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

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Abstract: A numerical and experimental study of passive microdrops manipulation hasbeen presented. This paper focuses on the modeling of micro-oscillators systems which are composed by passive amplifier without moving part. The characteristic of the channels is generally about 35 ¹mof 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 mmlength 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