

Piezoelectric properties of PVDF film by poling condition

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PVDF is polymer materials which is used for piezoelectric sensor because of its ferroelectricity and pyroelectricity properties. The properties of PVDF tend to vary depending on chain orientation in molecule which is controllable by poling. This study was intended to investigate the piezoelectric properties of PVDF film while changing poling on conditions. PVDFs having molecular weight of 80000, 275000 and 450000, respectively, were used in manufacturing PVDF film. Poling electrode made by silver paste printing on both sides of film. The change in piezoelectric properties of PVDF film were observed with poling voltage, temperature and time. Poling voltage was controlled at 1~5kV, temperature was at 30~100°C and the time for 1~5 minutes. The voltage level generated when impulse force was imposed on the surface of PVDF film was measured using oscilloscope and D33 meter was used in measuring piezoelectric constant. Output voltage and piezoelectric constant varied to the range of 3~18V and 0.1~1.5pC/N, respectively, in line with poling voltage changing to 1~5kV.