CALCULATION OF SHOCK HUGONIOTS FOR H_2 AND D_2 BASED ON THE THEORETICAL EQUATION-OF-STATE MODEL

Yu. A. Bogdanova, S. A. Gubin, and A. A. Anikeev

National Research Nuclear University MEPhI, 31 Kashirskoe Sh., Moscow 115409, Russian Federation

Abstract: In the previous works of the authors, the improved version of model of the equation of state (EOS) of two-component fluid mixtures which molecules interact with Exp-6 potential was suggested. Using EOS model of two-component fluid mixtures based on the perturbation theory, the calculations of thermodynamic parameters of shock wave compression of molecular hydrogen and deuterium were performed. Products of compression of these substances are the two-component mixtures. Conductivity on a shock adiabatic curve of hydrogen and deuterium is calculated. Comparison of the obtained results with experimental data allows the conclusion to be made that the suggested theoretical EOS model reliably describes thermodynamic properties of two-component fluid mixtures in a wide range of pressure and temperatures.

Keywords: perturbation theory; shock Hugoniot; intermolecular interaction potential Exp-6

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Received November 1, 2014

Contributors

Bogdanova Youlia A. (b. 1983) — assistant; Department No. 4 of Chemical Physics, National Research Nuclear University MEPhI, 31 Kashirskoe Sh., Moscow 115409, Russian Federation; bogdanova.youlia@bk.ru

Gubin Sergey A. (b. 1945) — Doctor of Science in physics and mathematics, professor, head of department No. 4 of Chemical Physics; National Research Nuclear University MEPhI, 31 Kashirskoe Sh., Moscow 115409, Russian Federation; sagubin@mephi.ru

Anikeev Artem A. (b. 1990) — postgraduate student, Department No. 4 of Chemical Physics; engineer, Department of UNIX-technology, National Research Nuclear University MEPhI, 31 Kashirskoe Sh., Moscow 115409, Russian Federation; anikeev_aa@mail.ru