

For our group project we were initially trying to visualize the bouncing jet phenomena. This occurs when a jet of a heavier liquid enters a spinning pool of the same liquid. The jet enters the pool curves back up and shoots out of the pool. We were able to capture the phenomena using mineral oil in a cylinder about 6" in diameter. Once we had the jet on video, I wanted to play with some colored oil and see if we could make any interesting patterns in the oil.

We had the 6" plastic cylinder spinning in the middle of an old turntable filled about 3 quarters of the way with mineral oil. I took a pop bottle with a hole poked in it (which we were using to get the initial jet) and shook about 8 drops of food coloring into about 8 oz of oil. At first we tried to capture another bouncing jet with the colored oil. Either the addition of the food coloring made the phenomena less likely to occur or we just didn't hit the right angles, but a colored jet was not happening. We then just shot the jet a deep into the pool as we could. The color just slowly worked its way down in what was mostly a blob of color; although it looked pretty cool, I wanted to make it a little more interesting. I then filled a pop bottle with water and added several drops of red food coloring. I shot the jet into the pool of oil until the cylinder was about to overflow. The jet of red water added a lot more turbulence, formed into bubbles in the oil and collected at the bottom of the cylinder.

We had one florescent light as well as two work lights on a stand behind the camera and above the turntable. Behind the turntable we had a large white poster board which reflected the lights well and provided a nice back light. We were working with a flip video camera which did not leave us with a lot of choices as far as field of view, exposure, focus, or frame rate/shutter speed. We did add a macro filter to the lens by wrapping it with masking tape and attaching it to the camera surrounding the lens. This allowed us a slightly closer image and closer focus. The camera was about 6 inches from the turntable on a tripod level with the middle of the cylinder. I put the original video we got from the flip into Final Cut and played with some filters. First I did a color correction filter in order to get the best contrast and most detail. Then I added a sharpen filter to try to get rid of some of the motion blur. In order to smooth out the image after the sharpen filter I added an anti alias filter. Finally I put a solarize filter on which inverts some of the colors and gives it something of a neon glow feel.

The video reveals the slow dissent of the colored oil as it mixes with the original pool as well as the turbulence that was created by adding a jet of water, which will not blend with the oil. I like the overall rhythm of the end image as well as the colors and textures. I feel like I lost some of the focus on the physics of the phenomena in making it look fun, but they are still quite visible. I would like to try this again with two different oils and see if I can send a jet into a spinning pool and have it leave a spiral line of color. If I did this again I would definitely use a camera that I have a little more control over.

