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Spectral and optical properties of a shocked gas with impurities ALEXANDER FEDOTOV GEFEN, LIOR PERELMUTTER, Soreq NRC, YAKOV KRASIK, VICTOR GUROVICH, Technion - Israel Institute of Technology, SOREQ NRC TEAM, TECHNION - ISRAEL INSTITUTE OF TECHNOLOGY COLLAB-ORATION — A study of the physical properties of gaseous materials under shock compression and the effects of impurities in the gas are presented. The shock compression was generated by a fast moving free surface of a shocked metal slab. In a previous published work, carried out in the Technion, a cylindrically converging copper capillary, filled with a He or an Ar gas, was studied. Atomic spectral lines of Cu impurities were identified in the light emitted from the gas. These atoms, mixed in the gas, probably originated from the capillary material. From the intensity ratios of the measured Cu spectral lines, we concluded that these atoms were heated up by the shocked gas to a temperature of about 1 eV. Gas temperature, gas pressure, shock velocity, etc. may be significantly affected by the presence of impurities. In the work presented here, the gas and impurity properties are farther analyzed, using the observed spectral lines of the mixed impurities. Calculations for a planar shock wave in the gas will also be presented.

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