

BPL_TEST2_Chemostat - demo

```
In [14]: run -i BPL_TEST2_Chemostat_fmpy_explore.py
```

Windows - run FMU pre-compiled JModelica 2.14

Model for the process has been setup. Key commands:

- par() - change of parameters and initial values
- init() - change initial values only
- simu() - simulate and plot
- newplot() - make a new plot
- show() - show plot from previous simulation
- disp() - display parameters and initial values from the last simulation
- describe() - describe culture, broth, parameters, variables with values/units

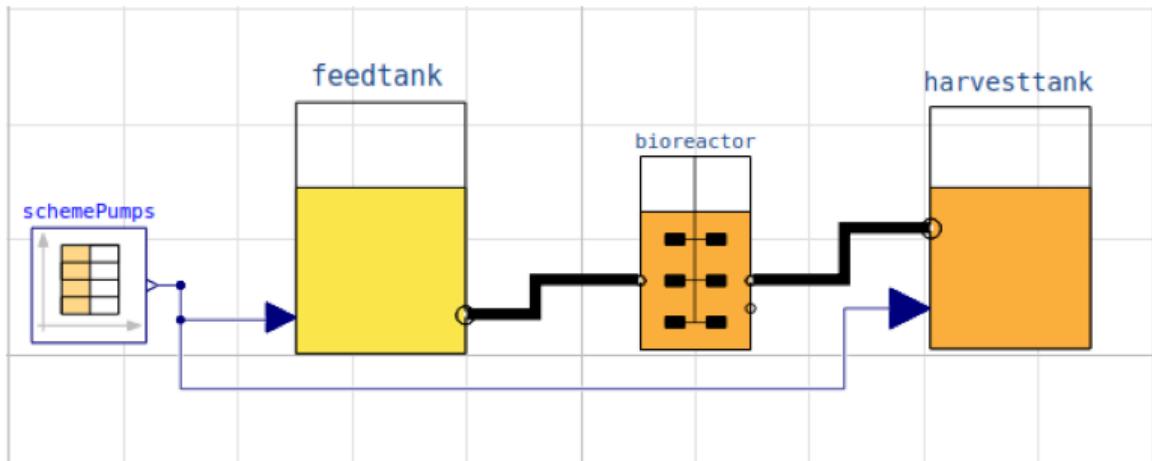
Note that both disp() and describe() takes values from the last simulation and the command process_diagram() brings up the main configuration

Brief information about a command by help(), eg help(simu)
Key system information is listed with the command system_info()
<Figure size 984.252x787.402 with 0 Axes>

```
In [15]: %matplotlib inline
plt.rcParams['figure.figsize'] = [25/2.54, 20/2.54]
```

