CONSTANTS OF EQUATION KUHN-MARK-HOUVINK OF CELLULOSE ACETATES WITH DIFFERENT DEGREE OF SUBSTITUTION

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For the first time Shtaudinger and then Mark and Houvink have show dependence of viscosity of polymeric solutions from their molecular mass. Logarithmic dependence of the characteristic viscosity from molecular mass not always has a liner type, owing to ratio of contour length and Kuhn segment and also by quality of solvent. For flexible chain polymers in good solvent parameter “a” in equation Kuhn-Mark-Houvink has increased with increasing of molecular mass owing to volume effects approaching to value 0.5 in θ - solvent. For hard chain polymers in region of relative low molecular mass value “a” can change in limits 1.0-1.7. In the case of branching and globe-type polymers the dimension of the macromolecular ball have increased with the growth of molecular mass in degree lower then 0.5. The classical examples of hard chain polymers are cellulose derivatives, molecular chains of which constructed from glucozide cycles. Hydrogen bonds have an important role in stabilization of hardness structure of polysaccharides. The model of persystemic chain of Kratki - Porod is most fruitful for description of conformation properties of such macromolecules. This model has taken into account orientation near-action, but also interaction of distant order can be possible. Fulfiness of theory of excluded volume in solutions of flexible – chain polymers has promoted to transfer the same ideals on the solutions of hard chain molecules and for the first time on solution of cellulose derivatives. As result of this a high values of inertia radius and derivations from Gauss properties of macromolecules of cellulose esters have been attributed to effect of distant action, “fricable” structure of macromolecular ball and influence of proceeding effect.

In this article on the base of the experimental data by light – scattering of cellulose acetates solutions of different degree of substitution in solvents differed by their thermodynamical quality has that to high values of exponent higher values of Kuhn segments corresponded. In all solvents “a” increased with growth of the substitution degree of cellulose acetates.