

Krug Chemistry – Deep Run Daily Planning Guide

Date of Lesson: Q2 Day 6– Ions & Chemical Bonding

Topic /Big Questions: (Question Stems & Question Creation Chart) <ul style="list-style-type: none"> • How do atoms form chemical bonds? • What is the difference between a molecule and a compound? • How is ionic bonding different than covalent bonding? • How are chemical formulas written? • What is chemical nomenclature? 	
State SOL CH1 CH 3	Unpacking the Standards (Video explanation shown at 3:18) CH.1 The student will demonstrate an understanding of scientific and engineering practices by f) obtaining, evaluating, and communicating information CH.3 The student will investigate and understand that atoms are conserved in chemical reactions. Knowledge of chemical properties of the elements can be used to describe and predict chemical interactions. Key ideas include <ul style="list-style-type: none"> a) chemical formulas are models used to represent the number of each type of atom in a substance; b) substances are named based on the number of atoms and the type of interactions between atoms; c) balanced chemical equations model rearrangement of atoms in chemical reactions; d) atoms bond based on electron interactions; e) molecular geometry is predictive of physical and chemical properties; and f) reaction types can be predicted and classified.
Visible Learning (For the three items with asterisks*, think from a student perspective. Use simple language)	
*What am I learning today? Ionic and Covalent Bonding and Nomenclature	
*Why is it important? The type of atom and number of valence electrons will determine the type of bond. Understand how bond occur will enable chemists to predict products in chemical reactions.	
*How will I know I've learned it? I will understand that ionic bonds occur when a metal atom transfers an electron to a nonmetal atom. This creates a positive cation (metal) and a negative anion (nonmetal). I will understand that covalent bonds occur when nonmetals share electrons. Due to sharing, multiple bonding proportions are available.	
Differentiation strategies: Ions & Chemical Bonding Presentation Types of Solids Notes PhET Atomic Interactions Simulation PBS Ionic Bonding Simulation Covalent Bonding and Nomenclature Notes Types of Chemical Bonds Worksheet Covalent Nomenclature Worksheet	

Accommodations and/or modifications are being met for students with IEP's/504's.

Small group activities; frequent checks for understanding; materials available on Schoology

Daily Plan/Sequence of Instruction:

Teacher will lead guided notes for **Ions and Chemical Bonding** and **Types of Solids** presentation. Teacher will lead demonstration of the PhET Atomic Interactions simulation (<https://phet.colorado.edu/en/simulation/atomic-interactions>) and PBS Ionic Bonding simulation (<https://wcve.pbslearningmedia.org/resource/lsp07.sci.phys.matter.ionicbonding/ionic-bonding/#.XV4XCehKjIV>). Students will work with partners to complete **Types of Chemical Bonds** and **Covalent Nomenclature** worksheets.

Assessments (List all [formative](#)/[summative](#) assessments used to check for understanding during this lesson. Summative assessments may occur during a different class period.):

PhET and PBS simulations – (formative)

Types of Chemical Bonds Worksheet – (summative)

Covalent Nomenclature Worksheet – (summative)

After assessing today's lesson are you and your students comfortable moving forward with your next objective?

Yes - students understand differences between ionic and covalent bonding

No, remediation required to proceed – students can come to One Lunch for help. We will review these concepts in more detail over the next several days.

Teacher reflection: Even though the difference between ionic and covalent bonding seems easy enough to understand, students often get them backwards. Even honors students get the facts mixed up. For example, a student may know that a metal transfers an electron, but they often think this makes it more negative instead of more positive. Students struggle to think of losing something as a positive thing. Teachers need to emphasize that the atom is losing a negative particle so it makes the atom more positive.