2D FT-NIR and FT-IR correlation analysis of temperature-induced changes of nylon 12.

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Streszczenie

FT-NIR and FT-IR spectra of nylon 12 were recorded from 25 to 200°C. Two-dimensional (2D) correlation spectroscopy was applied to analyse the experimental data. A heterospectral dynamical correlation between NIR and IR regions was performed. The correlation is found to be useful for making band assignments in the NIR region. It is shown that the temperature-induced conformational changes in the hydrocarbon chain proceed faster than the dissociation of hydrogen-bonded amide groups. Owing to the spectral resolution enhancement in the 2D correlation spectra, splitting of the symmetric stretching mode of the methylene unit was found. It suggests that, in the temperature range studied, nylon 12 exist both in crystalline and amorphous forms.

Adres publiczny

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