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! 1. Odbourávání alkoholu =====
vmax=0.12 ! [g dm-3 hr-1]
KM=0.06 ! [g dm-3] Michaelisova konstanta
!
! a) -----
cS0=4*4.5e-2*500*0.8/50 ! [g dm-3]
! cS0 >> KM ==> 0. řád
cS1=0.2*0.8 ! [g dm3]
tau=(cS0-cS1)/vmax
!
! b) -----
cS0=0.5e-2*333*0.8/40 ! [g dm-3]
! cS0 << KM ==> 1. řád
kk=vmax/KM ! [hr-1]
cS1=M(C2H5OH)/NA ! [g dm-3]
tau=ln(cS0/cS1)/kk ! [hr]
!
! 2. (12.11) Povrchové napětí =====
35+39 > 72.75 ! ==> kapka
!
!
! 3. (12.4) Povrchové napětí =====
d=1.4e-3 ! [m]
z=8e-2 ! [m]
T=23+273.15 ! [K]
rho=0.87e3 ! [kg m-3]
gamma=50.2e-3 ! [N m-1]
g=9.81 ! [m s-2]
p_hydro=z*rho*g ! [Pa]
p_tens=pi*d*gamma/(pi/4*d^2) ! [Pa]
p=p_hydro+p_tens ! [Pa]
!
!
!
!
!
!
!
!
!
!
!

! 4. Kelvinova rovnice =====
p=39.46e3 ! [Pa]
Vm=1.263e-3/M(CS2) ! [m3 mol-1]
gamma=32.25e-3 ! [N m-1]
r=5e-6 ! [m]
T=273.15+20 ! [K]
pkap=exp(-2*gamma*Vm/r/R/T)*p ! [Pa]
Dp=pkap-p ! [Pa]
!
!
! 5. Vznik mlhy =====
A=10.19621
B=1730.63
C=233.426
t1=20 ! [°C]
T1=(t1+273.15) ! [K]
p1=10^(A-B/(C+t1)) ! [Pa]
t=15 ! [°C]
T=t+273.15 ! [K]
p=10^(A-B/(C+t)) ! [Pa]
gamma=(75.621-0.15*t-1.0266e-4*t^2)/1000 ! [N m-1]
Vm=18e-6 ! [m3 mol-1]
p1t=p1*T/T1 ! [Pa] tlak klesl s teplotou
r=2*gamma*Vm/(R*T*ln(p1t/p)) ! [m]
V=4/3*pi*r^3 ! [m3]
n=V/Vm ! [mol]
N=n*NA ! molekul
!
!
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! 6. (12.21) Langmuirova izoterma =====
m1=2          ! [g]                                2
Asp=230       ! [m2 g-1]                          230
p1=22e3       ! [Pa]                                22000
V1=38e-6/m1   ! [m3 g-1] na 1 g adsorbentu        1.9 · 10-05
m2=26         ! [g]                                26
p2=90e3       ! [Pa]                                90000
Aat=0.2e-18   ! [m2]                                2 · 10-19
n1sp=V1/0.0224 ! [mol g-1]                          0.00084821
amax=Asp/Aat/NA ! [mol g-1]                          0.0019096
ar=n1sp/amax  ! ar=a/amax=bp/(1+bp)                 0.44418
bp=1/(1/ar-1)                                0.79914
b=bp/p1                                           3.6325 · 10-05
n2sp=amax*b*p2/(1+b*p2)                          0.0014623
n2sp*m2*0.0224                                    0.00085166

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