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(Technical Note)

A simple and novel method for acoustic streaming power measurement of ultrasonic horn

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Abstract

Ultrasonic horn with transfer of acoustic wave into an aqueous solution results in unique properties. When, transfer of sound wave into a liquid results in liquid movement in the direction of wave propagation which gradually loses its energy due to the viscous friction. This wave motion induces a flow which is known as acoustic streaming or micro-streaming. In this article, a simple innovative system is designed and built to measure the power generated by micro-streaming. By measuring and analyzing the physical relations, the micro-streaming power obtained for various amplitudes was between 0.5 to 2.61 watts and the maximum displacement of the tip acquired was between 8 to 25 micro-meter for this ultrasonic horn.

Keywords: Ultrasounic horn, Microstreaming, Acoustic pressure, Bubble cloud, Measurment.

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