

## Flame Test Energies

Theory & Purpose (you get from ch 7)

### Procedure:

1. Powder the salts (about 1-1.5 g) in the mortar, cleaning it out between salts.
2. Put salt 1 in watch glass 1, salt 2 in watch glass 2, and so on.
3. Pour 5 mL of methyl alcohol in each watch glass.
4. Using a match (or splint from a burner), carefully ignite the alcohol in watch glass 1.
5. After the alcohol level nears the salt, record the color of the flame.
6. Repeat steps 4 and 5 for all the salts in watch glasses 2-7.

### Calculations:

1. After the demonstration, find the approximate wavelength of the light of the flame using the chart.
2. Use the speed of light to calculate the frequency. Be sure to convert the wavelength to meters before you put it in the equation.
3. Use the frequency and Planck's constant to calculate the energy of the light.

Metal Ion Tested	Atomic Number	Color of Flame	Wavelength (nm)	Frequency (1/s)	Energy (J)
Lithium					
Copper					
Calcium					
Sodium					
Barium					
Strontium					
Potassium					

### Discussion:

1. Why did some flames appear the wrong color at various times during the tests?
2. What are some of the problems with using flame tests as a way to identify substances?
3. Explain how the colors are created by the atoms.
4. How are wavelength and frequency related? Wavelength and energy? Frequency and energy?
5. What practical uses are there for this phenomenon?

### Resources:

### Conclusion: