

Flame Test Lab

Activity Key

Background

The heat from a laboratory burner will cause the ions of some elements to give off light. Electrons will absorb the heat energy from the flame and will “jump” to a higher energy level. When the electrons return to their original energy levels, this absorbed energy is released as light. Different elements absorb and release different amounts of energy and thus produce different kinds of light. This light may be visible or invisible, infrared or ultraviolet radiation. Analysis of this light can be used to identify elements and molecules. In today’s lab, we will observe the visible range of light emission.

Objectives

1. Perform a flame test to identify the characteristic color of metal ions.
2. Identify the metal ion in an unknown solution.
3. Calculate the energy of emitted photons.

Materials: (per lab group)

10 ml dilute solutions of the following:

Barium Chloride
Calcium Chloride
Lithium Chloride
Potassium Chloride
Sodium Chloride
Strontium Chloride
Unknown Solution

7 Wood Splints
1 Bunsen Burner
Safety Goggles & Aprons

Note:

If chloride compounds are not available, metal nitrate compounds may be substituted.

Use dilute or approximately 0.1 M solutions

Unknowns:

Number the beakers 1-12.
Add solutions as follows:

- | | |
|-----------------------|------------------------|
| 1. Strontium Chloride | 7. Calcium Chloride |
| 2. Calcium Chloride | 8. Strontium Chloride |
| 3. Potassium Chloride | 9. Barium Chloride |
| 4. Barium Chloride | 10. Potassium Chloride |
| 5. Lithium Chloride | 11. Sodium Chloride |
| 6. Sodium Chloride | 12. Lithium Chloride |

Procedure

1. Put on your safety goggles and an apron.
2. Obtain a wood splint and the barium chloride solution.
3. Dip the wood splint into the solution and allow it to soak for 1-2 minutes.
4. Light Bunsen Burner. USE CAUTION!
5. Remove the splint from the solution and hold the end of the splint into the flame. Do not burn the splint.
6. Observe and record the color of the flame.
7. Repeat steps 2-6 using the remaining chloride solutions.
8. Obtain an unknown solution from your teacher. Record the number of your unknown.
9. Soak a wood splint in the unknown solution.
10. Hold the splint in the flame and record the color of the flame that is produced.
11. Using your data, identify the metal ion in your unknown solution.

Flame Test Lab Metal Ions Answer Key

Scroggins



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Laboratory Manual for Principles of General Chemistry Jo Allan Beran, 2010-11-01 This new edition of the Beran lab manual emphasizes chemical principles as well as techniques The manual helps students understand the timing and situations for the various techniques The Beran lab manual has long been a market leading lab manual for general chemistry Each experiment is presented with concise objectives a comprehensive list of techniques and detailed lab intros and step by step procedures *PE Lab Exp(Noncons)Mod Chem 90* Tzimopoulos, 1990 *Chemistry in the Laboratory* James M.

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Laboratory Assessment in the Chemistry Classroom Thomas Paul Hunt,1998 *Qualitative Analysis and Ionic Equilibrium* George H. Schenk,1990 A supplement for courses with a qualitative analysis component this lab manual contains explanations of the chemistry of metal ions and anions It includes pre lab exercises experiments and lab reports **British Ceramic Abstracts** ,1980 **Laboratory Experiments for General Chemistry** Harold R. Hunt,Toby F. Block,1994

Annual Book of ASTM Standards ASTM International,American Society for Testing and Materials,2004

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- Chapter 2: Essential Elements of Flame Test Lab Metal Ions Answer Key
- Chapter 3: Flame Test Lab Metal Ions Answer Key in Everyday Life
- Chapter 4: Flame Test Lab Metal Ions Answer Key in Specific Contexts
- Chapter 5: Conclusion

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6. In chapter 5, the author will draw a conclusion about Flame Test Lab Metal Ions Answer Key. This chapter will summarize the key points that have been discussed throughout the book.

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