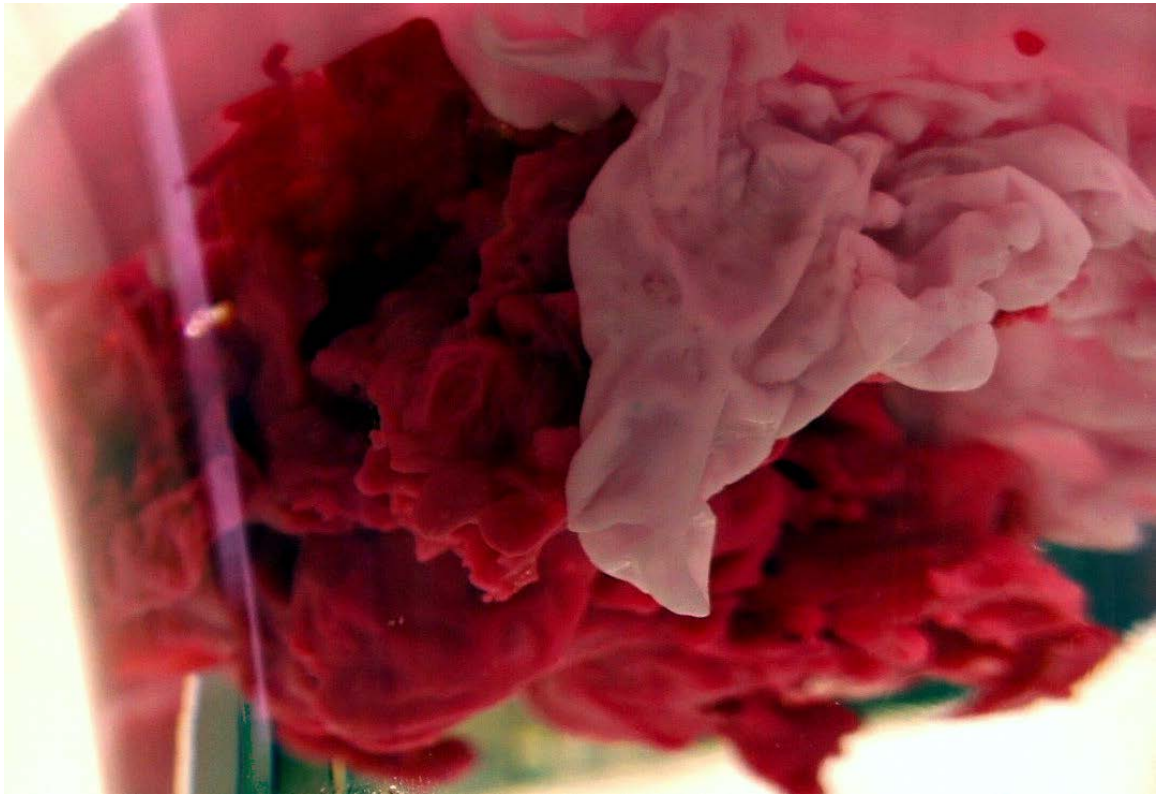


Hot Melted Wax in Cold Water

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Team 3 Photo



Team 3 Photo

Introduction

This image was taken for the third team photo. Due to time constraints with each of the team members, my team took photos and did our experiments separately. The experiment that I chose to perform was dropping hot wax in cold water. The wax used was melt-able wax blocks used for wall-plug devices. The waxes were different colors so that it could create contrast in the image. The water was cold so that it would capture the flow of the wax and “freeze” it as soon as possible. The flow of the wax formed similar to pouring other substances in to water. Because the wax was hardened shortly after reaching the cold water, the photos could be taken while the fluids were still. The wax is no longer moving in the photo.

About the Flow

The flow of the wax falling into water is similar to pouring other substances such as milk or food dye into water. However, the wax froze almost immediately. The wax was heated on the stove in a boiling pot of water in order to not apply direct heat to the wax and get it too hot. The wax was poured directly from the pan into the cold water. The pour was not kept constant since it was difficult to do with the hot wax. The photo used for this project was completely still. I attempted to take several photos while the wax was in motion, but because it was so hot, the camera captured a lot of motion blur. Therefore I decided to wait for the flow to stop in its place. Initially, the flow fell four or five inches below the surface of the water. It would then raise and form the shapes that are seen in the image. The clearest portions of the wax were the first ones poured. As the water cooled, the wax formed differently and would break up into very small beads.

