

FEEDBACK-CONTROL IN AN ULTRASONIC DRUG DELIVERY DEVICE

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In high-power ultrasonic systems, the resonance frequency fluctuates and drifts during operation. This can be due to heating and varying mechanical load. To maintain constant and controlled acoustic output, the resonance frequency needs to be adjusted in real-time during operation. We established a microcontroller based feedback method to control the acoustic output of a custom-made ultrasonic drug delivery device (UDDD). We report the calorimetrically measured total acoustic output and displacement of the UDDD probe with or without feedback at different electric power levels. In tissue phantom (ballistic gelatin), we also report the dimensions of the gelatin volume that contains delivered entity (contrast agent), when using or not using the feedback-control of the UDDD.