

Dielectric characterization of thermoplastic natural rubber/strontium titanate composites at 10 Hz to 1 MHz

ABSTRACT

The dielectric properties of Thermoplastic Natural Rubber (TPNR)/Strontium Titanate (SrTiO₃) composites was determined at room temperature, 27°C using the Impedance Analyzer at frequencies 10 Hz to 1 MHz. TPNR is formed as the matrix while SrTiO₃ acts as the filler. Six samples were prepared at percentages of fillers from 0 to 50% at 10% intervals. The results indicate that the dielectric constant is almost independent of frequency from 100 Hz to 1 MHz, but the dielectric loss factor decreased with increasing frequency. This could probably be due to interfacial polarization and ionic losses. The dielectric properties are also affected by the composition of the filler, SrTiO₃.

Keyword: Dielectric characterization; Thermoplastic natural rubber; Strontium titanate composite