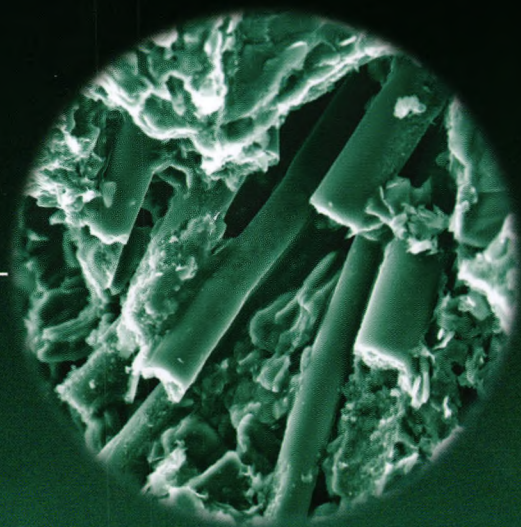


# 复合材料学报

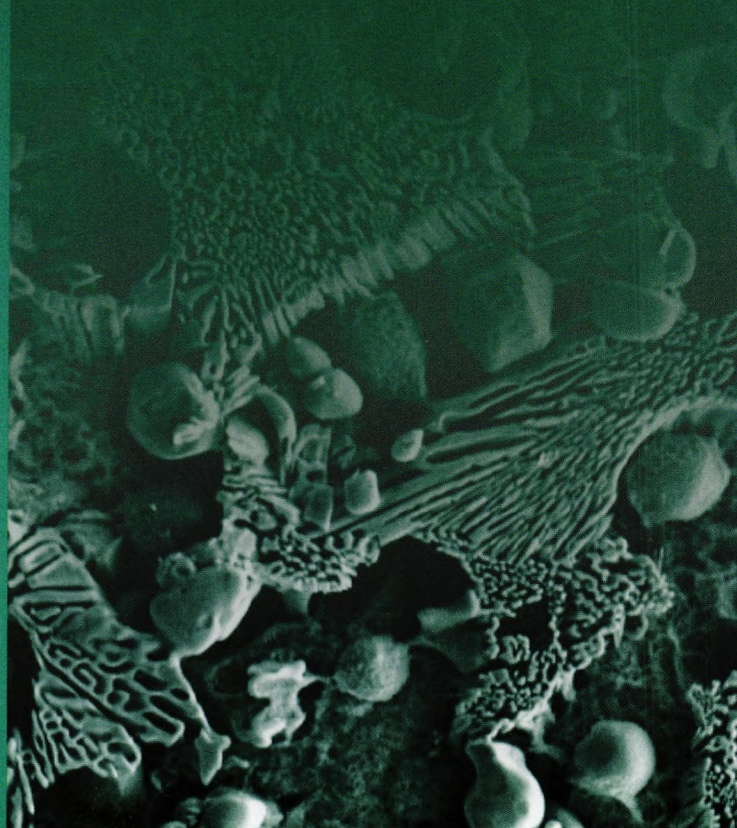


**Acta Materiae  
Compositae  
Sinica**



**2013. 3**

北京航空航天大学 主办  
中国复合材料学会





## 目 次

|                                                                                                               |                                        |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 钙基纳米蒙脱土/聚磷酸铵复合物的结构与性质 .....                                                                                   | 叶春雪, 杨荣杰, 仪德启 (1)                      |
| 阻燃 ABS 复合材料的制备及热分解性能 .....                                                                                    | 郭玉阳, 胡小平, 李良君, 侯雅楠 (7)                 |
| 改性聚丙烯纤维对发泡水泥性能的影响 .....                                                                                       | 李启金, 李国忠, 杜传伟 (14)                     |
| 七孔涤纶纤维对 CPE-AO2246 微观结构和性能的影响 .....                                                                           | 姜 生 (21)                               |
| 真空辅助树脂灌注工艺成型泡沫夹芯结构工艺设计与控制 .....                                                                               | 熊美蓉, 段跃新, 董安琪, 肇 研, 陈吉平, 苏佳智 (28)      |
| RTM 和预浸料共固化树脂体系界面层特性 .....                                                                                    | 郑亚萍, 陈 伟, 李江红, 许亚洪 (35)                |
| 偶联剂处理镀镍碳纤维/环氧树脂界面特性 .....                                                                                     | 熊 成, 付春娟, 刘建华, 于 美, 李松梅 (39)           |
| D101 大孔树脂颗粒/聚氨酯-环氧树脂弹性体复合材料水声吸声性能 .....                                                                       | 孙卫红, 刘 波, 晏 欣 (45)                     |
| 基于炭黑填充导电橡胶的力敏传感器的灵敏度 .....                                                                                    | 刘 平, 黄 英, 刘秀梅, 蔡文婷, 李锐琦, 王大月 (51)      |
| 碳纤维增强环氧树脂复合材料在切向气流和激光作用下的损伤 .....                                                                             | 陈敏孙, 江厚满, 焦路光, 李君神, 刘泽金 (56)           |
| 熔融酯交换法原位合成炭黑/聚碳酸酯导电复合材料 .....                                                                                 | 张廷健, 杨先贵, 王庆印, 胡 静, 刘绍英, 王公应 (63)      |
| 炭布/树脂复合摩擦材料的湿式摩擦学性能 .....                                                                                     | 费 杰, 黄剑锋, 曹丽云, 李翠艳 (70)                |
| 木垛型壳聚糖多孔支架的磷酸化改性和仿生矿化 .....                                                                                   | 赵要武, 陈 洁, 李立华, 丁 珊, 周长忍, 李 红, 张 桦 (76) |
| 瓦楞型竹束单板复合材料的制备及力学性能表征 .....                                                                                   | 陈复明, 江泽慧, 王 戈, 邱亚新, 刘杏娥, 程海涛 (82)      |
| 含孔和切口 C/C 编织复合材料静态拉伸下的力学性能 .....                                                                              | 唐玉玲, 泮世东, 周振功, 杨银环 (87)                |
| 异丙醇铝溶胶-凝胶掺杂的 $\text{SiO}_2 - \text{Al}_2\text{O}_3 / \text{PEG}$ 导热增强型定形相变储能材料 .....                          | 邱美鸽, 唐炳涛, 张淑芬, 贾 超 (93)                |
