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Piezoelectric and dielectric properties of poly(vinylidene fluoride)/ZnO nanocomposites

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The poly(vinylidene fluoride) (PVDF)/zinc oxide (ZnO) nanocomposites films were successfully prepared by mixing the fine ZnO particles into PVDF 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/ZnO nanocomposites were analyzed in detail. In comparison with pure PVDF, the dielectric constant of the nanocomposite (1 wt% ZnO) was significantly improved. The piezoelectric co-efficient of the nanocomposites films were measured. Experimental results revealed the influence of filler on the properties of PVDF and enhancement in the output performance and dielectric properties reflects the ability for energy storage capabilities.

Biography

P Hemalatha received her PhD degree from Madurai Kamaraj University, India. Her area of specialization is Nanotechnology. Currently, she is working as a Research Assistant at Qatar University, Qatar. Her project is related to polymer nanocomposites for piezoelectric application.

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