

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, $\alpha_r = \sqrt{\frac{\langle r^2 \rangle}{\langle r^2 \rangle_0}}$; expansion factor of the radius of gyration $\alpha_s = \sqrt{\frac{\langle s^2 \rangle}{\langle s^2 \rangle_0}}$; viscosity expansion factor $\alpha_\eta = \left(\frac{[\eta]}{[\eta]_\theta}\right)^{\frac{1}{3}}$ 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.

Source:

Purple Book, p. 59