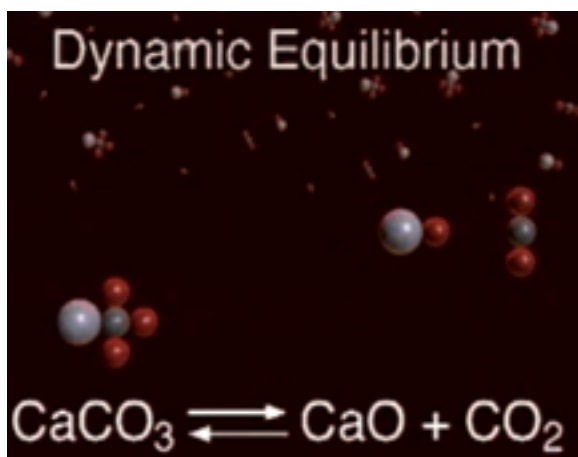
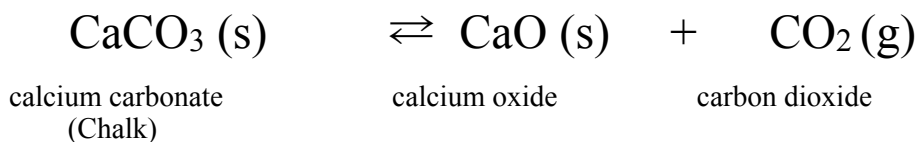


Video: Chemical Equilibrium between forward and reverse reactions

Equilibrium: When the RATE of the forward and reverse reactions are the same.



Observe the reversible reaction shown below.



Answer in your Interactive Notebook: Page 17.

1. Which molecules form when the forward reaction, decomposition of CaCO_3 occurs?
2. Which molecule is formed when the reverse reaction between CaO and CO_2 occurs? _____
3. When the forward reaction occurs at the same time as the reverse reaction, they are at _____.
4. Which quantities must be equal for a chemical reaction at equilibrium?
 - (1) the activation energies of the forward and reverse reactions
 - (2) the rates of the forward and reverse reactions
 - (3) the concentrations of the reactants and products
 - (4) the potential energies of the reactants and products
5. Given the equation representing a reaction at equilibrium: $\text{N}_2(\text{g}) + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3(\text{g})$

(a) Explain, in terms of collision theory, why the rate of the forward reaction **increases** when the concentration of $\text{N}_2(\text{g})$ is **increased**.

When the concentration of $\text{N}_2(\text{g})$ is increased, _____

(b) Explain why the amount of $\text{H}_2(\text{g})$ will **decrease** if $\text{N}_2(\text{g})$ is **added** to the test tube.

(Hint: Think about collision theory and the conservation of atoms during reactions)

When $\text{N}_2(\text{g})$ is added to the test tube, _____