

Abstract Submitted
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The growth of oscillating bubbles in an ultrasound field¹ RISA YAMAUCHI, TATSUYA YAMASHITA, KEITA ANDO, Keio Univ — From our recent experiments to test particle removal by underwater ultrasound, dissolved gas supersaturation is found to play an important role in physical cleaning; cavitation bubble nucleation can be triggered easily by weak ultrasound under the supersaturation and mild motion of the bubbles contributes to efficient cleaning without erosion. The state of gas bubble nuclei in water is critical to the determination of a cavitation inception threshold. Under ultrasound forcing, the size of bubble nuclei is varied by the transfer of dissolved gas (i.e., rectified diffusion); the growth rate will be promoted by the supersaturation and is thus expected to contribute to cavitation activity enhancement. In the present work, we experimentally study rectified diffusion for bubbles attached at glass surfaces in an ultrasound field. We will present the evolution of bubble nuclei sizes with varying parameters such as dissolved oxygen supersaturation, and ultrasound intensity and frequency.

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