

## Transport Properties. Temperature Coefficients As A Source Of Structural Information On Binary Molten Salt Mixtures

Alexander Redkin

Institute of High Temperature Electrochemistry  
620219 S. Kovalevskaya 22  
Ekaterinburg, Russia

Usually the analysis of structure change in molten salt mixtures is based on investigation of isotherms of different properties but this way has some disadvantages:

- melting points of salts are very different.
- the form of isotherms can change with temperature
- isotherm itself is not valid comparison system due to non-additivity of transport properties

At the same time, the temperature coefficients variation with concentration reflects structure change in the system. At viscosity investigation of LiF-BeF<sub>2</sub> molten mixture Cantor et al. pointed out the correlation between viscosity activation energy and expansivity[1]. The same correlation is presented for electrical conductivity of this system (fig.1). Temperature coefficients of density are used from linear equations  $p=a-b*T$  [1] and temperature coefficients of specific conductivity were taken from logarithmic equations  $\ln \chi = A - E/T$  (in relative units)[2].

Other systems show the same behavior. The temperature coefficients of density,[3] dynamic viscosity[3] and specific conductivity[4] for NaF-UF<sub>4</sub> molten mixture are shown on fig 2

One can see the correlation between concentration changes of all properties presented. It reflects activation energy change with variation of inter-ionic distances.

### References

1. S. Cantor, W.T. Ward and C.T. Moynihan J Chem.Phys. , V.50, p.2874 (1969)
2. V.N. Desyatnik et al. Russian Journal of Applied Chemistry, V.52, p.316 (1979)
3. V.N. Desyatnik et al Russian Journal of Atomic Energy, V.51, No 6, p.390(1981)
4. V.N. Desyatnik et al Russian Journal of Atomic Energy, V.49, No 2, p.129(1980)

Fig.1. Temperature coefficients of density and specific conductivity of LiF-BeF<sub>2</sub>

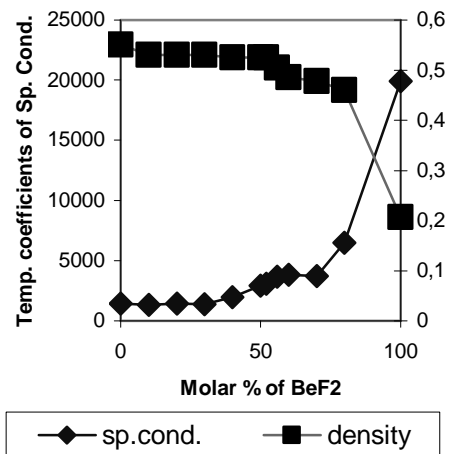


Fig.2. Temp. Coefficients for NaF-ThF<sub>4</sub> molten system

