

Tutorial on Ternary Plots

(Tom Co, 11/10/11)

Given: A set of mole fraction data for a ternary system

Desired: A plot of the data in a ternary diagram using Matlab

Preparation: Make sure three Matlab m-files are available:

draw_ternary.m

(draws the ternary diagram at desired intervals)

plot_ternary.m

(plots ternary data inside ternary diagram)

getpoints_ternary.m

(transforms (A,B) data to (x,y) location in ternary plot. needed in plot_ternary)

Procedure:

1. Set the ternary diagram with the desired intervals and labels.

Example:

```
>> draw_ternary(0.1,'C_\alpha','C_\beta','C_\gamma')
```

should yield the following:

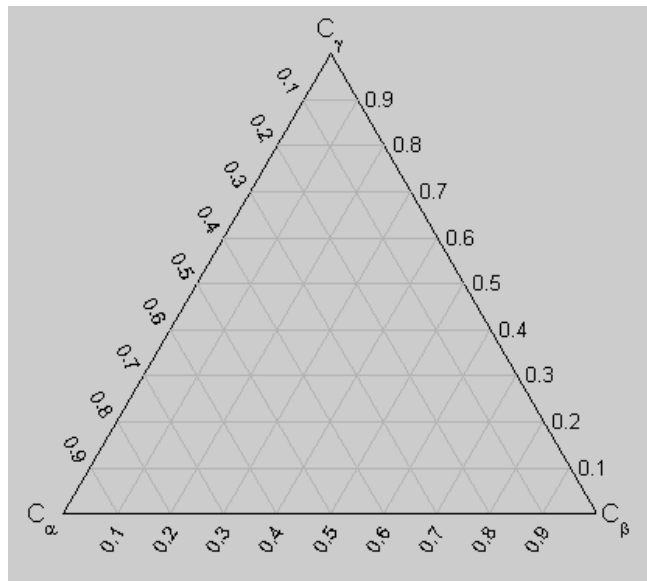


Figure 1. Setting up the ternary diagram.

2. Collect the mole fractions in a matrix where the first column refer to the mole fraction of component 1 and the second column refer to the mole fraction of component 2. (A

100% of component 1 is located at the lower left corner while a 100% of component 2 is located at the lower right corner of the triangular chart.)

Example:

Let

Calpha =
0.1000
0.2000
0.2800
0.3000

Cbeta =
0
0.0400
0.0900
0.1340

Cgamma =
0.9000
0.7600
0.6300
0.5660

Then using the following command,

```
>> plot_ternary([Calpha,Cbeta,Cgamma],'o')
```

will produce the following plot

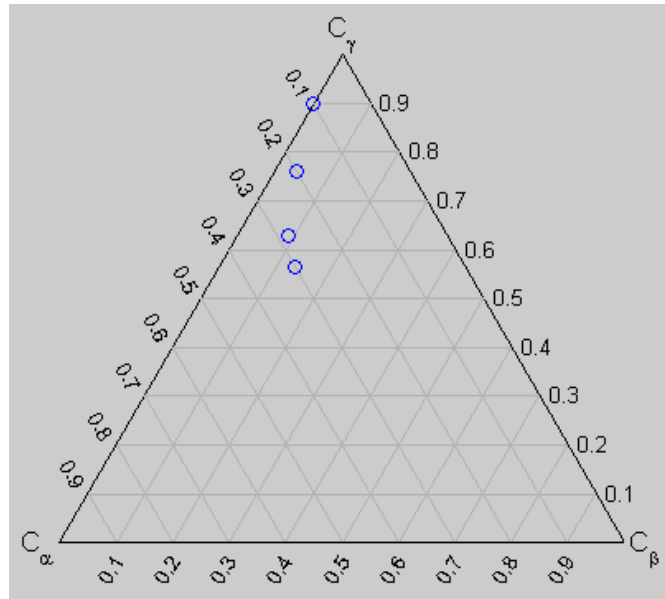


Figure 2. After using **plot_ternary.m**.

Remarks:

- a) You can replace the line-style ('o') in the example above to any other marker or line styles that are available in the **plot** functions of Matlab.
- b) **plot_ternary** contains **hold on** and **hold off**, thus allowing multiple plots in the same diagram for consecutive implementation of the command.