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IV 2 Report

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The picture shows the flow of a flame that is raised from burning oil perfume. The photo intends to study the idea of burning oil perfume. The result of burning oil perfume is a small flame. It is interesting to see how the flame made a small arc at the top.

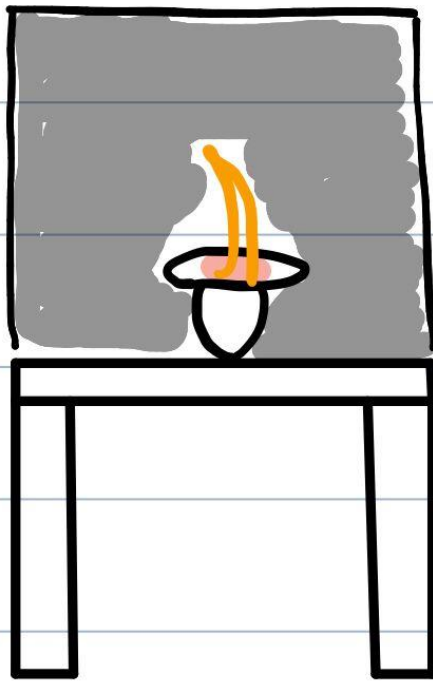


Fig.1 sketch for the setup

The set up of the picture was a serenity candle on a table, and oil perfume on the top of it. For the background, I used a black flag, and on the left side of the table, there was a desk lamp with 60W. The photo was taken with an 18-105mm Nikon lens. I used an auto-focus on the camera. The photo has been edited by lightroom. The editing was only to make the photo darker, so the details can be clear in the picture. The size of the field of view was about 2ft wide and 1.5ft high. The original picture dimension is 5184x3456, and the setting was ISO

The flame could be a laminar or turbulent flow. In this case, the flame is in laminar flow. We can find that from the propagation velocity of a laminar flame. In

addition, it depends on the fuel type, air fuel, temperature, and pressure. [1] Also, we can figure what kind of flow from *equation 1*

$$S_L = \frac{1}{p^n} T^m \quad \text{Equation 1}$$

Where p is the pressure, T is the temperature respectively in the unburned mixture, and n and m are depending on the fuel type.

The turbulent flame speed is about 10-20 m/s, since this is not the case here we can say it is laminar flow. [1]

I like the result of this photo. I like the details in this photo and how the boundaries of the flame are clear, also the arc at the top of the image is clear. Although it is a sample idea, it is good to study something we almost use every day to get a nice flame in our places. I think changing the light source into darker will be helpful. Also, trying to have a small light source will be useful since the flame considers as a light source. What I could do differently is try a different kind of fuel to see if it is different or not.



Fig.2 The image before editing



Fig.3 the image after editing

Reference:

- [1] Cuoci, A. (2019). *Laminar Flame*. Retrieved from ScienceDirect:
<https://www.sciencedirect.com/topics/chemistry/laminar-flame>