

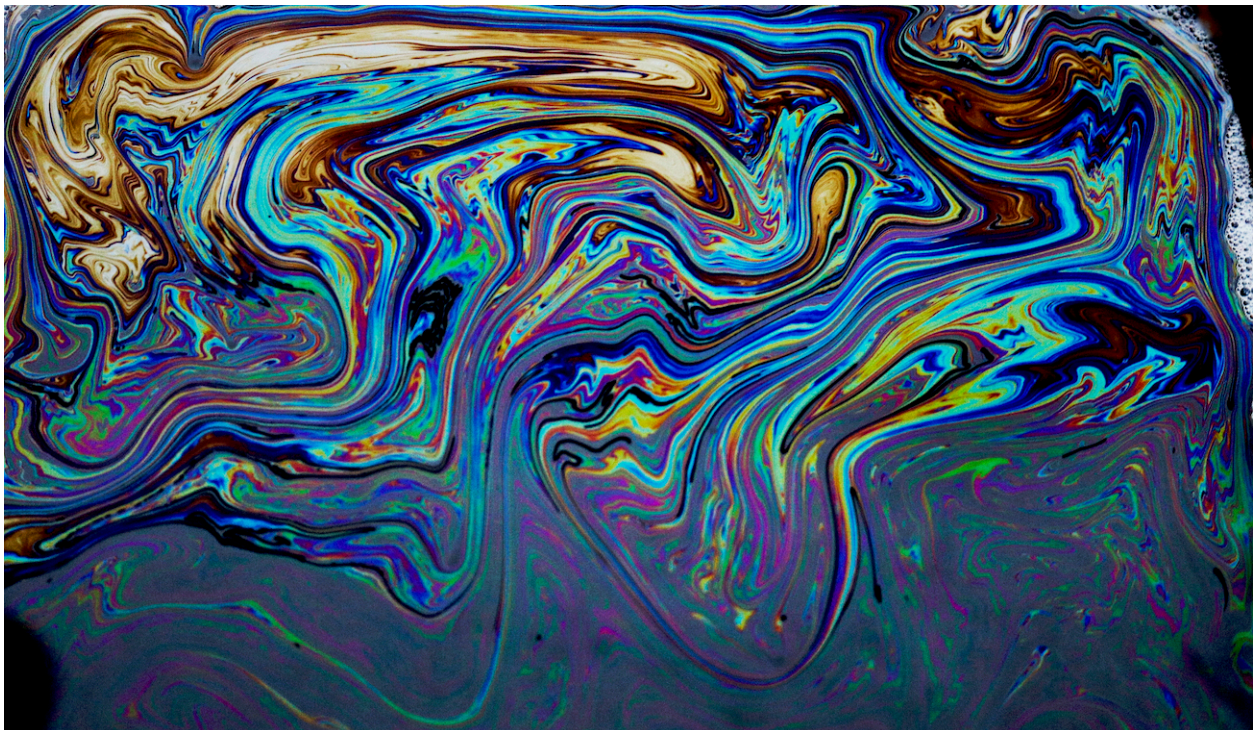
Team Third Image Write Up

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The purpose of this image was to capture an image for the Team Third Assignment. The intent of the image was to photograph soap film colors. When a thin film is exposed to sunlight, as the light passes through different thicknesses of the film, different colors appear on the film. It was challenging to have the film to stay in contact long enough to take pictures along with having the right angle to have the optimal amount of colors. Nevertheless, we were able to take impressive soap film images.

The soap film mixture was made in a cookie sheet by mixing water, dish soap, and sugar. According to Weatherscapes, adding sugar lengthens the lifespan of the soap film. [1] A coat hanger was bent into a rectangular shape and placed in the mixture. The coat hanger was then gently removed from the mixture forming a thin film in the gap of the coat hanger. The setup was outdoors because natural light was needed for the best results. Figure 1 shows a block diagram of the set up.

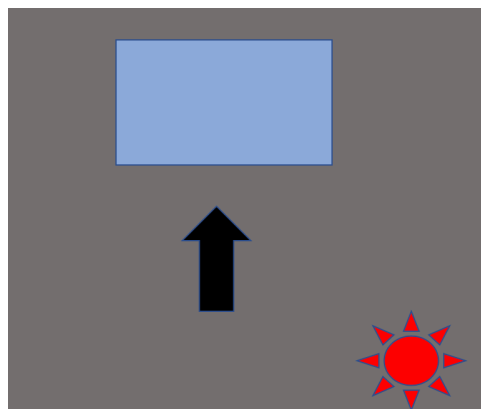


Figure 1: A block diagram of the setup.

The blue rectangle represents the coat hanger with the soap film. This was held by one of the team members at a 45-degree angle. The sun was starting to set behind the setup, however it was an overcast day, so the light was not coming from a point source. The black arrow was where the camera was oriented. The camera was slightly above the soap film looking down.

