

Atomic Emission Spectra Lab

Directions: From the lab video, record the color of flame produced by each of the metals. Use the chart provided to find the approximate wavelength of the light of each flame using the chart.

- Before beginning, record the atomic number of the metal in each salt listed below (the metal is the first element listed).
- Use the equation $c = \lambda \cdot \nu$ (speed of light = frequency x wavelength) to calculate the frequency. Be sure to convert the wavelength of meters before you put it into the equation. ($1 \text{ m} = 1 \times 10^9 \text{ nm}$)
- Use the frequency in the equation $E = h \cdot \nu$ ($h = 6.63 \times 10^{-34} \text{ J}\cdot\text{s}$) to calculate the energy of the light.

**** You must show your work on all calculations to receive credit! Take a picture of your work and upload it to Canvas with your Lab. You can submit more than one document. ***

Color	Wavelength (nanometers)
Red Light	~650 nm
Orange Light	~590 nm
Yellow Light	~570 nm
Green Light	~510 nm
Blue Light	~475 nm
Indigo Light	~445 nm
Violet Light	~400 nm



Metal Ion Tested	Atomic Number	Color of Flame	Wavelength (m)	Frequency (Hz)	Energy (J)
KCl	19	violet	$4.00 \times 10^{-7} \text{ m}$	$7.5 \times 10^{14} \text{ Hz}$	4.97×10^{-19}
CuCl ₂	29	green	$5.10 \times 10^{-7} \text{ m}$	$5.9 \times 10^{14} \text{ Hz}$	3.91×10^{-19}
CaCl ₂	20	orange	$5.90 \times 10^{-7} \text{ m}$	$5.1 \times 10^{14} \text{ Hz}$	3.38×10^{-19}
NaCl	11	yellow	$5.70 \times 10^{-7} \text{ m}$	$5.3 \times 10^{14} \text{ Hz}$	3.51×10^{-19}
SrCl ₂	38	red	$6.50 \times 10^{-7} \text{ m}$	$4.6 \times 10^{14} \text{ Hz}$	3.05×10^{-19}
LiCl	3	red	$6.50 \times 10^{-7} \text{ m}$	$4.6 \times 10^{14} \text{ Hz}$	3.05×10^{-19}

Part 2- Describe the incandescent and fluorescent lights and how they look different through the spectrum filter.

Virtual Chem Lab 5 Atomic Emission Spectra

Ying Liu



Virtual Chem Lab 5 Atomic Emission Spectra:

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