MME231 Materials Thermodynamics

Assignment 3
Please submit your answer on or before 1 February 2014

The combined statement of the first and second laws for the change in enthalpy of a unary system may be written as:

$$dH' = TdS' + V'dP + \mu dn'$$

1. Use this result to write an expression for the change in enthalpy of a unary, two-phase (α and β) system.

2. If the entropy, pressure and total number of moles are constrained to be constant, then the criterion for equilibrium is that the enthalpy is the minimum. Paraphrase the strategy used to deduce the conditions for equilibrium in an isolated system to derive them for a system constrained to constant S', P, and n'.

3. What happens to the condition for mechanical equilibrium?