

Numerical and Experimental Investigation of Fluidic Microdrops Manipulation by Fluidic Mono-Stable Oscillator

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Abstract: A numerical and experimental study of passive microdrops manipulation has been presented. This paper focuses on the modeling of micro-oscillators systems which are composed by passive amplifier without moving part. The characteristic size of the channels is generally about 35 μm of depth. The numerical results indicate that the production and manipulation of microdrops are possible with passive device within a typical oscillators chamber of 2.25 mm diameter and 0.20 mm length when the Reynolds number is $Re = 490$. The novel microdrops method that is presented in this study provides a simple solution about the production of microdrops problems in micro system. We undertake an experimental step. The first part is based on realization of sample oscillator; the second part is consisted of visualization of the microdrops production and its manipulation.

Keywords : microdrop, fluidic oscillator, CFD