عنوان مقاله:

Thermal Sherlock additive for industrialpumps and electromotors based onnanodiamond and mining equipment

محل انتشار:

هفتمین کنفرانس ملی شیمی و توسعه فناوری نانو (سال: 1402)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

Nano diamond particles with various filling ratios were added into the commercial high-temperaturevulcanized silicon rubber composites, which were originally designed for high-voltage outdoor insulators. Theirmicrostructures and electrical, thermal, mechanical, dielectric, and hydrophobic properties were systematicallystudied. Our results show that the Nano diamond filler improved slightly the electrical breakdown strength, i.e., from۱۶.۲ kV/mm for the unfilled sample to ۱۷.۱ kV/mm for ۰.۹ vol%-filled sample, and the thermal conductivity wasincreased from ۰.۴۵ W/m K for the unfilled sample to ۰.۵۰ W/m K for ۱.۸ vol%-filled sample. Moreover, thehydrophobic properties were also improved with the contact angle at room temperature increased from۹۱.۲ for the unfilled sample to ۱۰۲.۶ for the۱.۸ vol%-filled sample. However, the mechanical properties were deteriorated by these fillers, i.e., decrease of thetensile strength, tear strength, etc. The dielectric constants were found to increase first with the filling fraction andthen decrease. Possible mechanisms responsible for the improvement or deterioration for specific properties of thecomposites are discussed.

کلمات کلیدی:

Thermal, Sherlock, electromotors, nanodiamond, equipment

لینک ثابت مقاله در پایگاه سیویلیکا: