

**FLOW VIS GROUP REPORT 1**

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### **Introduction:**

The image taken was part of our first group project, as a team we were working on a ferrofluid experiment. I hoped to capture a side of ferrofluid that most people do not see. In order to do this, I intended to be creative while capturing the image and try different experiments with the set up and fluid itself. Something that caught my eye was the way the fluid would separate from its bonds and then attract quickly to the magnet that was present. So, with this idea I wanted to capture the ferrofluid moving through the oil to the magnet. In order to do this, I had the help of three teammates, Branden Goldenberg, Alexander Rosenberry, and Katherine Yarnell.

In order to take pictures of ferrofluid mixtures a device full of ferrofluid was acquired from the ITLL. The jars of ferrofluid were filled with an oil and isopropyl alcohol. Figure 1 shows the set up.

### **Setup:**

Taking pictures of the ferrofluid while the jars were in the jar structure was difficult, as a team we disassembled the project and took out the jars. Next we set up a lighting display using the overhead projector, a smaller projection system, and a flood light. We used a large piece of white paper as the backdrop. Figures 2 & 3 show this set up.

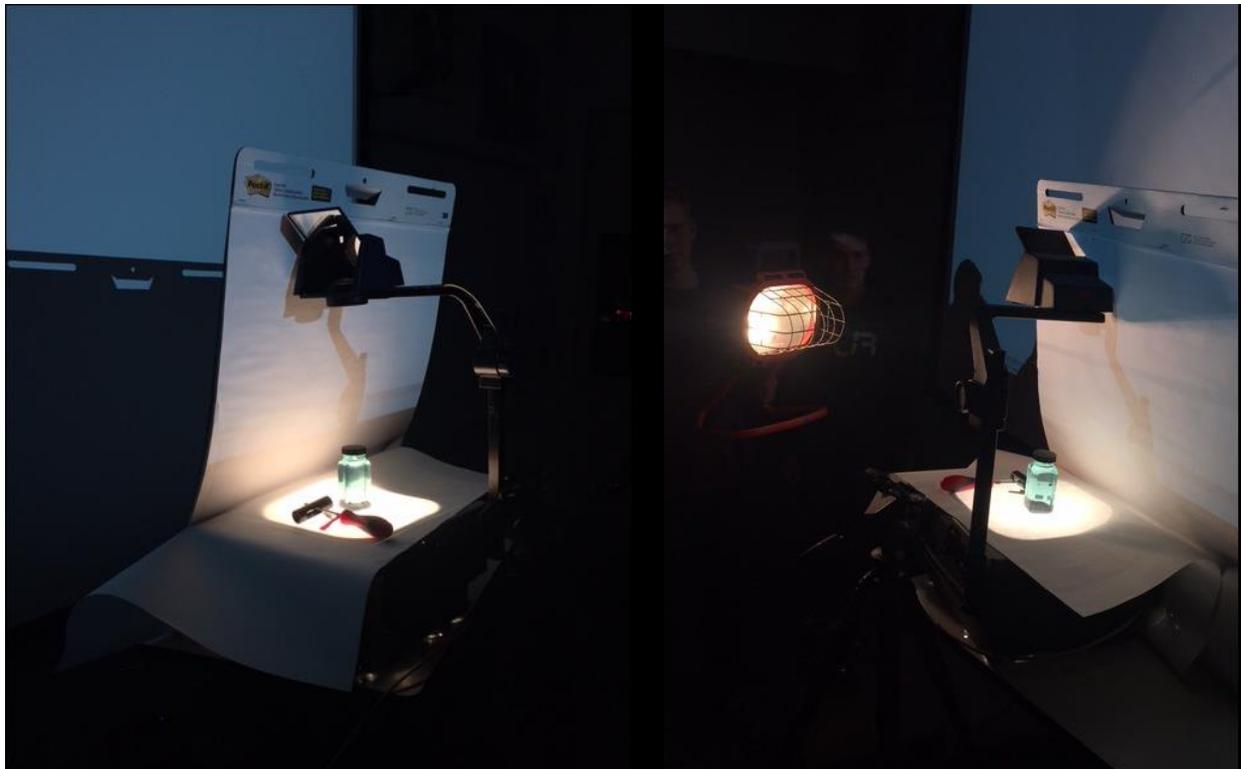


Figure 2:

Figure 3:

**Background:**

Ferrofluid is very interesting, in my final image, the black liquid contains nanoscale ferromagnetic particles. When a magnet is introduced to the system the fluid is pulled by the magnetic field. When the magnet is not introduced to the system the fluid behaves like a normal household fluid.

