in 1984

Vol. 32 No. 5 October 2015

主管单位:工业和信息化部

主办单位:北京航空航天大学

中国复合材料学会

主 编:益小苏

学术编辑:《复合材料学报》编辑部

北京海淀区学院路 37 号,100191

电 话:(010) 82316907(5973)

编辑出版:北航文化传媒集团

网 址:<http://fhclxb.buaa.edu.cn>

印 刷:北京科信印刷有限公司

发 行:北京报刊发行局

发行范围:国内外公开发行人

Administrated by Ministry of Industry and Information

Technology of the People's Republic of China

Sponsored by Beihang University (BUAA)

Chinese Society for Composite Materials

Chief Editor: Prof. Yi Xiaosu

Academically Edited by Editorial Office of

37 Xueyuan Road, Haidian District, Beijing 100191, China

Tel: 0086-10-82316907(5973)

Edited and Published by BUAA Culture Media Group Ltd.

<http://fhclxb.buaa.edu.cn>

Printed by Beijing Kexin Printing Co., Ltd

Distributed by Beijing Bureau for Distribution of

Newspapers and Journals

刊 号:  $\frac{\text{ISSN 1000-3851 (国际标准刊号)}}{\text{CN 11-1801/TB (国内统一刊号)}}$

国内定价:80.00 元 邮发代号:80-413

ISSN 1000-3851

