

# Observations of a Burning Candle

**Objective:** In this laboratory you will study a burning candle. You will learn about the properties of fire.

**Observations:** You will learn to make the invisible become visible using light and shadow.



## Materials

Simple candle with a holder

White card stock (like a plain index card)

Flashlight

Spoon

Scissors

Matches or a lighter

Q-tip

## Background Reading

In 1861 a series of lectures given by Michael Faraday were published under the title: *The Chemical History of a Candle*. This text is available online in the public domain. Either conduct a search for it or try this link:

[http://hermes.ffn.ub.es/luisnavarro/nuevo\\_maletin/Faraday\\_1860\\_History\\_Candle.pdf](http://hermes.ffn.ub.es/luisnavarro/nuevo_maletin/Faraday_1860_History_Candle.pdf)

**Read lecture one. Write a few notes from this lecture below:**

## The Experiment

Find out what wax is and describe it here:

Trim the wick of the candle so it is about 2 millimeters long. Light the candle. Take your time. Observe the candle burning carefully. Notice various regions of the flame - areas of different colors. Notice the shape of the flame. Draw the flame below:

The color of a flame indicates its temperature. Following the visible spectrum (Red, Orange, Yellow, Green, Blue, Violet) the more towards the blue side of the spectrum the hotter the flame. Based on this information - where is the hottest part of the flame?

While the candle is still burning hold a white card behind the candle at a distance of about 8 inches. Hold a flashlight in front of the candle also at a distance of about 8 inches so that it shines through the flame and casts a shadow on the card.



Describe the shadow. Draw a picture of it.

What do you think causes the shadow?

Take the spoon and hold it carefully above the flame so that the metal just touches the fire. Hold it there for several seconds then remove it and look at the spoon. Describe what you see:

Use the Q-tip to remove the substance deposited on the spoon. Rub this substance on a piece of white paper. What is this material? (Hint: It is an element.)

The chemical reaction for the burning of a candle is called combustion. Combustion is the reaction between a hydrocarbon and oxygen. For the candle to burn it requires oxygen. While the candle is burning lower a tall glass slowly over the flame without touching the fire. Does the candle continue to burn?

Is there anything else you have observed?

*This lab was written and photographed by Joy Walker.*