

Topic D: Drainage

“Generation of monodisperse, micron-sized through liquid coflows”

J.M. Gordillo, jgordill@us.es

Universidad de Sevilla, Departamento de Ingeniería Energética y Mecánica de Fluidos,
Sevilla, Spain.

The controlled production of uniform sized microbubbles is a process with inherent technological difficulties which can be overcome by using liquid co-flows. In this presentation, we will firstly review the different procedures followed for the production of bubbles with sizes below 1 millimeter, making special emphasis on those which make use of a co-flowing liquid in a confined 2D or 3D flow-focusing geometry. The different scalings for both bubble size and void fraction of the resulting wet or dry microfoam as a function of the gas and liquid flow rates will be presented for each geometry and, in addition, the underlying physics explaining these scalings will be discussed. Finally, the limitations of flow focusing for the production of bubbles with a much smaller size than those imposed by the geometry will also be discussed and new possible alternatives will be presented.