

## Characterization of the performance of an injector for the generation of controlled microbubbles

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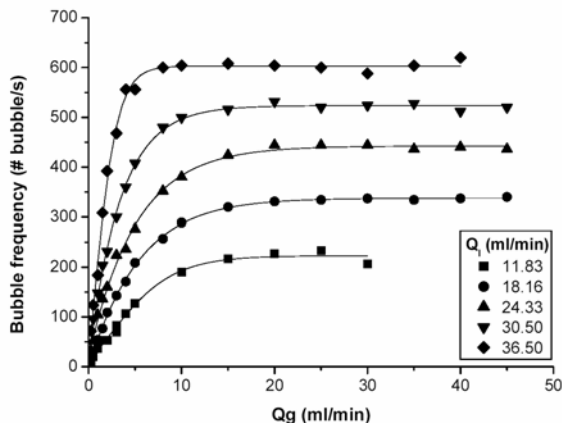
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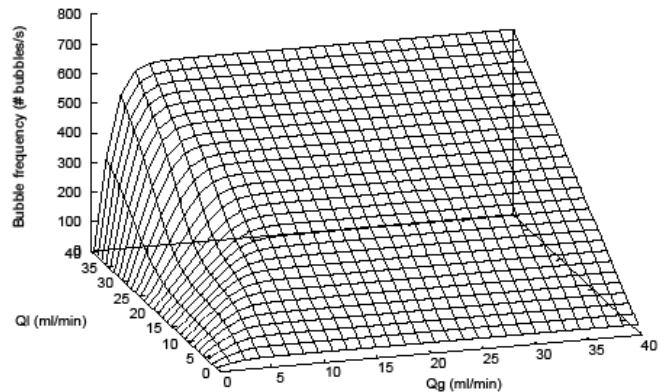
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We perform an extensive characterization of a recently reported microbubble injector in conditions relevant to microgravity [1]. Injection of bubbles is based on the generation of a slug flow in a capillary T-junction, whose operation is robust to changes in gravity level. We address questions regarding the performance under different working regimes. In particular we span a large range of parameters such as gas and liquid injection rates and capillary diameters.

The injection performance is characterized by measuring bubble injection frequency and bubble size distribution [2]. Limits of operation performance regarding the control of bubble sizes are evaluated, and the optimal performance has been identified.



Bubble frequency vs. air flow rate for different liquid flow rates; symbols are experimental results; lines are guides to the eye.



Bubble frequency vs. air and liquid flow rates; analytical prediction obtained from experimental data.

### References

[1].- J. Carrera, X. Ruiz, L. Ramírez-Piscina, J. Casademunt, M. Dreyer, *Generation of a Monodisperse Microbubble Jet in Microgravity*, AIAA Journal, Submitted (2007).

[2].- S. Arias, X. Ruiz, L. Ramírez-Piscina, J. Casademunt, R. González-Cinca, *Experimental study of a microchannel bubble injector for microgravity applications*, MST Journal, accepted for publication (2007).