Electrons Unit Objectives

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|  | **Objectives** | **Assignment(s)** |
|  | Review Objectives:   1. Know the charge of electrons. | Atomic Basics |
|  | 1. Describe and name the location where atoms are found. | Atomic Basics |
|  | 1. Know how to determine the number of electrons. | Atomic Basics |
|  | 1. Able to calculate the charge on an ion. | Notes |
|  | New Objectives:   1. Describe the purpose of Bohr models. | Notes |
|  | 1. Identify the number of electrons contained within each shell. | Notes/ Atomic Basics |
|  | 1. Draw Bohr models correctly for element #1-18. | Periodic Table Basics |
|  | 1. Describe the octet rule. | Notes |
|  | 1. Identify the number of electrons needed for an atom to obtain full valence shells. | Notes/ Periodic Table Basics |
|  | 1. Identify the valence shell and number of electrons in the valence shell. | Notes/ Periodic Table Basics |
|  | 1. Draw Lewis dot structures for all elements on the periodic table. | IF- Lewis Dot Structure wkst. & Periodic Table Basics |
|  | 1. Identify the pattern on the periodic table in which you can identify the number of electrons in the valence shell. | Notes/video |
|  | 1. Describe why the Bohr model was discarded and the *Quantum Mechanical model* is now used. | Notes/video |
|  | 1. Describe what quantum numbers describe. | Notes/video |
|  | 1. Describe the arrangement of principle energy levels around the nucleus and the sublevels contained in each energy level. | Notes/video |
|  | 1. Describe the shape and number of electrons each sublevel can hold. | Notes/video  ChemQuest 11 |
|  | 1. Identify how many orbitals are in each sublevel and how many electrons and the spin of each electron each sublevel can hold. | Notes/video |
|  | 1. Describe Aufbau’s principle, Hund’s rule, and the Pauli Exclusion principle and how each affects the description of the location of electrons. | Notes/video  **Electron Config POGIL** |
|  | 1. Draw Aufbau (Electron Orbital) diagrams for elements. | Electron Config POGIL  Chemistry I Electron Config wkst. |
|  | 1. Describe the location of s, p, d, & f blocks on the periodic table and how they can help you write the electron configuration. | Cracking the Periodic Table POGIL  Khan academy video |
|  | 1. Using an electron configuration identify the element that it belongs to. | IF- Electron Configuration wkst. |
|  | 1. Write electron configurations for all elements. | Wkst. |
|  | 1. Explain what the exceptions to writing electron configurations are and why they occur. | Notes/video |
|  | 1. Identify element from noble gas electron configuration and write noble gas electron configuration for each element. | Wkst. |
|  | 1. Describe the types of radiation on the Electromagnetic spectrum and what all types of electromagnetic radiation have in common. | Notes/Video |
|  | 1. Identify difference of wavelength and frequency in a diagram. | Notes/Video |
|  | 1. Describe the trends of wavelength, frequency, and energy on the Electromagnetic spectrum. | Notes/Video |
|  | 1. Describe the relationship between wavelength, frequency, and energy using c=Av and E=hv. | Notes/Video |
|  | 1. Calculate wavelength, frequency, and energy using c=Av and E=hv. | IG 5.3 wkst.  Flame Test Lab |
|  | 1. Describe what happens when an electron gains or loses energy. | **Energy and Light POGIL** |
|  | 1. Describe what ground state and excited state and electron configurations would be written for each. | Electron Config POGIL |
|  | 1. Describe what atomic emissions spectra is and why each element has a unique atomic emission spectrum. | **Flame Test Lab** |
|  | 1. Describe why different colors of light are produced in different emissions spectra. | Energy & Light POGIL  Emission Spectrum Lab |
|  | 1. Describe what scientists use emission spectra for. | Notes/video |
|  | 1. Describe Heisenberg’s Uncertainty principle. | Notes/video |
|  | 1. Describe the contributions of Bohr, Schodinger, and Heisenberg in creating the Modern Quantum Mechanical Model. | Notes/video |
|  |  | **Bold indicates a quiz will be given for this activity.** |

Electron Vocabulary

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| Word | Definition | Sentence or Picture |
| 1. Atomic emission spectrum |  |  |
| 1. Atomic orbitals |  |  |
| 1. Aufbau principle |  |  |
| 1. Electromagnetic radiation |  |  |
| 1. Electron configuration |  |  |
| 1. Energy level |  |  |
| 1. Frequency |  |  |
| 1. Ground state |  |  |
| 1. Heisenberg Uncertainty Principle |  |  |
| 1. Hertz |  |  |
| 1. Hund’s rule |  |  |
| 1. Pauli exclusion principle |  |  |
| 1. Photons |  |  |
| 1. Quantum |  |  |
| 1. Quantum mechanical model |  |  |
| 1. Spectrum |  |  |
| 1. Wavelength |  |  |