Unit 3 Title: Chemical Bonding Extensions: Molecular Geometry, Polarity, Introduction to Organic Chemistry

Content Area: **Template**
Course(s):
Time Period:
Length:
Status: **Published**

State Mandated Topics Addressed in this Unit

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N/A	N/A

Unit 3 Title: Chemical Bonding Extensions: Molecular Geometry, Polarity, Introduction to Organic Chemistry

Standards

SCI.HS-PS1-3	Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.
SCI.HS-PS2-6	Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.
SCI.HS-PS3-2	Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects).

Essential Questions

- How do sigma bonds and pi bonds and bond hybridization models better explain the use of electrons to create binding forces in molecules?
- How does the combination of electron groups and atoms in a molecule or ion contribute degrees of polarity and electron imbalance in a molecule or ion?
- What combinations of bonded electrons and lone pair electrons create molecules with various shapes and bond angles?
- What kinds of functional groups contribute to organic molecules having certain physical and chemical properties?
- Why can carbon atoms bond in a variety of ways with other non-metals to create many types of organic compounds?
- Why do unsymmetrical particles have greater potential to behave in a polar manner than symmetrical

particles?

Instructional Tasks/Activities

- VSEPR Theory and Simple Shapes
- Allotropes Investigation
- Bond Hybridization
- Bond Length / Bond Strength Relationships
- Covalent Bonding: Bond Length and Strength
- Expanded Octet Molecules
- Geometry and Polarity
- Ionic Bonding: Coulomb's Law and Lattice Energy
- Ionic Solids, Metallic Solids, and Polymers
- Isomers and Functional Group Modeling
- Isomers and Functional Groups
- LAB: "Isomers and Functional Groups"
- LAB: "pHet: Molecule Shapes and Polarity"
- LAB: "Qualitative Analysis"
- Lewis Structure Construction
- Lewis Structures and Resonance
- pHet Sims Activities - "Molecule Polarity"
- pHet Sims Activities - "Build a Molecule"
- pHet Sims Activities - "Molecule Shapes"
- Plastics Project
- Unit 3 Test
- Unit 3 Test review

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Flashcards and/or drill and practice
- Inquiry based activities with reflective discussion
- Journal / Student Reflection
- Kahoot
- Laboratory groups

- Lecture with note taking or guided notes
- Online models and simulators
- Other named in lesson
- Peer Review
- Performance
- Power Point Presentation
- Problem Correction
- Project
- Quiz
- Rubric
- Teacher Collected Data
- Test
- Whole and small group discussions
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Quiziz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- extended time
- large print
- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment

- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

Resources

- Resource 1
- Resource 2
- Resource 3
- Resource 4
- Resource 5