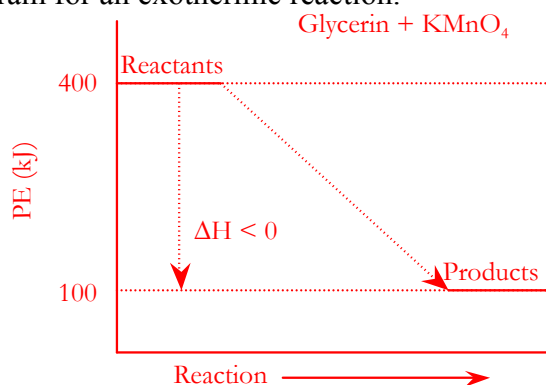


Episode 13 - The Driving Forces

Navigate to <https://www.learner.org/resources/series61.html#> and scroll down to Episode 13. Click on the “VoD” icon. Answer the following questions as you watch the video.

- When wood burns, this is an (**exothermic, endothermic**) reaction because heat is (**released, absorbed**). Thus, the system (**gains, loses**) energy. This is a (**favorable, unfavorable**) change in energy. (Chemists call this a “downhill” reaction.)
- Draw a basic energy diagram for an exothermic reaction.



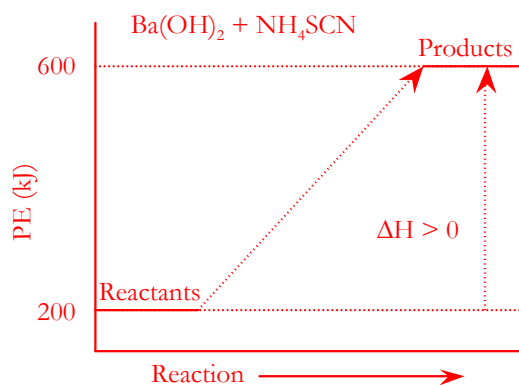
- When the endothermic reaction was done in the beaker, the drop of water under the beaker froze. Thus, the beaker got stuck to the board. Why did the water get so cold that it froze?

The reaction absorbed thermal energy from the surroundings, reducing the temperature of the H₂O on the board until it was below the freezing point of H₂O.

- For an endothermic reaction...

- the system (**releases heat to the surroundings, absorbs heat from the surroundings**).
- Thus, the system (**gains, loses**) energy.
- This is a (**favorable, unfavorable**) change in energy. (We call this “uphill.”)

- Draw a basic energy diagram for an endothermic reaction.



6. What is true about a system with high entropy?

It has a high amount of disorder.

7. In which of the following examples is entropy INCREASING?

a. solid turns to liquid **Increasing**

b. liquid turns to gas **Increasing**

c. solid turns to gas **Increasing**

8. In general, reactions prefer to proceed toward (**more, less**) energy and (**more, less**) entropy.

Exothermic

Why is an exothermic reaction favored? Releasing energy increases the temperature of the surroundings, which increases the disorder of the surroundings—hence the *ENTROPY* of the universe increases.

The entropy of the universe always increases!