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Mathematic simulation of ignition process for gelled condensed substance by single heated metallic and non-metallic particles

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Abstract

Mathematic simulation of main physical and chemical processes and phase exchanges at the ignition of gelled condensed substance (fuel) by local heating is performed. Conditions of interaction between near-surface layer of fuel and heated till high temperature metallic (steel, aluminum) and non-metallic (ceramic, carbon) particles from various origin are investigated. Values of main integral characteristic process – ignition time delay are determined. Dependences of ignition time delay from energy source temperature are established. Comparison of ignition conditions for gelled, liquid and solid condensed substances at local heating is performed.