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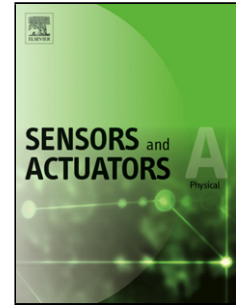
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Acoustic Bubble-Powered Miniature Rotor for Wireless Energy Harvesting in a Liquid Medium

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Highlights

Title: Acoustic Bubble-Powered Miniature Rotor for Wireless Energy Harvesting in a Liquid Medium

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- This paper presents acoustic energy harvesting technology utilizing a miniature rotor actuated by bubble-induced synthetic jets.
- The behavior of an oscillating bubble under acoustic excitation and an oscillating bubble-induced synthetic jet are investigated.
- The output voltage and power generated from the energy harvester are measured using an electrical circuit with different electric loads.
- Storage capacitor charging tests are performed with the 0.1 μF and 1 μF capacitors.
- This actuation technique is a simple but useful tool for energy harvesting and for potential acoustic wave sensors and actuators.

This paper presents a new type of acoustic energy harvesting technology in which a miniature rotor actuated by acoustically oscillating bubble-induced synthetic jets periodically vibrates piezocantilevers in order to generate electric power. The behavior of an oscillating bubble under acoustic excitation and an oscillating bubble-induced synthetic jet is experimentally verified to prove the working principle of an acoustically driven miniature rotor. The motion of the acoustically driven miniature rotor and the electric voltage generated from the vibrating piezocantilever are investigated. The rotating speed of the rotor and the electric voltage generated are highly dependent on the applied acoustic frequency. A custom-made electrical circuit with different electric loads is used to rectify the electric voltage and

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