

APPLICATION OF VISCOSIMETRIC METHOD
TO STUDY CONFIGURATIONAL TRANSITIONS
IN GLUCOSE AQUEOUS SOLUTIONS

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S u m m a r y

The shear viscosity has been measured for glucose aqueous solutions in the concentration range of 12.5–100 g/l and the temperature interval of 293–353 K. Experimental data are interpreted on the basis of Einstein's theoretical model. The fractions of glucose molecules in the “chair” and “boat” configurations are determined at various temperatures. The thermodynamic parameters that characterize the “chair”–“boat” configurational transition of a glucose molecule are evaluated. The numbers of water molecules in the hydration shells of both configurations were found. The “chair”–“boat” configurational transition is shown to result in the almost complete destruction of the hydration shell of a glucose molecule. The bonds of a glucose molecule in the “chair” configuration are found to be deformed, and the corresponding deformation energy is evaluated.