

THE MECHANISM OF IGNITION OF DOUBLE-BASE PROPELLANT AT LOW PRESSURES

V. G. Krupkin¹, V. N. Marshakov¹, and S. A. Rashkovskiy^{1,2}

¹N. N. Semenov Institute of Chemical Physics, Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation

²A. Yu. Ishlinsky Institute for Problems in Mechanics, Russian Academy of Sciences, 101-1 Vernadskogo Prosp., Moscow 119526, Russian Federation

Abstract: The ignition process of a homogeneous condensed energetic material — double-base propellant NB — in nitrogen at 1 atm is investigated. It is shown that the ignition from the radiation heater occurs through a hot-spot with the formation of the ignition wave. Burning of the sample proceeds by the hot-spots pulsating mechanism, if the heater is switched off at the time of origin of the hearth. If the heater is not switched off, the combustion regime looks as one-dimensional with a flat front, although some weak features of the hot-spots pulsating combustion mechanism remain. The characteristics of all those regimes are presented in the paper.

Keywords: ignition; combustion; hot-spots pulsating mechanism; gunpowder; double-base propellant; non-one-dimensional combustion front; hearth; focal pulsating combustion mechanism

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Contributors

Krupkin Vladimir G. (b. 1949) — Doctor of Science in physics and mathematics, chief research scientist, N. N. Semenov Institute of Chemical Physics, Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation; krupkin49@mail.ru

Marshakov Vladimir N. (b. 1935) — Doctor of Science in physics and mathematics, chief research scientist, N. N. Semenov Institute of Chemical Physics, Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation; marsh_35@mail.ru

Rashkovskiy Sergey A. (b. 1957) — Doctor of Science in physics and mathematics, leading research scientist, A. Yu. Ishlinsky Institute for Problems in Mechanics, Russian Academy of Sciences, 101-1 Vernadskogo Prosp., Moscow 119526, Russian Federation; leading research scientist, N. N. Semenov Institute of Chemical Physics, Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation; rash@ipmnet.ru