**%Data from:**

**%M.A.E. de Franco, N.K. Haro, E.P. Thurow, R. de P. Soares, L.A. Féris, ADSORÇÃO DE AMOXICILINA EM CARVÃO ATIVADO GRANULADO: CINÉTICA, ISOTERMAS E CURVAS DE RUPTURA, in: XI Encontro Brasileiro Sobre Adsorçao, Aracaju, Brazil, 2016.**

**%Amoxicillin on carbon, fixed inlet concentration, 3 different fluxes**

**%Isotherm values for c\_eq, q\_eq**

ce=[10,15,25,30,40,65,132,170,220,268,362,460]/1000; %Adsorbate inlet concentration [kg/m^3]

qe=[0.25,0.5,0.65,0.85,0.89,1.14,1.65,2,2.1,2.38,2.7,2.725]/1000; %Adsorbed fraction at equilibrium [kg/kg]

**%Corresponding Langmuir isotherm parameters**

qm=1/356.1; %[kg adsorbate/kg adsorbent]

kL=356.1/26.35; %[m^3solution/kgadsorbent]

**%Inlet concentration and t1/2 values for 3 fluxes**

ci=40/(1e3); %Adsorbate initial concentration [kg/m^3]

t12=[20.04545455 15.91666667 14.04477612]\*60; %Time at which the c/c\_in=1/2 [s]

**%Corresponding q\_eq**

qeexp=0.89/1000; %qe experimental

Q=[3,4,5]\*60/1000000; %Flow rate [m^3/s]

**%3 sets of times for breakthrough data with 3 fluxes**

texp={[12 13 14 14 16 17 18 19 20 21 22 23 25 30 40 49 60 70 80 89 120 150 180 209 270 300 329 359 389]\*60,

[9 9 10 12 13 14 14 15.5 17 18 21 21 22 23 24 25 30 39.5 49 61 70 80 89 120 209 239 270]\*60,

[5 8.5 8.5 9 10.5 12 13 15.5 17 18 19.5 21 22 23.5 25 30 39.5 49 60 70 80 89 120 150 180 209]\*60};

**%Corresponding outlet concentrations**

cexpci={[0.014545455 0.054545455 0.12 0.189090909 0.269090909 0.338181818 0.403636364 0.454545455 0.498181818 0.538181818 0.552727273 0.589090909 0.643636364 0.709090909 0.734545455 0.763636364 0.825454545 0.84 0.854545455 0.861818182 0.88 0.894545455 0.905454545 0.916363636 0.927272727 0.938181818 0.941818182 0.956363636 0.96],

[0.003636364 0.072727273 0.145454545 0.225454545 0.298181818 0.374545455 0.425454545 0.490909091 0.523636364 0.567272727 0.625454545 0.647272727 0.665454545 0.687272727 0.705454545 0.72 0.76 0.818181818 0.850909091 0.865454545 0.876363636 0.876363636 0.890909091 0.909090909 0.938181818 0.949090909 0.956363636],

[0.003636364 0.010909091 0.130909091 0.225454545 0.321818182 0.390909091 0.449090909 0.570909091 0.607272727 0.669090909 0.694545455 0.734545455 0.745454545 0.767272727 0.785454545 0.830909091 0.847272727 0.869090909 0.883636364 0.887272727 0.905454545 0.910909091 0.923636364 0.941818182 0.945454545 0.961818182]};

**%Various operating parameters**

Lb=20e-2; %Column height [m]

Db=12e-3; %Column diameter [m]

Sb=pi\*(Db^2)/4; %Bed section area [m^2]

Vb=Sb\*Lb; %Bed volume [m^3]

Pa=101325; %Atmospheric pressure [Pa]

T=25+273.15; %Column temperature 25 ºC [K]

rhoAMOX=1.6e3; %Adsorbate density at 26 ºC and 1.12 bar [kg/m^3]

MAMOX=365.4/1000; %Adsorbate Molecular Mass [kg/mol]

Rg=8.314; %Ideal gas constant [J/(K·mol)]

MH2O=0.018; %Water Molecular Mass [kg/mol]

muH2O=0.0008891; %Water dynamic viscosity [Pa·s]

rhoH2O=1000; %Water density [kg/m^3]

rhoac=600; %Adsorbent aparent density (0.25-0.6 g/cm^3) [kg/m^3]

d=1.765e-3; %Particle diameter (1.168-2.362 mm) [m]

us=Q/Sb; %Superficial velocity [m/s]

mcoal=0.5e-3; %Mass of initial adsorbent [kg]

rhob=mcoal/Vb; %Bulk density [kg/m^3]

e=1-(rhob/rhoac); %Porosity of the bed [m^3void/m^3bed]

u=us/e; %Interstitial velocity [m/s]

kp=((d^2)/150)\*(e^2)/((1-e)^2); %Permeability [m^2]