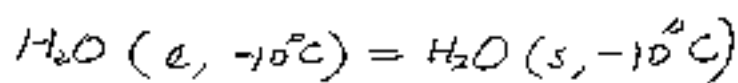


資源熱力學

1. Calculate the entropy difference between the irreversible and reversible processes for the freezing of water at -20°C . (20%)
2. Calculate the change in Gibbs free energy for (20%) the process



if the vapor pressure of water at -10°C is 2.149 mm of Hg, and the vapor pressure of ice at -10°C is

1.950 mm Hg

(a) at what situation $\Delta G = 0$

(b) $\Delta G = RT \ln P_2/P_1 \neq 0$

3. Discuss the Henry's-law constants. If the Henry's-law constant for CO_2 at 25°C is 1.25×10^6 , calculate the solubility of CO_2 in water at 25° at a partial pressure of CO_2 over the solution of 760 mm. Assume that a liter of solution contains practically 1000 grams of water. (C: 12.01; atomic weight) (20%)

(背面仍有題目,請繼續作答)

4. Discuss the physical meaning of Gibbs free energy. (20%)
5. Design an experiment showing that you can measure the "heat of evaporation of water" (H_2O) at 1 at. pressure. (20%)