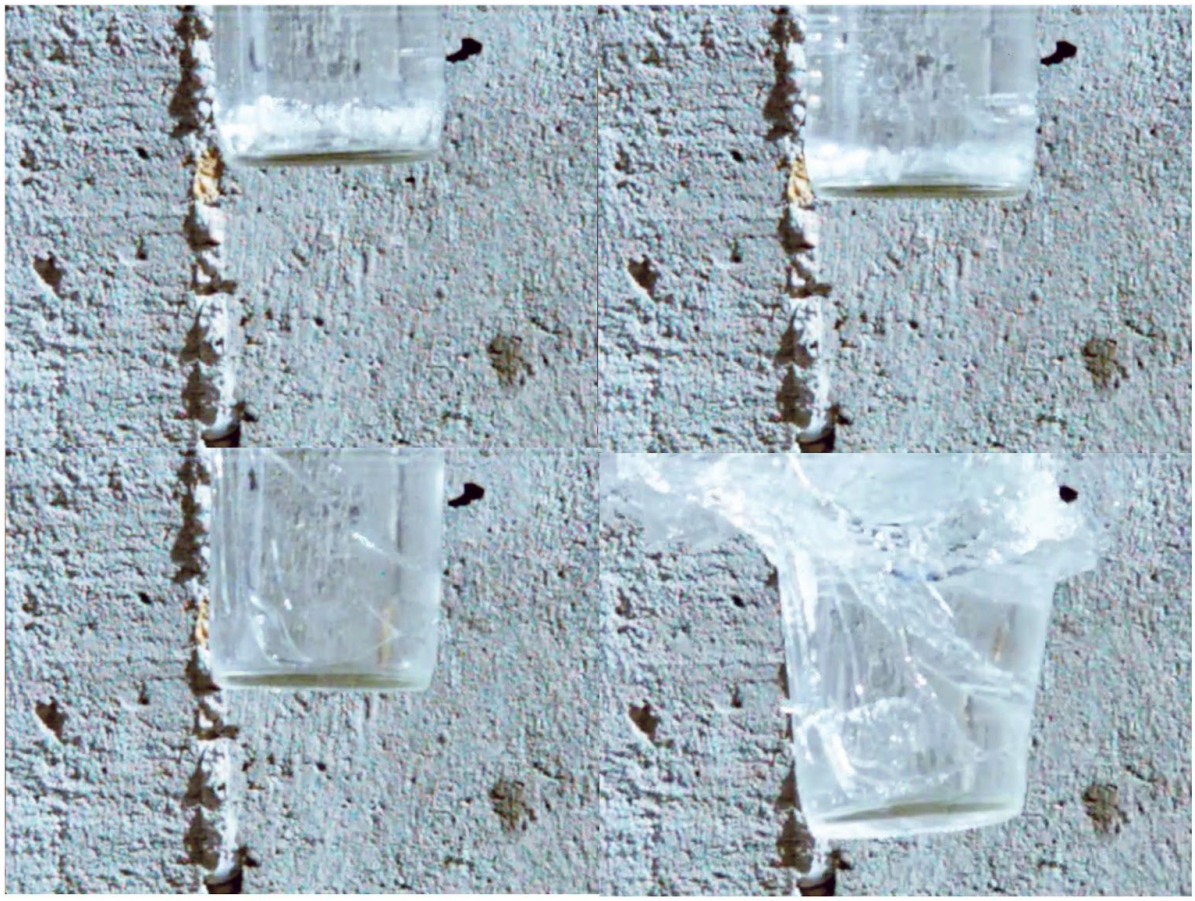


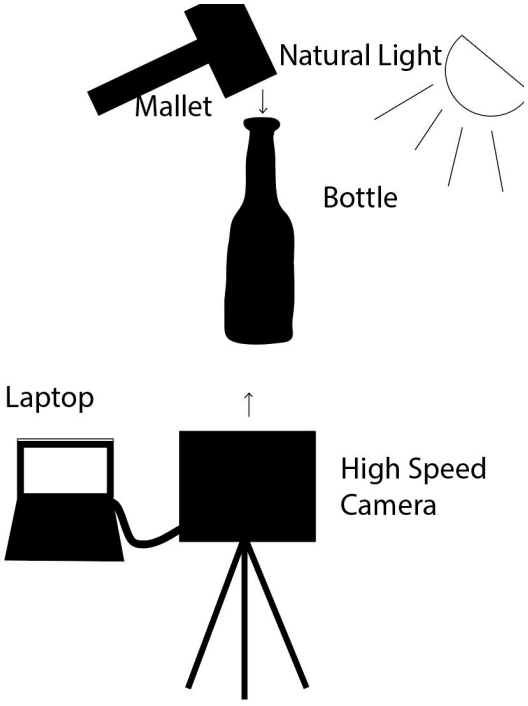
Anna Lynton
Team Second
Flow Visualization
November 12, 2018

PHYSICS

This image is an example of cavitation. Pressure changes are what cause the bottle the break. The mallet does not shatter the bottle at the top. Instead, as the bottle moved downward, the pressure of the liquid at the bottom drops below the vapor pressure. This creates vapor cavities. As the pressure returns to normal, these vapor cavities collapse. The force of these bubble rapidly collapsing is what breaks the bottom of the bottle.

SET UP

We began by getting the bottle in frame and focused. We then triggered the camera.The bottle was smashed using a rubber mallet. We had one team member wear gloved and hold the neck of the bottle and then hit the top of the bottle with the rubber mallet. This allowed us to capture the whole process, from hitting the bottle, to the bottle shattering, to the water falling to the ground. We did this experiment outside in front of a cement wall. This gave us excellent lighting and easy clean up. We used a high speed camera to capture this flow.



POST PROCESSING AND ARTISTIC INTENT

My image is composed of four screen shots from the video created by the high speed camera. I cropped each image, increase the contrast, and brighten each image. I also sharpen the

images, as they were blurry due to the fact they came from a video. I decided to create the series of images rather than a video because it shows each of the stages of cavitation more clearly.

SOURCES

Encyclopedia Britannica. (2018). *Cavitation* | *physics*. [online] Available at: https://www.britannica.com/science/cavitation [Accessed 13 Nov. 2018].