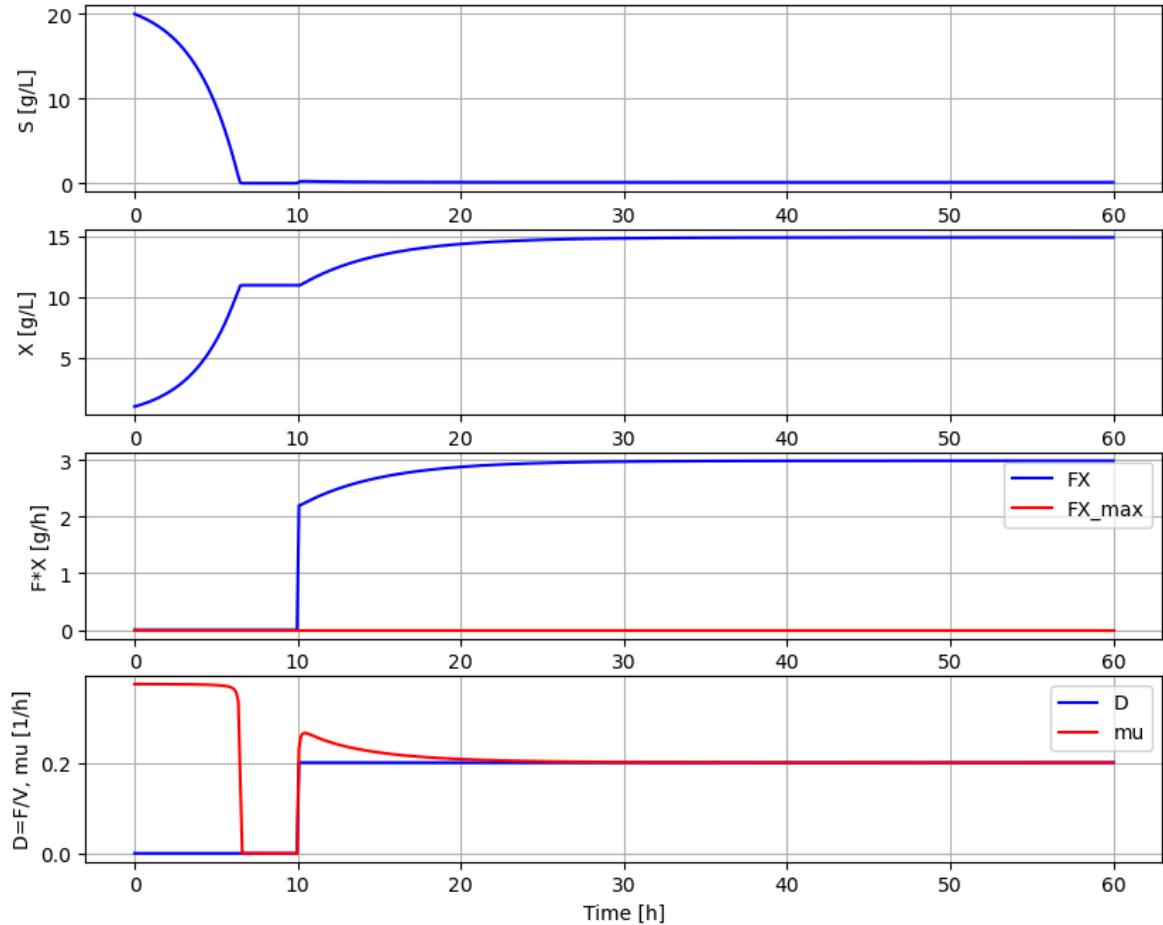
```
In [16]: process_diagram()
```

No processDiagram.png file in the FMU, but try the file on disk.

