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# Nonisothermal crystallization kinetics of poly(ethylene terephthalate) nanocomposites

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## Abstract

This article reports the nonisothermal crystallization kinetics of poly(ethylene terephthalate) (PET) nanocomposites. The non-isothermal crystallization behaviors of PET and the nanocomposite samples are studied by differential scanning calorimetry (DSC). Various models, namely the Avrami method, the Ozawa method, and the combined Avrami-Ozawa method, are applied to describe the kinetics of the non-isothermal crystallization. The combined Avrami and Ozawa models proposed by Liu and Mo also fit with the experimental data. Different kinetic parameters determined from these models prove that in nanocomposite samples intercalated silicate particles are efficient to start crystallization earlier by nucleation, however, the crystal growth decrease in nanocomposites due to the intercalation of polymer chains in the silicate galleries. Polarized optical microscopy (POM) observations also support the DSC results. The activation energies for crystallization has been estimated on the basis of three models such as Augis-Bennett, Kissinger and Takhor methods follow the trend PET/2C20A < PET/1.3C20A < PET, indicating incorporation of organoclay enhance the crystallization by offering large surface area.

## Related information

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