

Brody Rosch

2026 Get Wet

MCEN 4151-001

Sunday 20, 2026

2026 Get Wet Report

This image was taken for my first main assignment of Flow Visualization. It shows the flow of honey dripping off a cup and lit by natural light. The intent of this image was to get introduced to the flow visualization photography world and take a clear picture using my camera of something that I wouldn't normally see. This assignment was meant to be an introduction to the course which focuses on demonstrating fluid motion through photography and videography. This was my goal with this first picture.



Figure 1: Original unedited Get Wet image.



Figure 2: Final edit of Get Wet image.

The setup for the image was very simple, using only the cup and natural light to create my apparatus. It only shows the honey flowing over the edge of the bottom of the cup as I tilted it towards the camera. The only forces acting on the fluid are pull of gravity downward, the viscous forces within the honey keeping it together in a tight column as shown, and the friction forces between the honey and the glass, which only slowed the motion down. The resolution time was manageable as honey moves slowly, but capturing something more interesting happening can be difficult because it can still happen quickly and pass if you're not ready. The spatial resolution was also manageable with a DSLR camera, as the focus was able to put the honey as the main object of the photo, leaving the glass, and the background in decreasing focus, which worked out well in the image.

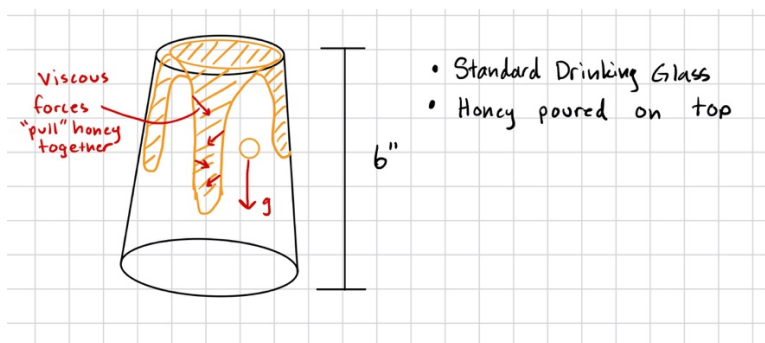


Figure 3: Sketch of photograph apparatus.

For this analysis, I chose to calculate the Reynolds number to show the laminar nature of the fluid. Honey is a very viscous fluid based on the amount of sugar concentration and low water content, which is what makes it move the way it does [1] When calculating this number, the required variables are density ρ , a characteristic length L , an average velocity v , and dynamic viscosity μ [2]. For this image the characteristic length I used was about 3 inches (0.0762 meters) which was around half of the cup length, the velocity was about 0.01542 meters per second as the honey was dripping to around half of the cup length in around 5 seconds. The density of honey is around 1420 kilograms per meter cubed, and the dynamic viscosity is around 10 pascal seconds. Using these values, we can find the Reynolds number for the honey shown in the image.

$$Re = \frac{\rho v L}{\mu} = \frac{1420 \frac{kg}{m^3} * 0.01542 \frac{m}{s} * 0.0762m}{10 Pa * s} = 0.165$$

A Reynolds number under ~2300 is laminar, and we clearly 0.165 is far below this threshold which shows how smoothly the honey is flowing in this image, and how it is extremely laminar.

To make this picture I only used natural light from my window, and honey from my cabinet. I simply poured the honey on the cup and held the cup in different positions while taking pictures. I was trying to get the honey to demonstrate an interesting fluid flow which is why I kept moving the cup around as I was taking pictures. The lighting was bright and close to the honey which made for the image to be bright and well exposed. I would say that recreating this image or one very similar would be very feasible for most people.

For this image I was very close to the object because it allowed for the most focus. I was around 3-5 inches from the honey during the entire shoot, and it was taken on a DSLR Canon EOS Rebel T2i. The picture was taken with a 58-millimeter focal length lens, with an aperture of f5.6, a shutter speed of 1/80, and an ISO100. The original image was 5184x3456 pixels, and the edited final image was 4046x2472 pixels. This was because I was shooting with my images saving as JPEG, and when I saved them, it got compressed slightly. This was a learning moment, to shoot with RAW image files for better editing potential.

I think this image reveals a successful demonstration of honey flow, especially in the laminar aspect of the flow. Laminar flow is what's expected from honey, and it being shown here in that way is effective with the lighting and editing. I like this image because it has interesting colors and shows the bubbles in the honey which make for a pleasing picture. I think fluid physics are shown well as the laminar nature of honey is highlighted. I feel that I fulfilled my intent with this picture, although I think it could be improved by showing more streams of honey or by adding some sort of mixing aspect to the flow. I think this would simply make the image more interesting which could alone make for another excellent flow visualization. I think I could also improve in my postprocessing, especially in color editing. I think the crop here is great, but I

could highlight the interesting parts of the picture better with a better understanding of color editing in Dark table.

References

- [1] Jambo Asali (2025) <https://jamboasali.com/the-golden-science-of-honey-understanding-honeys-viscosity-fluidity-and-crystallization/>
- [2] SimScale (2026) <https://www.simscale.com/docs/simwiki/numerics-background/what-is-the-reynolds-number/>