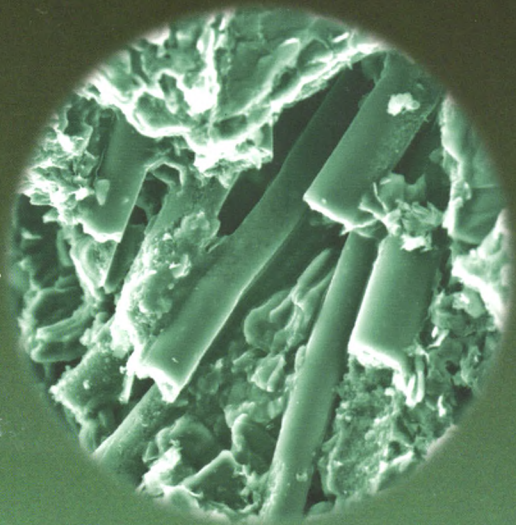


# 复合材料学报



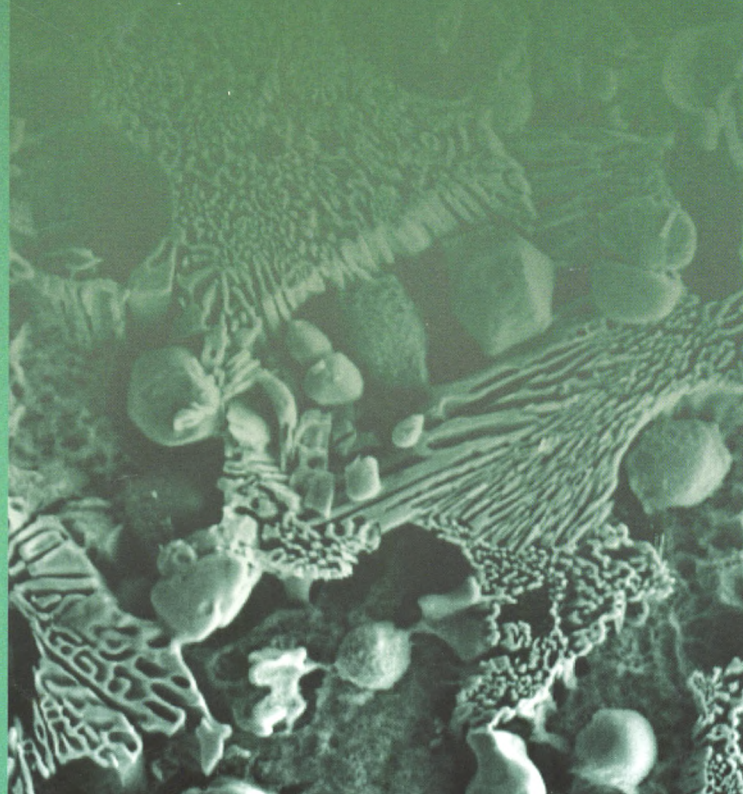
## Acta Materiae Compositae Sinica



# 2015. 3

北京航空航天大学  
中国复合材料学会 主办

万方数据



目 次

复合材料多尺度分析方法与典型元件拉伸损伤模拟 ..... 杨强, 解维华\*, 孟松鹤, 杜善义, 李勇霞 (617)

MWCNTs 表面改性剑麻纤维及其环氧树脂基复合材料传感器的制备及性能 ..... 黄怀国 (625)

壳聚糖/纤维素生物质发泡复合材料多孔结构的表征 ..... 吕芳兵, 张传杰, 王潮霞, 朱平 (632)

不同官能化碳纳米管对 MWCNTs-碳纤维/环氧树脂复合材料力学性能的影响 ..... 郑国栋, 张清杰, 邓火英, 蒋文革, 杨小平, 隋刚 (640)

无卤阻燃乙烯-醋酸乙烯酯共聚物泡沫复合材料的制备及性能表征 ..... 陈志杰, 郑玉婴, 张延兵, 刘先斌, 尚鹏博, 樊志敏 (649)

木质素磺酸铵对聚乳酸/木纤维可生物降解复合材料力学与热性能的影响 ..... 胡建鹏, 郭明辉 (657)

超临界氧化铝/聚醚砜-BMI-BBA-BBE 复合材料的微观结构与耐热性 ..... 陈宇飞, 代起望, 滕成君, 谭琚琰, 张清宇 (665)

氧化石墨烯/聚氨酯杂化膜的原位聚合构建及气体渗透性 ..... 赵丽, 陈雨霏, 王挺, 吴礼光 (673)

