

MOLECULAR REORIENTATION IN POLY(ETHYLENE GLYCOL-CO-CYCLOHEXANE-1,4-DIMETHANOL TEREPHTHALATE)PETG – SiO₂ COMPOSITES STUDIED BY ¹H NMR

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Molecular dynamics of poly(ethylene glycol-co-cyclohexane-1,4-dimethanol terephthalate) PETG – SiO₂ composites has been studied by ¹H Nuclear Magnetic Resonance methods. The spin–lattice relaxation times in the laboratory frame T_1 , and the spin–lattice relaxation times off-resonance in the rotating frame $T_{1\rho}^{off}$ as well as the second moment M_2 and the slope line width of the ¹H NMR lines have been determined as a function of temperature. The measurements were performed using a home-made pulse spectrometers operating at the frequency of 30.2 MHz. The form absorption ¹H NMR line was measured by the continuous wave method.

The correlation times of the internal motions of phenyl rings were estimated on the basis of the dispersion of the relaxation time $T_{1\rho}^{off}$ below and above the glass temperature T_g and the temperature dependence of the second moment and slope line width of ¹H NMR signal.

The results indicate that the α relaxation process, which is associated with motions of chain segments, appears in the temperature range covering the glass transition.

References:

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