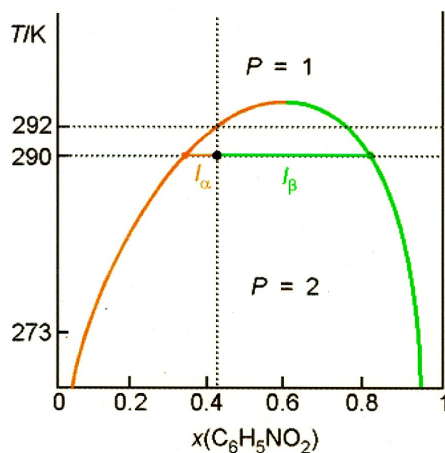


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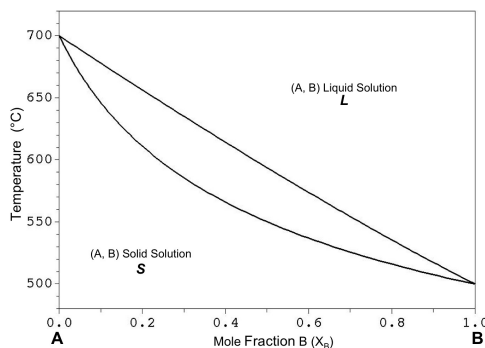
## In-class practice problems

November 2, 2009

- The hexane/nitrobenzene ( $C_6H_5NO_2$ ) phase diagram is shown below. Answer the following questions about a solution containing 41% nitrobenzene at 290 K.
  - How many phase are present?
  - What is (are) the composition(s) of the phase(s) present?
  - How much of each phase is present ?
  - As the temperature decreases what happens to the relative amounts of each phase?



- The phase diagram for the binary A–B system is shown below.



- At  $600^\circ\text{C}$  and  $X_B = 0.4$ :
  - What phase(s) is(are) present?
  - What is the composition of each phase (in mole fraction B)?
  - How much of each phase is present? (i.e. determine the phase fraction/percent of each phase present)
- On the set of axes with temperature plotted versus time sketch a cooling curve that would be observed when cooling an A–B sample with  $X_B = 0.2$  from  $700^\circ\text{C}$  to  $500^\circ\text{C}$ . Label any important temperatures to correspond to the phase diagram.