

Abstract Submitted  
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**Experimental determination of detonation parameters of explosives based on ammonium nitrate** ALEXANDER UTKIN, VLADIMIR LAVROV, VALENTINA MOCHALOVA, Institute of problems of chemical physics RAS — Laser interferometer VISAR was used for investigation of the reaction zone structure and determination of detonation parameters in two different kinds of explosives based on ammonium nitrate: emulsion explosives (EE) and composite explosives with plastic binder (CE). The influence of ammonium particle size, structure and diameter size of explosive charge on the detonation velocity and distribution of parameters inside the reaction zone has been investigated. It was found that detonation front of EE and CE is not smooth and a typical size of oscillations is determined by initial heterogeneity of explosives. Averaged profile of particle velocity fits with classic model of detonation and strongly pronounced Von Neumann spike is observed. Spike parameters are approximately 1.2 times greater than C-J parameters. The reaction time is order of microsecond. The detonation velocity of investigated explosives with initial density  $1.1 \text{ g/cm}^3$  was changed from 4.5 to 5.0 km/s for EE and from 4.0 to 4.5 km/s for CE. The influence of aluminium and iron oxide additions on the detonation properties of CE was investigated.

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