

As an initial attempt to capture fluid motion, I have decided to share an image that I have captured of smoke in a laminar state. I experimented with several fluids and setups of different types, but found myself strongly attracted to results that I was able to capture with smoke. The type of image that I captured strongly resembles what images I had in mind when thinking of this class, I will go into more detail of this later.

Finding a location to capture this phenomenon was the first obstacle that needed to be overcome. With weather outside in fair condition, for a late January night, and under the protection of an overhang the conditions seemed to be perfect. The temperature outside this evening was approximately 25 degrees Fahrenheit and there was a slight breeze, less than a meter per second,



from the south to the north (right to left on Image 1). The size of the flow image captured is about 7 cm x 15 cm. The object placed approximately 20 cm from the camera lens. Flow was estimated at .2 meters per second. Flame diameter was 7mm at largest flame origin. Pure laminar flow is apparent for approximately 5 cm from the flame tip. Transitional flow exists for approximately 3-4 cm above laminar flow. The left most corner of the image shows turbulent flow emerging, but not completely chaotic. The Reynolds number for flow captured varies from 0 at the flame to just over 10,000 at the top left corner.

To create this image, I took a Q-tip, non-used, and dipped the head in green paint (Testors 1124 green). Knowing that the paint was flammable I expected to get a good burn from it but I was initially surprised by the amount of smoke that emerged during the burning. The smoke was thick and seemed as if it was the same entity as the flame. The black backdrop is due to my back yard. My camera had to be oriented vertically a few degrees to not have the flash show the wooden fence in the background. In the original picture the fence is not visible, however a street light in the mid-top-right corner is. As mentioned, the only lighting used was the flash from the camera. This was done to eliminate any shadows that may have appeared between layers of smoke. Light shining from the point of view will not allow any visible shadows.

To capture this image, I used a vintage Nikon Coolpix 3100 digital camera. The 3100 has 3.1 Mega pixels and had a maximum shutter speed of 1/3000 sec. The Aperture range is F2.8 - F4.9, but I did not find a way to configure these specs at all. The raw image captured was used almost as-is. Only small changes were done in photo-shop to complete the final image. All background was eliminated by painting it black and glow that was captured had been cut out as well. A glow had appeared in the original picture, I imagine due to the flash on the Q-tip, and as well as a glow around the fire.

I was very pleased with the outcome of this photo. When I enrolled in the class, I was very eager to capture laminar flow. I like the way that long laminar streams appear; to me they give of a peacefulness and sense of grace. Being able to capture the transition from fire to smoke became important after seeing the phenomenon occur because of a symbolism that took away from the image; the fire as strong and destructive as it is, has its fragile counterpart. The image itself left me slightly uneasy. The camera that I was using made me feel like I was cheating what was

happening. Digital photography allows the user to capture to the best of the camera's ability, film photography defines that the image captured is determined by the ability of the photographer. I set my image quality settings as high as possible and found that no matter how patient I was, I was getting as good as a picture as my camera could offer.