

A study on the improvement of the manufacturing process to improve the ferroelectric and mechanical properties of PVDF composite materials

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In this presentation, the changes in the ferroelectric properties and mechanical properties of PVDF composites caused by the molecular weight of PVDF and the content of the filler used are to be considered. As PVDF decreases, chain mobility increases and dielectric properties are improved, while mechanical and thermal properties are significantly reduced. Therefore, an optimized molecular weight of PVDF that can simultaneously satisfy ferroelectric properties and mechanical properties was set. In addition, it was confirmed that the beta-crystallinity, mechanical properties and thermal properties inside PVDF were simultaneously improved when graphene oxide and barium titanate nanoparticles were added in an appropriate amount. As a result, it was possible to implement a PVDF composite with excellent performance with a maximum dielectric constant of more than 10^3 F/m and a dielectric loss factor of less than 10^{-2} .