碱处理对竹纤维及竹纤维增强聚丙烯复合材料性能的影响 ..... 王春红, 刘胜凯 (683)

玻璃纤维表面纳米 SiO<sub>2</sub> 改性对 GF/PCBT 复合材料力学性能的影响 ..... 杨斌, 章继峰, 梁文彦, 周利民 (691)

多巴胺改性 BaTiO<sub>3</sub> 对 BaTiO<sub>3</sub>/PVDF 复合材料击穿场强的影响 ..... 冯晓军, 刘晓林, 赵坤, 陈建峰 (699)

功能氧化石墨烯/热塑性聚氨酯复合材料薄膜的制备及阻隔性能 ..... 樊志敏, 郑玉婴, 刘先斌, 尚鹏博, 汪晓莉, 陈志杰, 周琚 (705)

MCA-MMT 的制备及其对玻璃纤维增强聚丙烯复合材料阻燃性能的影响 ..... 李恺丹, 许家友, 刘杰 (712)

等离子体处理碳纤维/树脂复合材料 ..... 倪新亮, 金凡亚, 沈丽如, 童洪辉 (721)

环氧树脂包覆聚磷酸铵微胶囊的制备及其对聚丙烯的阻燃效果 ..... 刘成娟, 陈葵, 纪利俊, 朱家文 (728)

SiO<sub>2</sub>-MWNTs/聚乳酸复合材料的冷结晶动力学及球晶形态 ..... 石坚, 卢秀萍, 李红月, 李东泽 (737)

石墨/酚醛树脂复合材料双极板的制备与性能 ..... 陈惠, 刘洪波, 夏笑虹, 杨丽, 何月德 (744)

炭黑/聚丙烯-聚(苯乙烯-乙烯/丁烯-苯乙烯)复合材料的介电性能和压阻性能 ..... 施昌勇, 游峰, 王东瑞, 李欣欣, 党智敏 (756)

TiC<sub>0.7</sub>N<sub>0.3</sub> 增强 ZrO<sub>2</sub> 基复合材料的微观结构及力学性能 ..... 张梦雯, 韩成玮, 修稚萌, 孙旭东 (762)

微波强化掺 Al-TiO<sub>2</sub> 改性膨润土的制备及其结构表征 ..... 吴光锋, 聂锦旭, 陈仕稳, 谢伟楠, 骆科枢 (769)

ZrO<sub>2</sub> 增韧 Al<sub>2</sub>O<sub>3</sub> 陶瓷的力学性能和增韧机制 ..... 任会兰, 龙波, 宁建国, 褚亮 (776)

碳纤维增强油井水泥石的力学性能 ..... 李明, 杨雨佳, 郭小阳 (782)

考虑纤维体积含量变化的纤维缠绕厚壁柱形结构的等强度设计 ..... 吴杨, 邢静忠, 耿沛, 杨涛 (789)

基于分级优化的复合材料带加强筋板屈曲优化·····	范志瑞, 杨世文, 金达锋, 刘哲 (797)
二维编织复合材料圆柱曲板屈曲性能试验与有限元分析·····	张劲松, 余音, 汪海 (805)
用于变形机翼夹心式柔性伸缩蒙皮的梯形蜂窝支撑结构·····	沈元, 昂海松, 刘卫东 (815)
基于渐进损伤分析的复合材料螺栓连接强度包线法研究·····	赵丽滨, 秦田亮, 山美娟, 张建宇 (823)
复合材料带缠绕成型工艺参数耦合机制及优化·····	史耀耀, 俞涛, 何晓东, 康超, 张晓扬, 张军 (831)
预成型体渗透率预测及其受压缩变形的影响·····	金天国, 魏雅君, 杨波, 毕凤阳 (840)
非贯通球形空腔型轻质仿生结构的设计及其力学性能·····	杨志贤, 于娜, 刘泽华 (848)
仿甲虫鞘翅轻质结构及其参数优化设计·····	郭策, 江小婷, 邹稳蓬, 王笑春 (856)
复合材料宏观强度准则预测能力分析·····	吴义韬, 姚卫星, 沈浩杰 (864)
树脂基复合材料曲面结构件固化变形数值模拟·····	马云荣, 贺继林, 李栋, 谭耀, 徐雷 (874)
复合材料三维损伤模型在大开口结构强度预测中的应用·····	黄河源, 赵美英, 王文智, 侯赤 (881)
有限高磁电弹性体中双半动态与静态裂纹分析·····	郭怀民, 赵国忠 (888)
基于阻尼材料拓扑分布的结构-声辐射优化·····	陈炉云, 张裕芳 (896)
基于改进模拟退火算法的复合材料层合板频率优化·····	孙士平, 张卫红 (902)
TiO <sub>2</sub> -海藻酸钙复合膜表征、对染料的光催化降解及 TiO <sub>2</sub> 回收·····	····· 蔺洪全, 赵孔银, 马敬环, 冯灵智, 李志辉, 魏书心 (911)
氮掺杂 TiO <sub>2</sub> 中空复合微球的制备及可见光光催化性能·····	陈苗, 教卫, 王如意, 刘嘉宁, 张高文 (918)
Keywords for composites·····	(924)
<b>《复合材料学报》</b> 征稿简则·····	(封三)

