

Unit Four Electron Behavior

Objectives

Name the model that replaced the Bohr model of the atom.

Explain the concept of wave-particle duality.

Solve problems involving the relationship between the frequency and the energy of a photon.

Describe a standing wave.

State the Heisenberg uncertainty principle

State the relationship between the principal quantum number (n), the number of orbitals, and the maximum number of electrons in a principal energy level.

State the meaning and possible values of each of the four quantum numbers.

Write the electron configuration code for selected atoms.

Identify the principal, angular momentum, magnetic, and spin quantum numbers.

Identify the four quantum numbers for indicated electrons.

Identify the energy level, sub-energy level, orbital, and spin for an electron given the four quantum numbers for the electron

Define valence electrons.

Indicate the number of valence electrons for selected atoms.

Draw Lewis dot diagrams for selected atoms.

Identify the person credited for organizing the periodic table.

State the basis for the organization of Mendeleev's periodic table

Identify groups in the periodic table.

State the number of valence electrons for each a group in the periodic table.

Explain the relationship between the chemical behavior of families in the periodic table and their electron configuration.

Identify periods in the periodic table.

Describe the similarities among elements in the same period in the periodic table

Vocabulary

<p>black body radiation</p> <ul style="list-style-type: none">• diffraction• interference• photoelectric effect• photon• quantum• quantum mechanics• quantum theory• Pauli exclusion principle• principal quantum number• quantum number• wave-particle duality <p>angular momentum quantum number</p> <ul style="list-style-type: none">• Aufbau principle• electron configuration code• Hund's rule	<ul style="list-style-type: none">• magnetic quantum number• orbital representation• spin quantum number• core electron• Lewis dot diagram• valence electron• valence shell <p>actinide series</p> <ul style="list-style-type: none">• alkali metals• alkaline earth metals• group (family)• halogens• lanthanide series• noble gases• period• transition elements
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