



**Unit 4**  
**Optimizing Chemical Reactions**  
**High School**  
**Chemistry**

**Unit Length and Description:**

9 Instructional Weeks

Students will apply evidence of scientific principles to provide explanations about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs. Students will also refine a chemical system design by specifying a change in conditions that produces increased amounts of products at equilibrium (Le Chatelier's Principle).

**Science Standards:**

- HS-PS1-5** Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.
- HS-PS1-6** Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.

**Enduring Understandings-  
Unit Anchor Phenomenon:**

Different methods of preservation may or may not keep avocados from turning brown.

**Essential Questions-  
Reflective Summaries:**

- Explain the factors that can increase the rate of an observed chemical reaction.
- Design a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.