In order to capture the image, a teammate Branden Goldenberg slowly introduced the magnet to the system until the ferrofluid began to jump from the bottom of the jar to the magnet located further above the jar. While Branden was introducing the magnet Alex and Katherine held the lighting and backdrop steady. This resulted in my final image.

The image was taken with the following settings:

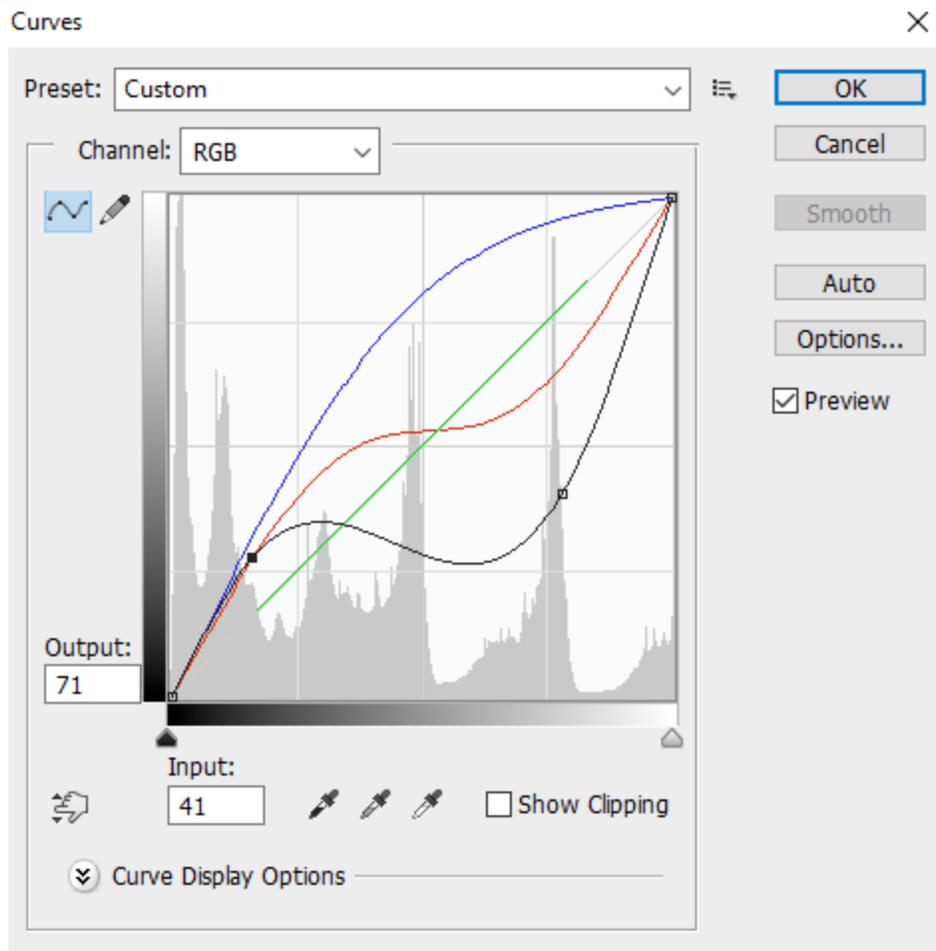
Shutter Speed = 1/500

F Stop = F8

ISO = 400

**Post Processing:**

In all honesty, I wasn't very happy with my image. Though I had accomplished the task of creating an image of a ferrofluid that isn't seen too often, the image was missing some flare. In order to jazz up the final image I used post processing to bring out the multiple layers within the oil and ferrofluid mixture. I used the curves tool in Adobe Acrobat Photoshop to play with the colors. Figure 4 shows the curves used in the final image.



I focused on pink because it created a cool blue tint encapsulating the ferrofluid itself. The brought out the blue and darker brown spots of the different densities within the image. Figure 5 shows the image before any post processing was done, compared to figure 6 which is the final product.



Figure 5: Before Edit



Figure 6: After Edit

In the future, I would have liked to have a different setup so that I wasn't competing with the glass of the jar so much. The image reveals ferrofluid in a different context, which is what I was hoping to do, however the image didn't come out crisp and I could have done a better job focusing on the fluid itself. If I was to redo this project, I would use a less thick glass that was cleaned for the photoshoot. I believe my intent was fulfilled but there are many areas to improve upon. The improvement starts with creating a better experiment set up, and changing the settings on the camera so I can really capture the crisp outline of the ferrofluid.