

Chemistry w/E&S Lab Handout 04 Electrons and Light

Your Name: _____

Purpose: To determine the characteristic colors of light emitted by excited atoms in solutions and gas tubes.

Materials: gas discharge tubes spectroscope
 power supply

Procedure:

1. Plug in the power supply and place one gas tube in the device.
2. Turn on the switch and observe the light with the spectroscope.
3. Do not leave it on for more than one minute as it will get hot.
4. Record the colors of the light from each gas tube.
5. Change tubes and repeat steps 1-4 for each tube.

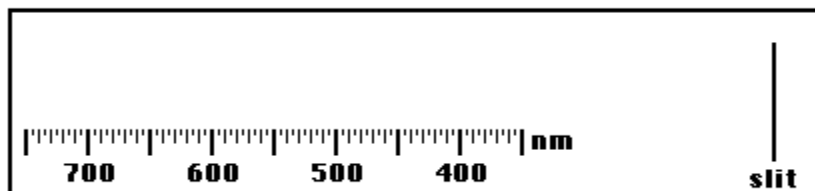
Hydrogen:

How many electrons does Hydrogen have? _____

What is the condensed e^- configuration for Hydrogen: _____

How many valence electrons does Hydrogen have? _____

Line spectrum of Hydrogen: (draw with colored pencils if you like)



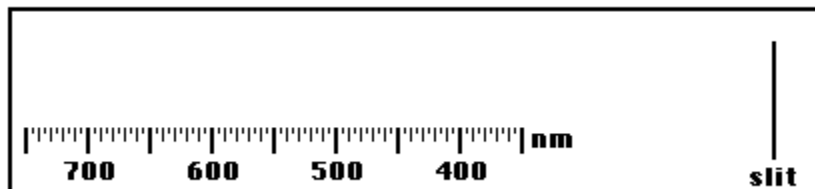
Helium:

How many electrons does Helium have? _____

What is the condensed e^- configuration for Helium: _____

How many valence electrons does Helium have? _____

Line spectrum of Helium: (draw with colored pencils if you like)



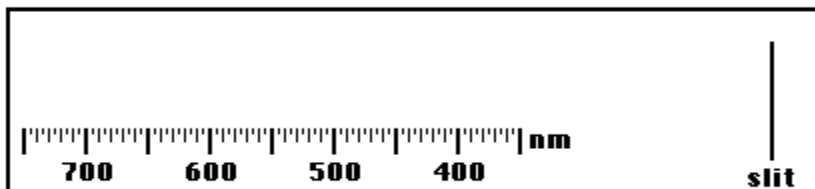
Neon:

How many electrons does Neon have? _____

What is the condensed e⁻ configuration for Neon: _____

How many valence electrons does Neon have? _____

Line spectrum of Neon: (draw with colored pencils if you like)



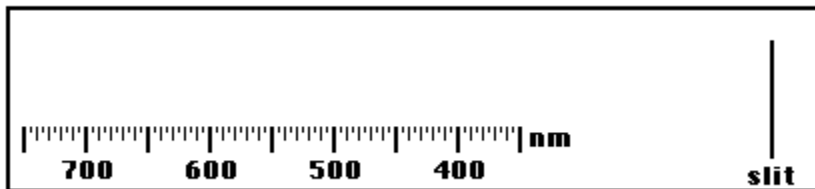
Argon:

How many electrons does Argon have? _____

What is the condensed e⁻ configuration for Argon: _____

How many valence electrons does Argon have? _____

Line spectrum of Argon: (draw with colored pencils if you like)



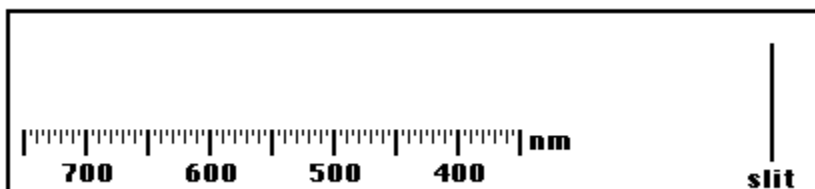
Bromine:

How many electrons does Bromine have? _____

What is the condensed e⁻ configuration for Bromine: _____

How many valence electrons does Bromine have? _____

Line spectrum of Bromine: (draw with colored pencils if you like)



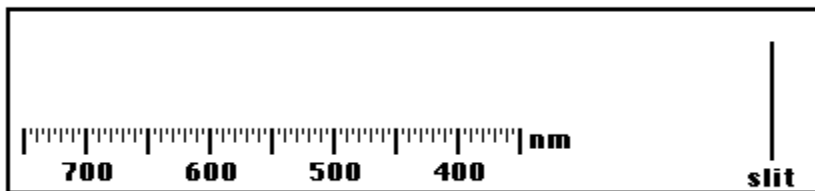
Krypton:

How many electrons does Krypton have? _____

What is the condensed e⁻ configuration for Krypton: _____

How many valence electrons does Krypton have? _____

Line spectrum of Krypton: (draw with colored pencils if you like)



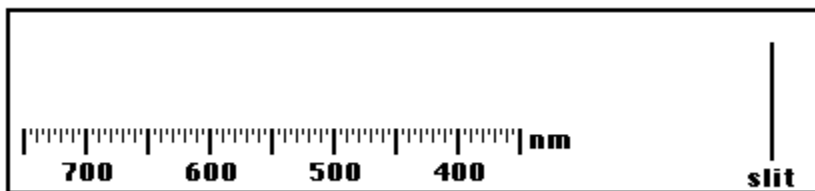
Xenon:

How many electrons does Xenon have? _____

What is the condensed e⁻ configuration for Xenon: _____

How many valence electrons does Xenon have? _____

Line spectrum of Xenon: (draw with colored pencils if you like)



Questions:

1.) As the number of electrons increases, what happens to the complexity of the atom's spectrum?

2.) When energy is absorbed by electrons they move to a _____ energy level.

3.) When energy is released by electrons they move back to the

_____. (two words)

4.) Where on the periodic table are the elements that have 8 valence electrons?

Conclusion:

This is the part of the lab report where you reflect on what you did in the experiment and what you have learned. If the lab/experiment relates to something that we did in class, then make sure to talk about how it may (or may not) be relevant to what we have learned.

- What basic principles in chemistry did this lab demonstrate?
- What did you learn?
- How could it have been made better?

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.