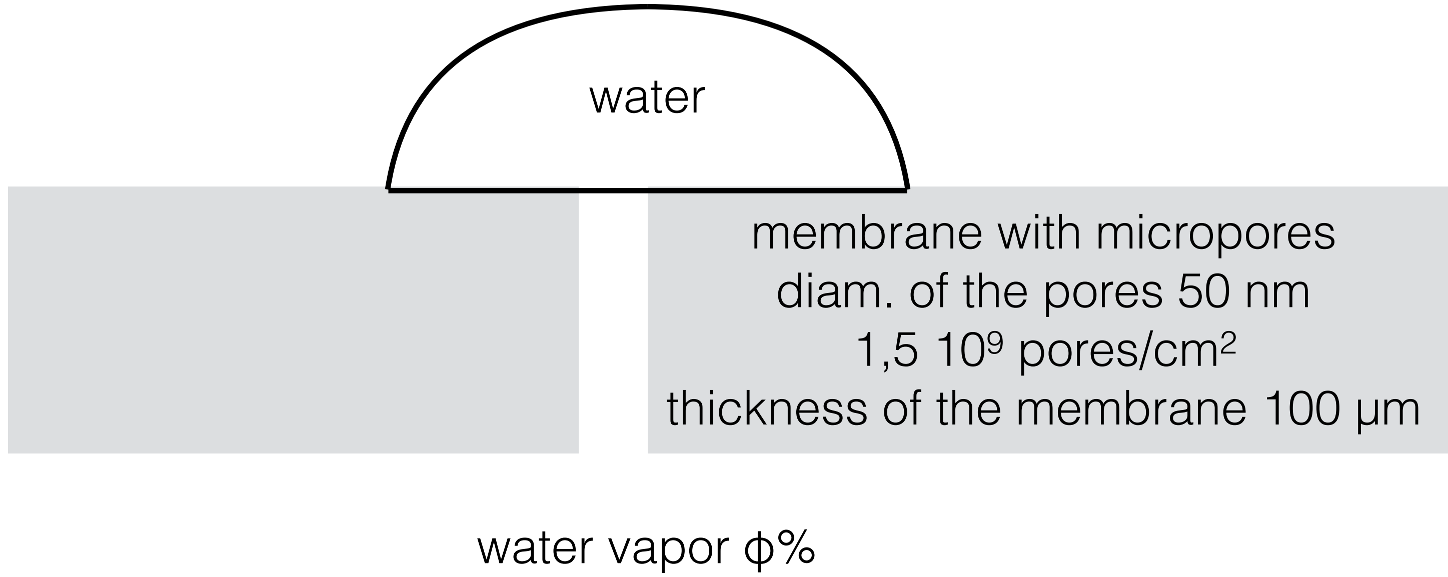
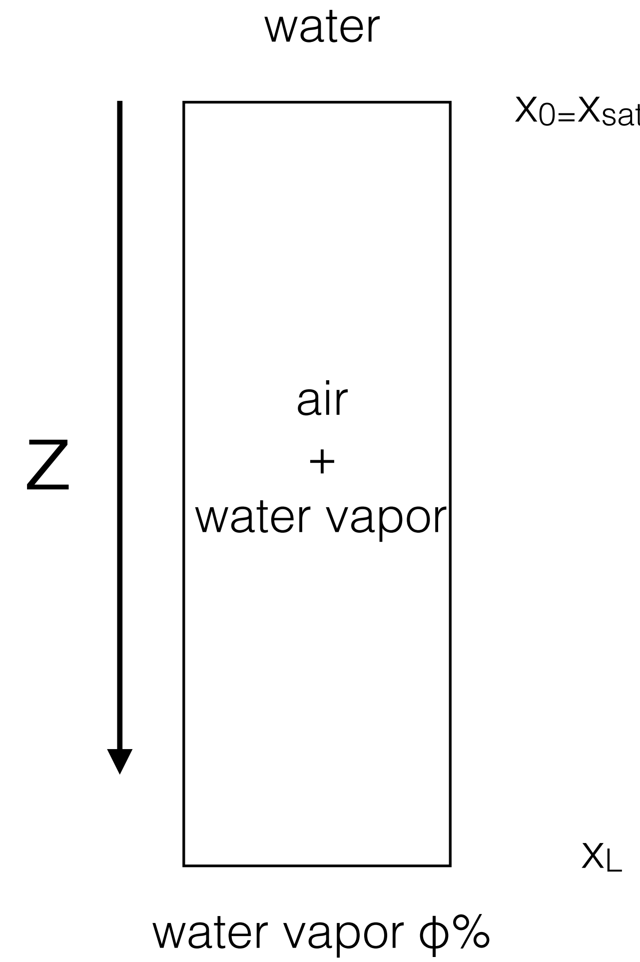




