

Investigation of thermophysical properties of liquid metals and alloys at TU Graz

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Within the last 30 years the thermophysics and metalphysics group at the Institute of Experimental Physics, Graz University of Technology, Austria has rendered outstanding services to obtain thermophysical properties of liquid metals and alloys. Five different techniques of measuring thermophysical properties have been applied, namely pulse-heating, where the investigations have started already in the 80ies, investigations by means of DSC and DTA have been added since the year 2000, a four-point-probe was recently rearranged for the investigation of resistivity as a function of temperature up to 1000 °C and we are building up an electromagnetic levitation apparatus to investigate surface tension and densities of liquid metals funded by the Austrian Science Fund (FWF) Project P 23838-N20. Today, only few more experiments on pure metals by means of the pulse heating technique are to be expected, because almost all metallic elements, which are suitable for our system, have been investigated. These elements are: C, Co, Cu, Al, Au, Hf, In, Ir, Fe, Pb, Mo, Ni, Nb, Pd, Pt, Re, Rh, Ag, Ta, Ti, W, V, Zn, and Zr. The investigations of different alloys will continue by means of pulse heating. To extend the range of thermophysical properties obtained in the liquid phase the electromagnetic levitation facility will be employed. To access accurate thermophysical property data in the solid phase the four point probe apparatus, as well as the DSC and the DTA are used.

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