A Study on the Fabrication and Application of AL (Acoustic Levitation) Devices

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Acoustic Levitation technology has no material limits. Less receiving, and can move or mix objects without contact. It is an area that is expected to be applicable to various industrial applications. So far, the technology has remained in the hemisphere-type experimental equipments for supporting very small styrofoam balls and a water drop of fine needle, and only little is known. In this study, we made and developed an acoustic levitation device to understand and develop the principles to confirm the mobility of objects using acoustic levitation. In addition, various types of devices were transformed to realize the industrial and entertainment applications of acoustic levitation technology. The condition of the transducer to observe the stable waveform and movement of the object was voltage 11. 2V to 12.4V and a resistance of about 1.6O, and visually confirming the appearance of the wave When you want to see, the strongest standing wave space is formed when a reflector is installed at a position of 10 cm from ultrasonic waves and a voltage of 15 V is maintained, so that stable levitation is achieved. Acoustic levitation is influenced by humidity finely, and optimum flotation is possible only when there is no static electricity and a constant temperature of 25? is maintained. In addition, depending on the type of transducer, the shape of directivity is different, which affects acoustic levitation. The wide form of directivity test graph gives stable results to the experiment. In a cylindrical device with all conditions optimized and external resistance reduced, a styrofoam ball with a diameter of 4.5cm was moved to acoustic flotation. It has been confirmed that a small mass but large size material can be transmitted through acoustic levitation.

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