



Self-organizing of Fibre-like Structures in Turbulent Gas and Dust Clouds

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The phenomenon of self-organizing of a fibre-like structures in a gas and dust zone of turbulent mixing (see a photo) in experiments on a shock tube was observed. The zone of mixing is formed on the surface of a layer of the dust media, accelerated by pressure of products of a detonation of a mix of acetylene with oxygen in the closed channel of a shock tube of square cross section.

Similar structures are observed at a birth of stars from diffused media of gas and dust clouds (see for ex.[1, p.55])

From instantaneous fast speed photography of the flow in the channel of a shock tube with a multiphase mixture GDC - gas and dust cloud; The shock induced by the detonation produces DP- a detonation products of a mix of acetylene with oxygen visible near the explosive device.

It is possible to identify and measure structures related to the following within the gas and dust cloud GDP: 1) W -wall structures due to the channel of the shock tube; 2) M-mark straight lines produced by the optics ; 3) FS- fibre -like structures with fractal appearance that separate the GDC regions.

[1] A.V.Kolesnichenko, M.Ya.Marov. Multicomponent turbulence. MAIK, Nauka, M., 1999, 336p (in Russian).