## Exercises to Le Chatelier’s principle

1. Write down the equilibrium laws for the following reactions:

a.) O2 (g) + 2 H2 (g)  2 H2O (g)

b.) 2 NH3 (g)  N2 (g) + 3 H2(g)

2. For the reaction

H2 (g) + I2 (g)  2 HI (g)

the equilibrium constant at a given temperature is K= 50.5.

a.) Considering this value, what can you say about the reaction? What does the value mean for the concentrations of the involved substances at equilibrium?

b.) The above reaction is carried out starting with the reactants. After some time the concentrations of all involved substances is measured:

c(H2) = 15.78·10-3 mol/l, c(I2) = 4.93·10-3 mol/l und c(HI) = 20.17·10-3 mol/l.

Is this reaction at equilibrium?

3. The value of the equilibrium constant K can never have a value equal or smaller than zero.

1. Why is that so? Study the expression of the equilibrium law for this reaction.
2. In what range of values lies K if the equilibrium is on the left, the right or in the middle?