

Bubble Growth in a Two Phase Upward Flow in a Miniature Tube

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Abstract : A bubbly flow in a vertical miniature tube is analyzed theoretically. The liquid and gas phase are co-current flowing upward. The gas phase is injected via a nozzle whose inner diameter is 0.11mm and it is placed on the axis of the tube. A force balance is applied on the bubble at its detachment. The set of governing equations are solved by use of Mathematica software. The bubble diameter and the bubble generation frequency are determined for various inlet phase velocities represented by the inlet mass quality. The results show different behavior of bubble growth and detachment depending on the tube size.

Keywords : two phase flow, bubble growth, mini-channel, generation frequency

Conference Title : ICFE 2014 : International Conference on Fluids Engineering

Conference Location : Amsterdam, Netherlands

Conference Dates : May 15-16, 2014