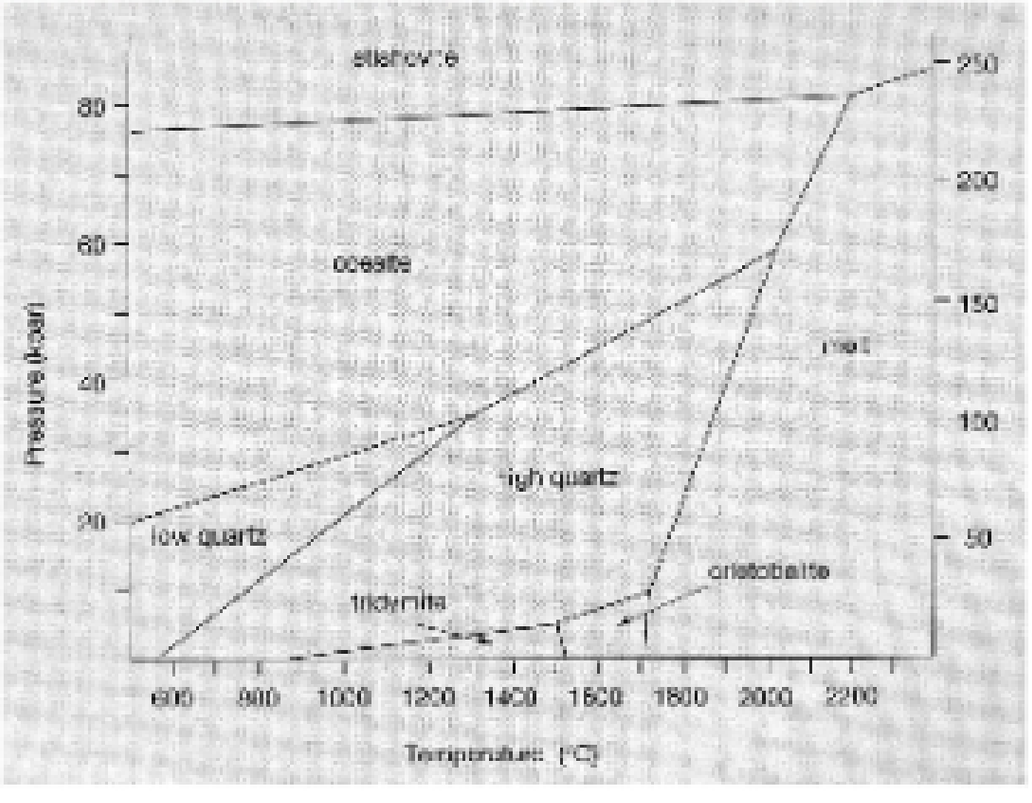
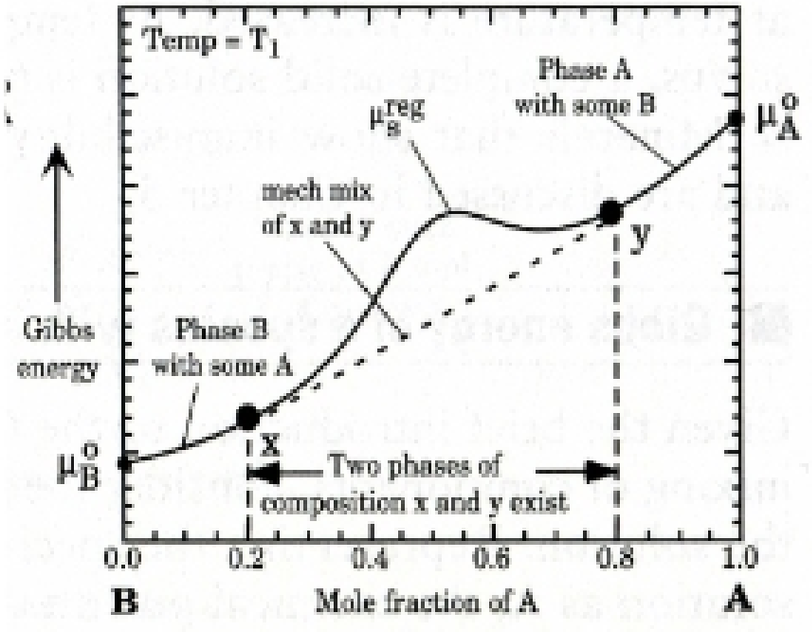
Phase diagram

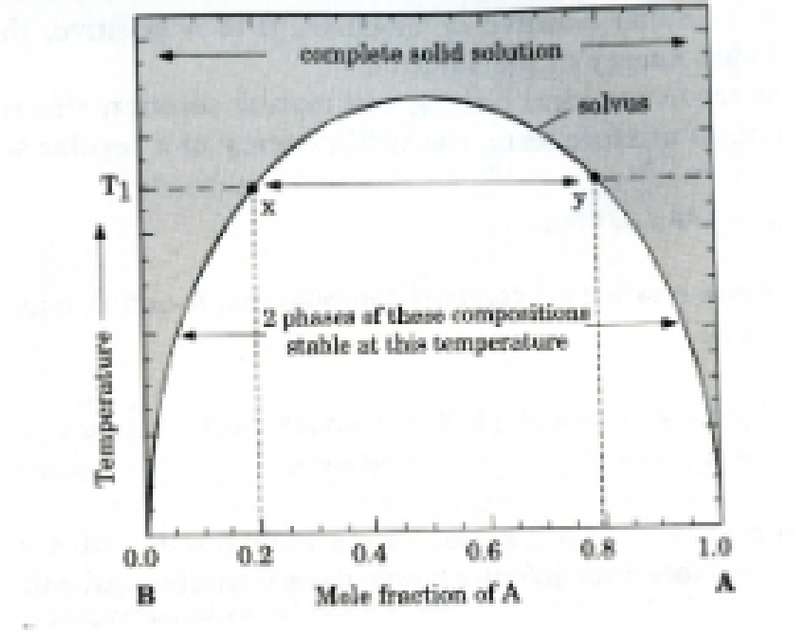
- Need to represent how mineral reactions at equilibrium vary with P and T



$$-\left[\frac{\Delta S_R}{\Delta V_R}\right] = \left[\frac{\partial V_R}{\partial T}\right]_P \qquad \left[\frac{\partial P}{\partial T}\right]_{\Delta G=0} = \frac{\Delta S_R}{\Delta V_R} \qquad -\left[\frac{\partial \Delta S_R}{\Delta T}\right]_P = \frac{\Delta C_P}{\partial T}$$

P-X stability and mixing





Gibbs Phase Rule

- The number of variables which are required to describe the state of a system:
- $p+f=c+2$ $f=c-p+2$
  - Where p=# of phases, c= # of components, f= degrees of freedom
  - The degrees of freedom correspond to the number of intensive variables that can be changed without changing the number of phases in the system