


## Chemistry Curriculum Bundle #5

<b>Title</b>		<b>Suggested Dates</b>
Electromagnetic spectrum and Electron Configuration		11/16- 12/4 (12 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
An atom's electron configuration determines its chemical properties.	Why do we have compounds?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

<b>Knowledge &amp; Skills with Student Expectations</b>	<b>District Specificity/Examples</b>	<b>Suggested Resources</b> (See note above)
<p><b>6 The student knows that atomic structure is determined by nuclear composition, allowable electron cloud, and subatomic particles.</b></p> <p><b>6A Describe the existence and properties of subatomic particles.</b></p>	<p><i>Including</i></p> <ul style="list-style-type: none"> <li>• Describe electromagnetic spectrum and wave and particle properties including frequency, wavelength, and energy</li> <li>• Calculations using wavelength, frequency, and energy</li> <li>• Describe the electron orbitals and properties such as                             <ul style="list-style-type: none"> <li>• Shape (s &amp; p)</li> <li>• Number of electrons</li> <li>• Sublevels (orientations)</li> <li>• Quantum numbers (PAP)</li> </ul> </li> <li>• Write electron configurations and abbreviated (noble gas) configurations</li> <li>• Draw orbital diagrams of atoms (and ions PAP) using                             <ul style="list-style-type: none"> <li>• Aufbau Principle</li> <li>• Pauli Exclusion Principle</li> <li>• Hund's Rule</li> <li>• Periodic table</li> </ul> </li> </ul> <p><i>understand the experimental design and conclusions used in the development of modern atomic theory, including Dalton's Postulates, Thomson's discovery of electron properties, Rutherford's nuclear atom, and Bohr's nuclear atom</i></p>	<p>CPO Science Atom Building Game <a href="http://www.cpo.com/em_atombuilding.shtml">http://www.cpo.com/em_atombuilding.shtml</a></p> <p>Electron Configuration Battleship Rules See chemistry resource folder</p> <p>Electron Configuration Battleship Teacher Notes See chemistry resource folder</p> <p>Electron Configuration Battleships See chemistry resource folder</p> <p>Spdf Bingo Slabaugh See chemistry resource folder</p> <p>Matter and Change Lab Manual Glencoe Lab: Flame Test</p>

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	<p><i>understand the electromagnetic spectrum and the mathematical relationships between energy, frequency, and wavelength of light</i></p> <p><i>calculate the wavelength, frequency, and energy of light using Planck's constant and the speed of light;</i></p> <p><i>use isotopic composition to calculate average atomic mass of an element</i></p> <p><i>express the arrangement of electrons in atoms through electron configurations and Lewis valence electron dot structures</i></p>	
<p><b>4 The student knows the characteristics of matter.</b></p> <p><b>4D Describe the physical and chemical characteristics of an element using the periodic table and make inferences about its chemical behavior.</b></p>	<p><b>Including</b></p> <ul style="list-style-type: none"> <li>• Describe             <ul style="list-style-type: none"> <li>○ s, p, d, and f blocks</li> <li>○ Electron configuration</li> </ul> </li> </ul>	
<p><b>8 The student knows how atoms form bonds to acquire a stable arrangement of electrons.</b></p> <p><b>8C Compare the arrangement of atoms in molecules, ionic crystals, polymers, and metallic substances.</b></p>	<p><b>Including</b></p> <ul style="list-style-type: none"> <li>• Solid amorphous structures</li> <li>• Solid covalent network structures</li> <li>• Ionic compound structure (crystal lattice)</li> <li>• Metallic bonding (“sea of electrons”)</li> <li>• Explain VSEPR theory in relation to shapes including             <ul style="list-style-type: none"> <li>○ Linear</li> <li>○ Bent</li> <li>○ Tetrahedral</li> <li>○ Trigonal planar</li> <li>○ Trigonal pyramidal</li> </ul> </li> <li>• Use geometric shapes to determine molecular polarity</li> </ul> <p><i>predict molecular structure for molecules with linear, trigonal planar, or tetrahedral electron pair geometries using Valence Shell Electron Pair Repulsion (VSEPR) theory</i></p>	<p>VSEPR Animations Adrian Dingle <a href="http://adriandingleschemistrypages.com/vsepr.html">http://adriandingleschemistrypages.com/vsepr.html</a></p> <p>Shapes and Polarities Lab See chemistry resource folder</p> <p>Lab: Marshmallow Molecules See chemistry resource folder</p>