Unit 2 - Structure and Properties of Matter

Content Area: **Science**
Course(s): **Science 7**
Time Period: **October**
Length: **~20 days**
Status: **Published**

Unit Summary

Students build understandings of what occurs at the atomic and molecular scale. Students apply their understanding that pure substances have characteristic properties and are made from a single type of atom or molecule. They also provide a molecular level accounts to explain states of matter and changes between states. The crosscutting concepts of cause and effect, scale, proportion and quantity, structure and function, interdependence of science, engineering, and technology, and the influence of science, engineering and technology on society and the natural world provide a framework for understanding the disciplinary core ideas. Students demonstrate grade appropriate proficiency in developing and using models, and obtaining, evaluating, and communicating information. Students are also expected to use the scientific and engineering practices to demonstrate understanding of the core ideas.

Standards

SCI.6-8.MS-PS1-1	Develop models to describe the atomic composition of simple molecules and extended structures.
SCI.6-8.MS-PS1-1.2	Modeling in 6–8 builds on K–5 and progresses to developing, using and revising models to describe, test, and predict more abstract phenomena and design systems.
SCI.6-8.MS-PS1-1.2.1	Develop a model to predict and/or describe phenomena.
SCI.6-8.MS-PS1-1.3	Scale, Proportion, and Quantity
SCI.6-8.MS-PS1-2.4.1	Analyze and interpret data to determine similarities and differences in findings.
SCI.6-8.MS-PS1-1.PS1.A	Structure and Properties of Matter
SCI.6-8.MS-PS1-1.PS1.A.1	Substances are made from different types of atoms, which combine with one another in various ways. Atoms form molecules that range in size from two to thousands of atoms.
SCI.6-8.MS-PS1-1.PS1.A.2	Solids may be formed from molecules, or they may be extended structures with repeating subunits (e.g., crystals).

Student Learning Objectives

SLO 1	**Develop models to describe the atomic composition of simple molecules and extended structures.**[Clarification Statement: Emphasis is on developing models ofmolecules that vary in complexity. Examples of simple molecules could include ammonia and methanol. Examples of extended structures could include sodium chloride or diamonds. Examples of molecular-level models could include drawings, 3D ball and stick structures, or computer representations showing different molecules with different types of atoms. The substructure of atoms and the periodic table are learned in high school

chemistry.] [Assessment Boundary: Assessment does not include
valence electrons and bonding energy, discussing the ionic nature of subunits of complex structures, or a complete depictionof all individual atoms in a complex molecule or extended structure.]

SLO 2	**Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.** [Clarification Statement: Examples of reactions could include burning sugar or steel wool, fat reacting with sodium hydroxide, and mixing zinc with hydrogen chloride. [Assessment Boundary: Assessment is limited to analysis of the following properties: density, melting point, boiling point, solubility, flammability, and odor.]

Driving Questions

- How is it that everything is made of stardust?
- What are the "building blocks" that make up all matter in the universe?
- Is it possible to tell if two substances only mixed together or if they reacted with each other?