Abstract:In this paper, the electret properties of three types of castings prepared P(VDF-HFP) (poly(vinylidene fluoride-hexafluoropropylene)) copolymer films whose contents of HFP are 4.2, 4.7 and 5.9% are discussed. Experimental results point out that the copolymer film is a polar material, i.e. there exists both oriented dipoles and deposited space charge in the film after charging. Estimating polarizations at different charging fields based on analysis of charging current curves indicate a comparatively high polarization formed under the charging field above 200 MVm^{-1} for the copolymer film. The mechanically thermal stretching process not only increases the density of the oriented dipoles and deposited space charge but also improves the thermal stability of deposited space charge. However, the increase of HFP content in the copolymer has a negative impact on the density of oriented dipoles and deposited space charge. The measurements by means of laser doppler vibrometer show that the copolymer in which the HFP content is 4.2% and 4.7%, respectively has a notable converse piezoelectric coefficient as high as 140 pmV^{-1} and 130 pmV^{-1} . Dynamics of interaction of space charge with oriented dipoles for the copolymer with HFP content of 4.7% are investigated by means of isothermal surface potential decay at different temperatures. At the same time, pyroelectric effect of the copolymer is also discussed.