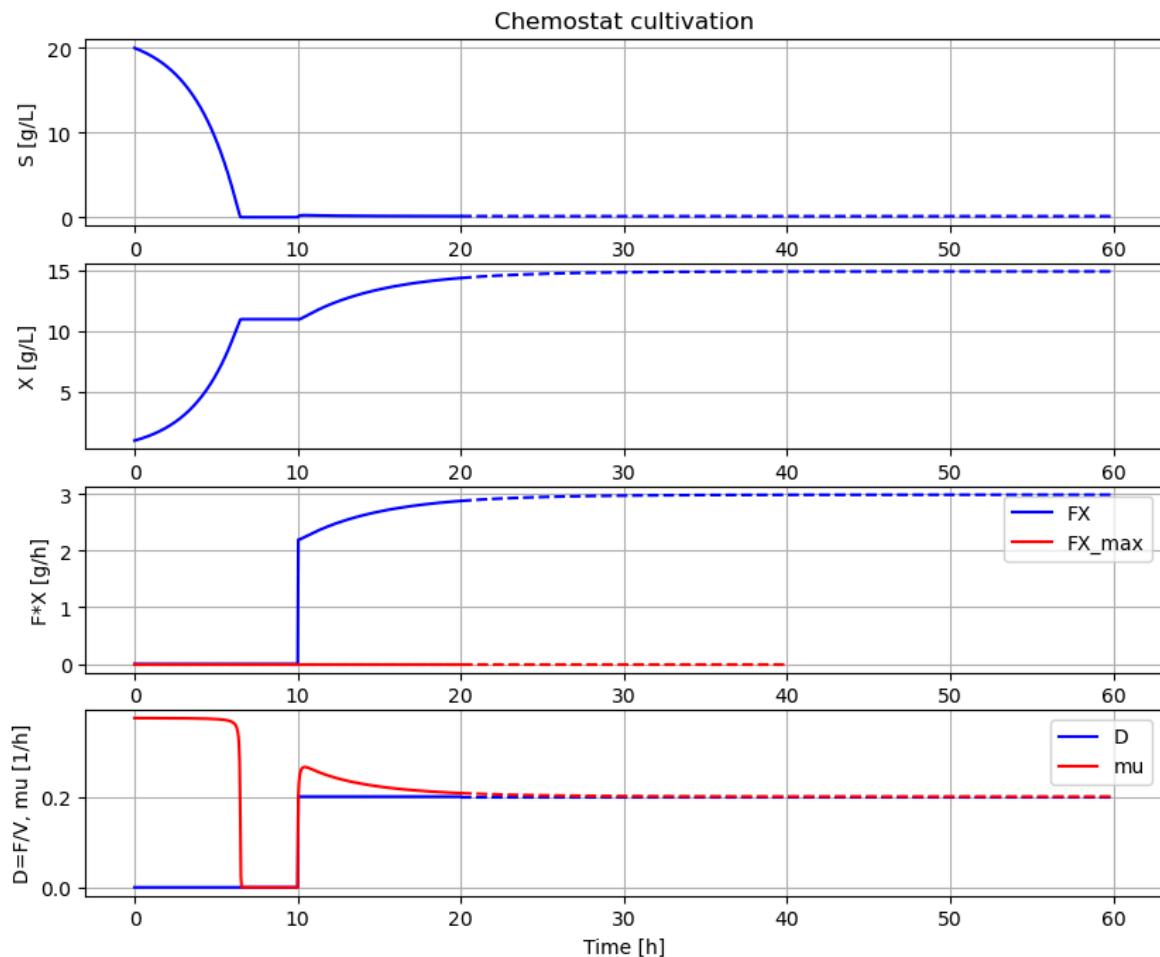


```
In [17]: newplot()
par(Y=0.50, qSmax=0.75, Ks=0.1)           # Culture parameters
init(V_start=1.0, VX_start=1.0, VS_start=20) # Bioreactor startup
par(S_in=30, t0=0, F0=0, t1=10, F1=0.2)     # Substrate feeding
simu(60)
```

Chemostat cultivation



```
In [18]: # Check simu('cont')
newplot()
simu(20)
simu(40, 'cont')
```



```
In [19]: disp('culture')
```

```
Y : 0.5
qSmax : 1.0
Ks : 0.1
```

```
In [20]: describe('mu')
```

```
Cell specific growth rate variable : 0.2 [ 1/h ]
```

```
In [21]: describe('parts')
```

```
['bioreactor', 'bioreactor.culture', 'D', 'feedtank', 'harvesttank', 'MSL', 'sche  
mePumps']
```

```
In [22]: describe('MSL')
```

```
MSL: RealInput, RealOutput, CombiTimeTable, Types
```

```
In [23]: system_info()
```

System information

-OS: Windows
-Python: 3.12.11
-Scipy: not installed in the notebook
-FMPy: 0.3.27
-FMU by: JModelica.org
-FMI: 2.0
-Type: CS
-Name: BPL.Examples_TEST2.Chemostat
-Generated: 2025-07-26T09:39:44
-MSL: 3.2.2 build 3
-Description: Bioprocess Library version 2.3.1
-Interaction: FMU-explore for FMPy version 1.0.2

In [24]: `!lsb_release -a`

'lsb_release' is not recognized as an internal or external command,
operable program or batch file.