



**Virginia Region II Annual Teacher Night
at Jefferson Lab 2025**

Activity Title: **Lab: Endothermic and Exothermic Reactions**

Type: Experiment

Grade Level: Grade 8

Time Allotment: 50 mins

Objectives with Correlated SOLs:

PS.3 The student will investigate and understand that matter has properties and is conserved in chemical and physical processes. Key ideas include

- a) pure substances can be identified based on their chemical and physical properties;
- b) pure substances can undergo physical and chemical changes that may result in a change of properties;
- c) compounds form through ionic and covalent bonding; and
- d) balanced chemical equations model the conservation of matter.

Enduring Understanding

- changes involve the breaking and making of chemical bonds. If the total energy required to break bonds in the reactants is more than the total energy released when new bonds are formed in the products, the reaction is endothermic. If the total energy required to break bonds in the reactants is less than the total energy released when new bonds are formed in the products, the reaction is exothermic (PS.3 b).

Essential Knowledge and Practices

- use evidence and scientific reasoning to differentiate between a chemical reaction that requires an input of energy (endothermic) and one that releases energy (exothermic) (PS.3 b)
- analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical change has occurred (PS.3 b)

Materials List (including equipment):

- Plastic cup
- Temperature Probe
- 60mL Water
- 2 tsp Epsom Salt
- Stopwatch
- 100mL Vinegar
- ½ tsp Baking Soda
- 60mL Water
- ½ tsp Calcium Chloride
- 100mL Hydrogen Peroxide
- ½ tsp Yeast

Teacher Contact Information:

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