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Experimental Measurement of Compressibility, Temperature and Light Absorption in Dense Shock-Compressed Gaseous Deuterium MIKHAIL ZHERNOKLETOV, RFNC-VNIIEF — In this work, gaseous deuterium with a high initial density, close to the density of liquid deuterium, was chosen as the object of investigation. The use of gaseous deuterium was dictated by the possibility of obtaining its initial parameters with a high certainty, because they are fully determined by the initial gas pressure and temperature. For tests with gaseous deuterium at high initial pressure (1500-2000 atm), we developed and manufactured capsules using steel of high strength and resistance in hydrogen atmosphere. In their geometrical sizes, the capsules correspond to hemispherical generator of shock waves, which is capable to provide pressures of $\approx$ 1.3 TPa in iron. Using the hemispherical generator of shock waves in two experiments under pressures of $\approx$83 GPa and 93 GPa in shock compressed gaseous deuterium, we measured density ρ=0.64 g/cm^3 and 0.70 g/cm^3, temperature T=23000 K and 24100 K, and light absorption up to 70 cm^{-1}_

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