Colors are generated by the soap film based on the thickness of the film. Films ranging from 0- 1500 nm, when exposed to light, will be colored. [2] Figure 2 shows the expected colors from a soap film based on the thickness.

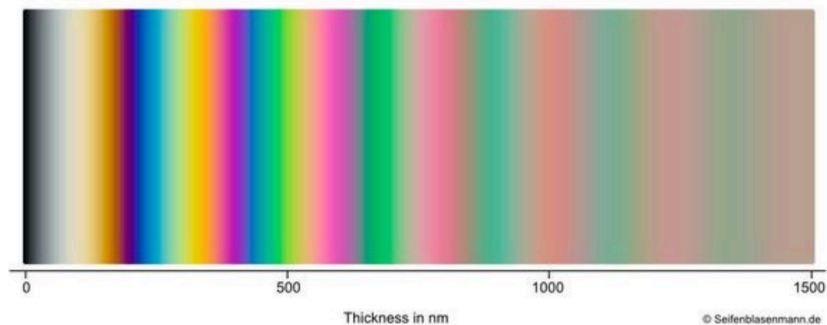


Figure 2: Soap film colors based on the thickness of the soap film. [2]

From Figure 2 it can be estimated that the top two thirds of the photographed soap film had a thickness ranging from 0- 500 nm. The top of the film is whiter and therefore thinner because gravity pulls the filament towards the bottom. Another reason for the variable thickness was the wind outside seemed to stir up the soap film therefore mixing the colors.

The coat hanger was roughly six inches across, and the field of view was also six inches across. The object was roughly three feet away from the lens. The focal length of the lens was 32 mm. I used a Cannon T6i Rebel. The original and final image width and height was 6000 x 4000 and 4935 x 2878 respectively. The aperture, shutter speed, and ISO settings were f/5, 1/80, and 800 respectively. Figure 3 shows the image before post-processing.

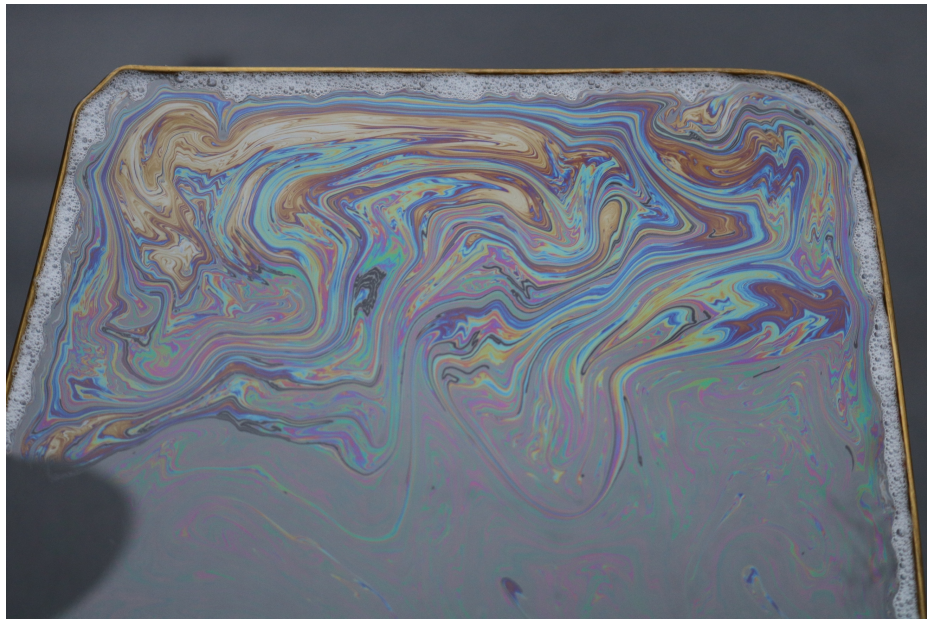


Figure 3: The original image before post-processing.

For post-processing, I cropped the image to remove some of the background, used the clone stamp to remove the coat hanger wire that was in the upper corner of the image, and I increased the saturation of the colors. Overall, I wanted to colors to speak for themselves, so I did not want to drastically change the colors.

The image clearly reveals the colors due to variable soap film thickness. I really like how vibrant the colors are along with how they are mixed. I dislike how the bottom third does not have as many colors as the top two thirds. I could have cropped out the bottom third, but I did not want to crop out some of the streaks that move into the bottom third. A question that arose was after a minute or so, the colors would stop mixing and the film appeared to solidify. Why would the film solidify after some amount of time? Overall, I fulfilled my intent, and going forward it would be interesting to experiment with various artificial light sources and see how the patterns would differ if at all.

References

1. Photographing soap film colors. (n.d.). Retrieved December 14, 2018, from http://www.weatherscapes.com/techniques.php?cat=miscellaneous&page=soap_films
2. Color and Film Thickness. (n.d.). Retrieved December 14, 2018, from http://soapbubble.wikia.com/wiki/Color_and_Film_Thickness