| Si-B-C 陶瓷涂敷 2D C/SiC 复合材料的抗氧化性能 .....                                                                         | 左新章, 张立同, 刘永胜, 成来飞, 龚慧灵 (100)          |
| 稀土氧化物 $\text{Pr}_2\text{O}_3$ 掺杂对高压 ZnO 压敏电阻性能的影响 .....                                                       | 刘桂香, 徐光亮, 罗庆平, 查忠勇, 马寒冰 (107)          |
| $\text{Al}_2\text{O}_3 - \text{TiC} / \text{Al}_2\text{O}_3 - \text{TiC} - \text{CaF}_2$ 复合叠层陶瓷材料摩擦磨损性能 ..... | 宋培龙, 杨学锋, 王守仁, 杨丽颖 (114)               |
| 纳米金刚石-陶瓷结合剂复合粉体的高分子网络凝胶法制备与烧结 .....                                                                           | 赵玉成, 王明智, 张贝贝, 赵东鹏 (120)               |
| 化学气相沉积层状 $\text{BC}_x / \text{SiC}$ 涂层自愈合机制 .....                                                             | 张伟华, 成来飞, 张立同, 刘永胜, 杨文彬 (125)          |
| 纳米 $\text{SiO}_2$ 对钢纤维/混凝土高温后力学性能及微观结构的影响 .....                                                               | 燕 兰, 邢永明 (133)                         |
| 机械合金化和 SPS 工艺制备 $9\text{CrWTi} - \text{Y}_2\text{O}_3 / \text{铁素体-马氏体钢}$ .....                                | 杨 剑, 郭志猛, 杨薇薇, 吴成义, 罗 骥, 曹慧钦 (142)     |

|                                          |                               |
|------------------------------------------|-------------------------------|
| 微波无损检测热障涂层下金属表面裂纹的参数优化 .....             | 杨玉娥, 何存富, 吴 斌 (149)           |
| 阳极氧化工艺对纤维-铝合金层板力学性能的影响 .....             | 翟 豹, 王树彬, 张博明, 岳广全 (154)      |
| 三维全五向编织复合材料弹性性能及热物理性能的有限元分析 .....        | 卢子兴, 王成禹, 夏 彪 (160)           |
| 梯度复合材料应力强度因子计算的梯度扩展单元法 .....             | 陈 康, 许希武, 郭树祥 (168)           |
| 工艺因素对修理后蜂窝夹芯结构侧压性能的影响 .....              |                               |
| ..... 刘 遂, 关志东, 郭 霞, 孙 凯, 刘卫平, 孔娇月 (177) |                               |
| 拉压性能不同纤维增强复合材料的非线性本构模型 .....             | 朱 亮, 肖 毅 (184)                |
| 基于实体-壳耦合模型的复合材料层压板冲击损伤阻抗优化 .....         |                               |
| ..... 伊鹏跃, 李 真, 陈秀华, 于哲峰, 汪 海 (191)      |                               |
| 2.5维机织复合材料经向拉伸弹性模量预测与试验验证 .....          | 朱永新, 崔海涛, 温卫东 (198)           |
| 受拉载荷下 C/SiC 铆接接头应力的数值模拟与实验验证 .....       |                               |
| ..... 刘永胜, 胡成浩, 汪 清, 成来飞, 张立同 (205)      |                               |
| 纤维增强复合材料层板高速倾斜冲击损伤数值模拟 .....             | 马 凯, 许希武, 古兴瑾 (211)           |
| 基于 ANSYS 的 0-3 型压电复合材料电荷分布 .....         | 代 璟, 黄志雄, 石敏先, 陈 卓, 窦荣洋 (220) |
| 考虑界面效应的复合泡沫塑料弹性性能数值仿真预测与试验研究 .....       | 喻 明, 朱 平, 马颖琦 (225)           |
| 空心颗粒填充树脂复合泡沫材料热膨胀性能数值模拟 .....            | 梁 希, 李慧剑, 余 为, 姜 鑫 (233)      |
| 基于连续碳纤维/树脂智能材料的梁结构应变模态表征 .....           |                               |
| ..... 朱四荣, 周志勇, 吕 泳, 郑华升, 李卓球 (240)      |                               |
| 含冲击损伤缝合层板剩余压缩强度 .....                    | 毛春见, 许希武 (247)                |
| Keywords for composites .....            | (44, 75)                      |
| 《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\*252\*zh\*P\*¥50.00\*1100\*38\*2013-06

