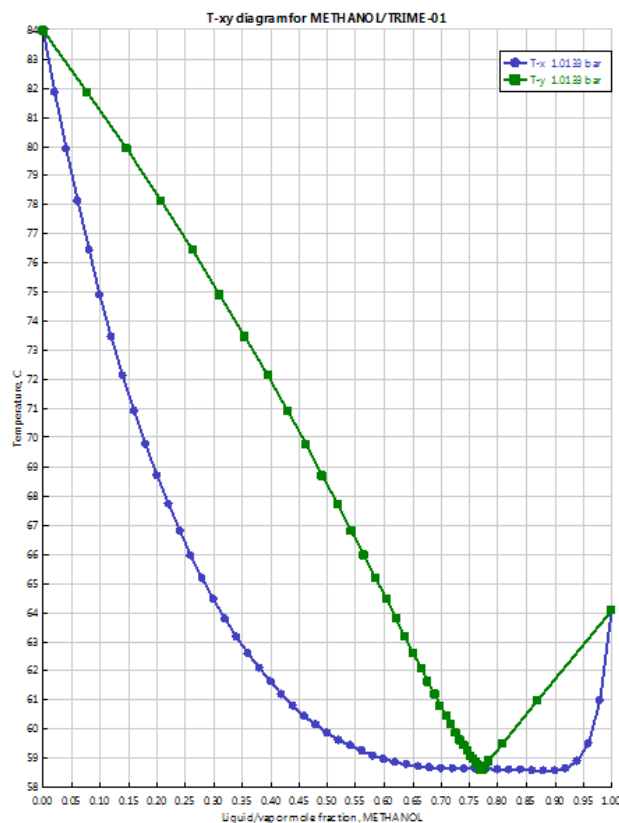


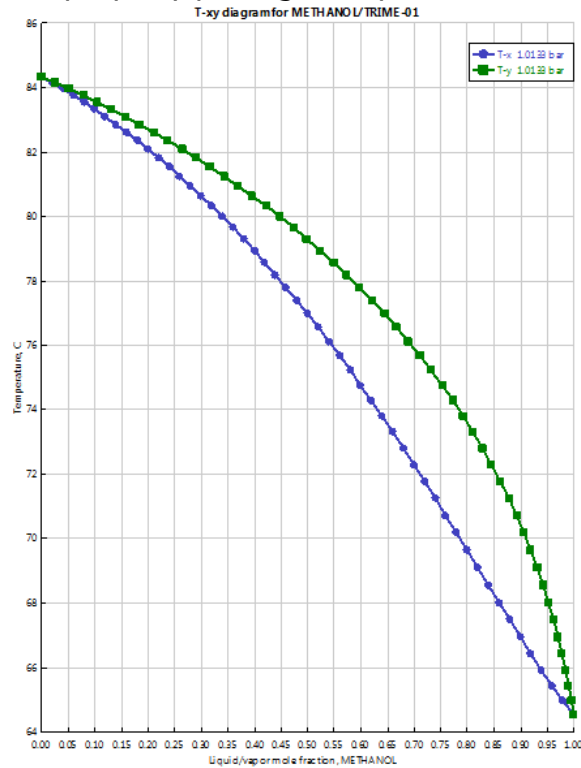
# Choosing the Correct Aspen Property Package

Choosing the correct property package is crucial to solving a problem using Aspen. Without the correct property package, the simulation will not simulate correctly and you will not obtain meaningful results. Typically during lectures, the professor tells us what property package to use so we don't waste our time trying to find out the correct one. However, for one of the class exercises, the goal was to determine what is the right choice of property package to use. For example, say you are designing a chemical plant that will separate methanol and trimethoxysilane( $C_3H_{10}SiO_3$ ). Since this is a binary system, experimentally it has been determined that these two components form a *Maximum Boiling Azeotrope* that is pressure sensitive. An azeotrope is a mixture of two or more components that cannot be separated by normal distillation. It occurs during boiling, the liquid and vapor compositions are the same. It's reflected in a Txy diagram, when the composition lines pinch together.

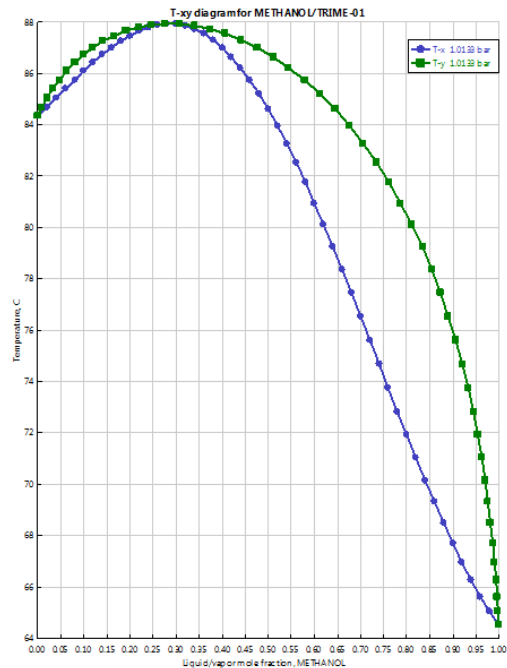
In this assignment, I started with the property package *Peng-Robinson*. The result is shown below:



As you see, the azeotrope does not occur at the highest boiling temperature. It occurred around 59.6 degrees Celcius. Therefore, this is not a suitable model for separation. Next I tried the property package *Uniquac*. The result is shown below



As you see, there's no observable azeotrope in this one graph, therefore, it is also not a good model for the separation of methanol and trimethoxysilane(C<sub>3</sub>H<sub>10</sub>SiO<sub>3</sub>). Last I tried the property package *Unifac*. The result is shown below:



As you see, the azeotrope occurs at the highest boiling temperature as stated in the problem. This will be a good model to use for the remainder of the problem.

Source: <http://lehighcheme.wordpress.com/2014/04/21/choosing-the-correct-aspen-property-package/>