World Academy of Science, Engineering and Technology
International Journal of Aerospace and Mechanical Engineering
Vol:9, No:01, 2015

Micro-Oscillator: Passive Production and Manipulation of Microdrops

Authors : Khelfaoui Rachid, Chekifi Tawfiq, Dennai Brahim, Maazouzi A. Hak

Abstract : A numerical and experimental studies of passive micro drops production have been presented. This paper focuses on the modeling of micro-oscillators systems which are composed by passive amplifier without moving part. The micro-system modeling is based on geometrical oscillators form. An asymmetric micro-oscillator design that is based on a bistable fluidic amplifier is proposed. The characteristic size of the channels is generally about 35 microns 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 micro drops 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 the realisation of sample oscillator; the second part is consisted of visualization, production and manipulation of microdrops.

Keywords : modelling, miscible, micro drops, production, oscillator sample, capillary
Conference Title : ICFDT 2015 : International Conference on Fluid Dynamics and Thermodynamics
Conference Location : London, United Kingdom
Conference Dates : January 19-20, 2015