Melting curve and equation of state of tin in shock waves

K.V. Khishchenko[1], M.V. Zhernokletov[2], A.E. Kovalev[2], I.V. Lomonosov[1], M.E. Novikov[2]

[1]JIHT RAS, Moscow, [2]RFNC–VNIIEF, Sarov

Using a shock and rarefaction overtake technique with carbon tetrachloride and carbogal as analyzer liquid, sound velocity was measured in shocked tin over pressure range of 30–140 GPa. Plane shock-wave generators based on high explosive charges were applied for shock loading of samples. Photodiode gauges registered light of shocked analyzer liquids. A new multi-phase equation of state for tin in a wide range of pressures and temperatures is proposed. A comparison of calculated results and experimental data indicates that high boundary of tin melting on principal Hugoniot corresponds to pressures of 80–90 GPa.