期刊基本参数: CN 11-1801/TB \* 1984 \* b \* A4 \* 308 \* zh \* P \* ¥80.00 \* 1100 \* 39 \* 2015-06

本期编辑: 张广萌 王小辰

审校: 蔡 斐

## CONTENTS

- Multi-scale analysis method of composites and damage simulation of typical component under tensile load .....  
 ..... YANG Qiang, XIE Weihua, MENG Songhe, DU Shanyi, LI Yongxia (617)
- Preparation and properties of MWCNTs surface modified sisal fibers and their epoxy based composite sensors .....  
 ..... HUANG Huaiguo (625)
- Porous structural characterization of chitosan/cellulose biomass foaming composites .....  
 ..... LYV Fangbing, ZHANG Chuanjie, WANG Chaoxia, ZHU Ping (632)
- Effect of different functionalized carbon nanotubes on mechanical properties of MWCNTs-carbon fiber/epoxy composites ...  
 ..... ZHENG Guodong, ZHANG Qingjie, DENG Huoying, JIANG Wenge, YANG Xiaoping, SUI Gang (640)
- Preparation and property characterization of halogen-free fire retardant ethylene-vinyl acetate copolymer foam composites ...  
 ..... CHEN Zhijie, ZHENG Yuying, ZHANG Yanbing, LIU Xianbin, SHANG Pengbo, FAN Zhimin (649)
- Influence of ammonium lignosulphonate on mechanical and thermal properties of polylactic acid/ wood fiber biodegradable composites .....  
 ..... HU Jianpeng, GUO Minghui (657)
- Microstructure and heat-resistance of SCE-Al<sub>2</sub>O<sub>3</sub>/PES-BMI-BBA-BBE composites .....  
 ..... CHEN Yufei, DAI Qiwan, TENG Chengjun, TAN Junyan, ZHANG Qingyu (665)
- In-situ polymerization construction and gas permeabilities of graphene oxide/polyurethane mixed matrix membranes .....  
 ..... ZHAO Li, CHEN Yufei, WANG Ting, WU Liguang (673)
- Effects of alkali treatment on properties of bamboo fiber and bamboo fiber reinforced polypropylene composites .....  
 ..... WANG Chunhong, LIU Shengkai (683)
- Effects of glass fiber surface modified by nano-SiO<sub>2</sub> on mechanical properties of GF/PCBT composites .....  
 ..... YANG Bin, ZHANG Jifeng, LIANG Wenyan, ZHOU Limin (691)
- Effects of dopamine-modified BaTiO<sub>3</sub> on breakdown strength of BaTiO<sub>3</sub>/PVDF composites .....  
 ..... FENG Xiaojun, LIU Xiaolin, ZHAO Kun, CHEN Jianfeng (699)
- Preparation and barrier properties of functional graphene oxide/thermoplastic polyurethane composite films .....  
 ..... FAN Zhimin, ZHENG Yuying, LIU Xianbin, SHANG Pengbo, WANG Xiaoli, CHEN Zhijie, ZHOU Jun (705)
- Preparation of MCA-MMT and its effects on flame retardant properties of glass fiber reinforced polypropylene composites ...  
 ..... LI Kaidan, XU Jiayou, LIU Jie (712)
- Carbon fiber/resin composites treated by plasma ..... NI Xinliang, JIN Fanya, SHEN Liru, TONG Honghui (721)
- Preparation of epoxy resin coated ammonium polyphosphate microcapsules and their flame retardant effects on polypropylene  
 ..... LIU Chengjuan, CHEN Kui, JI Lijun, ZHU Jiawen (728)
- Cold crystallization kinetics and spherulitic morphologies of SiO<sub>2</sub>-MWNTs/poly lactide composites .....  
 ..... SHI Jian, LU Xiuping, LI Hongyue, LI Dongze (737)
- Preparation and properties of graphite/phenolic resin composite bipolar plate .....  
 ..... CHEN Hui, LIU Hongbo, XIA Xiaohong, YANG Li, HE Yuede (744)
- Dielectric properties and piezoresistive properties of carbon black/polypropylene-poly (styrene-ethylene/butylene-styrene) composites .....  
 ..... SHI Changyong, YOU Feng, WANG Dongrui, LI Xinxin, DANG Zhimin (756)
- Microstructure and mechanical properties of TiC<sub>0.7</sub>N<sub>0.3</sub> reinforcing ZrO<sub>2</sub> matrix composites .....  
 ..... ZHANG Mengwen, HAN Chengwei, XIU Zhimeng, SUN Xudong (762)

