

Thermodynamic modeling and emf study of liquid Al-Li-Zn alloys

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Electromotive force (emf) measurements in liquid Al-Li-Zn system were performed by the concentration cell method with the (LiCl-LiF)eut electrolyte. Liquid Li or (Bi,Li₃Bi(l)+Li₃Bi(s)) two phase alloy, are used as the reference electrode depending on Li concentration. The emf measurements were carried out over a broad range of temperatures of liquid Al-Li-Zn alloys lying along the cross-sections of constant Al to Zn mole fractions ratio equal to 0.136 and 3. Partial thermodynamic functions of Li in liquid Al-Li-Zn alloys were calculated from emf data. These data compared to results obtained using of the ternary RK parameters optimized by Guo[1]. Mixing enthalpy for three Al/Zn cross-section was computed and confronted to calorimetric data [2].

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References:

- [1] C.Guo, Y.Liang, C.Li, Z.Du, *CALPHAD*, 35, 54-65 (2011)
- [2] Y.B.Kim, F.Sommer, *Thermochimica Acta*, 291, 27-34 (1997)