本期编辑: 吴红丽 审校: 孙丽娟 李玉彬

## CONTENTS

|                                                                                                                                                                       |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Structure and properties of calcium nano-montmorillonite/ammonium polyphosphate compounds .....                                                                       | YE Chunxue, YANG Rongjie, YI Deqi (1)                                                 |
| Preparation and properties of flame retarded ABS composites .....                                                                                                     | GUO Yuyang, HU Xiaoping, LI Liangjun, HOU Ya'nan (7)                                  |
| Effects of modified polypropylene fibers on properties of foamed cement .....                                                                                         | LI Qijin, LI Guozhong, DU Chuanwei (14)                                               |
| Effect of seven-hole hollow polyester fibers on microstructure and properties of CPE - AO2246 .....                                                                   | JIANG Sheng (21)                                                                      |
| Process design and control of the VARI forming foam-core structure .....                                                                                              | XIONG Meirong, DUAN Yuexin, Dong Anqi, ZHAO Yan, CHEN Jiping, SU Jiazhi (28)          |
| Interface properties of RTM and prepreg process co-curing system .....                                                                                                | ZHENG Yaping, CHEN Wei, LI Jianghong, XU Yahong (35)                                  |
| Effect of coupling treatment on the interface characteristic of nickel plating carbon fiber/resin .....                                                               | XIONG Cheng, FU Chunjuan, LIU Jianhua, YU Mei, LI Songmei (39)                        |
| Underwater acoustic absorption properties of D101 macroporous resin bead/polyurethane - epoxy elastomer composites .....                                              | SUN Weihong, LIU Bo, YAN Xin (45)                                                     |
| Mechanical sensitivity of pressure-sensitive sensor based on conductive rubber filled by carbon black .....                                                           | LIU Ping, HUANG Ying, LIU Xiumei, CAI Wenting, LI Ruiqi, WANG Dayue (51)              |
| Damage of carbon fiber reinforced resin matrix composite subjected to laser and tangential gas flow loading .....                                                     | CHEN Minsun, JIANG Houman, JIAO Luguang, LI Junshen, LIU Zejin (56)                   |
| In-situ synthesis of carbon black/polycarbonate conductive composites by melt-transesterification process .....                                                       | ZHANG Tingjian, YANG Xiangui, WANG Qingyin, HU Jing, LIU Shaoying, WANG Gongying (63) |
| Wet tribology performance of carbon fabric/resin composites .....                                                                                                     | FEI Jie, HUANG Jianfeng, CAO Liyun, LI Cuiyan (70)                                    |
| Phosphorylation and biomimetic mineralization of chitosan woodpile porous scaffolds .....                                                                             | ZHAO Yaowu, CHEN Jie, LI Lihua, DING Shan, ZHOU Changren, LI Hong, ZHANG Meng (76)    |
| Preparation and mechanical properties of corrugated bamboo bundle laminated composites .....                                                                          | CHEN Fuming, JIANG Zehui, WANG Ge, QIU Yaxing, LIU Xing'e, CHENG Haitao (82)          |
| Mechanical properties analysis of 3D C/C braided composite opening structures under static tension .....                                                              | TANG Yuling, PAN Shidong, ZHOU Zhengong, YANG Yinhuan (87)                            |
| Thermal conductivity enhanced $\text{SiO}_2 - \text{Al}_2\text{O}_3$ /PEG form-stable phase change material based on the sol-gel doping of aluminum isopropanol ..... | QIU Meige, TANG Bingtao, ZHANG Shufen, JIA Chao (93)                                  |
| Oxidation resistance of two dimensional C/SiC composite coated with Si - B - C ceramic .....                                                                          | ZUO Xinzhang, ZHANG Litong, LIU Yongsheng, CHENG Laifei, GONG Huiling (100)           |
| Effects of $\text{Pr}_2\text{O}_3$ doping on the electric properties of the high-voltage ZnO varistor .....                                                           | LIU Guixiang, XU Guangliang, LUO Qingping, ZHA Zhongyong, MA Hanbing (107)            |
| Friction and wear properties of $\text{Al}_2\text{O}_3 - \text{TiC}/\text{Al}_2\text{O}_3 - \text{TiC} - \text{CaF}_2$ composite laminated ceramic .....              | SONG Peilong, YANG Xuefeng, WANG Shouren, YANG Liying (114)                           |
| Preparation and sintering of nanodiamond-vitrified bond composite powders by polyacrylamide gel method .....                                                          | ZHAO Yucheng, WANG Mingzhi, ZHANG Beibei, ZHAO Dongpeng (120)                         |
| Self-healing mechanics of layered $\text{BC}_x/\text{SiC}$ coating by CVD method .....                                                                                | ZHANG Weihua, CHENG Laifei, ZHANG Litong, LIU Yongsheng, YANG Wenbin (125)            |

