

Abstract Submitted
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A newly developed optical fiber probe processed by femtosecond pulses for a measurement of micro bubbles and droplets¹ YUSUKE OZAWA, KEISUKE MATSUDA, Shizuoka University, SHINGO OISHI, SHIN-ICHIRO AOSHIMA, Hamamatsu Photonics K.K., TOSHIYUKI SANADA, TAKAYUKI SAITO, Shizuoka University — Optical fiber probes can be applied to an efficient and reliable measurement for gas-liquid two-phase flows. This measurement technique enables a real-time and high-accuracy measurement of characterization of bubbles/droplets. In this study, we newly developed an optical fiber probe processed by femtosecond pulses (fs-Probe) in order to measure tens-of-micrometers bubbles/droplets. The new fs-Probe whose detecting point is formed at tens micrometer from its tip using fs pulses can detect gas-liquid interface velocity. We demonstrated a measurement of millimeters size bubbles/droplets and discussed its capability for measurement of velocities and diameters of them using fs-Probe. Furthermore, we visualized contact processes between fs-Probe and bubbles/droplets on the measurement. We discussed the relation between output signal characteristics and contact processes depending on a geometry of fs-Probe, wettability, and so on.

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