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MOLECULAR WEIGHT DISTRIBUTION AND PROPERTY COMPUTATIONS BY THE ENERGY MODEL OF VISCOELASTICITY

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Abstract

Some computation results of new principle and major lines of background are shown. Only essential formulas for presented results of rheometers are concerned.

A new assertion to model viscoelasticity of polymers starts from their real molecular structure. The theory is based on the principle of electrostatic energy on fields and it gives, as used relatively, a simple linear differential constitutive formula. The solutions of the formula join viscosity, modulus and other flow properties to molecular structure. The error of the fit is small compared to the procedures published earlier.

Starting from dynamic viscosity measurements some computed MWD results for HDPE structures are shown. On the contrary viscosity from molecular structure was also computed. The new model that uses the real structure made also possible to calculate relaxation modulus and relaxation modulus spectra of polymers.