

ABSTRACT

EXPERIMENTAL INVESTIGATION OF BUBBLE FLUCTUATION IN A TURBULENT DOWNWARD FLOW

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An experimental investigation to observe the bubble fluctuation in surrounding turbulent downward flow has been carried out. The test section was a 348 mm length of conical pipe with inlet and outlet diameter of 27.2 mm and 53 mm, respectively. The velocity profiles as well as the turbulent parameters were measured by using Particle Image Velocimetry (PIV) while the 3-dimensional position of the injected single bubble was obtained from the high speed camera recording with a mirror arrangement close to the test section. The turbulent parameters such as axial and x-direction turbulent intensity and the ratio between the turbulent kinetic energy to the mean kinetic energy are presented. As a result, the bubble's radial position for the difference bubble sizes were obtained from the experiment.

Keywords: Downward bubble flow, Turbulent flow, Particel Image Velocimetry (PIV), Turbulent intensity.