

CONCLUSION

Fourier Transform Infrared Spectroscopy (FTIR) showed decreasing of β -crystalline phase content with increasing stretching ratio of solution-casting technique. From FTIR result, It can be calculated that $F(\beta)$ value was highest in original casted film. However, SEM micrographs showed that the casted film contained high porosity which defected to film surface and yielded unwish high dielectric loss. By applying stretching, degree of porosity was reduced leading to improvement of dielectric loss but this affect to dielectric constant due to decreasing of β -phase content. Decreasing of β crystalline phase can be confirmed by XRD diffraction. Moreover, the dielectric results showed that the dielectric constant of all films were temperature dependant and molecular relaxation did not be affected by mechanical stretching

High dielectric constant can be enhanced by increasing of $\text{Ba}_{0.7}\text{Sr}_{0.3}\text{TiO}_3$ ceramic content in PVDF/ $\text{Ba}_{0.7}\text{Sr}_{0.3}\text{TiO}_3$ composite film. More agglomeration of ceramic powder were found in composites at higher $\text{Ba}_{0.7}\text{Sr}_{0.3}\text{TiO}_3$ content which made them opaque and stiff result in high dissipation factor. The dielectric constant of composite does not remain constant with temperature but almost stable in short range of temperature of 0°C to 60°C . Also the thermal stability of the composites can be improved by higher amount of ceramic powders but melting temperature of composite does not change compared to pristine PVDF.

Multilayered thin films were successfully prepared by the compression molding technique. The smooth, dense surface and interface in the resulting multilayered PVDF and PVDF/BST composite films was very clearly evidenced by SEM. The dielectric constants and dissipation factor of multilayer thin films were investigated as the function of frequencies and temperature. The dielectric constant of multilayered films was explained by the series connection of the component films. And hysteresis loops of multilayer film showed ferroelectric behavior.

Recommendation

Mechanical properties of the composite films cannot be measured due to the thin thickness, slipping before breaking.

The fabrication of multilayer, laminating with electric insertion between each layer, etc.