

# Flame Test Demonstration and Activity:

## Al DeGennaro

### Students' Guide

#### Goals

- To learn about electronic states through flame tests
- To relate the chemistry of atomic structures to cases from everyday life

#### The Demonstration and Activity

In this lesson, you will be looking for the relationship between color and electronic states by observing a flame test demonstration. You will then apply what you learn to a practical situation.

#### Materials for Each Group

- A Bunsen burner
- Matches
- Solutions of different metal ions: sodium chloride, lithium chloride, calcium chloride, barium chloride, strontium chloride, copper chloride and potassium chloride
- Wooden splints soaked in the solutions

#### SAFETY

Wear safety goggles at all times during the demonstration.

When working with fire, have a fire extinguisher nearby, remove all flammable and explosive chemicals, tie your hair back, and be careful.

#### Instructions

Watch the demonstration of flame tests, and fill in the colors in the following table:

Explain the chemistry of the process: \_\_\_\_\_

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What can you say about the difference between energy levels in these metal atoms? \_\_\_\_\_

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Salt	Color
Sodium Chloride	
Lithium Chloride	
Calcium Chloride	
Barium Chloride	
Strontium Chloride	
Copper Chloride	
Potassium Chloride	

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Read the following story:

Ms. Steinway, a worker in the Useful Chemical Company, is suing the company for injuries suffered during a chemical explosion in the company. She claims that she was hurt, when a KCl tank exploded due to inadequate safety measures, which were undertaken by the company. Eyewitnesses to the explosion, report that they saw a bright green flash of light.

You are the chemical expert witness in court. You have to determine whether Ms. Steinway is telling the truth, using chemical evidence.

Explain your claims: \_\_\_\_\_  
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\_\_\_\_\_  
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