Abstract Submitted
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A parametric study on the rise of a pair of bubbles using algebraic volume of fluid method: effect of diameter and viscosity ratio.[1] AMARESH DALAL, AMOL C KULKARNI, JAI MANIK, GANESH NATARAJAN, Indian Inst of Tech-Guwahati — The effect of droplet diameter and viscosity ratio on the coalescence of two bubbles rising in a quiescent liquid has been studied numerically using algebraic volume of fluid (VOF) method. If the upper bubble diameter is 75 % of the lower bubble, the time taken for their coalescence increases in comparison with the case of equal bubble diameter. For the case, when the diameter of the upper bubble is reduced, this delay may be attributed to comparatively weaker jet formed behind the leading bubble, ultimately resulting in lesser acceleration of the trailing bubble. While for the other case, when the diameter of the lower bubble is reduced, it is because of a totally different scenario of liquid entrapment observed during coalescence. The effect of viscosity of the surrounding fluid is also noticed separately for the situation when the diameters of the bubbles are equal. It has been observed that, the increase in viscosity of the surrounding fluid will increase the form drag over the bubbles, eventually leading to the delay in their coalescence.

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Amaresh Dalal
Indian Inst of Tech-Guwahati

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