SWIRLING COMBUSTION ABOVE WATER SURFACE

G. N. Mokhin

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

Abstract: The results of experimental study of combustion of n-heptane evaporating from the surface of water in the vortex combustion chamber are reported. The walls of different shapes that provide tangential air entry to the combustion chamber were used. After ignition, an intense vortex diffusion flame is formed on the axis of the combustion chamber; however, later, it transforms into a blue funnel-shaped premixed laminar flame burning steadily in the central region of the chamber above the water surface. This scheme can be used for environmentally friendly burning of thin films on water surface and for the laminar vortex combustion research.

Keywords: swirling combustion; laminar flame; critical conditions; low-emission burning

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Contributor

Mokhin Grigory N. (b. 1964) — Candidate of Science in physics and mathematics, leading research scientist, N. N. Semenov Institute of Chemical Physics, Russian Academy of Sciences, 4 Kosygin Str., Moscow 119991, Russian Federation, mokhin@gmail.com