The Isobaric Heat Capacity of Water at High Pressures and Low Temperatures

Jacobo Troncoso [C, S]
Applied Physics Department, University of Vigo, Ourense, Galicia, Spain
jacobotc@uvigo.es

Previous experimental measurements of isobaric heat capacity for water have shown it presents an atypical behavior, especially at low temperature. However, the studies of these anomalies are almost all restricted to pressures below 100 MPa. In order to explore the behavior of this magnitude for water at high pressure - up to 500 MPa- a new heat flux calorimeter was developed. Heat capacity of water was determined using this instrument and compared with that of other liquids. Experimental data show that isobaric heat capacity is also strongly anomalous at high pressure, especially as regards its temperature dependence: heat capacity against temperature show minima for most studied isobars. As pressure is increased, the location of these minima is increased for low pressure but increases at higher pressures.