Supplementary Information

Inducing drop to bubble transformation *via* resonance in ultrasound

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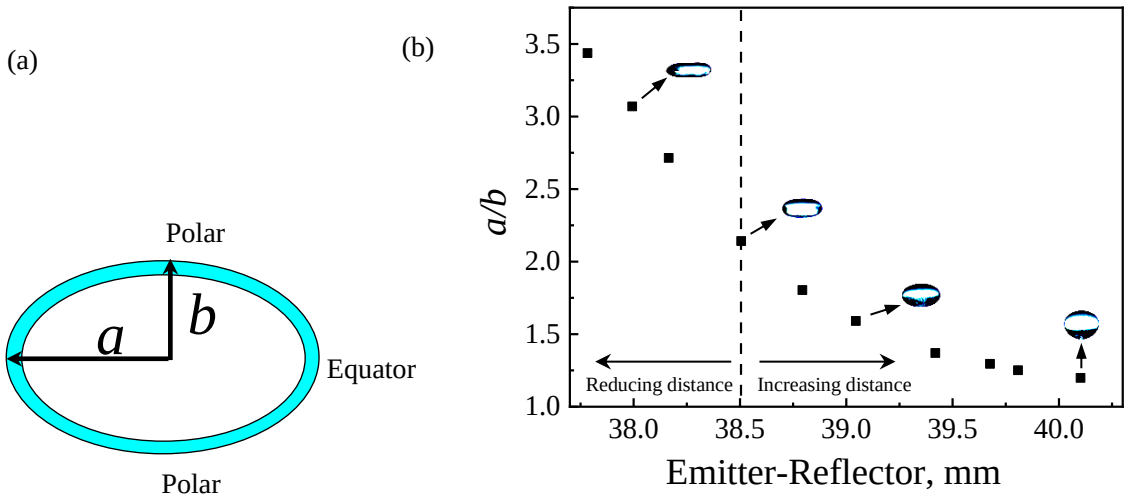
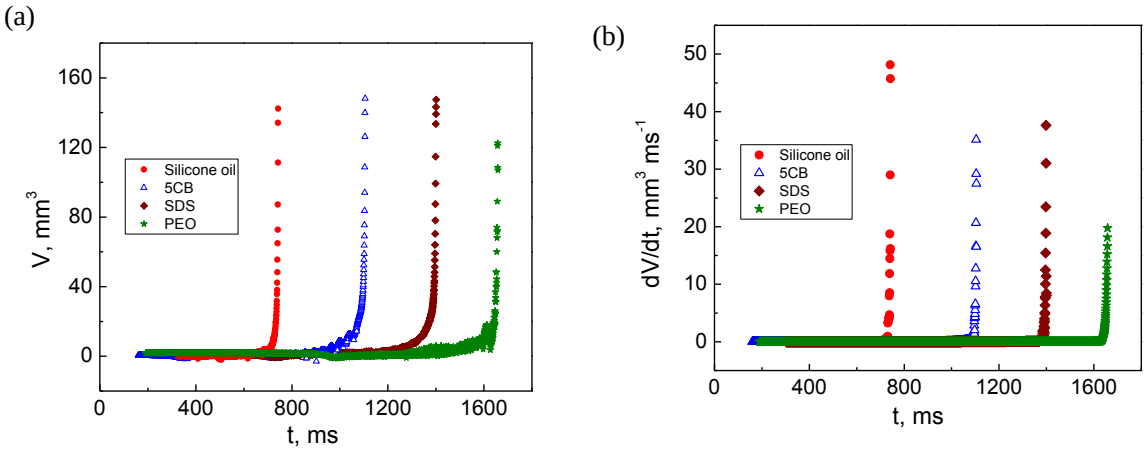
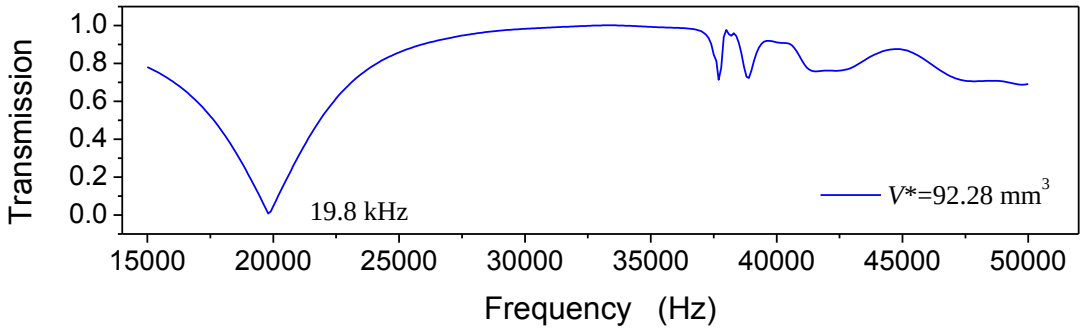


Supplementary Figure 1. Bubble shape versus sound intensity. (a) Schematic view of a bubble, (b) aspect ratio *a*/*b* of the bubble (obtained from 1xcmc SDS drop, 10 μL) as a function of emitter-reflector distance. The dotted line indicates the emitter-reflector distance corresponding to the initial drop-bubble transition.

