

Measuring Surface Tension of Liquid Metals Using Levitation Melt Methods

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Abstract

Measuring surface tension of liquid metals and alloys is an important, yet difficult task. Whereas the sessile drop technique is the standard method for low to moderate temperatures, containerless techniques have become the best choice for high temperature materials, i.e. for systems with melting points above 1200 °C. Applying electromagnetic levitation, containerless processing of liquid metals becomes possible up to temperatures as high as 2000 °C, depending on the available power. In order to obtain the surface tension, the oscillations of the levitated liquid metallic drop are recorded and analysed. From the frequency of these oscillations, the surface tension can be determined with high precision.

In this talk, the oscillating drop technique will be introduced, and some representative results on binary and ternary alloys, such as Al-Ni or Cu-Fe-Ni will be presented.