

# **THE FORMATION OF PIEZOELECTRIC ( $\beta$ ) PHASE OF POLY(VINYLDENE FLUORIDE) FROM ELECTRICALLY TREATED MELT**

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## **ABSTRACT**

Crystallization of the piezoelectric  $\beta$ -phase in poly(vinylidene fluoride) (PVDF) was achieved by cooling the polymer melt in an electric field. During cooling, the melt was treated with AC and DC electric fields of different intensities and frequencies (AC). The samples were analyzed with Fourier-transform infrared (FTIR) spectroscopy, which revealed a  $\beta$ -phase in PVDF as a direct result of the treatment. The longitudinal piezoelectric coefficient,  $d_{33}$ , was determined by measuring of the voltage on the samples under mechanical stress at different frequencies. The results indicate that the appropriate electrical treatment of PVDF's melt can initiate the creation of piezoelectric phase of this polymer with much lower electric fields than are used in conventional poling methods of PVDF.