

Simulation of Gas Injection with the Level Set Method

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Abstract

The physical mechanisms that operate in gas injection are complex, since the bubble formation at submerged orifices involves a wide range of length and time scales, bubble coalescence occurs, rapid pressure variations around the gas bubble produce the wobbling of the bubble, as well as the high velocities involved in the bubble bursting phenomenon on the free surface, among the others. In this work, the bottom gas injection process was simulated using the level set method implemented in the COMSOL Multiphysics software. Good quantitative agreement was found between results obtained in this work and the theoretical and numerical results reported in the literature.