

# Characterization of a microbubble injector for applications in microgravity

S. Arias<sup>a</sup>, X. Ruiz<sup>b,c</sup>, L. Ramírez-Piscina<sup>b,d</sup>, J. Casademunt<sup>b,e</sup>, R. González-Cinca<sup>a,d,\*</sup>

<sup>a</sup> Escola Politècnica Superior de Castelldefels, Universitat Politècnica de Catalunya, Av. Canal Olímpic s/n, 08860 Castelldefels (Barcelona), Spain

<sup>b</sup> Institut d'Estudis Espacials de Catalunya, Gran Capità 2-4, 08034 Barcelona, Spain

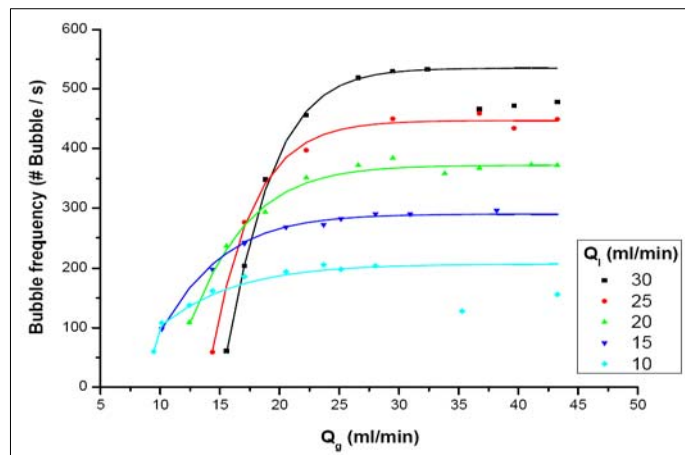
<sup>c</sup> Departament de Física Aplicada, Universitat Rovira i Virgili, Marcel··i Domingo s/n, Campus Sant Pere Sescelades, 43005 Tarragona, Spain

<sup>d</sup> Departament de Física Aplicada, Universitat Politècnica de Catalunya, Av. Canal Olímpic s/n, 08860 Castelldefels (Barcelona), Spain

<sup>e</sup> Departament d'Estructura i Constituents de la Matèria, Universitat de Barcelona, Diagonal 647, 08028 Barcelona, Spain

\* ricard@fa.upc.edu

The characterization of a microchannel bubble injector [1] has been carried out in conditions relevant to microgravity applications. A slug flow is generated in the T-junction of the injector, which performs independently of the microgravity level. The injection performance has been characterized by measuring bubble frequency and size distribution for different liquid and gas injection flow rates. Bubble generation frequency is observed to saturate for high gas flow rate (see figure). The saturation frequency follows a linear scaling with the liquid flow rate. The scaled bubble diameter has been observed to decrease linearly with  $We^{0.5}$ .



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