IMPINGING BUBBLY JETS AT DIFFERENT GRAVITY LEVELS

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Bubbly jet impingement have been studied experimentally and numerically at different gravity levels. Two bubbly jets flow along the same axis in opposite direction, colliding in the central region. As a result, a narrow zone (the impingement zone) in which coalescence events between bubbles can be enhanced, is created. Experimentally, a slug flow is created inside a capillary T-junction ($d = 1$ mm inner diameter) prior to injection into a test tank full of distilled water. Bubble size and velocity are controlled via the gas and liquid flow rates. Microgravity experiments have been carried out at ZARM Drop Tower, using different separations between jets (from 50 mm up to 100 mm). Results on the global structure of the impinging jets and the individual behavior of bubbles are presented.
CFD simulations have been carried out at different gravity levels and different separation between jets. A qualitative comparison between the CFD simulations and the global structure of the impinging jets obtained from the experiments have been carried out, obtaining a good agreement.