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On the Evaporation of a Monodisperse Droplet Stream at High-Pressure

Grazia Lamanna[(1)], Han Sun[(1)], Bernhard Weigand[(1)], Davide Magatti[(2)], Pietro Micciche[(2)], Fabio Ferri[(2)]

(1) *Institute of Aerospace Thermodynamics, Stuttgart University, Germany*
(2) *Department of Chemical, Physical and Mathematical Sciences, University of Insubria, Como, Italy*

A new experimental facility has been developed aimed at investigating the evaporation of free falling droplets at high pressure. A monodisperse droplet stream is generated in the upper part of the test rig and is embedded in a gas flow. The droplet speed is determined by means of a video technique and a stroboscope lamp. The droplet size is determined by means of the low-angle light scattering technique. The method consists in detecting the light scattered by an ensemble of particles at small angles in the forward direction. As detector device, a common CCD camera has been employed, thus resulting in an increased angular resolution and sensitivity when compared to standard photodiodes arrays. Promising results have been obtained in the case of iso-propanol droplets with an average nominal diameter of 54 micron.

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