

Name: _____

Lab 13. Qualitative Analysis: The Flame Test

Background The ions of many common elements impart a characteristic color to a flame. Often these ions are used commercially in fireworks and color-producing “logs”. The characteristic color can be used to identify the presence of an unknown ion. In this lab you will investigate the colors produced by different metal ions. The data will be used to identify unknown ions.

Objective: To identify the characteristic color for various metals and use flame color to identify an unknown.

Safety: Wear chemical splash goggles, gloves, and an apron. Tie back long hair. Hold the burning splint over your ceramic plate. Use caution with igniting the Bunsen burner. Be sure to wet all splints before placing them in the non-hazardous waste container.

Disposal: Place wet used splints in the nonhazardous waste container.

Materials

• 2 cobalt glass plates	• ceramic plate
• Bunsen burner	• splints: Li, Na, K, Ba, Ca, Cu, Sr, B
• flint lighter	• 2 splints: unknown

Procedure

1. Fill a 250 ml beaker with water.
2. Ignite your Bunsen burner and adjust to produce a nonluminous flame.
3. Place the lithium splint in the flame and observe the color. Record your observations in the Data Table.
4. Place the splint in the beaker of water to extinguish the flame.
5. Repeat Steps 3 and 4 with each of the other known metals.
6. Observe the flames generated by the two unknowns.
7. Dispose of splints in nonhazardous waste.
8. Wash and return glassware to lab drawer.

Analysis

Using the data recorded in your Data Table for the known metals, identify the metal ion(s) present in each of your unknowns.

Data Table

Element	Observations
Li	
Na	
K	
Ba	
Ca	
Cu	
Sr	
B	
Unknown (1)	
Unknown (2)	

Analysis Table

Identity of Unknown 1	
Identity of Unknown 2	