

Supplementary Information

MEMS Based Broadband Piezoelectric Ultrasonic Energy Harvester (PUEH) for Enabling Self-Powered Implantable Biomedical Devices

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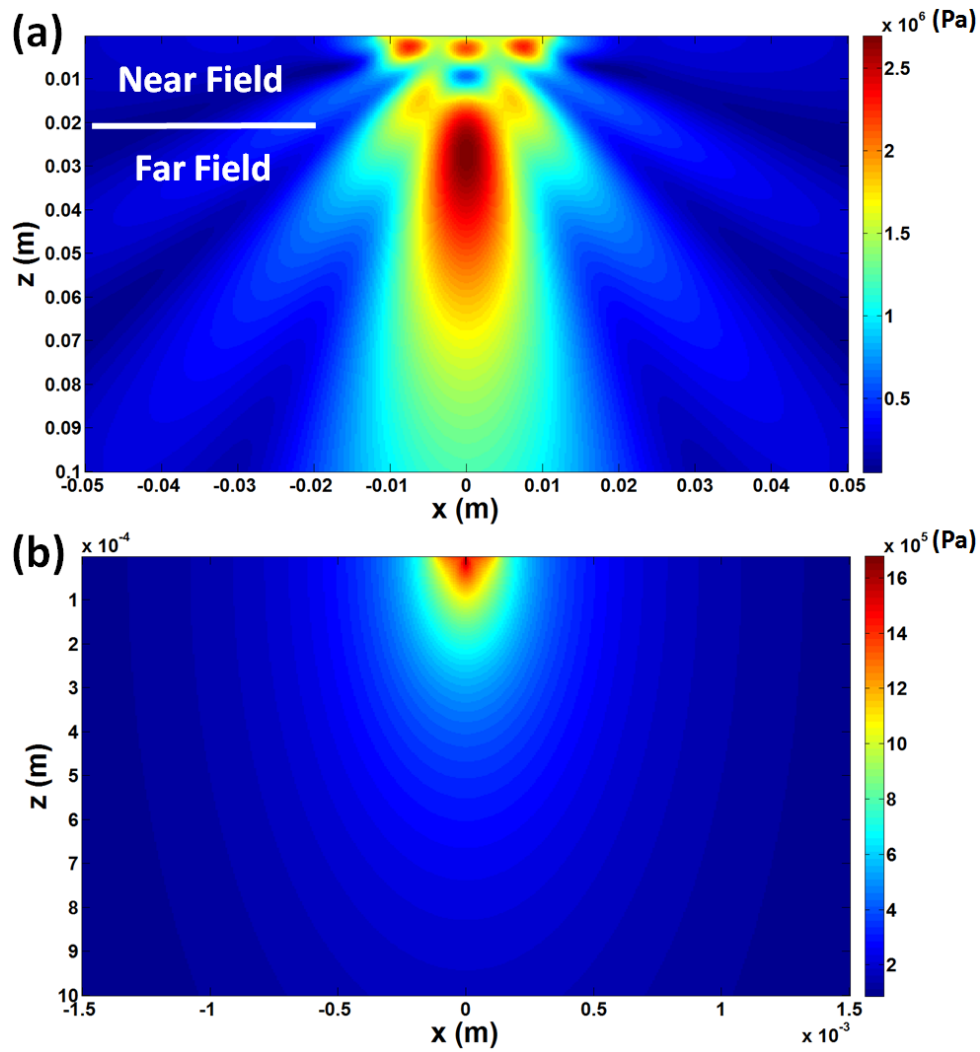


Figure S1: (a) Ultrasound pressure pattern of the bulk lead zirconate titanate (PZT) transducer (diameter 25 mm) by Transducer Array Calculation GUI (Karlsruhe Institute of Technology), showing the near field regime is within 2 cm. (b) Ultrasound pressure pattern of the proposed piezoelectric ultrasonic energy harvester (PUEH), showing the near field regime is within 100 μm range. Input sinusoidal signal is 200 kHz, 2 V_{pp}.

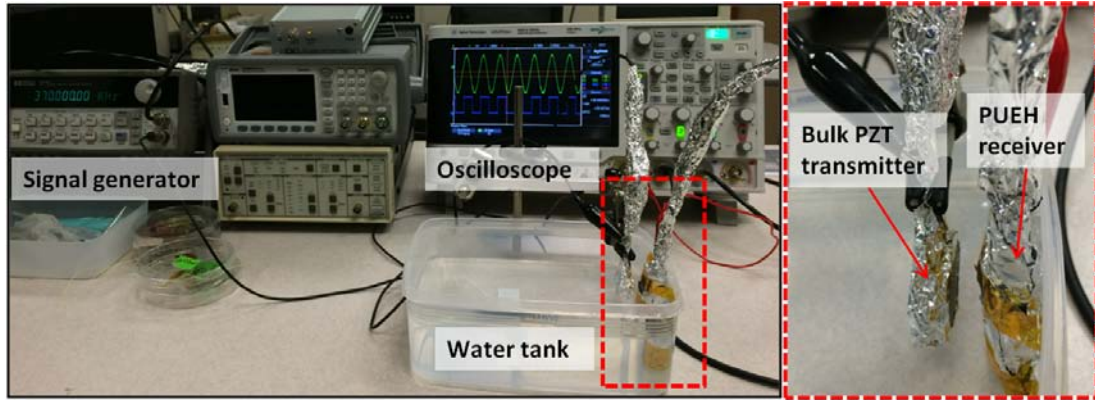


Figure S2: Photograph of testing setup of the power transfer system for voltage and power measurement.

