

Glass transition temperatures of the system zinc chloride—dimethyl sulfoxide—water

J. MALÁ and I. SLÁMA

*Institute of Inorganic Chemistry,
Czechoslovak Academy of Sciences, CS-160 00 Prague*

Received 29 October 1984

Glass transition temperatures of the mixture zinc chloride—dimethyl sulfoxide—water have been determined as a function of zinc chloride concentration at various mole fractions of dimethyl sulfoxide in the mixed solvent. Plots of these data are of a convex character. The calculated dependence of the glass transition temperature on the mixed solvent composition is also nonlinear. The glass-forming composition range has been determined and its boundaries are discussed.

Были определены температуры стеклования смесей хлористого цинка, диметилсульфоксида и воды в зависимости от концентрации хлористого цинка при постоянной мольной доле диметилсульфоксида в смешанном растворителе. Было показано, что у кривых этой зависимости конвексный характер. Вычисленную зависимость температуры стеклянного перехода от состава растворителя тоже нельзя описать линейным отношением. Была определена концентрационная область стеклообразования и были обсуждены ее границы.

The research into the glass-forming ability of concentrated solutions of inorganic salts in organic solvents is currently at the stage of data accumulation. The glass-forming composition range and the influence of chemical composition on the glass transition temperature have so far been investigated for only a few systems salt—dimethyl sulfoxide (DMSO) [1] and salt—water [2]. It has been established that the glass-forming composition ranges for binary aqueous solutions are different from those for the same salts in DMSO. It is therefore of interest to examine changes in the glass-forming ability and glass transition temperature of salt solutions in DMSO on gradual replacement of the organic solvent by water. Investigation of ternary systems has proved rewarding from one other aspect: the glass-forming ability of these systems allows the effect of composition on the glass transition temperature to be studied over wider composition ranges [3—7] than in the case of binary systems.

The aim of the present work was to investigate the effect of composition on the glass-forming ability and glass transition temperature of the system zinc chloride—DMSO—water.

