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Equilibrium Data for LL Systems

A degree of Freedom analysis shows

$$C = 3$$

$$P = 2$$

$$\therefore F = C - P + 2 = 3 - 2 + 2 = 3$$

Usually T & P are specified, therefore only one composition of one phase is required to completely specify LL systems at equilibrium.

Triangular diagrams are used to present the equilibrium data, either

- (1) Equilateral (Figure 4-14 a)
- (2) Right Triangular (Figure 4-14 b)

Discuss features of Figure 4-14 a.

	Majority	Transfer	Example	Symbol
Solute	-	✓	Ethylene Glycol	B
Solvent	Extract		Furfural	C
Diluent	Raffinate		Water	A

Note limited solubility of A w/C & C w/A

(a) Show pure "corners"

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(b) Show E & R phases.

(c) Show tie lines (EMR)

(d) show plait point (phases converge to same single composition).

In RTD's (right triangular diagrams) we demonstrate a second popular notation system with the same system.

Solvent C

S

Example System

Solute B

A

chloroform, C

Diluent A

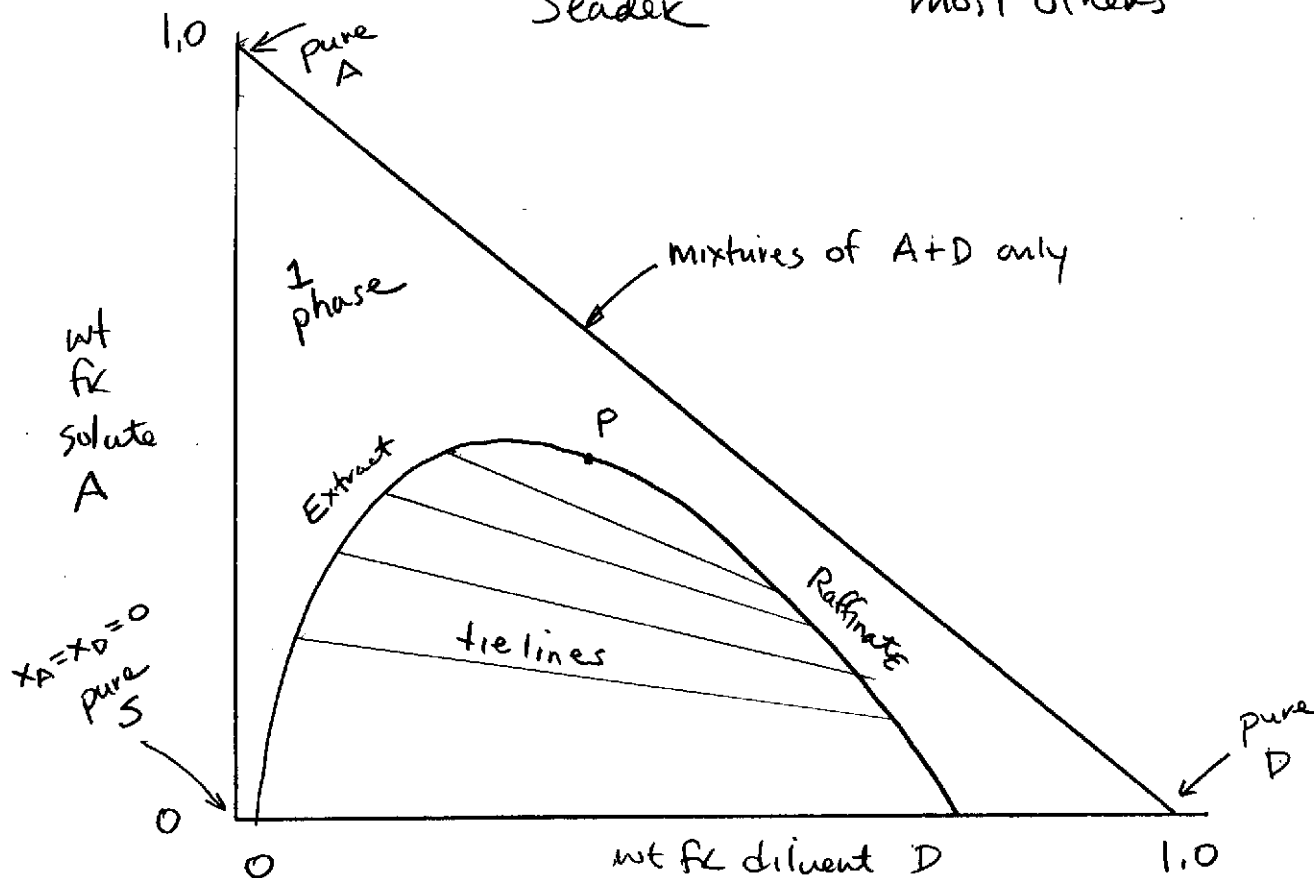
D

acetic acid, A

Water, W

Seader

most others



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Six different plots are available for $C=3$

#	X-axis	Y-axis	
1	D	A	(shown)
2	D	S	
3	A	D	
4	A	S	
5	S	A	
6	S	D	

Often times, conjugate lines are provided instead of tie lines.

