

LEARNING GOALS FOR PROPERTIES OF LIGHT AND ELECTRONIC STRUCTURE

<p>Guiding Question: How do scientists use the properties of light to determine the arrangement of electrons in atoms?</p>	
<p style="text-align: center;">Content Goals</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> • Explain how historical experimental work (especially with light emissions) contributed to current understanding of atomic structure / electron arrangement • Describe the quantum mechanical model of the atom and provide supporting evidence • Describe and compare different properties of light (wavelength, frequency, energy, speed) • Calculate the wavelength, frequency, or energy of a photon given one of these variables • Show the electron arrangement in atoms and ions using electron configurations and orbital diagrams • Explain how the movement of electrons is responsible for emissions of light • Apply the Aufbau Principle, Pauli Exclusion Principle, and Hund's Rule to electron configurations and orbital diagrams 	<p style="text-align: center;">Skills Goals</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> • Process experimental data using calculations and display calculations appropriately • Analyze graphs mathematically and descriptively • Explain results of experiment and logically evaluate possible sources of error • Correctly state the topic of a scientific text • Summarize the main idea of a scientific text • Summarize the most significant supporting statements in a scientific text
<p>Organizing Ideas (Big Ideas and Links between Big Ideas)</p> <p>Students will:</p> <ul style="list-style-type: none"> • Understand how electron arrangements in different elements are similar and different • Understand how light and its properties are critical to our understanding of atomic structure 	
<p>Assessment – How will I know if students have mastered content, skills, and big ideas?</p> <p>Students will:</p> <ul style="list-style-type: none"> • Prepare data tables, graphs, and calculations after collecting experimental data • Complete tests and quizzes on properties of light and electron arrangement • Summarize main idea and supporting statements in scientific article 	

Key Vocabulary:	
Electromagnetic radiation	Energy level
Frequency	Sublevel
Wavelength	Orbital
Speed of light	Spin
Emission spectrum	Electron configuration
Photon	Orbital diagram
Bohr	Quantum Mechanical Model
Heisenberg	Heisenberg Uncertainty Principle
Schrodinger	

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"You observed me speeding? Are you familiar with the Heisenberg uncertainty principle?"