

An emerging string of fluid pearls

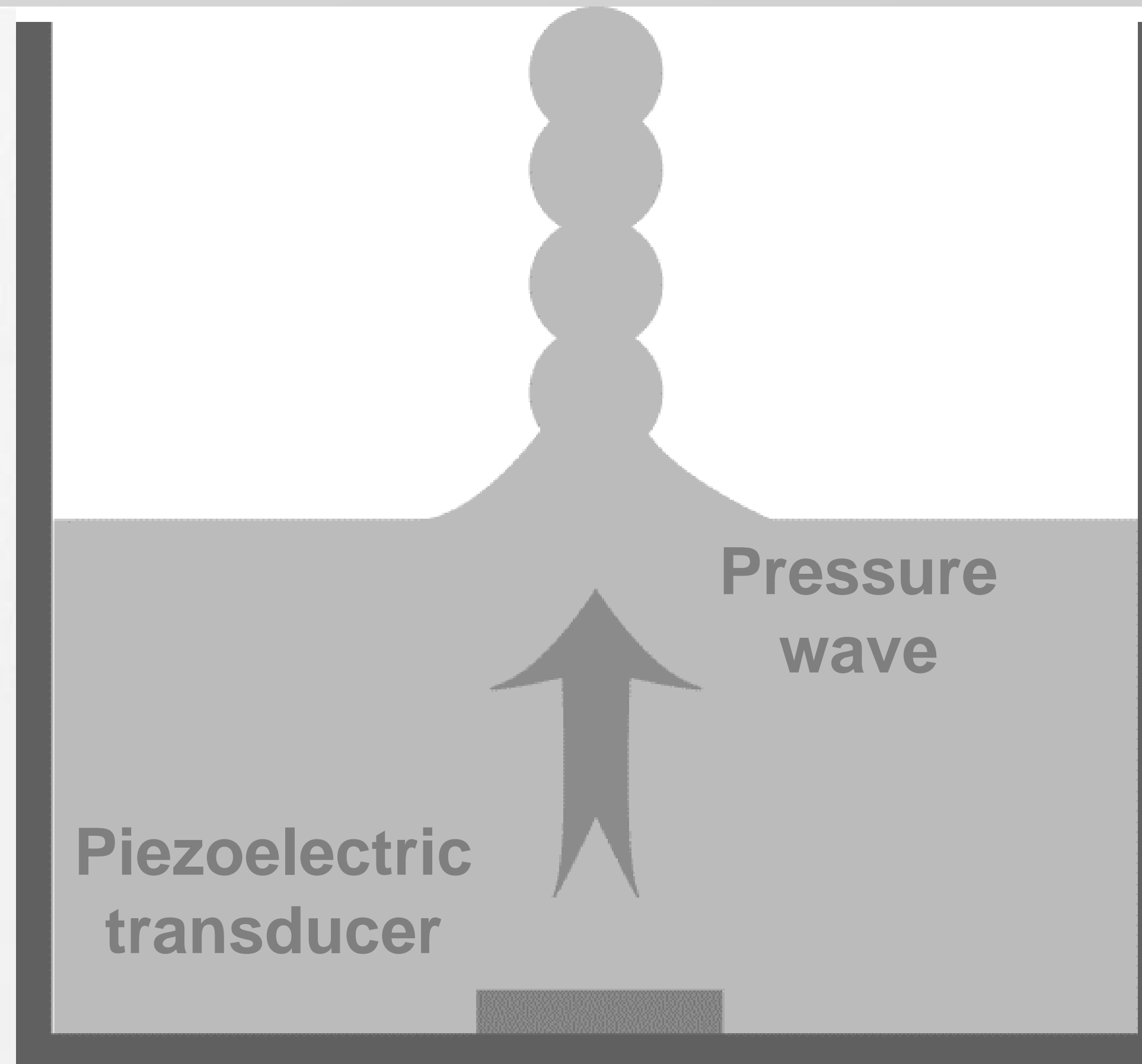
Seong Jin Kim¹, Minsu Jang², Soong Ho Um² and Sunghwan Jung¹

¹ Biomedical Engineering and Mechanics, Virginia Tech
² School of Chemical Engineering, Sungkyunkwan University

How does a humidifier work?

A humidifier makes our room humid by emitting mist through cavitation processes, which is generated by a submerged piezoelectric transducer. In this poster, we simply use a commercial cool mist humidifier (VUL520, Vicks). Shortly after the humidifier is turned on, a rising fluid column appears to form a string of fluid pearls.

In the very beginning, a fluid hill forms and then tiny fluid bulbs are created by the concentrated pressure wave at the tip of the fluid hill. As time passes, fluid pearls get accumulated on the top of the string of fluid pearls. Finally, cavitation emits mist at various locations.



Voltage : 18 mV
Frequency : 2.8 MHz

Accumulating
fluid pearls
on the top

1 mm

Emitting
mist cloud

1 mm

1 mm

$t = t_0$

$t_0 + 8.9 \text{ ms}$

$t_0 + 20 \text{ ms}$

1 mm