Chemical Thermodynamics

Examples

- Consider a simple gas phase equilibrium

$$N_2O_4 \leftrightarrow 2\ NO_2$$

- What is K_p at equilibrium assuming that the gases are ideal and T = 298K?

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$$N_2O_4 \leftrightarrow 2\ NO_2$$

- If one mole of N_2O_4 is placed in a 10 L tank at 298 K how much of each species is present at equilibrium?

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$$N_2O_4 \leftrightarrow 2\ NO_2$$

- If one mole of N_2O_4 is placed in a balloon such that the total pressure is always 1 bar at 298 K how much of each species is present at equilibrium?

Examples

- Consider a simple gas phase equilibrium

$$N_2O_4 \leftrightarrow 2\ NO_2$$

- If one mole of N_2O_4 is placed in a balloon such that the total pressure is always 1 bar at 400 K how much of each species is present at equilibrium?

Examples

- Consider a hypothetical gas phase reaction

$$A\,(g) + B\,(g) \leftrightarrow C\,(g)$$

- The reaction is conducted at constant temperature and the gases are ideal. The standard chemical potentials at 298 K of C(g), A(g), and B(g) are -12 kJ/mol, -3 kJ/mol, and -4 kJ/mol, respectively. What is K_p for the reaction at 298K?

Examples

- Consider a hypothetical gas phase reaction

$$A\,(g) + B\,(g) \leftrightarrow C\,(g)$$

- The reaction is conducted at constant temperature and volume and the gases are ideal. The standard chemical potentials at 298 K of C(g), A(g), and B(g) are -12 kJ/mol, -3 kJ/mol, and -4 kJ/mol, respectively. What is the volume if 1 mole of each substance is present at equilibrium ?