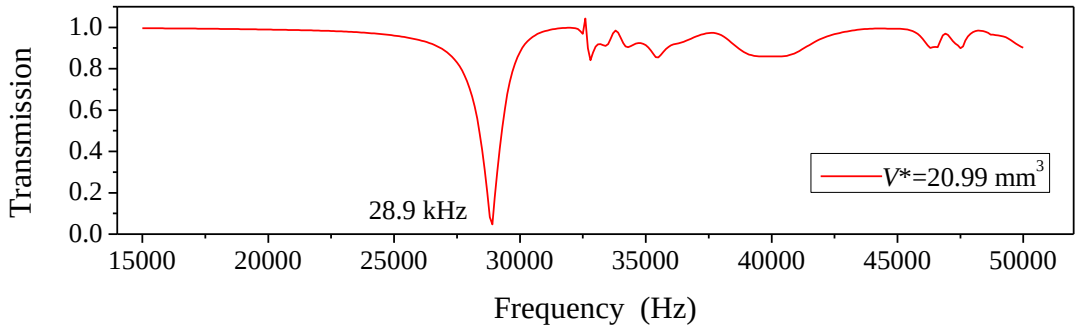


Supplementary Figure 2. Variation of (a) cavity volume V and (b) its inflation rate dV/dt as a function of time for drops of different liquids (10 μL) upon increasing the sound intensity by reducing the emitter-reflector distance at u_R = 1.00 mm s^{-1}.

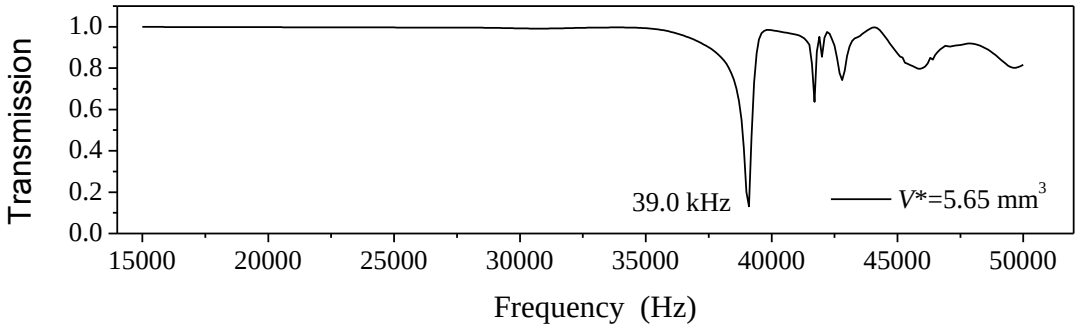
(a)



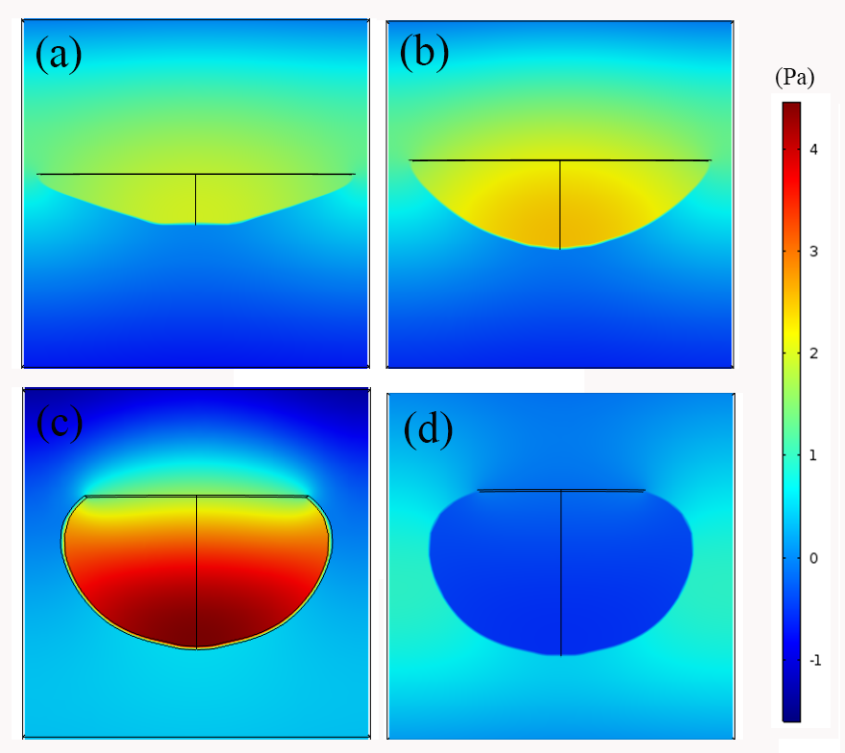
(b)