|                                                                                                                                                            |                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Influence of nano-SiO <sub>2</sub> on mechanical properties and microstructure of steel fiber reinforced concrete after heating at high temperatures ..... | YAN Lan, XING Yongming (133)                                              |
| 9CrWTi – Y <sub>2</sub> O <sub>3</sub> /ferritic – martensitic steels prepared by mechanically alloyed and spark plasma sintering .....                    | YANG Jian, GUO Zhimeng, YANG Weiwei, WU Chengyi, LUO Ji, CAO Huiqin (142) |
| Optimization of evaluating surface crack on the substrate under thermal barrier coatings using microwave .....                                             | YANG Yu'e, HE Cunfu, WU Bin (149)                                         |
| Effect of anodizing process on the mechanical properties of glass fiber reinforced aluminum laminates .....                                                | ZHAI Bao, WANG Shubin, ZHANG Boming, YUE Guangquan (154)                  |
| Finite element analysis of elastic property and thermo-physical properties of three-dimensional and full five-directional braided composites .....         | LU Zixing, WANG Chengyu, XIA Biao (160)                                   |
| Graded extended finite elements for stress intensity factor of gradient composites .....                                                                   | CHEN Kang, XU Xiwu, GUO Shuxiang (168)                                    |
| Process parameters effect on the edgewise compressive behavior of repaired honeycomb sandwich structures .....                                             | LIU Sui, GUAN Zhidong, GUO Xia, SUN Kai, LIU Weiping, KONG Jiaoyue (177)  |
| Nonlinear constitutive model for fiber reinforced composites with different properties in tension and compression .....                                    | ZHU Liang, XIAO Yi (184)                                                  |
| Optimizing damage resistance of composite under low-velocity impact based on the application of solid – shell coupling model .....                         | YI Pengyue, LI Zhen, CHEN Xiuhua, YU Zhefeng, WANG Hai (191)              |
| Elastic property prediction and experimental verification in the warp direction of 2.5D woven composites .....                                             | ZHU Yongxin, CUI Haitao, WEN Weidong (198)                                |
| Numerical stimulation and experimental validation of stress in C/SiC riveting joints under tensile load .....                                              | LIU Yongsheng, HU Chenghao, WANG Qing, CHENG Laifei, ZHANG Litong (205)   |
| Numerical simulation of damage in fiber reinforce composite laminates under high velocity oblique impact .....                                             | MA Kai, XU Xiwu, GU Xingjin (211)                                         |
| Charge distribution in 0 – 3 piezoelectric composites by using ANSYS .....                                                                                 | DAI Jing, HUANG Zhixiong, SHI Minxian, CHEN Zhuo, DOU Rongyang (220)      |
| Experimental study and numerical prediction of the elastic properties of syntactic foams considering the interfacial effect .....                          | YU Ming, ZHU Ping, MA Yingqi (225)                                        |
| A numerical simulation on the coefficient of thermal expansion of hollow particle filled resin syntactic foam .....                                        | LIANG Xi, LI Huijian, YU Wei, JIANG Xin (233)                             |
| Strain modal characterization of beams using continuous carbon fiber/polymer smart composite .....                                                         | ZHU Sirong, ZHOU Zhiyong, LÜ Yong, ZHENG Huasheng, LI Zhuoqiu (240)       |
| Residual compression strength of stitched composite panels with impact damage .....                                                                        | MAO Chunjian, XU Xiwu (247)                                               |