Curie Transition and Crystal Morphology in Poly(VDF-co-TrFE)/PMMA Blends

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The Miscibility in Poly(VDF-co-TrFE)/PMMA blend is evaluated by factor analysis(FA) using IR spectra and melting point depression. FA result indicates the existence of the specific interaction between two polymers. The effect of PMMA and crystallization condition on the Curie transition and double melting transition of poly (VDF-co-TrFE)/PMMA blends is investigated by thermal analysis. As the rate of cooling adopted in nonisothermal melt-crystallization is slower, the Curie transition point is lower and the melting point is higher. The paraelectric -to-ferroelectric phase transition temperature is hardly dependent on PMMA content, but the increase up to 20 wt.% in PMMA content yields the elevation of the ferroelectric-to-paraelectric phase transition temperature due to the contribution of PMMA to the enhancement of the thermodynamic stability of poly(VDF-co-TrFE) by the specific interaction between them. Paraelectric phases with two different morphological structures as well as morphologically different ferroelectric phases are found in poly(VDF-co-TrFE)/PMMA blends.