

Measurement of the thermal expansion coefficient of tungsten in the solid and liquid phase at pressures of 0.1 – 0.5 GPa

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For many applications it is necessary to know the value of the thermal expansion coefficient of tungsten for both the solid and the liquid phase. Such data especially are needed for modeling of the interaction of the high-temperature plasma with the walls of the tokamak in the international project ITER. However, at present, there is a significant discrepancy in the literature data on the values of the coefficient and not only for the liquid phase, but also for the solid states close to the melting line. In this work, using the interferometer technique, we have measured the thermal expansion coefficient of solid and liquid tungsten in the vicinity of the melting line at the pressures of 0.1–0.5 GPa with an error less than 10%.