

论文

聚甲基乙烯基硅氧烷/炭黑复合体系的电阻弛豫行为

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摘要 考察了聚甲基乙烯基硅氧烷/炭黑(CB)复合交联体系在恒定压应力作用下以及完全卸载后的导电行为,发现电阻在恒定压应力作用下及完全卸载后均随时间非线性下降,呈现典型的电阻弛豫行为.根据电阻弛豫时间以及最大电阻弛豫幅度,分析了导电网络结构变化与电阻弛豫之间的关联,讨论了炭黑含量对电阻弛豫的影响.结果表明,在恒定压应力2~4MPa下,电阻弛豫具有两个与CB含量无关的弛豫时间,对应不同尺寸导电网络的结构变化.完全卸载后,基体形变回复造成导电网络发生结构弛豫,弛豫时间随CB含量增大而延长.

关键词 [聚甲基乙烯基硅氧烷](#) [炭黑](#) [弛豫](#) [电阻特性](#)

分类号

RESISTIVITY RELAXATION OF CARBON BLACK FILLED POLY (METHYL VINYL SILOXANE) VULCANITE

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Abstract Conduction behaviors of carbon black(CB)filled poly(methyl vinyl siloxane)(PMVS)vulcanites in loading and unloading processes were investigated. The results revealed that the resistance decreased with time after loading under constant stress and also after unloading, exhibiting a typical relaxation behavior. According to the resistance relaxation time and the most extent of resistance relaxation, relationships between the structure change of conductive network and the resistance relaxation were analysed. Simultaneously, the effect of CB content on resistance relaxation was discussed. It was found that under 2~4 MPa stress. tWO relaxation times were detected independent of the content of CB. which were related to the structure change of conductive networks in different dimension. After unloading the recovery of matrix deformation resulted in the occurrence of structure relaxation. and the relaxation times increased with the content of CB.

Key words [Poly \(methyl vinyl siloxane\)](#) [Carbon black](#) [Relaxation](#) [Resistance characteristic](#)

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