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Unusual dielectric loss properties of carbon nanotube - polyvinylidene fluoride composites in low frequency region (100 Hz <f <1 MHz)[1]
GUANG-LIN ZHAO, YI ZHEN, JUAN ARREDONDO, Physics Department, Southern University and A&M College — Systematic investigations on the dielectric properties of multi-walled carbon nanotubes (MWCNTs)-polyvinylidene fluoride (PVDF) composites with a wide MWCNT concentration range (2-9wt%) have been carried out. It was revealed that the dielectric constant are increased by the addition of an appropriate amount of MWCNTs at room temperature. However, when the concentration of MWCNTs in the composites reaches above 5wt%, negative dielectric constants and large dielectric loss in the composites are observed in the low frequency range. The ferroelectric CNT-PVDF polymer composites containing more than 5 wt% MWCNTs have a strong dielectric absorption, which has the potential for acoustic applications.

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