## Flame Test Lab

Stars have different colors, which are indicators of temperature. The hottest stars tend to appear blue or blue-white, whereas the coolest stars are red. Red also means that this star could contain calcium, potassium, rubidium.

# **Objective**

In this lab, we will perform the flame test for several metals by placing them into a Bunsen burner flame.

**Pre-lab Questions** *Answer each question in complete sentences.*

1. What color of light is lowest in energy?  What is the highest?
2. What is the purpose of a flame test?
3. What is quantum leap?
4. Electrons [*absorb* / *release*] (choose one) energy when they return to their ground state.
5. If you test two samples and find that both produce a red flame, how can you determine for sure whether they contain the same metal?

# **Materials**

Metal salt solutions Flint Bunsen burner Wood splints

# **Procedure**

1. Take the necessary precautions before beginning this experiment. Your first job is to make sure you and your lab partner(s) have the proper safety equipment, including goggles and apron. Check to see that long hair is tied back and long sleeves are rolled up.

2. The next job is to do your flame tests. Dip the tip of a wood splint into one of the known solutions, then hold the splint in the hottest part of the Bunsen burner flame.

Record the color of the flame in your data table. Discard the used splint properly.

3. Repeat the procedures for each known solution and then the unknown solution. Identify the unknown solution.

# **Data Table**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Salt Solution** | Lithium | Calcium | Copper | Strontium | Potassium | Sodium | Unknown |
| **Flame Color** |  |  |  |  |  |  |  |

# **Conclusion Questions *Answer each question in complete sentences****.*

1. What is the identity of the unknown metal?
2. Describe the activity of electrons when a substance is heated in a flame. How does this serve in identifying substances?

**Lab Techniques**

* Proper use of equipment
* Safety and clean up

Each student is responsible for his/her own lab report. Staple your group’s paper together to submit your assignment.