

Surface Tension and Viscosity of Ni-Al Catalytic Precursor Alloys

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The surface tension and viscosity of a variety of Al-Ni catalytic precursor alloys have been measured by the oscillating drop method in an electromagnetic levitation device under reduced gravity conditions. The surface tension values such obtained agree very well with values obtained in ground based em-levitation. The Cummings and Blackburn correction of the shift of the surface oscillation frequency due to the magnetic pressure of the levitation field was verified with a confidence level better than $\pm 2\%$. The good agreement of viscosity values obtained in the microgravity experiments with values obtained from the oscillating cup method under normal gravity conditions gives support to the application of the oscillating drop method in an electromagnetic levitation device with a confidence level of $\pm 20\%$. The viscosity values obtained indicate strong interactions in the liquid phase commensurate with a large negative heat of mixing in the Ni-Al alloy system. The experimental results obtained are compared with the predictions of several semiempirical thermodynamic models.