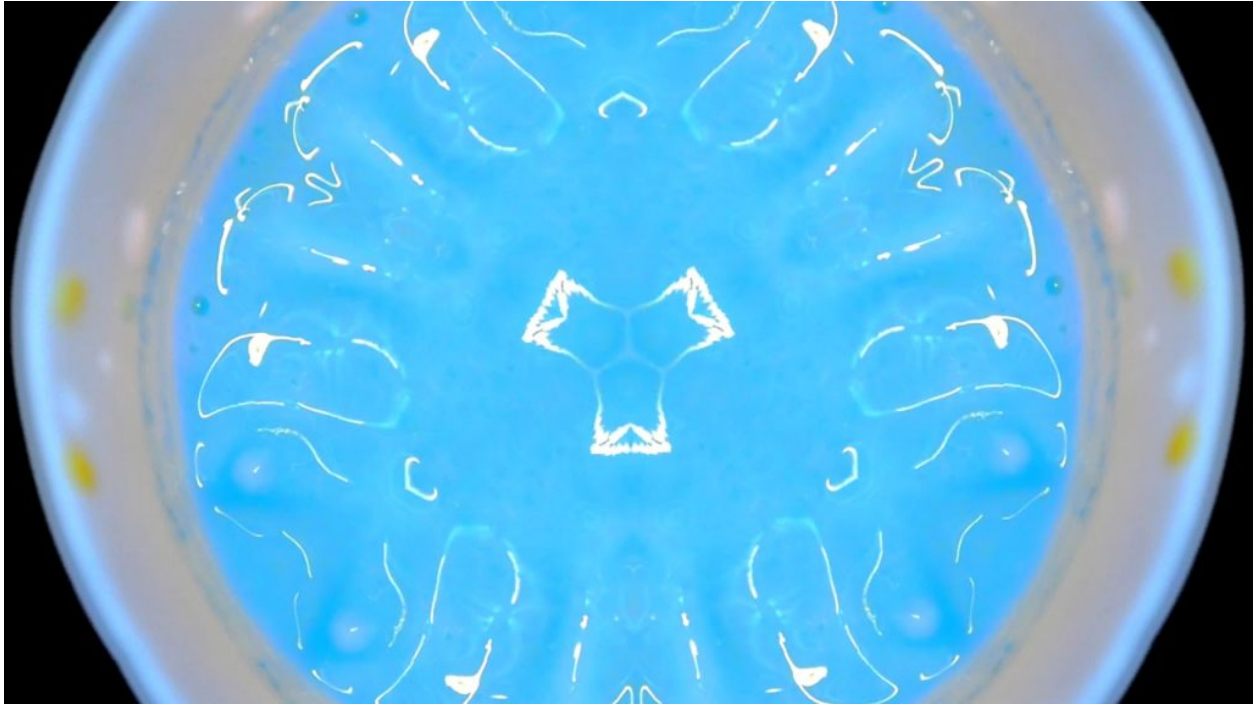


IV3 REPORT



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Flow Visualization - CINE 4200

12/5/2020

I. EXPERIMENT PURPOSE

The purpose of this video was to capture the effect of sound vibration on liquids or more commonly known as Cymatics patterns. A very thick liquid was used which consisted of mainly milk and some turmeric for coloring and wings hot sauce to thicken the liquid and make it more viscous.

II. THE VISUALIZATION TECHNIQUE

A speaker with built-in woofer was used to generate the vibration. Then a plastic cup was adhered using a plastic bridge to the speaker woofer part. In order to achieve the optimal cymatics fluid dynamics. I connect my phone to the speaker and play pure wavelengths and adjusted them until I got the right amount of Hz which was around 90Hz.

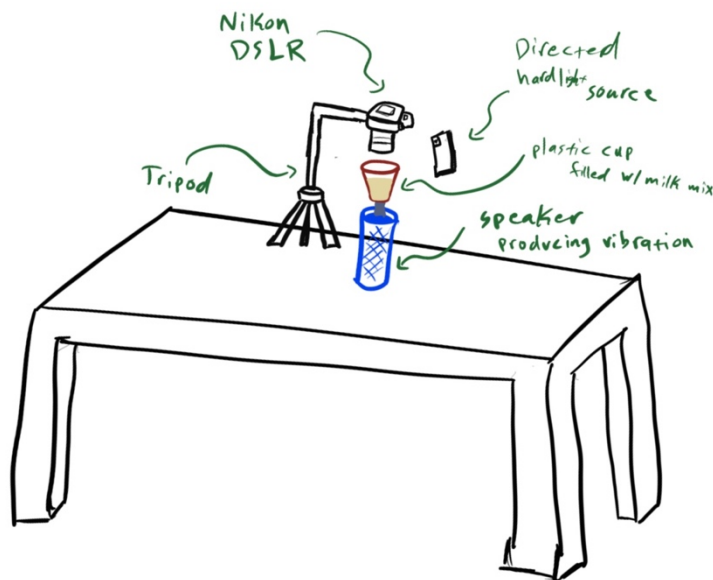


Figure 1: Experiment setup

III. THE FLUID MECHANICS

In order to achieve this fluid phenomena and capture it. I had to produce sinusoidal sound waves through the liquid which is governed by the following equation:

$$f(t) = A\cos(\omega t + \phi)$$

Where A is the amplitude of the oscillation, ω is the frequency, and ϕ is the phase shift.¹ So I played with these variables until I found the optimal sinusoidal oscillation for the viscosity of the liquid I am using which had the the following values: $A= 0.3$, $\omega=80$ Hz , and $\phi=0$

IV. PHOTOGRAPHIC TECHNIQUE

A Nikon D3100 DSLR Camera was used to capture the experiment video. The camera was placed on a tripod and about 6 in away from the object. The lens used was AF-S DX VR Zoom-Nikkor 18-55mm f/3.5-5.6G. The post processing was done in photoshop and involved adjusting the color scheme to give the video the vibrant blue look, the sharpness, and cropping. Another major editing was the addition of kaleidoscope effect which gave the video the symmetrical effect it had.

V. CONCLUSION

The video was way out of my comfort zone mainly because I have never done video editing like this before. I love the final look I came up with and I feel it has its own aesthetic appeal. What I would love exploring is having the same set up but using liquids with different viscosities. I feel that I fulfilled my intent of this experiment and I am very satisfied on how it turned out.

VI. REFERENCES

- 1- <http://fourier.eng.hmc.edu/e84/lectures/ch3/node3.html>