Abstract Submitted for the SHOCK07 Meeting of The American Physical Society

Tension of Liquids Near Melting Point by Shock Waves VASILY SOSIKOV, ALEXANDER UTKIN, VLADIMIR FORTOV, Institute of Problems of Chemical Physics R A S — The influences of strain rate on the negative pressure have been investigated in liquids near melting point by the example of water, hexadecane and pentadekane. The method of spall strength measurements was applied and wave profiles were registered by laser interferometer VISAR. It was cared out that in water and hexadecane there is a strong dependence between the strain rate and the registered negative pressure. It is unusual, because ordinarily the negative pressure is almost independent from the value of stain rate, when liquids are far from melting point. It is shown that the double metastable state of water was realized during our experiments. The process of destruction in hexadecane is double staged, like it is in methyl alcohol, unlike in methyl alcohol destruction is double staged only when the loading pressure exceed the threshold of about 250 MPa. At the first stage formation of cavities starts and there is a kinked at free velocity profile was observed. At the second stage the cavity grow rate increases and the spall pulse occurs. Anomal dependence of the loading pressure on the negative pressure was discovered in pentadecane.

> Vasily Sosikov Institute of Problems of Chemical Physics R A S

Date submitted: 20 Feb 2007

Electronic form version 1.4