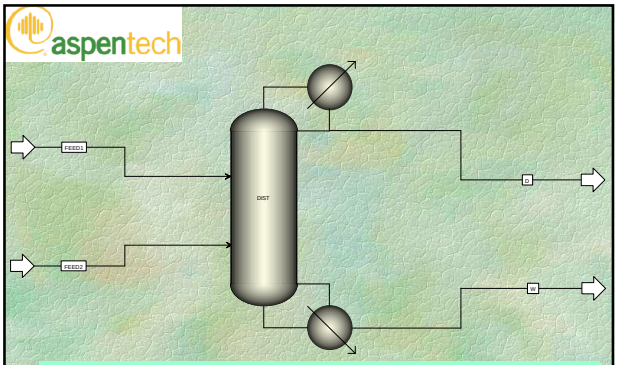
灵敏度分析

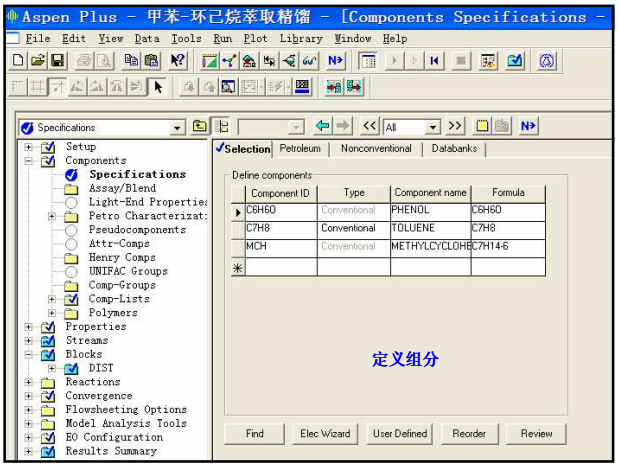
Sensitivity Analysis

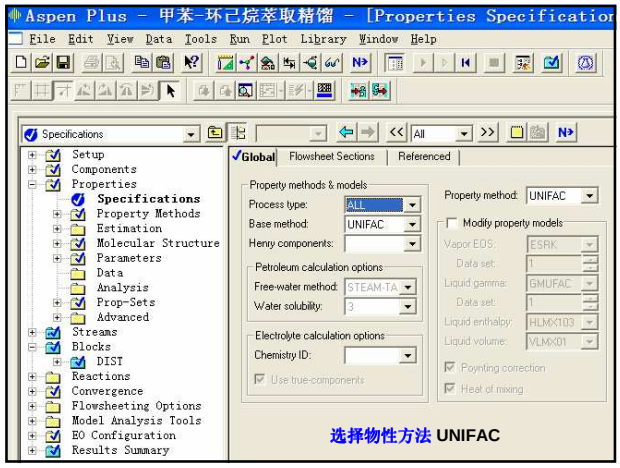
嘉兴学院　化学工程系

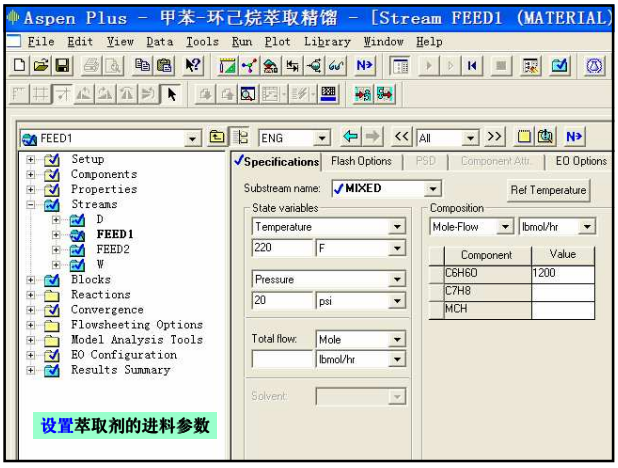
