

# Laboratory report on the reaction of flames towards medals essay



**ASSIGN  
BUSTER**

## Laboratory Report on the Reaction of Flames Towards Metals ? Introduction

The purpose of the flame lab was to identify a set of flame-test color standards for selected metal ions, relate the colors of a flame test to the behavior of excited electrons in a metal ion, observe spectral lines using diffraction grating, and to identify an unknown metal ion by using a flame test. My hypothesis for the lab was that most of the flames when sprayed with a solution will be a orange-red color. The unknown element color will be a orange-red color.

Every element has a distinctive electron configuration, and is part of the reason that every atom has distinctive characteristics. When energy is added to an atom, electrons jump from their ground state to their excited state. When they return to the ground state, they release the excess energy that they have absorbed in packages of light called photons, or light quanta. The characteristic light emitted by each individual atom is the basis for the chemical test is known as the flame test. "-Gilbert Procedure When doing this lab make a data table, one row for each sample, in addition to a row for water alone.

Gently spray the solution up into the flame of the burner from an angle 10 to 12 inches from the flame. If too close, the flame may go out. If this does occur, call the instructor to relight the flame. Observe the specific flame color and record it in the data table.

Repeat the test and record the results for trial 2 in the data table. Rotate to all stations, when instructed to do so. Wash your hands when finished. The

materials in this lab include diffraction grating (or prism), spectral tubes, power supplies, Bunsen burners, and spray bottles of solutions.

Data Observation: I observed that the elements when sprayed colors didn't have unique colors, none of them really differed. Substance Trial 1 Trial 2  
 Water Orange Orange Unknown red red NaCl Bright orange Bright  
 CoCl Orange Orange KCl Purple orange Purple Orange Sr(NO<sub>3</sub>) Red Red  
 BaCl Green Green Ca(NO<sub>3</sub>) Tangerine Light Red Gas Color Spectral Lines Hg Light  
 blue Purple, Green, Yellow H Purple Pink Purple, Blue, Red, Orange N Pink  
 Purple Purple, Blue, Red, Orange Analysis The elements that were most easily identified were NaCl, Water, CoCl, BaCl, and Hg. The more difficult elements were Ca(NO<sub>3</sub>), KCl, Sr(NO<sub>3</sub>). Ca(NO<sub>3</sub>), KCl, Sr(NO<sub>3</sub>), N, and H Sr(NO<sub>3</sub>), when tested it had the same properties of the unknown. The flame test was sensitive.

Identifying a specific color of the element was usually not easy, because it sometimes looked multi-colored making it difficult to determine which ion is present. Sr(NO<sub>3</sub>), Ca(NO<sub>3</sub>), NaCl, CoCl, Water, BaCl, Hg, H, N Conclusion I identified the unknown metal to be Sr(NO<sub>3</sub>). Even though there was a few elements that had different colors, the majority of the elements were very similar. My hypothesis was proven to be right, because even the unknown metal was a orange-red color. The first trial I did, I made an error by spraying the solution to close to the flame which blew it out.

Learning from that in my other trials, I angled it correctly and did not repeat the mistake. Performing the flame lab, I have learned how to construct the

Bohr's Model. In addition to that, I learned about the sensitivity in qualitative tests, and more about elements and atoms.