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研究简报

改性CF与EVA复合材料的PTC行为研究

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摘要 试图通过增强EVA与CF之间的相互作用来消除NTC现象. 由于CF表面光滑, 惰性大, 将CF用$KMnO_4$表面氧化后与具有活性官能团的EVA熔融共混, 得到EVA-改性CF复合物.

关键词 正温度系数(PTC) 负温度系数(NTC) 碳纤维 乙烯-醋酸乙烯共聚物(EVA) 凝胶

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Study on PTC Behavior of Modified CF-EVA Composite Materials

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Abstract Carbon fiber oxidized by $KMnO_4$ was combined with ethylene vinyl acetate(EVA) copolymer, the obtained composite shows a fine stability of thermal cycles and nearly unchanged switching temperature under thermal cycles, at the same time negative temperature coefficient (NTC) phenomenon is eliminated. Solvent-extraction method is used to examine the interaction between EVA and CF and insolublity with the gel structure were found. The crosslinking network in the gel adsorb CF intensely which makes CF disperse in EVA uniformly, orientate consistently, combine with EVA tightly and shows the elimination of NTC phenomenon. The switching temperature of the composite in the heating process is not identical with that of the composite in the cooling process absolutely, but the temperatures in the above two processes are consistent with the outset of melting temperature and the end of crystallization temperature respectively.

Key words Positive temperature coefficient(PTC) Negative temperature coefficient(NTC) Carbon fiber(CF) Ethylene-vinyl acetate(EVA) copolymer Gel

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