9. Exercise General Chemistry 29.01.2024

WS 2023/24

9.1

The reaction enthalpy for the oxidation of ethane to acetic acid is to be determined using the enthalpies of combustion of ethane (-1427.85 kJ/mol) and acetic acid (-783.68 kJ/mol). Gaseous water should be produced in all reactions.

9.2

Calculate the density of air (78 vol% N_2, 21 vol% O_2, 1 vol% Ar) at 20 °C and 1 bar.

9.3

A mixture of 9.25 g CO and 7.83 g CO_2 is under a pressure of 0.8 bar. Calculate the partial pressures of the gases.

9.4

Calculate the pressure arising at 20 °C in a 100 dm^3 vessel when 100 g Na reacts with 100 g water.

9.5

At 290K the vapour pressure of pure Benzene is 50 Torr, the vapour pressure of pure Toluene is 15 Torr. Which mixture of liquid Toluene/Benzene (which composition) will
distill equimolar at 290K? What will be the total vapour pressure?