

# COLORS AND ELEMENTS

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### MATERIALS NEEDED:

Wide mouth plastic bottles, 4 oz (120 mL)  
Anhydrous salts of strontium, calcium, copper, lithium, barium, potassium and sodium, usually chlorides, finely powdered and oven dried.  
Bunsen burner or portable gas burner

### SAFETY PRECAUTIONS:

This procedure uses fine particulates of anhydrous metal salts. Use with good ventilation.

### DISPOSAL:

There is no disposal in this experiment.

### PROCEDURE:

The salts should be anhydrous and oven dried for at least 2 hours at a temperature of 110°C. The cooled salts should be stored in air-tight wide mouth plastic bottles.

To use the salts: Have a properly adjusted flame on a Bunsen burner or other gas burner. Shake the bottle containing one of the chemical salts. Open the bottle and bring the mouth of the bottle near the air intake vents on the burner. Fine particles of solid will be pulled into the air stream and will result in a brightly colored flame. NOTE: Because of its brightness and persistence, use the sodium salt last.

### EXPLANATION:

This procedure shows the visible emission spectra of a number of metallic elements in the most vivid manner I have ever found. It can be used to lead to discussions of:

Emission spectra of elements, supplemented by discharge lamps containing hydrogen, helium, neon, etc. (students get C-Spectra or spectroscopes to observe spectra)

Emphasize: No two elements have the same spectra (same colors and patterns of lines).

How can we detect elements in stars, and other planets?

How do fireworks work?

Once prepared, these bottles will last for many years. Occasionally, they will need to be oven dried as they absorb moisture from the atmosphere.