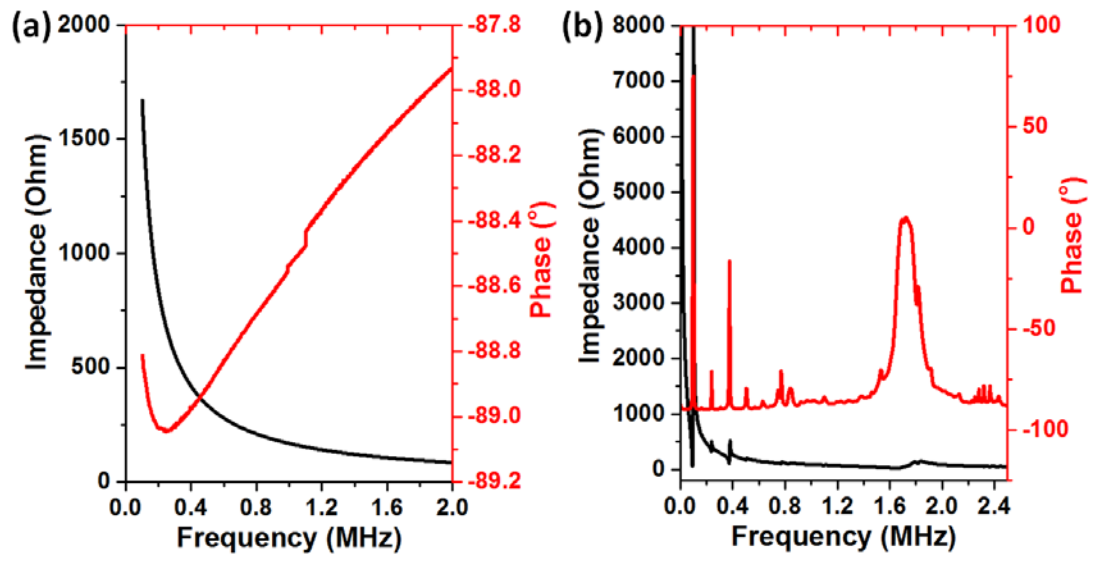


Figure S3: Impedance of (a) the PUEH and (b) bulk PZT transducer measured in water with respect to frequency.

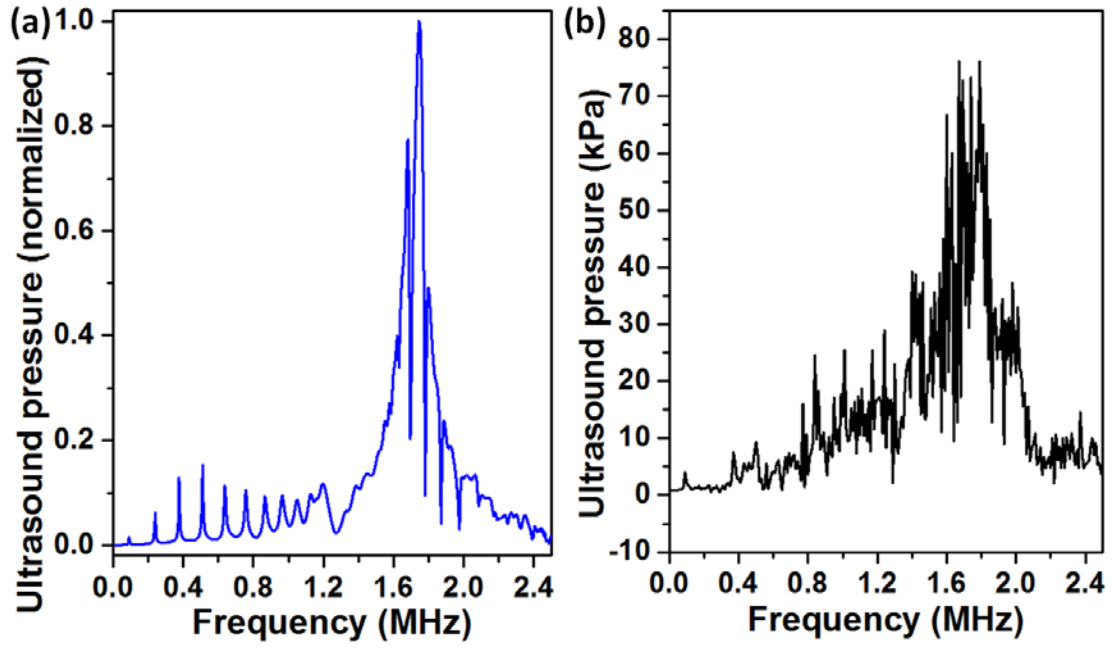


Figure S4: (a) Simulation and (b) testing results of the generated ultrasound pressure

by bulk PZT transducer at 1 cm distance.