

Abstract Submitted
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Measurement of Bubble Size Distribution Based on Acoustic Propagation in Bubbly Medium¹ XIONGJUN WU, CHAO-TSUNG HSIAO, JIN-KEUN CHOI, GEORGES CHAHINE, Dynaflow Inc. — Acoustic properties are strongly affected by bubble size distribution in a bubbly medium. Measurement of the acoustic transmission becomes increasingly difficult as the void fraction of the bubbly medium increases due to strong attenuation, while acoustic reflection can be measured more easily with increasing void fraction. The ABS ACOUSTIC BUBBLE SPECTROMETER[®][©], an instrument for bubble size measurement that is under development tries to take full advantage of the properties of acoustic propagation in bubbly media to extract bubble size distribution. Properties of both acoustic transmission and reflection in the bubbly medium from a range of short single-frequency bursts of acoustic waves at different frequencies are measured in an effort to deduce the bubble size distribution. With the combination of both acoustic transmission and reflection, assisted with validations from photography, the ABS ACOUSTIC BUBBLE SPECTROMETER[®][©] has the potential to measure bubble size distributions in a wider void fraction range.

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