Standard #: SC.912.P.10.7

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Distinguish between endothermic and exothermic chemical processes.

General Information

Subject Area: Science

Grade: 912

Body of Knowledge: Physical Science

Idea: Level 2: Basic Application of Skills & Concepts

Standard: Energy -
A. Energy is involved in all physical and chemical processes. It is conserved, and can be transformed from one form to another and into work. At the atomic and nuclear levels energy is not continuous but exists in discrete amounts. Energy and mass are related through Einstein's equation $E=mc^2$.

B. The properties of atomic nuclei are responsible for energy-related phenomena such as radioactivity, fission and fusion.

C. Changes in entropy and energy that accompany chemical reactions influence reaction paths. Chemical reactions result in the release or absorption of energy.

D. The theory of electromagnetism explains that electricity and magnetism are closely related. Electric charges are the source of electric fields. Moving charges generate magnetic fields.

E. Waves are the propagation of a disturbance. They transport energy and momentum but do not transport matter.

Date Adopted or Revised: 02/08

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
2003340:	Chemistry 1 (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)
2002490:	Forensic Sciences 2 (Specifically in versions: 2014 - 2015, 2015 - 2017, 2017 - 2022 (current), 2022 and beyond)
2002400:	Integrated Science 1 (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2002410:	Integrated Science 1 Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2003310:	Physical Science (Specifically in versions: 2015 - 2022 (current), 2022 and beyond)
2003320:	Physical Science Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2003390:	Physics 1 Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2003800:	Florida's Preinternational Baccalaureate Chemistry 1 (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
7920011:	Access Chemistry 1 (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 and beyond (current))
7920025:	Access Integrated Science 1 (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 and beyond (current))
2002405:	Integrated Science 1 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 - 2020 (course terminated))
2003345:	Chemistry 1 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2003836:	Florida's Preinternational Baccalaureate Physics 1 (Specifically in versions: 2015 - 2022 (current), 2022 and beyond)
7920022:	Access Physical Science (Specifically in versions: 2016 - 2018, 2018 and beyond (current))

Related Access Points

Access Points Number	Access Points Title
SC.912.P.10.Pa.4:	Identify materials that provide protection (insulation) from heat.
SC.912.P.10.In.4:	Describe a process that gives off heat (exothermic), such as burning, and a process that absorbs heat (endothermic), such as water coming to a boil.
SC.912.P.10.Su.4:	Recognize common processes that give off heat (exothermic), such as burning, and processes that absorb heat (endothermic), such as water coming to a boil.

Related Resources

Lesson Plans

Name	Description
Modeling the Kinetic Theory:	Students will engage in a directed inquiry lab to model the kinetic theory of matter. In the end, students should have a firm grasp of how matter's behavior is changed when its structure is changed during phase transitions.
Using Acid/Base Neutralization to Study Endothermic vs Exothermic Reactions and Stoichiometry:	In this lesson, students will experimentally determine whether an acid/base neutralization reaction is endothermic or exothermic. They will also use their results to identify the limiting reactant at various times in the process and calculate the concentration of one of the reactants.

Teaching Idea

Name	Description
Zip-lock Bag Reactions:	Students conduct and observe a chemical reaction in a sealable plastic bag. Students then devise and conduct their own experiments to determine the identity of two unknown substances used in the reaction.

Text Resource

Name	Description
What is Chemiluminescence?:	This informational text resource is intended to support reading in the content area. The text defines chemiluminescence as an exothermic chemical process. It contrasts endothermic and exothermic reactions. To better understand chemiluminescence, the author compares the process to incandescence and gives examples of chemiluminescence in everyday life and in nature.