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**Investigation of a relationship between Spherical-shape particle flocculation and acoustic-cavitation-oriented bubbles (ACOBs) under kHz-band ultrasonic irradiation** SAYURI YANAI, Faculty of Engineering, Shizuoka University, YUKI MIZUSHIMA, Graduate school of Science and Technology, Shizuoka University, TAKAYUKI SAITO, Research Institute of Green Science and Technology, Shizuoka University — We investigated unprecedented spherical-shape particle flocculation with an effect of acoustic-cavitation-oriented bubbles (ACOBs) that were generated in water under kHz-band ultrasonic irradiation. In past studies, particle concentrations forming stripes under MHz-band ultrasonic irradiation have been investigated and reported by many previous researchers. However, the spherical-shape particle flocculation is very anomalous. Further, it is able to flocculate mm-order particles that are principally impossible to manipulate using MHz-band ultrasonic. We focused on the mechanism of the spherical-shape particle flocculation under 20-kHz-ultrasonic irradiation in water. From our experimental results of spherical-shape particle flocculation, we found out that the flocculation factors were not only acoustic radiation force but also behavior of the ACOBs. The ACOBs adhering to the particle surface moved to a certain position with the particle, depending on acoustic pressure distribution in the water. In the present study, we report and discuss the results of the visualized relationship among the ACOB motion, the particle motion and acoustic pressure distribution in water.

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