Laboratory Assignment 7

Reading Assignment

1. "Chapter 9: Distillation" from Treybal, Robert E. Mass-Transfer Operations. McGraw-Hill Book Company (Third Edition).

Laboratory Assignment (Due Date: After Lab session)

1. [50 points] In this exercise we will simulate a multicomponent distillation column using rigorous distillation model (RADFRAC) in ASPEN. The column has following configuration.

Components	Fz_i
Benzene	250 lbmol/h
Toluene	80 lbmol/h
Naphthalene	10 lbmol/h
Type of Column	Conventional with partial reboiler
Stage pressure drop	2 kPa
Condenser Pressure	130 kPa
Top stage inside column pressure	125 kPa
Feed plate location	10 (above stage)
Number of equilibrium stages	23
Thermal condition of Feed	110 $^\circ$ F and 175 kPa
Type of Condenser	Total
Reflux ratio	2
Distillate flow rate	120 lbmol/h
Side product (vapor)	14th stage from top stage inside column

Assume VLE is adequately represented by Soave-Redlich-Kwong (SRK) property method. Compute composition on each tray (including bottom and distillate). Plot the temperature profile inside the distillation column.