The Physicochemical Properties of Liquid Eutectic Ga-Zn Alloys with Sn Additions

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In regard to the high transparency and superior electrical conductivity of thin-film transparent conductive oxides in applications such as transistors using a simple surface patterning and dip-casting process, the low temperature alloys is very interesting. In this study, the density, surface tension and viscosity of liquid eutectic Ga-Zn with Sn additions were measured using the discharge crucible method (DC). The obtained temperature dependency of physicochemical properties of Ga-Zn with Sn alloys were determined in the range of 323-823 K. The viscosity and density of Ga-Zn-Sn alloys across a wide range of temperatures increased with increasing Sn content in the alloy, while surface tension decreases. The obtained experimental results were compared with several models for surface tension and viscosity.

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