

Piezoelectric and Dielectric Properties of Poly(Vinylidene fluoride-Hexafluoropropylene)/ZnO Nanocomposites

Authors : P. Hemalatha, Deepalekshmi Ponnamma, Mariam Al Ali Al-Maadeed

Abstract : The Poly(vinylidene fluoride-hexafluoropropylene) (PVDF-HFP)/ zinc oxide (ZnO) nanocomposites films were successfully prepared by mixing the fine ZnO particles into PVDF-HFP solution followed by film casting and sandwich techniques. Zinc oxide nanoparticles were synthesized by hydrothermal method. Fourier transform infrared (FT-IR) spectroscopy, X-ray diffraction (XRD) and scanning electron microscopy (SEM) were used to characterize the structure and properties of the obtained nanocomposites. The dielectric properties of the PVDF-HFP/ZnO nanocomposites were analyzed in detail. In comparison with pure PVDF-HFP, the dielectric constant of the nanocomposite (1wt% ZnO) was significantly improved. The piezoelectric co-efficients of the nanocomposites films were measured. Experimental results revealed the influence of filler on the properties of PVDF-HFP and enhancement in the output performance and dielectric properties reflects the ability for energy storage capabilities.

Keywords : dielectric constant, hydrothermal, nanoflowers, organic compounds

Conference Title : ICMSE 2017 : International Conference on Materials Science and Engineering

Conference Location : Amsterdam, Netherlands

Conference Dates : May 14-15, 2017