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ATLS 4151-001  
Sep 26, 2022

This was the first project and I wanted to capture colorful food dyes flowing through and coloring a tub of water. The intent was to capture the intersecting patterns of different colors of dye since food coloring has a very interesting diffusion pattern where it sort of falls into the water and leaves a trail behind it, spreading out at the same time. I hoped to capture different and unique patterns of the dyes so I used a method to get multiple colors flowing through the water simultaneously. The end result was a multi-layered collection of colorful tendrils and beads of dark pigment at the top

The food dye was suspended in droplet form in a thin layer of oil above the water so the release of the dye was gradual. Due to the higher density of the food coloring compared to the water, it begins falling through the water. This disparity also results in Raleigh-Taylor instabilities occurring where the two fluids meet, causing some of the dye to separate and rise away from the larger clump. Since the water I used was cold the diffusion happened slower and the droplets were able to fall faster and farther before starting to diffuse more heavily into the surrounding water, which also results in the vortices or big wide clumps you're able to see at the bottom of some of the larger dye tendrils. Since those clumps are flowing faster through the water there's more disturbance between the dye and the water, the dye ends up separating more violently as a vortex ring.

This effect was accomplished by first filling a container with cold water, then in a separate smaller container combining vegetable oil and different colors of food dye, as much or as little dye as you want, and about a quarter cup of oil. I used about 25 drops of food coloring for this image. The oil & dye solution was then mixed up to disperse the dye droplets evenly and poured carefully on top of the surface of the water. The picture was taken after many of the dye droplets had started to release from the layer of oil above. The shot was lit from above the camera at a 45 degree angle to the subject using studio-type lights mounted in the house, about 4 feet away.

The dimensions for the shot are approximately 8 in wide by 4 in tall, and the lens was about 18 inches from the subject. The shot was captured using a Canon Powershot S5 IS digital camera, its lens having a focal length of 38 mm. The image was taken in JPG format with the original dimensions of 3264x2448 px. The image was then cropped and edited to a 3262x1405 px PNG file. The image was taken with an f-stop of f/3.5, exposure time of 1/3th of a second, and ISO setting of 100. No flash was used for this image. The image's contrast and brightness

were adjusted, as well as the frame and size. An original image before edits can be found on Canvas.

Overall I really appreciate what I was able to capture in this image. The mix of swirling colors and instability patterns caused the fluid's interactions are interesting to look at, and the unexpected yellow background provides even more color to distinguish the different dyes against. In developing this idea further I think it would be good to examine closer shots to the individual dye streams and focus more on the instabilities arising while it's flowing through the water. I also think more effort could be taken to make the dye flow very slowly but still highlight the Raleigh-Taylor instability effects. The image was taken with an f-stop of  $f/5.6$ , exposure time of  $1/100$ th of a second, and ISO setting of 200. No flash was used for this image, the natural light coming into the room was abundant enough.