INFLUENCE OF β^--RADIATION ON ACOUSTIC PROPERTIES OF POLYVINYLCHLORIDE-BASED HETEROGENEOUS SYSTEMS

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S u m m a r y

Experimental results concerning the β^--irradiation (up to a dose of 1.5 Gy) influence on the acoustic properties of filled, and filled and plasticized polyvinylchloride (PVC) are reported. The magnitudes of Young's modulus E of PVC systems and the dissipative energy loss by an ultrasonic field with a frequency of 0.4 MHz in them have been shown to depend on the absorbed β^--dose and the temperature T, as well as on the type and the content of components in the system. Various relaxation states of the system were found to demonstrate a reduction of the ultrasonic logarithmic decrement with the radiation dose growth. At 290 K $\leq$ $T \leq$ 400 K, the shear, μ, and Young's moduli of original PVC turned out the most sensitive to the influence of β^--irradiation, while the introduction of fillers and plasticizers into the composite reduced the effect of its irradiation. The influence of β^--rays on acoustic properties of PVC systems is maximal for absorbed doses within the interval $0.45 \div 1.5$ Gy and gives rise to the increase of the moduli by $30 \div 40\%$. The experimental results have been analyzed by introducing the structural parameter of a composite; as such, the relative width of the peak in the temperature dependence of energy dissipation in the constant ultrasonic deformation mode has been selected.