Aaron Porras

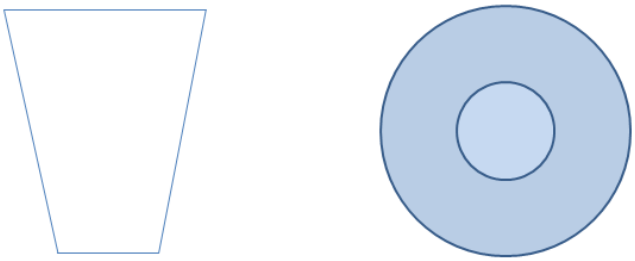
MCEN 4151

Professor Hertzberg

"Get Wet"

The purpose of this image was to use our imagination and experiment with different fluids in order to create our first flow visualization image. My focus was to capture a unique angle of two different fluids in order to create a beautiful demonstration of fluid flow. I chose to use water and honey because their viscosities are very different. I was curious to see the two fluids would interact with each other. Additionally, I wanted to showcase how beautiful fluid flows can be captured with every day household items.

The setting for the picture was created by dripping honey down the sides of a contoured glass, similar to the figure below, which was then filled with water. The glass is 10 inches tall and has some designs carved into the side. The top diameter is about 4.5inches and the bottom diameter is about 2.5 inches. The water adds some magnifying effects and also makes some interesting reflections with design in the glass. The honey was placed with radial symmetry for aesthetic purposes. It gives the image a unique look that lets the viewer delve into their imagination to figure out what the image really is.



(side view) (top view)

The biggest physical phenomenon with this image deals with viscosity. Viscosity of a fluid is a measure of the resistance to gradual deformation by shear or tensile stress (Viscosity). The honey was dripped at the top edge of the glass and the force of gravity pulls it down the side of glass. Since it has a much higher viscosity than water it is slowly dripped down the side instead of conforming to the shape of the glass like the water did. In this image, I waited until streams were close to the bottom of the glass. The viscosity of water is 1 centipoise and the viscosity of honey is around an average of 10,000 centipoise (Viscosity Tables). If set long enough, the honey will eventually come to rest similar to the water.

The angle that this photo was taken was directly overhead about 6 inches from the surface of the fluid. The reason for this was to try and create a tunneling effect with the long streams of honey in conjunction with the shape of the glass and the white background. It was taken during the day in the kitchen so the lighting indirect from the sun and kitchen lights. Finally, the image was cropped so only the top of the water and honey could be seen. This reinforces the idea that the viewer can use their imagination to determine what they are looking at.

I chose to do a close up overhead shot to capture as much of the honey flow as possible, while maintaining symmetry of the image. It was taken using a Sony Cyber Shot DSC HX30v, which is just a normal point and shoot camera. The final image is 3672x4896 pixels. Unfortunately, the aperture, shutter speed and ISO were not recorded by the camera for this photo. There was no other processing besides the cropping, which was done in GIMP.

Overall, I am very satisfied with the final image. It displays great symmetry and the angle and field of view allow the viewer to use their imagination to depict what kind of fluids make the. It shows a good contrast of different viscosities of fluids and how two different fluids can exist and interact. The feedback I got from my classmates was good and most people commented on the things I was trying to achieve with this image. In the future, I might consider using more color in the image whether it is background color, dyeing of the fluid, or adding color using software.

Works Cited

Wikipedia contributors. "Viscosity." *Wikipedia, The Free Encyclopedia*. Wikipedia, The Free Encyclopedia, 6 Feb. 2013. Web. 10 Feb. 2013. http://en.wikipedia.org/wiki/Viscosity

Viscosity Tables. *V&P Scientific, Inc.: Innovators of Liquid Handling, Arraying, and Mixing.* 10 Feb. 2013. http://www.vp-scientific.com/Viscosity_Tables.htm