

Abstract Submitted  
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**Dynamic response of pure titanium up to 1300 K.** EUGENE ZARETSKY, Ben-Gurion University — Dynamic response (yield and spall strengths) of pure polycrystalline Ti (Alfa Aesar, 99.99% Ti) was studied in a series of planar impact experiments with initial sample temperature ranged from 300 to 1300 K. In the separate series of experiments the temperature dependence of the longitudinal speed of sound in Ti was measured on the base of the reverberation of the stress pulse generated in the 3-mm Ti sample by 1-mm aluminum impactor. In all the experiments the velocity of the sample free surface was continuously monitored by VISAR. It was found that in spite of a softening preceding the HCP-BCC transformation in titanium (1155 K) the HCP phase still maintains some substantial,  $HEL(1145\text{ K}) = 0.4\text{ GPa}$ , strength. Just above the transition temperature the strength experiences more than two-fold increase:  $HEL(1170\text{ K}) = 0.94\text{ GPa}$ . The spall strength of BCC titanium at this temperature is of about 2 GPa, and close to that of HCP titanium at 1145 K, 2.3 GPa. Possible variation of the strength mechanisms caused by the temperature increase and the phase transition are discussed.

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