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Turbulence characteristics of liquid motion induced by single rising bubble[1] KOICHI MORIKAWA, TOSHIYUKI SANADA, TAKAYUKI SAITO, Shizuoka University — Characteristics of the surrounding liquid motion of a single rising bubble were experimentally investigated. A single bubble with three kinds of diameters was released under complete control of initial diameter, orientation and launch timing using a bubble generator. Especially, we focused on the bubbles with zigzagging motion. Both the surrounding liquid motion and bubble motion were simultaneously visualized via PIV measuremen. Vorticity distribution and standard deviation of liquid-phase velocity were calculated. Moreover, we analyzed the turbulence intensity of liquid-phase motion induced by the bubble within measurement time. We clarify both the distribution of disturbance and the intensity of disturbance. As a result,each bubble formed various vorticity distributions in its vicinity during the bubble rising. On the other hand, the turbulence intensity of the liquid-phase velocity was obviously different. Associated with increase in the bubble radius, the area of disturbance region induced by bubble was spread. The horizontal component of the turbulence intensity was increased by the bubble with significant interface motion.

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