

Standard #: SC.912.P.8.12

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Describe the properties of the carbon atom that make the diversity of carbon compounds possible.

General Information

Subject Area: Science

Grade: 912

Body of Knowledge: Physical Science

Idea: Level 2: Basic Application of Skills & Concepts

Standard: [Matter](#) -

Date Adopted or Revised: 02/08

A. A working definition of matter is that it takes up space, has mass, and has measurable properties. Matter is comprised of atomic, subatomic, and elementary particles.

B. Electrons are key to defining chemical and some physical properties, reactivity, and molecular structures. Repeating (periodic) patterns of physical and chemical properties occur among elements that define groups of elements with similar properties. The periodic table displays the repeating patterns, which are related to the atom's outermost electrons. Atoms bond with each other to form compounds.

C. In a chemical reaction, one or more reactants are transformed into one or more new products. Many factors shape the nature of products and the rates of reaction.

D. Carbon-based compounds are building-blocks of known life forms on earth and numerous useful natural and synthetic products.

Content Complexity Rating: [Level 2: Basic Application of Skills & Concepts](#) - [More Information](#)

Date of Last Rating: 05/08

Status: State Board Approved

Related Courses

Course Number	Course Title
3027010:	Biotechnology 1 (Specifically in versions: 2015 and beyond (current))
2000370:	Botany (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2003350:	Chemistry 1 Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2003360:	Chemistry 2 Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2002480:	Forensic Science 1 (Specifically in versions: 2014 - 2015, 2015 - 2017, 2017 - 2022 (current), 2022 and beyond)
2002420:	Integrated Science 2 (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2002430:	Integrated Science 2 Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2002540:	Solar Energy Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2002550:	Solar Energy 2 Honors (Specifically in versions: 2014 - 2015, 2015 - 2018 (course terminated))
2000500:	Bioscience 1 Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2002425:	Integrated Science 2 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 - 2020 (course terminated))

Related Access Points

Access Points Number	Access Points Title
SC.912.P.8.Pa.4:	Match common compounds to their names or communication symbols.
SC.912.P.8.In.8:	Identify that carbon is found in all living things.
SC.912.P.8.Su.8:	Recognize that carbon is found in all living things.

Related Resources

Lesson Plans

Name	Description
Uniqueness of Carbon:	In this lesson, students will be introduced to bonding and will ultimately learn that carbon is a versatile element in terms of its ability to bond in so many different ways (single, double, and triple bonds).

[Molecular Compound Lewis Dot Structures:](#)

In this lesson, students will be introduced to bonding and what enables an element to bond in a variety of ways (single, double, and triple bonds).

Perspectives Video: Expert

Name	Description
Carbon:	Harry Kroto, from Florida State University, discusses the amazing element carbon, the compounds it forms, and the uses including carbon nanotubes. Download the CPALMS Perspectives video student note taking guide .

Perspectives Video: Professional/Enthusiast

Name	Description
Graphite for High-temperature Glass Art Fabrication:	Glass artist Russel Scaturro explains why graphite tools are required for fabrication with borosilicate glass. Download the CPALMS Perspectives video student note taking guide .

Text Resources

Name	Description
Graphene: The Next Wonder Material?:	This informational text resource is intended to support reading in the content area. The article places special attention on the properties of graphene and its future potential uses.
Do Diamonds Really Come from Coal?:	This resource is intended to support reading in the content area. This article debunks a popular Superman myth. Even though diamonds and coal are both different forms of carbon, and pressure is a key part of turning carbon into diamonds, the author explains why Superman cannot crush coal to make diamonds. The article goes on to explain how diamonds are actually formed.

Video/Audio/Animation

Name	Description
Climate Connections Global Warming: All about Carbon:	This is a video series that explains (introduces) properties of the carbon atom and parts of the carbon cycle. The video is entertaining and highly relevant for content.

Student Resources

Video/Audio/Animation

Name	Description
Climate Connections Global Warming: All about Carbon:	This is a video series that explains (introduces) properties of the carbon atom and parts of the carbon cycle. The video is entertaining and highly relevant for content.

Parent Resources

Video/Audio/Animation

Name	Description
Climate Connections Global Warming: All about Carbon:	This is a video series that explains (introduces) properties of the carbon atom and parts of the carbon cycle. The video is entertaining and highly relevant for content.