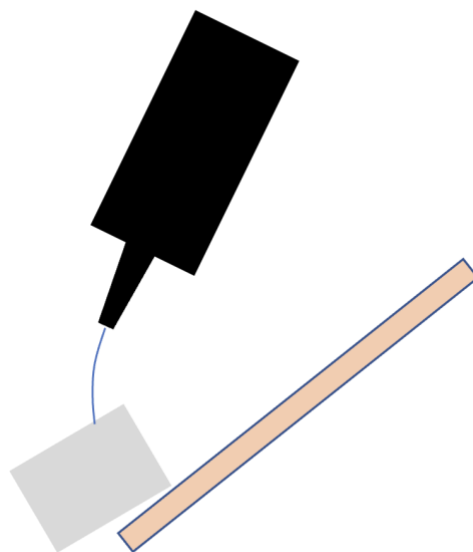


Benjamin Carnicelli IV1 / Get Wet report 9/28

This image was taken in the hopes of illustrating both the randomness and chaos in flow paths and light diffraction techniques. At first, I attempted to pour warm water over several clear ice cubes and have the water flow over multiple blocks creating a sort of fountain or sculpture look. Due to the randomness of water flow and surface tension this affect was not possible to achieve.

The image setup is sketched below. The first step in the process was creating clear ice to be able to illustrate diffraction and reflection. The way I created clear ice was to take warm water (slightly over room temp using the warm spout on the sink) and filling up a cooler with it. I then placed this cooler in the freezer with the top open and waited between 18 and 24 hours for it to freeze. The reason this works is that the water freezes from the top down due to the insulated sides and doesn't allow air to be trapped in the ice as it freezes. By pulling out the block before it freezes to the bottom there is no air trapped in the ice and it becomes very clear. The next step was to boil water and fill a bottle with a quick pour spout with the boiling water. I then propped a cutting board against the wall and placed a cube of ice on it and poured the warm water over the cube. The cube used in this image started at roughly 3 by 3 inches but melted slightly as the experiment progressed. This was likely all laminar flow. The quick pour spout used on the bottle ensures laminar flow out of the bottle and the smooth surface and low pour height means that there were little factors that would induce turbulence.



After the experiment was completed the image was taken against a different background. Because the cutting board did not give a continuous appealing background, I draped a black apron over it and took the photos against that. The benefit of using ice was that I could move the block and position it in a way that would look best and show the flow paths. This was then lit with a desk lamp from just behind the camera and an overhead light.

The overall field of view here is roughly 8 by 6 inches as I feel it captured the cube and framed it well. The cube was then placed roughly 15 inches from the lens of the camera

as this provided the best size of field while focusing well. This was captured at 25mm with an ISO of 360, a shutter speed of 1/60 and f/4. All of this was done on a Nikon D7000 with an 18-55mm Nikkor lens. The original image was 4928×3264 pixels. Post processing included color corrections and some background manipulation to create a more uniform and dark background.

This image shows the different paths that the flow of fluid took as it melded the ice cube. I really like that you can see that there was a path in the top left that's a little bit smaller than the other two because as the cube melted, flow stopped passing through that path. It's also really interesting that you can't really see the actual flow paths very well due to the reflection and refraction in the ice. The natural curves and angles in the ice and the light reflecting off of them make it really interesting to look at and try to interpret the geometry of the cube. Originally, I was hoping to capture the random flow paths and a little bit of a longer path instead of the refraction effect that I ended up getting. The original intent was to get a video of the ice melting and the flow changing as the ice melts, but I found this to be too difficult to complete by myself. In the future it could be more interesting to get the lighting and camera setups right prior to melting ice and then take a video of the ice being melted. If I did this I would also probably try to set something up that sets a continuous, slow flow that could be constant and not done by hand.