Measurements of Heat Capacity of Titanium and Zirconium by Electromagnetic Levitation

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Heat capacity of titanium and zirconium was measured in the temperature range of 1300 to 1800 K. The measurement technique is based on the modulated power method proposed by Fecht and Johnson. The heat capacity of a sample can be derived from the sample's temperature response to a carefully controlled modulated electromagnetically heating power if the sample's hemispherical total emissivity is known. The experiments were performed using the electromagnetic levitator at Auburn University. The solid titanium and zirconium samples were suspended in the center of the induction coil with a very small diameter (0.15 mm) Pt-Rh wire, which allow us assume the heat losses through the wire negligible. The heat capacity measurements of titanium and zirconium are presented and the uncertainty is estimated to be 3%.