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/videoChemQuest 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 POGILChemistry 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 POGILKhan 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 POGILEmission 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
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| 1. Atomic orbitals
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| 1. Aufbau principle
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| 1. Electromagnetic radiation
 |  |  |
| 1. Electron configuration
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| 1. Energy level
 |  |  |
| 1. Frequency
 |  |  |
| 1. Ground state
 |  |  |
| 1. Heisenberg Uncertainty Principle
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| 1. Hertz
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| 1. Hund’s rule
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| 1. Pauli exclusion principle
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| 1. Photons
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| 1. Quantum
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| 1. Quantum mechanical model
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| 1. Spectrum
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| 1. Wavelength
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