%oef5

%initiele condities

y0=[0.01 0 10 1]

%tijdsduur

tspan=[0 100]

%solver oproepen

[t y]=ode45(@oef5funct,tspan,y0)

%resultaat plotten

plot(t,y(:,1),'r:',t,y(:,2),'-',t,y(:,3),'c-')

xlabel('Tijd (u)')

ylabel('Fed-batchfermentatie (kg/m^3)')

legend('Biomassa','Product','Substraat')

function [ ydot ] = oef5funct(t,y)

%umax=0.3; Ks= 0.1; k1= 0.03; k2= 0.08, Yxs= 0.8

%F=0 voor batchfermentatie; F=1.5 voor fed-batchfermentatie

%Sf=10

X=y(1);

P=y(2);

S=y(3);

V=y(4);

if t<22.5;

ydot=[(0.3\*(S/(0.1+S))\*X)

(0.03+0.08\*0.3\*(S/(0.1+S)))\*X

(-0.3\*(S/(0.1+S))\*X)/0.8

0];

else t>22.5;

ydot=[(0.3\*(S/(0.1+S))\*X)-(X\*(1.5/V))

((0.03+0.08\*0.3\*(S/(0.1+S)))\*X)-(P\*(1.5/V))

(10\*(1.5/V))-((0.3\*(S/(0.1+S))\*X)/0.8)-(S\*(1.5/V))

1.5];

end

