

W-PS Physical Science

Experiment

Solvent (water) liquid medium for the experiment

Solute (Epsom salt) solid substance introduced to the solvent (can be liquid)

Solution - combination of solute and solvent mixed together.

If temperature increases, it generally means energy is released - called an

Exothermic Reaction
↑ heat
↙ outside

Initial temp $60^{\circ}\text{F} \rightarrow 95^{\circ}\text{F}$
exothermic

If temperature decreases, it generally means energy is absorbed - called an endothermic reaction
↘ inside ↖ heat

initial temp $70^{\circ}\text{F} \rightarrow 50^{\circ}\text{F}$

solvent: water solute: epsom salt

Initial temp: 64.9°F

Observations: took time

Final temp: 66.6°F

Ex 2

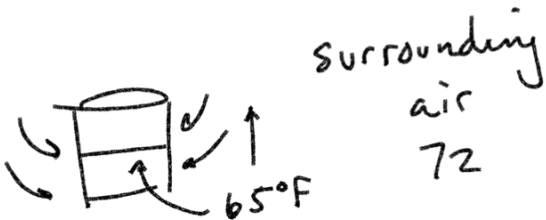
Initial temp: 71. °F

Final temp: 71.9°F

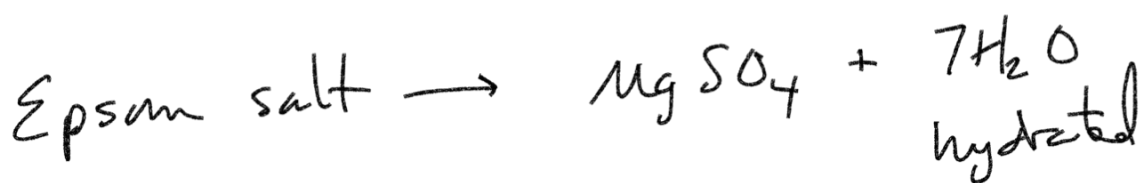
" Law of Cooling "



closed system
no heat/energy transfer



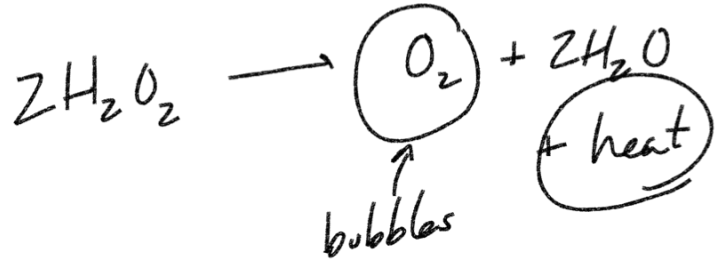
Reaction is actually endothermic



Hydrogen peroxide
(solvent)

Yeast → enzyme
(solute) catalase

initial temp: 68.2 °F
final temp: 100.2 °F



Exothermic



water ice

solvent: liquid water
solute: solid water (ice)

Initial temp: 70.6 °F
final temp: 63.3 °F

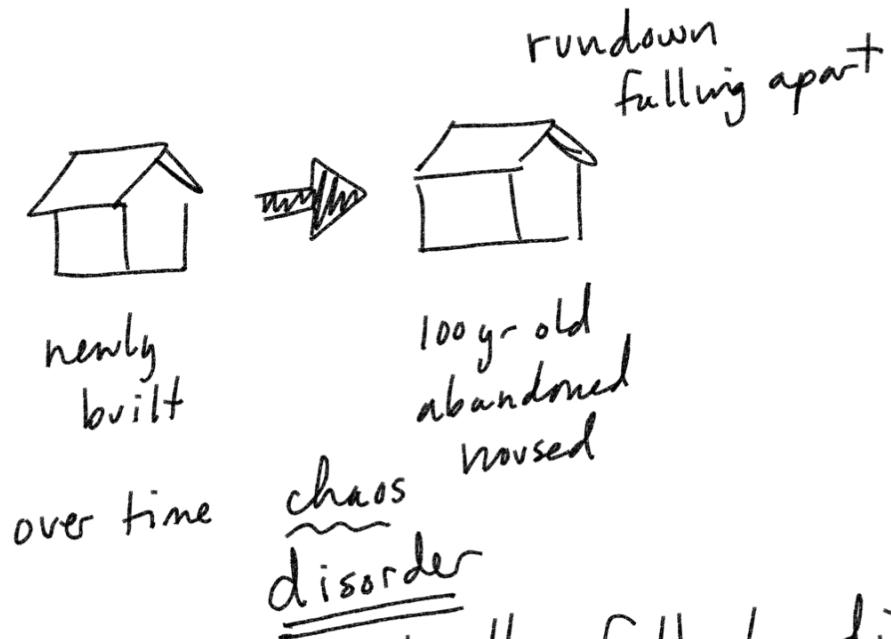
Endothermic

Exergonic → net effect
energy was released
but heat was absorbed.