2009-04-26

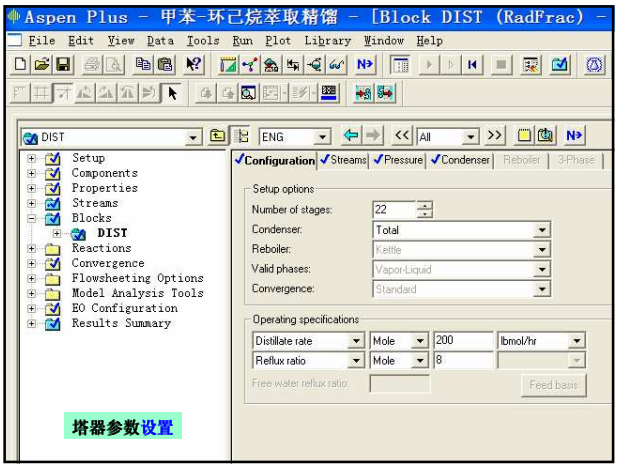


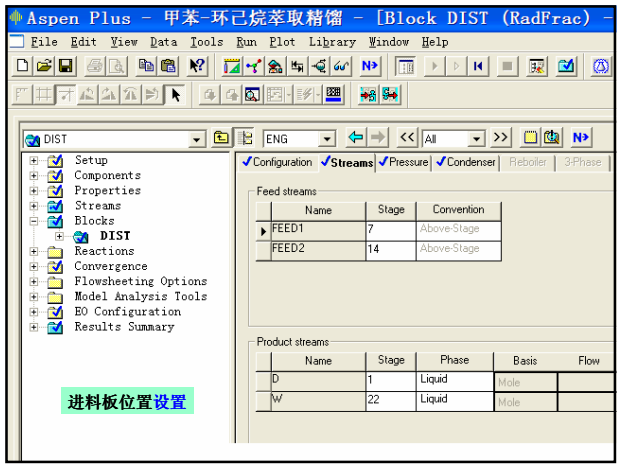
甲基环己烷（MCH）与甲苯沸点相近，难以用简单的二元精馏分离，用苯酚萃取精馏是较为有效的方法。通过增大萃取剂的流量来提高塔顶MCH产品的纯度；灵敏度分析：考察萃取剂苯酚流量的增加对产品MCH纯度的影响。

