

Calorimetry in complex Al-systems

Richard H. Kemsies

Lehrstuhl für Werkstofftechnik
Fakultät für Maschinenbau und Schiffstechnik
Universität Rostock, Germany

The differential scanning calorimetry (DSC) is an outstanding technique for the in situ investigation of solid-solid phase transformations and heat capacities of metallic alloys during continuous heating and cooling processes covering a wide temperature and scanning rate range. This presentation deals with recent DSC studies of the precipitation and dissolution behaviour of secondary phases in aluminium alloys. Therefore the excess heat capacity will be introduced to quantify the intensity of endothermic phase dissolution and exothermic phase precipitation, respectively. Furthermore the DSC step scan method for accurate heat capacity measurements will be presented. Heat capacities of different intermetallic phases in a temperature range of -60 to 600 °C will be shown. The latter data will be incorporated in the GTT database.