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Improved performance of a micro oscillator for micro-mixing

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This work is realised out within the MAST team (Micro-fluidics Applied to Thermal Systems) at the ENERGARID laboratory (Energetics in Dry Areas). In the microsystems, the flows are strongly laminar, which significantly decreases the performance of the mixture, which is carried out essentially by diffusive or chaotic mechanisms. It is then necessary to imagine new techniques to limit these declines in performance. Improving the performance of microfluidic oscillators (fig. 1) for micro-mixing is one of the axes of our research. We are particularly interested in the means capable of making the mixture effective at the miniature scale based on a good oscillation frequency of the oscillator and with the aid of a simple passive microsystem, which does not require an external operation. . The choice of a type of original micro-mixer (fig. 2), based on the geometry of the bistable oscillator studied, showed that the value of the mixing index is acceptable and improves along the output channels, to reach a value maximum at the output of the micro mixing.

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