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Dr. Sunberg

Flow Visualization - ATLS 4151

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Get Wet Report

In this class we are tasked with capturing the phenomenon of fluid flow. For this particular project, Get Wet, we just had to come up with an idea for a visually stunning image that we would capture to “get our feet wet” and introduce ourselves with getting good visuals from a flow. For this project I set out to capture the phenomenon of the flambé. I have worked in many kitchens and have always found it fascinating that these dishes light on fire, on purpose, and was curious why. By taking this image I intended to capture the feeling that cooking with literal fire like that feels like. I also had a friend help me light the flame so that I could operate the camera with both hands as this was a little dangerous for both me and my camera.

As shown in figure 1, this photo was taken top down, with the food and alcohol in a pan with a diameter around 11 inches on a stove which was set to high heat. About 30 seconds was allowed to pass after the alcohol (90 proof) was introduced, then being lit with a lighter, about half a foot above the pan. This flow is the evaporation of a flammable substance, turning it into a vapor, which is lit and travels back down and into the pan. The reason you can light the flow from the air instead of the pan is mainly due to the heat produced from the pan which heats the vapor and causes it to be less dense and rising. Even though the alcohol is being exposed to high

heat, it is not enough to break it down immediately, so it stays flammable for a while while it rises up.

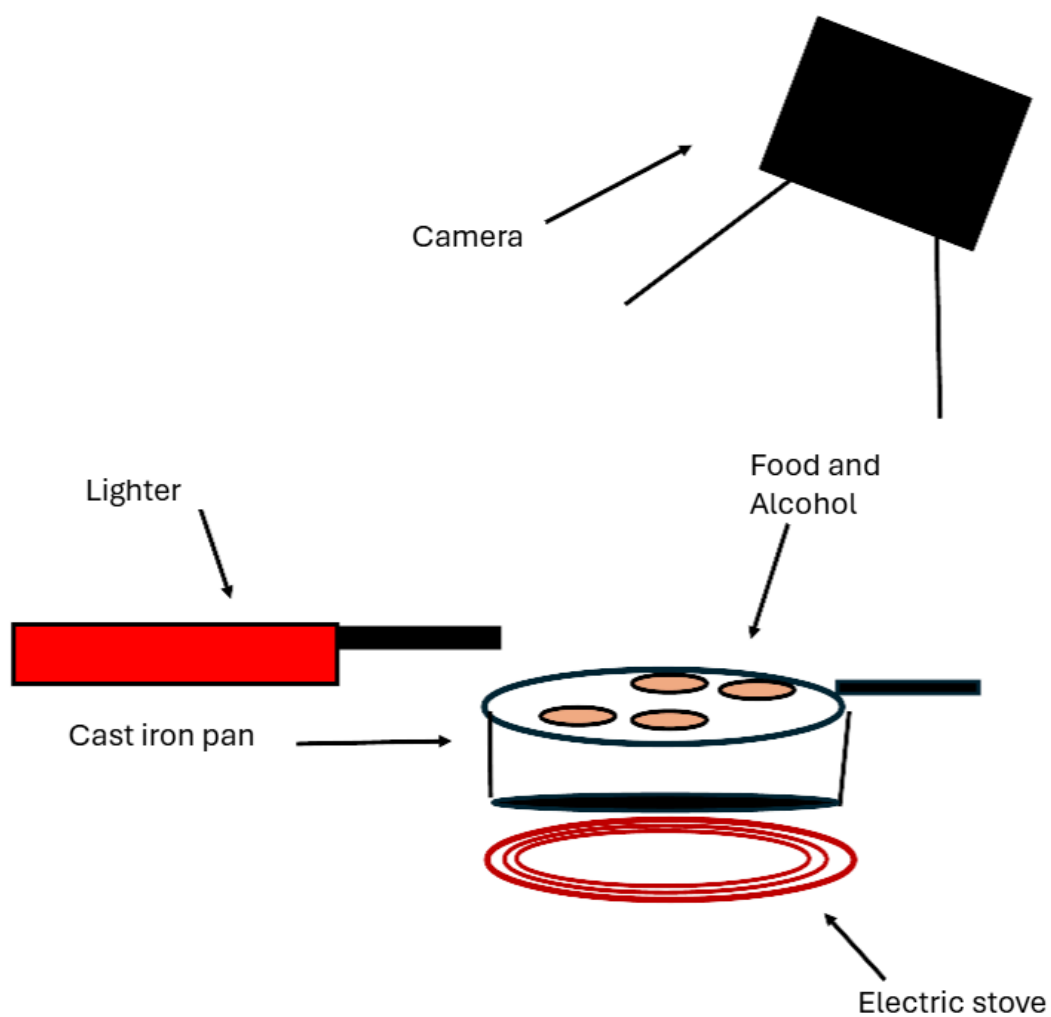


Figure 1: Apparatus

The visualization was a contrast made with fire in a dark space. I got most of the food, oil, butter, and alcohol from Safeway. By making the room really dark when I took the photo I

was able to isolate the flame and use the light it emitted to show the other parts of the photo, such as the food.

The pan was about 12 inches away from the camera. I brought the camera up as high as I could without touching my cooking hood, so that I could keep the lens away from fire and anything that might damage it. I used autofocus, because it was hard to get manual focus on the shot in time before the flame got too small to emit enough light to show what was happening. I used the manual zoom on the lens to get more of the pan in frame, with the end focal length of 18mm. The original image from the camera was 5472 X 3648 and the image post-processing was 2818 X 1843 this was shot on the Samsung NX 210, a digital, mirrorless camera. I shot with a really wide aperture to expose the camera to more light so the light given off by the flame was more visible in the other parts of the shot and it was F3.5 in my settings, I also increased the shutter speed so the wider aperture didn't cause any bleeding or streaks in my shot, I ended up with an exposure of 1/200 seconds. Since there isn't much light or color in my image, changing the color profile of the image didn't do much, however I found nice results in turning up the exposure and contrast as I could better see even the light hitting the wall, and the food below the flames.



Figure 2: before post-processing

This image shows the intensity of cooking in this manner. While it might seem very crude and dangerous at first, it is such an art and is very beautiful. This image exemplifies this. You can see the flames twisting upward toward the camera and this shows the air and alcohol vapor moving. I wonder how this experiment would have gone if I owned a gas stove instead of an electric one. This is a beautiful image and it shows how cooking is beautiful, and that was my intent, and I fulfilled it. I would like to find a way to have contrast like I have in this image, but also enough light to see the other parts of the image, like the food better, as I wasn't able to achieve this. I definitely would like to capture more combustion as it is very cool and applicable to our everyday life.