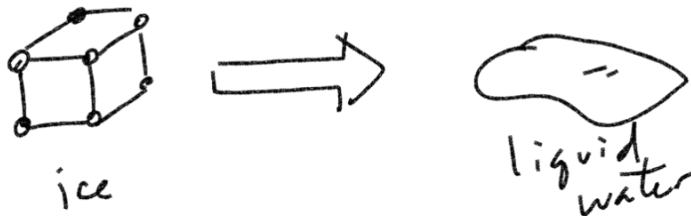
— Confusing —

Entropy

Entropy →



over time all things naturally fall to disorder.
Entropy.



Increase of
entropy
↓
release in
energy

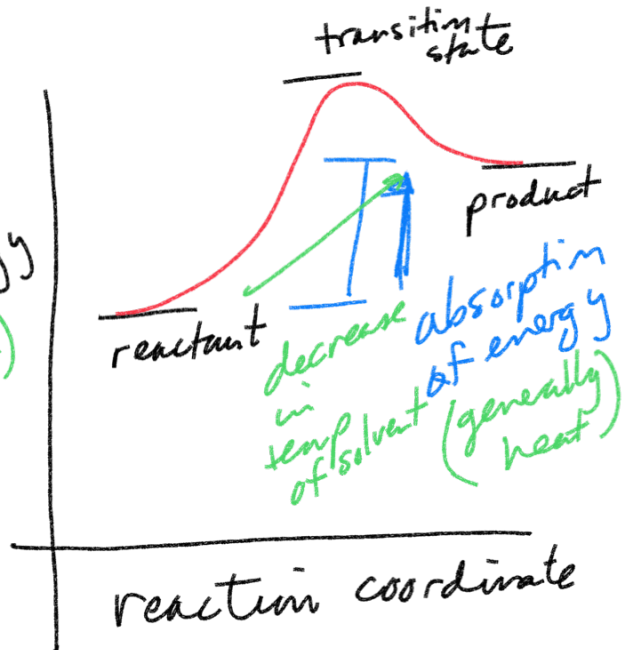
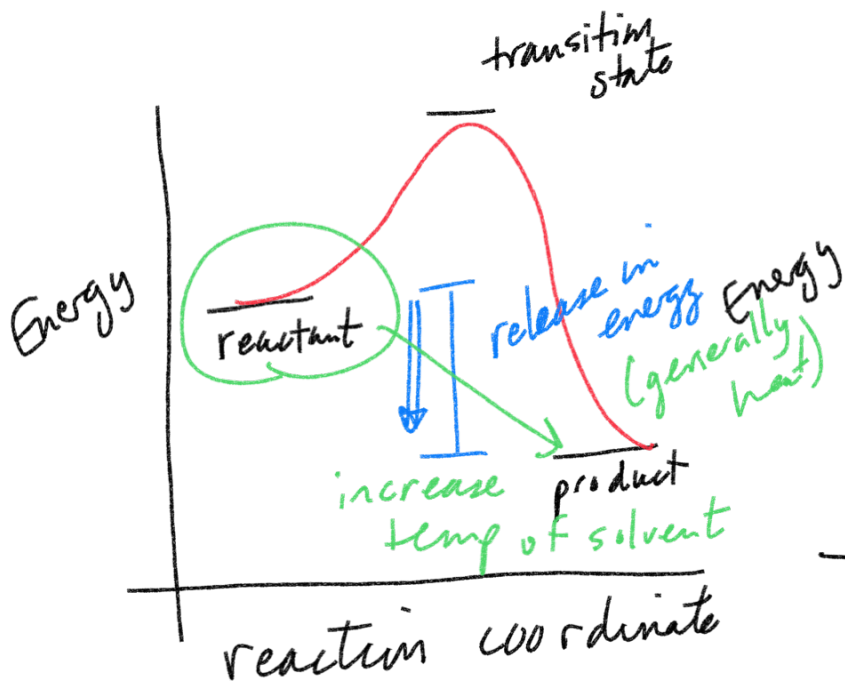
solvent
vinegar (acetic acid)

solute
baking soda
(sodium bicarbonate)

Initial temp: 69.6°F

final temp: 57.1°F

Endothermic Reaction



Exothermic

Endothermic

HW
 Experiment
 Calorimetry
 online HW 22 } March 17th
 Quiz 22 }
 HW/Quiz 20 due tonight
 HW/Quiz 21 } March 17th
 exothermic → release heat
 endothermic → absorb heat
 No class on March 16th