

CONCEPT: ENTROPY

□ Even if a reaction is highly exothermic, the level of order it requires may make it **statistically improbable**.

• Entropy ΔS is the tendency of a system to take its most probable form.

_____ = More ordered

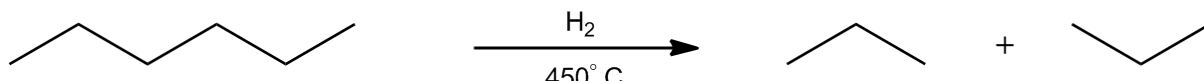
_____ = More disordered

□ There are three phenomena that make reactions more probable. $\Delta S \uparrow$ □ All are favored by _____

1. Increasing the Number of Molecules

Reactions that create extra molecules are more probable since there are *more ways to arrange them*.

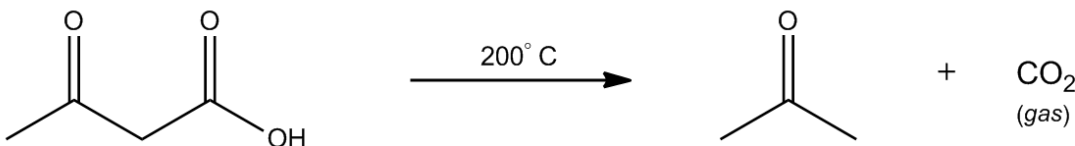
Thermal Cracking:



2. Phase Transition

Transformation of solid to liquid or liquid to gas is more probable since the molecules will have a *greater vibrational freedom*.

Decarboxylation:



3. Increasing Molecular Freedom of Motion

Converting cyclic molecules to acyclic molecules are more probable since it *increases freedom of rotation*.

Lactone Ring Opening:

