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Influence of Pressure on Fast Dynamics in Polymers B. BEGEN, A. KISLIUK, A.P. SOKOLOV, University of Akron, V.N. NOVIKOV, IA&E, Russian Academy of Sciences, K. NISS, A. CHAUTY-CAILLIAUX, C. ALBA-SIMIONESCO, Université de Paris-Sud, B. FRICK, Institut Laue-Langevin — Recent experiments reveal a strong correlation between the fast dynamics and the fragility of glass forming liquids. It is known that both density and thermal energy influence significantly the structural relaxation and the glass transition in most of the glass forming systems. However, not much is known about the influence of volume and temperature on the fast dynamics. In this contribution, we present light and neutron scattering study of the influence of pressure on fast dynamics and elastic properties in polymers. Our results show that the boson peak frequency increases with pressure stronger than the sound velocity. We observed that the boson peak intensity decreases under pressure stronger in Raman scattering than in neutron scattering suggesting a decrease in the light-to-vibrations coupling coefficient $C(v)$. We argue that variations in $C(v)$ might be related to amplitude of structural fluctuations. We speculate that change in disorder and/or overall density under pressure is the main cause for the observed variations.

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