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材料科学与工程

碳纤维 / 膨胀石墨协同复合对硅橡胶性能的影响

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摘要：

采用溶液插层法制备了膨胀石墨(expanded graphite,EG) / 硅橡胶(VMQ)导热复合材料,利用短切碳纤维(carbon fiber,CF)对复合材料体系进行增强。研究了EG、CF和钛酸酯偶联剂对硅橡胶导热和力学性能的影响。结果表明:短切CF与EG有良好的协同复合作用,一定量的钛酸酯偶联剂可以有效地改善填料与基体之间的界面作用,与EG / VMQ复合材料相比,CF / EG / VMQ复合材料的导热性能和力学性能都有了显著提高。

关键词： 硅橡胶 膨胀石墨 碳纤维 导热系数

Collaborative effect of CF / EG on properties of silicone rubber

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Abstract:

The solution intercalation method was used to prepare the expanded graphite / VMQ thermally conductive composites. Carbon fiber was added to improve the mechanical properties and the effects of EG, CF and titanate coupling agents on thermal conductivity and mechanical properties of silicone rubber were studied. It was found that there was better collaborative effect between CF and EG, and the polymer filler interactions could be improved by adding certain content titanate coupling agents. Compared with EG / VMQ composites, CF / EG / VMQ composites showed higher thermal conductivity and mechanical properties.

Keywords: silicone rubber expanded graphite(EG) carbon fiber (CF) themal conductivity

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