Throughout the process, I had to replenish the water so that it was cold and the wax would freeze properly. The photo that was taken was during my third and final trial with the wax. In the photo it can be seen that the top layer of wax formed differently than the bottom. This is because the water had been slightly warmed from the hot wax and the wax at the top was not as solidified. The viscosity of the wax at 100 degrees Celsius is 3.0657¹.

Visual Technique

The wax was poured into a large vase, and example of which is shown in Figure 1. The first color of wax (red) was poured and allowed to set, then the second color (pink) was poured over and around it. I chose to do this so that you could see a contrast between the two colors and see the flows differently. I also believe it made the photo more aesthetically pleasing. It gave a floral aspect to the photo with the touch of green in the background, though the green was not intentionally there. A white sheet was hung in the background on the table and the wall behind. The lighting was fluorescent lights on the ceiling. The lights were about four feet above the top of the vase. A flash was attempted for several of the photos, though it was not used to take this image.



Figure 1: Vase used in experiment. Total height is 12 inches.

Photographic Technique

The camera used for this image was a Sony NEX-5. It is a DSLR camera, and a pancake lens was used to take the photo. The object was 6 inches from the lens. This distance was good because I was able to catch the edge of the glass as well. I used that as an aesthetic technique. The focal length of the lens was 21mm and the ISO was 200. An aperture of $f/4$ was used to create the appropriate depth of field to capture the flow. I wanted to capture the pink flow that is in the front of the photo. The flow was pressed to the glass and very easy to see. The shutter speed with this aperture was $1/40$. Since the flow was not in motion this shutter speed worked well. The original photo size is 1203x1088 pixels and the final image is 1071x738.

The photo was cropped and enhanced to begin the processing. I played around with the colors and tried inverting them. The final image was enhanced and cropped. I also lightened it in order to see the flow better. The two images are compared below in Figure 2 and Figure 3.



Figure 2: Raw Photo

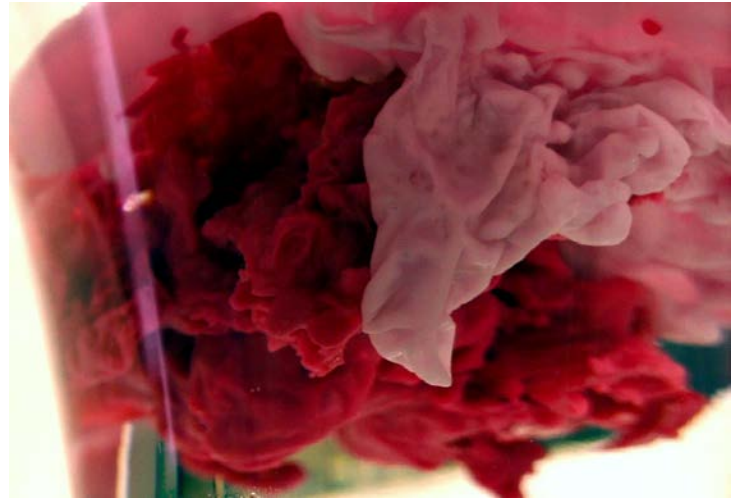


Figure 3: Final Photo

Conclusion

The image reveals how the viscosity of the wax falls into the water. I believe that the image captured it well. I do enjoy how clear the image is in the center. When capturing the photo, I liked that I did not have to capture the flow while it was in motion. However, I was disappointed in the final image capturing. This image provided the clearest flow. But there is a reflection on the glass and I was unable to remove it in post processing using Gimp. The side of the glass from which I took the photo also left some of the background that was not hidden by the sheet. I do believe that the image captured the phenomenon well and that the colors of the wax provided a beautiful image.

References

¹ "Paraffin Wax." *Viscopedia.com*. Viscopedia, n.d. Web. 11 Nov. 15.