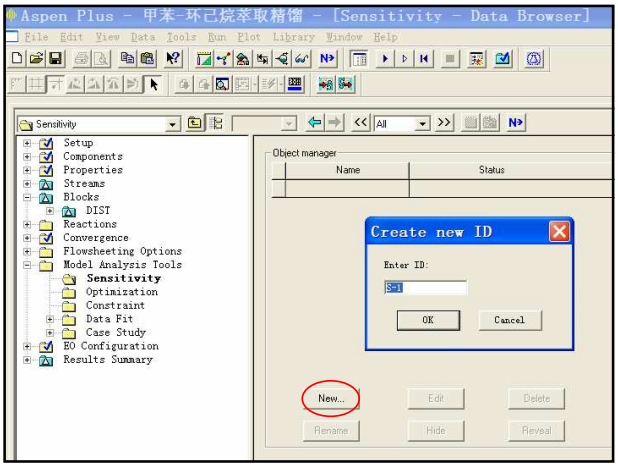


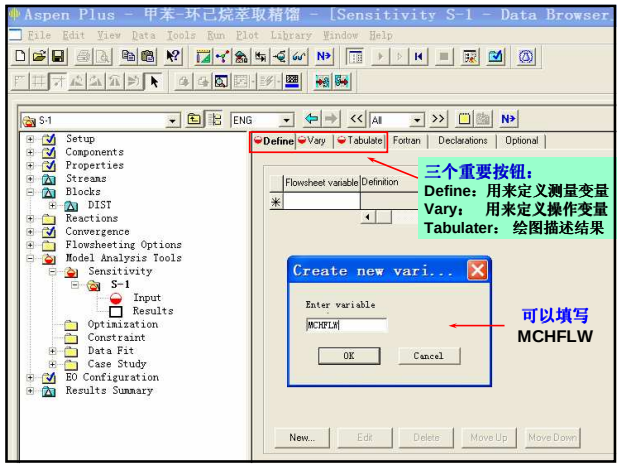




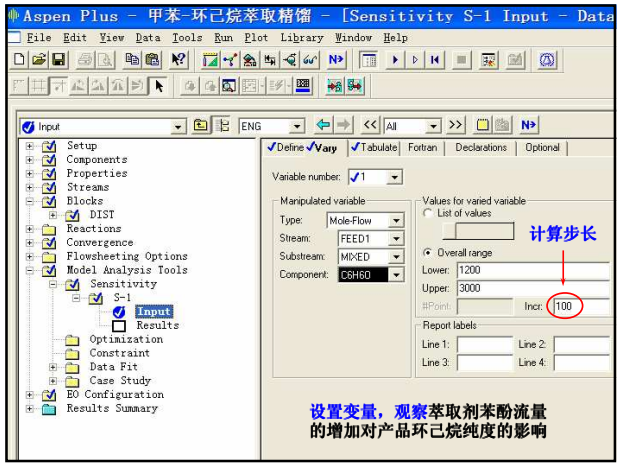

Aspen Plus - 甲苯-环己烷萃取精馏 - [Block DIST (RadFrac) -
塔器参数设置

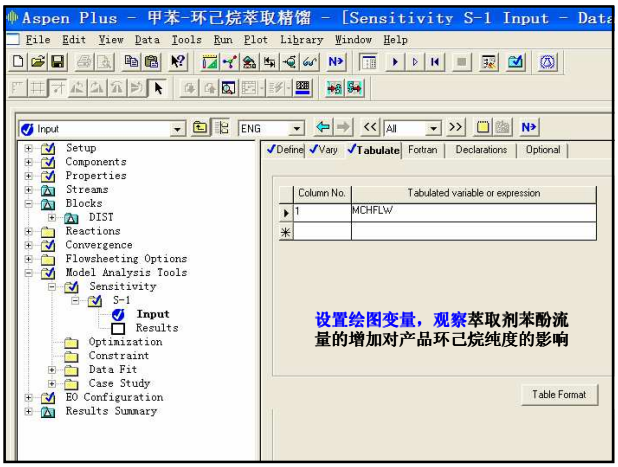

Aspen Plus - 甲苯-环己烷萃取精馏 - [Block DIST (RadFrac) -
进料板位置设置

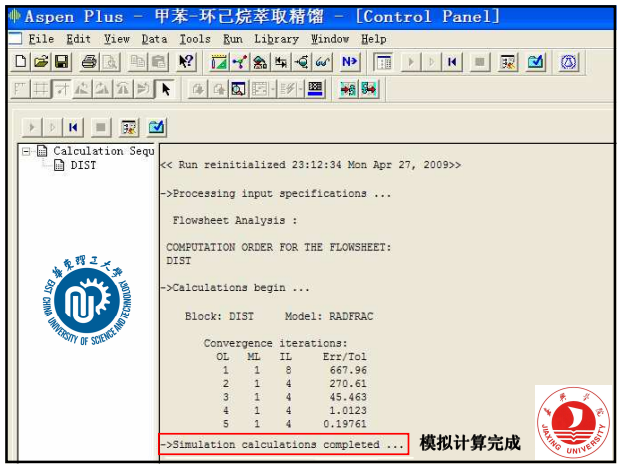

Aspen Plus - 甲苯-环己烷萃取精馏 - [Sensitivity - Data Browser]
Create new ID
Enter ID:
S-1
OK
Cancel
New...

