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Flow Visualization
Group Project #2

For the flow image I submitted, my main goal was to visualize and aerosol flow while simultaneously examining combustion in the same frame. I was trying to capture a flow image with just the light from the flame and minimal other lighting sources.

To create a flame aerosol flow I used a common can of hairspray ignited by a lighter two to three inches away from the flame. The pressurized flammable liquid was propelled from the can and ignited midstream by the flame from the lighter. The small particles from the stream ignited quickly then helping to ignite the larger ones. The flow of flame is then projected in the same way that the liquid flow was going.

For the visualization of this flow it seemed appropriate to take the image with a black background and the key light from the flame itself. I used a small backlight to help show the aerosol spray itself. By doing this it created a nice glow from the flame but also had enough backlight on the fluid to visualize this as well.

Because I was photographing in such low light I used a Canon 5D Mark II camera which has an amazing ability to capture low light images. The ISO was rated all the way up to 6400. Unfortunately there was still not enough light to capture the flames at a high shutter speed. I shot it at a 250^{th} of a second. This does create motion blur but I feel that this adds a better visualization to the flow just for the fact that you can see directionality. I was at a wide focal length of about 28mm and this is the exact equivalent to 35mm film camera because of the 5D's full frame sensor. I was almost wide open on the iris shooting at an F.4 because of the lowlight conditions. Even though this is a small depth of field I feel that the focus was quite accurate. I used very minor post manipulation with only boosting the contrast slightly.

I have always liked images that include the flow of fire and decided that this would be a very achievable image. I believe it shows both the flows of the flame and the flow of the aerosol as well.