

Detonations of Hexane Vapor/Droplets – Air Mixtures

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Detonation characteristics of hexane droplets/vapor-air mixtures were determined on the basis of experiments in a vertical 13-m long detonation tube. Hexane droplets were injected at the top of the test section. The droplets moved down and – when first of them reached the bottom of the test section – a initiating shock wave entered the tube. Pressure histories, shock wave and flame velocities in the hexane droplet suspensions were determined on the basis of signals from pressure transducers, pressure switches and photodiodes located along the test section. The results obtained enabled us to state whether and under what conditions a detonation process of the droplet suspension occurs, what are the parameters of the detonation wave and how are they affected by the suspension parameters and the initiating shock wave pressure.

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