



Effect of TiO₂ contents on the crystallization kinetics of PVDF in PVDF-diluent-TiO₂ blends

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ABSTRACT

Effect of TiO₂ contents on the non-isothermal crystallization kinetics of poly(vinylidene fluoride) (PVDF) in PVDF-diluent-TiO₂ blends was studied via differential scanning calorimetry method. Non-isothermal crystallization of PVDF was investigated by Jeziorny analysis and crystallizability analysis. Studies showed that the crystallization peak temperature of the blends increased from 363 to 375.6 K and the Avrami exponent decreased from 4 to 2.68, with the increase in TiO₂ content from 0 to 3.0 wt%. Higher TiO₂ content could hinder the growth of PVDF crystals in the blends. The blends with the TiO₂ content of 0.45% had the largest crystallization rate ($Z_c = 0.97$) and the maximum crystallizability ($G_R = 1.05$). Hopefully, the introduction of TiO₂ to the membrane mixture would be applied to control and adjust the structure of the membrane prepared.

Keywords: Crystallization kinetics; Nonisothermal crystallization; PVDF; TiO₂

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