THE EMISSION SPECTRA OF LOW-INTENSITY SHOCK WAVES PROPAGATING IN He DILUTED WITH Xe

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Propagation of shock waves in helium, diluted a small admixture of xenon ([Xe]=(0.1 - 10)%), experimentally investigated in a high-vacuum shock tube ”Yashma” (residual pressure of gas $P<10^{-6}$ mbar) in the next regimes: the shock wave Mach number $M=(2.3 - 3.3)$, the equilibrium pressure and temperature behind the shock front $P=(0.3 - 0.7)$ bar, $T=(850 - 1350)$K. The highly purified gases were used. The spectra measurement was performed from the shock tube end. Were applied the spectrograph ACTON 2150 (Princeton Instrument) and high speed CCD-camera LeGa-3, equipped with the intensifier based on the electro-optical transducer, sensitive in the range of 115 - 900 nm. Were measured the emission spectra in the range from 180 to 650 nm. The data were obtained on the dependence of the spectra on the concentration of Xe, the initial thermodynamic parameters of gas mixtures and the rate of shock waves. The optical transitions lines in Xe are Identified. It has been shown that a decrease in the concentration of Xe in the mixture causes the shift in the emission spectrum toward the vacuum ultraviolet region.

The work is supported by the Program of the Presidium of RAS “Matter under High Energy Densities”.