

expansion factor (in polymers)

The ratio of a dimensional characteristic of a macromolecule in a given solvent at a given temperature to the same dimensional characteristic in the θ state at the same temperature. The most frequently used expansion factors are: expansion factor of the mean-square end-to-end distance, $\alpha_r = (\langle r^2 \rangle / \langle r^2 \rangle_0)^{1/2}$; expansion factor of the radius of gyration $\alpha_s = (\langle s^2 \rangle / \langle s^2 \rangle_0)^{1/2}$; viscosity expansion factor $\alpha_\eta = ([\eta] / [\eta]_\theta)^{1/3}$ where $[\eta]$ and $[\eta]_\theta$ are the intrinsic viscosity in a given solvent and in the θ state at the same temperature, respectively.

Expansion factors defined by different dimensional characteristics are not exactly equal, nor need they have a constant ratio as a function of relative molecular mass.

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