

Abstract: The thermal stability of piezoelectric d_{33} coefficients and charge dynamics in the piezoelectret films with tailored microstructure, made of non-porous polytetrafluoroethylene (PTFE) and fluoroethylenepropylene (FEP) layers, are investigated by the measurements of the isothermal decay of piezoelectric d_{33} coefficients at elevated temperatures and the analysis of thermally stimulated discharge (TSD) current spectra in short circuit, respectively. The results show that the quasi-static piezoelectric d_{33} coefficient up to 300 pC/N is achieved and its Young's modulus is about 0.28 MPa. The d_{33} values in the present studied films show improved thermal stability compared with the films without regular microstructure. The drift path for the most of detrapped charges in the films is through the solid dielectric layer