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Chemistry Concepts & Standard Alignments (NGSS, CCSS)



Correlations to Next Generation Science Standards

Article	Chemistry Concepts	NGSS Connections
<i>Don't Sweat It: How Moisture-Wicking Fabrics Keep You Cool and Dry</i>	Physical properties Covalent bonding Electronegativity Intermolecular forces Molecular structure Functional groups	<p>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.</p> <p>HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.</p> <p>Disciplinary Core Ideas:</p> <ul style="list-style-type: none"> PS.1.A: Structure and Properties of Matter ETS1.B: Developing Possible Solutions <p>Crosscutting Concepts:</p> <ul style="list-style-type: none"> Cause and effect Energy and matter Structure and function <p>Science and Engineering Practices:</p> <ul style="list-style-type: none"> Constructing explanations (for science) and designing solutions (for engineering) <p>Nature of Science:</p> <ul style="list-style-type: none"> Science addresses questions about the natural and material world.
<i>What Are Glow Sticks, And What Is the Chemical Reaction That Makes Them Light Up?</i>	Activation energy Bond energy Molecular structure	<p>HS-PS1-4. Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends on the changes in total bond energy.</p> <p>HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.</p> <p>Disciplinary Core Ideas:</p> <ul style="list-style-type: none"> PS.1.A: Structure and Properties of Matter PS.1.B: Chemical Reactions ETS1.B: Developing Possible Solutions <p>Crosscutting Concepts:</p> <ul style="list-style-type: none"> Cause and effect Energy and matter: flows, cycles, and conservation Systems and system models <p>Science and Engineering Practices:</p>

		<ul style="list-style-type: none"> Asking questions (for science) and defining problems (for engineering) <p>Nature of Science:</p> <ul style="list-style-type: none"> Science is a human endeavor.
<i>The Opioid Epidemic: How Did It Get This Bad?</i>	<p>Intermolecular forces</p> <p>Molecular structure</p> <p>Functional groups</p> <p>Pharmaceuticals</p>	<p>HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.</p> <p>Disciplinary Core Ideas:</p> <ul style="list-style-type: none"> LS.1.A: Structure and Function ETS1.B: Developing Possible Solutions <p>Crosscutting Concepts:</p> <ul style="list-style-type: none"> Cause and effect Structure and function Stability and change <p>Science and Engineering Practices:</p> <ul style="list-style-type: none"> Obtaining, evaluating, and communicating information <p>Nature of Science:</p> <ul style="list-style-type: none"> Science is a human endeavor
<i>Origin of Life</i>	<p>Organic chemistry</p> <p>Polymers</p> <p>Chemical change</p> <p>Nature of science</p>	<p>HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.</p> <p>Disciplinary Core Ideas:</p> <ul style="list-style-type: none"> PS.1.A: Structure and Properties of Matter LS1.A: Structure and Function <p>Crosscutting Concepts:</p> <ul style="list-style-type: none"> Cause and effect Energy and matter: Flows, cycles, and conservation Stability and change Structure and function <p>Science and Engineering Practices:</p> <ul style="list-style-type: none"> Planning and carrying out investigations Engaging in arguments from evidence <p>Nature of Science:</p> <ul style="list-style-type: none"> Scientific knowledge is open to revision in light of new evidence. Scientific knowledge assumes an order and consistency in natural systems. Science addresses questions about the natural and material world.