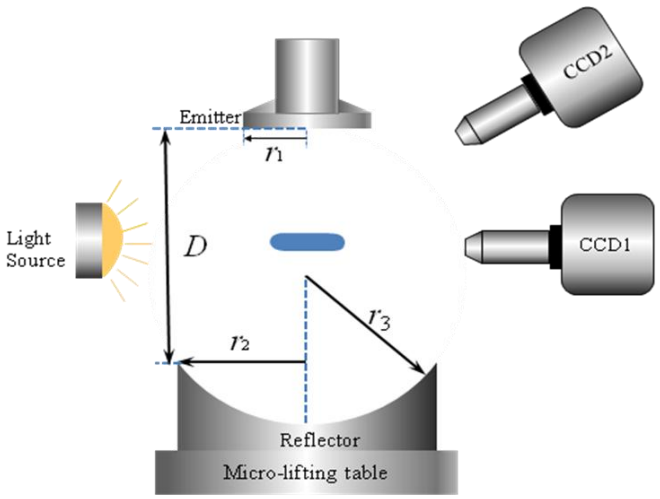
(c)



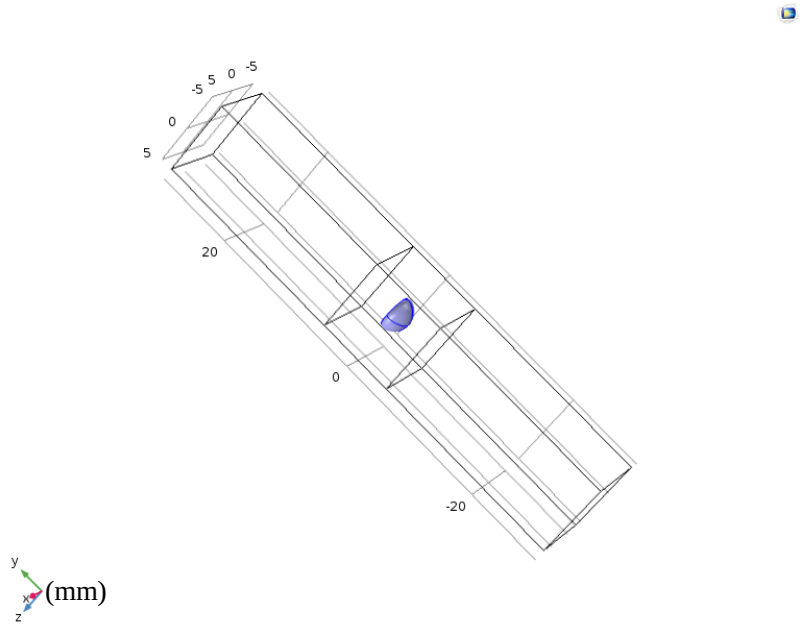
Supplementary Figure 3. Simulation of acoustic resonant properties of the air cavity encapsulated by the buckled liquid film. The model of the cavity is built by rotation of the contour line of the sample extracted from the images taken with the high speed camera, which possess the maximum inflation rate. (a), (b) and (c) correspond to the cavities in levitators of 20.7, 27.5 and 39.2 kHz respectively. The downward peak shows the maximum energy adsorption by the cavity from the sound field at a certain frequency indicating the resonance behavior.



Supplementary Figure 4. Sound pressure distribution in the air cavities of varied volume corresponding to the shape evolution of a liquid film levitated in a 20.7 kHz levitator. The volumes for (a)-(d) are 30.01, 56.27, 92.28 and 106.76 mm^3 respectively. The cavity of (c) corresponds to the maximum inflation rate and also shows the strongest energy adsorption.



Supplementary Figure 5. Schematic representation of the experimental setup. r_1 = 12.5 mm, r_2 = 25.0 mm, r_3 = 37.4 mm.



Supplementary Figure 6. Schematic illustration of the simulation domain and cavity model.

Supplementary Table 1. Final bubble volume influenced by the curvature of the reflector, where the bubble was obtained from SDS drops (10 μL) in a 20.7 kHz levitator, the corresponding Emitter-Reflector distance was ~ 28.5 mm.

Curvature radius of reflector (mm)	2a (mm)	2b (mm)	Final bubble volume (mm^3)
30.0	7.48	3.35	91.47
37.4	7.20	3.95	111.84
40.0	7.53	3.88	105.12
60.0	7.72	4.05	118.05
Flat (∞)	7.83	3.65	112.86