

This assignment focuses on observing and documenting a bubble and its applicable fluid physics. We intended for our image to show a soap bubble that was both aesthetically pleasing as well as demonstrative of fluid physics.

The project only required the use of Dawn hand soap, a thick rope, an aluminum rod, and some imagination. Therefore, the visualization technique was fairly simple. No flash or additional camera features were used, as it was outside under natural lighting. The light levels, being early in the morning were low compared to laboratory conditions.

This image incorporates the following technical specifications, flow descriptions, and necessary comprehensive values:

- A Nikon N70 film camera was used with shutter speed of 1/400 second.
- The aperture was set at 1/8
- The film used was Kodak 100 Gold, with an ISO setting of 100. The lens is 55mm.
- Shutter Speed Value: 400
- Aperture Value: 8
- Focal Length: 55
- Time resolution: During this picture the bubble was generated by one of our group members by holding the rope, in the form of a circle, and allowing the wind to expand the soapy water into a bubble. The wind was blowing at around 1 m/s, and the bubble expanded in about 2 seconds. The subject was about .5 meters away from the lens. With the shutter speed set relatively high, the image was time resolved.

While the bubble was easy to make, it was hard to capture on film. We took a roll and a half of film and the image you see was the best of all the images. We did do some manipulation in Photoshop to remove some of the background spots we felt would distract from the image. It was fun playing with the bubbles and creating many images, but we still feel as if our final image does not fully capture the extent of our scientific work.

The bubble was approximately two feet in diameter at the base and only lasted around 4 seconds before the environment destroyed it. (Note: the bubble expanded to its full size in around 2 seconds) Just like the work produced by the Scottish artist on the film we watched in class, our bubble was very ephemeral. The bonds that hold the bubble's form were only strong enough to withstand the four seconds of expansion before the forces of wind and gravity overcame the dwindling bond strength. We noticed that as the bubble grew larger, the walls got inherently thinner, and this reduced structure was the cause of

many of our bubbles failures. The colors of the bubble, which were very beautiful, (and unfortunately not captured on film) were caused by light waves reflecting and bending off of the different layers of the bubbles surface. Our original goal was partly fulfilled.