

## عنوان مقاله:

An Experimental and CFD Investigation on Effect of Initial Bubble Diameter on its Rise Velocity Profile in A Laboratory-Scale Flotation Column Cell

## محل انتشار:

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## خلاصه مقاله:

The bubble diameter effect on the bubble rise velocity profile in a flotation column is studied by the two-phase computational fluid dynamics (CFD) method. The simulations are done in the ANSYS® Fluent® software using a two-phase volume of fluid model. The computational domain is a square cross-section column with a ۱۰ cm width and a ۱۰۰ cm height, in which air is interred as a single bubble from the lower part of the column by an internal sparger. An experimental test is also performed, the hydrodynamics parameters are recorded, and the simulated results are validated using the values obtained for the bubble rise velocity. The simulation results obtained indicate that CFD can predict the bubble rise velocity profile and its value in the flotation column with less than ۵% difference in comparison with the experimental results. Then the simulations are repeated for the other initial bubble diameter in the bubbly flow regime in order to study the bubble diameter effect on the rise velocity profile. The results obtained demonstrate that the larger bubbles reach the maximum velocity faster than the small ones, while the value of maximum velocity decreases by an increase in the bubble diameter. These results can be used to improve the flotation efficiency.

## کلمات کلیدی:

column flotation, bubble diameter, Velocity profile, multiphase simulation, CFD Simulation

## لینک ثابت مقاله در پایگاه سیویلیکا:

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