

HEAT TRANSFER IN GASES BY PRESSURE GRADIENT ELASTIC WAVES

Yan Beliavsky
Super Fine Ltd. Israel
e-mail: superfin@netvision.net.il

Abstract

A large amount of experimental data illustrating the influence of sound on temperature processes has accumulated in industry and technology research. None of these effects can be explained by conventional theories. The Ranque effect, the Hartmann–Sprenger effect and the temperature separation inside a short vortex chamber (performed by the author) also belong to this class of phenomena. In the report, the concept of Pressure Gradient Elastic Waves (PGEW) is proposed and proved. The concept gives a physical description of the heat transfer in these processes. A Pressure Gradient Elastic Waves is a special type of elastic wave arising in compressible media (gas) with a pressure gradient in the presence of density fluctuations (sound). The most important property of this kind of elastic wave is that it transfers energy from a low pressure zone to a high pressure one.