$x_{A0}=x_{sat} = p_{sat}/p \qquad x_{AL}=\phi\, x_{sat} = \phi\, p_{sat}/p$

p_{sat}= 0.03 bar at 298 K

D_A= 0.25 10^{-4} m^2/s

the mixture A+B is treated as an ideal gaz mixture

Molar fluxes of vapor N_A and air N_B as a function of molar fractions x_A and x_B

$N_A= x_A(N_A + N_B)- C\, D_A\, dx_A/dz \qquad N_B= x_B(N_A + N_B)- C\, D_B\, dx_B/dz$

$d N_A/dz = 0$, $d N_B/dz = 0$, value of N_B at the gaz/water interface =0, N_B =0 everywhere

$N_A(1-x_A)=- C\, D_A\, dx_A/dz \qquad x_B N_A = C\, D_B\, dx_B/dz$

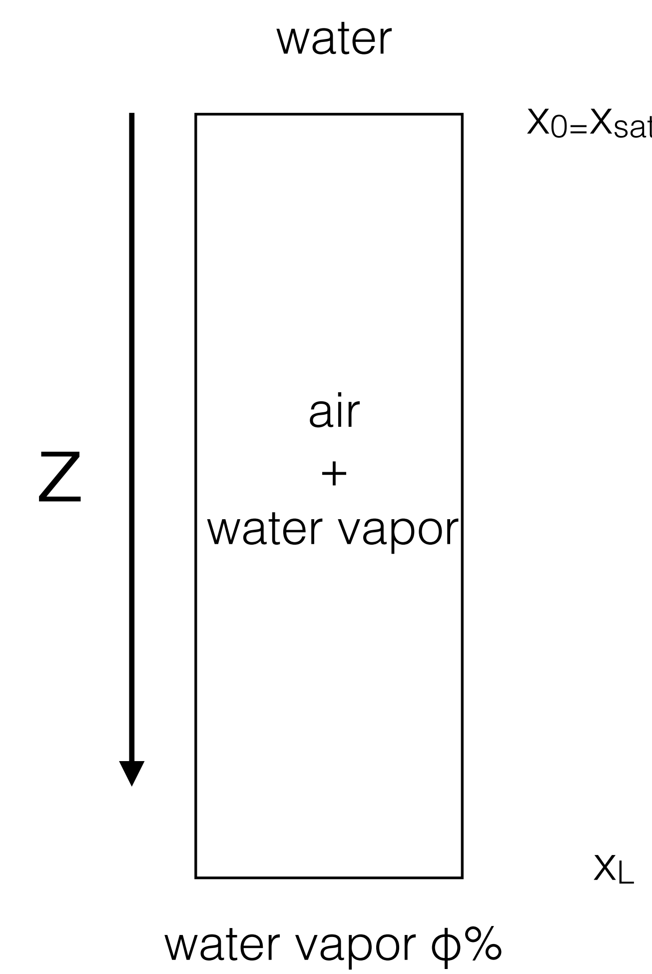
$$N_A(1-x_A) = -c\,D_A\,dx_A/dz$$

$$x_B N_A = c\,D_B\,dx_B/dz$$

$$N_A = -1/(1-x_A)\,c\,D_A\,dx_A/dz$$

$$0 = -d/dz[1/(1-x_A)\,dx_A/dz] = d/dz[d/dz\,[\ln(1-x_A)]]$$

$$\ln(1-x_A) = C_1 z + C_2$$



$x_{A0} = x_{sat} = p_{sat}/p$ $\quad x_{AL} = \phi\,x_{sat} = \phi\,p_{sat}/p$

$p_{sat} = 0.03$ bar at 298 K

$c = 40$ moles/m^3

$D_A = 0.25\ 10^{-4}\ m^2/s$

Goretex membrane : $1.5\ 10^9$ pores/cm^2

each pore has a diameter of 50 nm