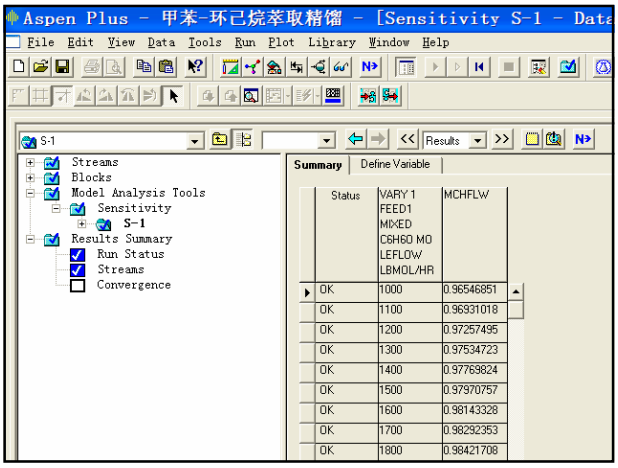

Aspen Plus - 甲苯-环己烷萃取精馏 - [Sensitivity S-1 - Data Browser
三个重要按钮：
Define：用来定义测量变量
Vary： 用来定义操作变量
Tabulater： 绘图描述结果
Create new vari...
Enter variable
MCHFLW
OK
Cancel
可以填写
MCHFLW

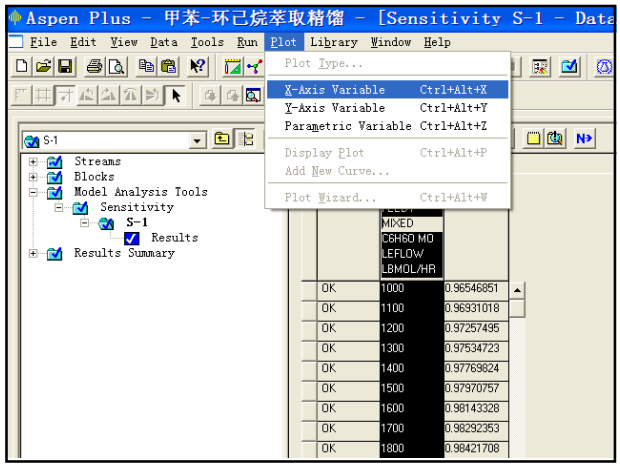

Variable Definition
Select a variable category and reference
Variable name: MCHFLW
Category
All
Blocks
Streams
Model Utility
Property
Reactions
Reference
Type: Mole-Frac
Stream: D
Substream: MIXED
Component: MCH
Mole-Frac是模块变量，D
模块的变量，组分是MCH
Close

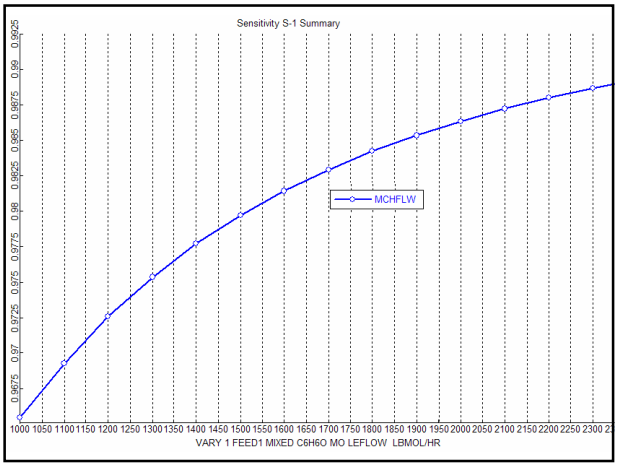

Aspen Plus - 甲苯-环己烷萃取精馏 - [Sensitivity S-1 Input - Data
计算步长
设置变量，观察萃取剂苯酚流量
的增加对产品环己烷纯度的影响

