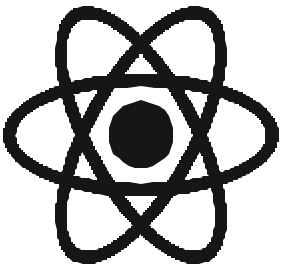

Electron Arrangement and Bonding

Science, Chemistry
TVO 1984
Science SOL CH.2, CH.3
6 10-minute programs for grades 11-12
One Year Tape and Keep Rights
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In this series, Chemistry students will learn the importance of the electron to chemical compounds. Through computer animation, the series explores the development of the atomic model by scientists such as Bohr, Rutherford, and Planck, and relates their contributions to an understanding of the function of electrons, explaining clearly and concisely how the properties of an atom may be predicted by studying its electrons.

101. Introducing the Players—This program introduces the atom and the three main sub-atomic particles-the electron, the proton, and the neutron. The location, charge, and relative mass of these particles are demonstrated. Ernest Rutherford's model of the atom is reviewed in terms of its advances and shortcomings.
Va. SOL Science: CH.2, CH.3

102. The Rutherford-Bohr Atom—With his concept of energy levels, Bohr saved Rutherford's model of the atom. This program explores Bohr's hypothesis that electrons can occupy only definite energy levels. The transfer of electrons between energy levels and the relationship between an atom's properties and its electron arrangement are also discussed.
Va. SOL Science: CH.2, CH.3

103. Electron Arrangement—When physicists Erwin Schrodinger and Werner Heisenberg applied wave mechanics to the atom, they theorized that Bohr's energy levels consisted of sub-levels-or orbitals. This program demonstrates the importance of the number of electrons in the outer orbitals to the properties of the atom.
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104. How Atoms Bond—The forces of attraction and repulsion within atoms are examined, and the different types of bonds that form are shown. Covalent bonds, in which atoms share electrons, and ionic bonds, in which an electron is traded from one atom to another, are explained.
Va. SOL Science: CH.2, CH.3

105. Molecular Substance and Covalent Crystals—This program explains stable and unstable atomic bonds. Diatomic molecules form when atoms share pairs of electrons, held together by covalent bonds. Polar molecules, produced by a combination of covalent and ionic bonds, occur when one nucleus has a stronger charge than the other.
Va. SOL Science: CH.2, CH.3

106. Metals and Ionic Solids—The common properties of metal-its conductivity and malleability-can be explained by the types of bonding that occur between metal atoms. The properties of metals, which are covalent solids, are contrasted with those of crystals, which are ionic solids.
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