

Abstract Submitted
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Electrical Properties of PVDF Based Nanocomposites JERRY CONTRERAS, HEINRICH D. FOLTZ, The University of Texas Pan American, YUPING DUAN, Dalian University of Technology, China, HASINA F. HHUQ, STEVEN C. TIDROW, MIRCEA CHIPARA, The University of Texas Pan American — Nanocomposites based on polyvinylidene fluoride (PVDF) have been obtained by melt mixing, loading the polymeric matrix with various weight fraction (between 0 % to 40 %) of different fillers (multiwalled carbon nanotubes, carbon nanofibers, and barium titanate). Pellets of nanocomposites have been obtained by hot pressing at about 175 °C. Copper contacts have been deposited on the as obtained pellets and the electrical features have been measured by using the two point technique. PVDF is a semicrystalline ferroelectric and piezoelectric polymer with a glass transition temperature of -35 °C and a melting temperature of about 175 °C. Electrical measurements have been performed in a wide range of frequencies starting from dc to ac (up to about 250 MHz). The dependence of the resistivity and dielectric constant on frequency and temperature (between -50 °C to 150 °C) was investigated in detail. Supplementary DSC, WAXS, and Raman data provided detailed information regarding the effect of fillers on phase transitions (glass, crystallization, and melting) and crystalline composition/structure of these nanocomposites.

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