

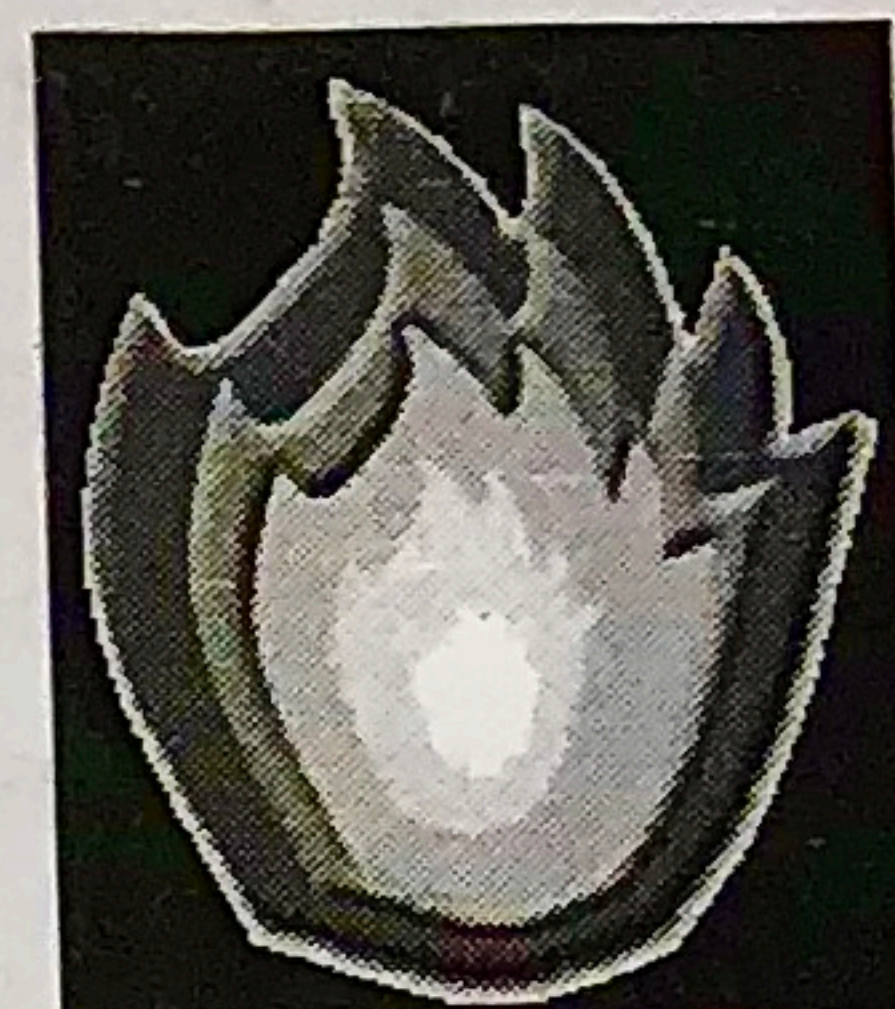
Flame Test Exploration

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Problem: What colours are characteristic of particular ions in a flame test?

Materials: solutions of the following salts: copper (II) nitrate, strontium nitrate, lithium nitrate, potassium nitrate, zinc nitrate & calcium nitrate

Equipment: Safety glasses, spray bottles with ions & Bunsen burner



Procedure:

1. Put on goggles.
2. Obtain a spray bottle with one of the compounds. Light the Bunsen burner and adjust the flame to a low clean burning blue flame.
3. Spray one pump of the solution into the flame. Record your observations of the colour produced with photographic evidence. Record your observations. Repeat until all solutions have been tested
4. Clean up. Wash hands.

Data:

Table 1: Colours of nitrated salts after heating.

Salt	Colour
Copper (II) Nitrate 2	green
Strontium Nitrate 4	red
Lithium Nitrate 1	red pink
Potassium Nitrate 3	purple/pink
Calcium Nitrate 6	orange
Zinc Nitrate 5	orange

Application questions:

1. What particles are found in the chemicals that may be responsible for the production of colored light?

Nitrate doesn't produce coloured light, so it is the metals in the compound that are responsible for producing the coloured light

2. Why do different chemicals emit different colors of light?

The colour varies based on the size of atoms, because it takes more energy to displace electrons on a smaller atoms, so they reach a higher state of excitement and as they disperse that energy on the way down, they emit a colour with a higher frequency / shorter wavelength