

Guided Notes: Entropy

Name: _____ Period: _____

2nd Law of Thermodynamics

- Entropy (S) is a measure of the _____ or _____ of the particles that make up a system.
- Entropy is a driving force in all _____ processes.
- The _____ - spontaneous processes proceed in a way that the disorder of the universe increases.
- Entropy is all about _____.
- This is the _____ Law of Thermodynamics.

Measuring Entropy

- Change of state
 - Which state has the most entropy? _____
- Solids dissolving to form a solution
 - Solutions have _____ entropy than _____ and _____.
 - _____
- Big particles broken down into little pieces – entropy _____
 - $\text{CaCO}_{3(s)} \rightarrow \text{CaO}_{(s)} + \text{CO}_{2(g)}$
 - More parts = _____
- Spreading out gases
 - Greater volume = _____

Calculating Entropy

- $\Delta S_{\text{rxn}} = \sum \Delta S_f(\text{products}) - \sum \Delta S_f(\text{reactants})$
- Therefore:
 - $\Delta S_{\text{rxn}} =$ Getting more _____
 - + $\Delta S_{\text{rxn}} =$ Getting more _____

Practice:

- Which has more entropy?
 - Solid CO_2 or gaseous CO_2
 - H_2 gas at 1atm or H_2 gas at .001atm?
- Predict the sign of the entropy change:
 - Solid NaCl is added to water to form a solution
 - Water vapor condenses on a cold surface to form crystals

Check for understanding:

- Which has more entropy?
 - A solution of potassium nitrate or solid potassium nitrate? (circle one)
- What is the sign of the change in entropy?
 - $2\text{SO}_{3(g)} \rightarrow 2\text{SO}_{2(g)} + \text{O}_{2(g)}$