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Theoretical investigation of some physicochemical properties in the liquid Sn-Ag-In alloys

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Abstract

Some physicochemical properties such as surface tension, molar volume, density and viscosity of liquid Sn-Ag-In alloys have been estimated using Kohler, Muggianu ,Toop and Hillert geometrical models along three cross-sections x_{Sn}/x_{In}=1/2, 1/1and 2/1. Indeed, Guggenheim, Kozlov-Romanov-Petrov and Kaptay equations have also been extended to estimate the surface tension and viscosity based on the thermodynamic data of the investigated system over a wide temperature range 823*K*-1123*K* and 773-1173K, respectively. The results show that the three investigated properties, surface tension, density and viscosity decrease with increasing tin for all studied models. On the other hand, a different behavior of these properties as a function of the temperature was noted. This evolution depends on the composition of the studied alloys.