Preparation of bentonite modified by Al-TiO <sub>2</sub> with microwave radiation and its structure characterization .....	WU Guangfeng, NIE Jinxu, CHEN Shiwen, XIE Weinan, LUO Keshu (769)
Mechanical properties and toughening mechanisms of ZrO <sub>2</sub> toughened Al <sub>2</sub> O <sub>3</sub> ceramics .....	REN Huilan, LONG Bo, NING Jianguo, CHU Liang (776)
Mechanical properties of carbon fiber reinforced oil well cement composites .....	LI Ming, YANG Yujia, GUO Xiaoyang (782)
Constant strength design of filament wound thick-walled cylindrical structure considering variation of fiber volume content ...	WU Yang, XING Jingzhong, GENG Pei, YANG Tao (789)
Optimum buckling of composite stiffened panel based on hierarchy optimization .....	FAN Zhirui, YANG Shiwen, JIN Dafeng, LIU Zhe (797)
Test and finite element analysis of buckling performance for 2D textile composite cylindrical curved panels .....	ZHANG Jingsong, YU Yin, WANG Hai (805)
Trapezoidal cellular support structure applied to flexible telescopic sandwich skin of morphing wing .....	SHEN Yuan, ANG Haisong, LIU Weidong (815)
Progressive damage analysis based strength envelope method research for composite bolted joints .....	ZHAO Libin, QIN Tianliang, SHAN Meijuan, ZHANG Jianyu (823)
Mechanism and optimization of process parameters coupling for composite tape winding .....	SHI Yaoyao, YU Tao, HE Xiaodong, KANG Chao, ZHANG Xiaoyang, ZHANG Jun (831)
Permeability prediction of preform and influence of compression deformation .....	JIN Tianguo, WEI Yajun, YANG Bo, BI Fengyang (840)
Design and mechanical properties of lightweight bionic structures with non-connected spherical lumens .....	YANG Zhixian, YU Na, LIU Zehua (848)
A lightweight structure inspired by beetle's elytra and its optimum design of parameters .....	GUO Ce, JIANG Xiaoting, ZOU Wenpeng, WANG Xiaochun (856)
Prediction ability analysis of macroscopic strength criteria for composites .....	WU Yitao, YAO Weixing, SHEN Haojie (864)
Numerical simulation of curing deformation of resin matrix composite curved structure .....	MA Yunrong, HE Jilin, LI Dong, TAN Yao, XU Lei (874)
Application of composite material 3D damage model in strength prediction of large opening structures .....	HUANG Heyuan, ZHAO Meiyong, WANG Wenzhi, HOU Chi (881)
Dynamic and static analysis for two semi-infinite cracks in finite magnetoelastic strip .....	GUO Huaimin, ZHAO Guozhong (888)
Structural-acoustic radiation optimization based on damping materials topological distribution .....	CHEN Luyun, ZHANG Yufang (896)
Frequency optimization of composite laminates using an improved simulated annealing algorithm .....	SUN Shiping, ZHANG Weihong (902)
Characterization and dyes photocatalytic degradation of TiO <sub>2</sub> -calcium alginate composite films and recycle of TiO <sub>2</sub> .....	LIN Hongquan, ZHAO Kongyin, MA Jinghuan, FENG Lingzhi, LI Zhihui, WEI Shuxin (911)
Preparation and visible-light photocatalytic property of nitrogen-doped TiO <sub>2</sub> hollow composite microspheres .....	CHEN Miao, AO Wei, WANG Ruyi, LIU Jianing, ZHANG Gaowen (918)

## 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,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 3 期 2015 年 6 月出版

## Acta Materiae Compositae Sinica

Bimonthly, Started in 1984

Vol. 32 No. 3 June 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

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

**Acta Materiae Compositae Sinica**

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

国内定价:80.00 元 邮发代号:80-413

ISSN 1000-3851