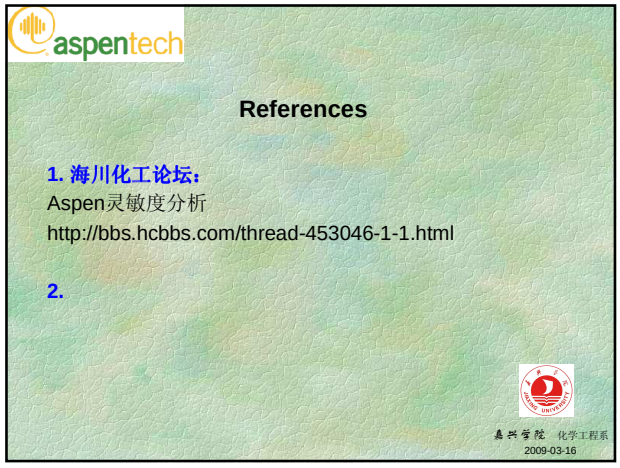

Aspen Plus - 甲苯-环己烷萃取精馏 - [Sensitivity S-1 Input - Data
File Edit View Data Tools Run Plot Library Window Help
Input
ENG
All
Define Vary Tabulate Fortran Declarations Optional
Column No.
Tabulated variable or expression
1
MCHFLW
Setup
Components
Properties
Streams
Blocks
DIST
Reactions
Convergence
Flowsheeting Options
Model Analysis Tools
Sensitivity
S-1
Input
Results
Optimization
Constraint
Data Fit
Case Study
EO Configuration
Results Summary
设置绘图变量，观察萃取剂苯酚流量的增加对产品环己烷纯度的影响
Table Format


Aspen Plus - 甲苯-环己烷萃取精馏 - [Control Panel]
File Edit View Data Tools Run Library Window Help
Calculation Sequ
DIST
<< Run reinitialized 23:12:34 Mon Apr 27, 2009>>
->Processing input specifications ...
Flowsheet Analysis :
COMPUTATION ORDER FOR THE FLOWSHEET:
DIST
->Calculations begin ...
Block: DIST Model: RADFRAC
Convergence iterations:
OL ML IL Err/Tol
1 1 8 667.96
2 1 4 270.61
3 1 4 45.463
4 1 4 1.0123
5 1 4 0.19761
->Simulation calculations completed ...
模拟计算完成


Aspen Plus - 甲苯-环己烷萃取精馏 - [Sensitivity S-1 - Data
File Edit View Data Tools Run Plot Library Window Help
S-1
Results
Streams
Blocks
Model Analysis Tools
Sensitivity
S-1
Results Summary
Run Status
Streams
Convergence
Summary
Define Variable
Status
VARY 1 FEED1 MIXED C6H6O MO LEFLOW LBMOL/HR
MCHFLW
OK 1000 0.96546851
OK 1100 0.96931018
OK 1200 0.97257495
OK 1300 0.97534723
OK 1400 0.97769824
OK 1500 0.97970757
OK 1600 0.98143328
OK 1700 0.98292353
OK 1800 0.98421708


Aspen Plus - 甲苯-环己烷萃取精馏 - [Sensitivity S-1 - Data
File Edit View Data Tools Run Plot Library Window Help
Plot Type...
X-Axis Variable Ctrl+Alt+X
Y-Axis Variable Ctrl+Alt+Y
Parametric Variable Ctrl+Alt+Z
Display Plot Ctrl+Alt+P
Add New Curve...
Plot Wizard... Ctrl+Alt+W
S-1
Streams
Blocks
Model Analysis Tools
Sensitivity
S-1
Results
Results Summary
MIXED
C6H6O MO
LEFLOW
LBMOL/HR
OK 1000 0.96546851
OK 1100 0.96931018
OK 1200 0.97257495
OK 1300 0.97534723
OK 1400 0.97769824
OK 1500 0.97970757
OK 1600 0.98143328
OK 1700 0.98292353
OK 1800 0.98421708


Sensitivity S-1 Summary
MCHFLW
0.9675 0.97 0.9725 0.975 0.9775 0.98 0.9825 0.985 0.9875 0.99 0.9925
1000 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050 2100 2150 2200 2250 2300
VARY 1 FEED1 MIXED C6H6O MO LEFLOW LBMOL/HR


aspentech
References
1. 海川化工论坛：
Aspen灵敏度分析
http://bbs.hcbbs.com/thread-453046-1-1.html
2.
嘉兴学院 化学工程系
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