

4-3-5 Gibbs energy 5

Consider the total differential $dg = \left(\frac{\partial g}{\partial T}\right)_P dT + \left(\frac{\partial g}{\partial P}\right)_T dP$. What variable is represented by $\left(\frac{\partial g}{\partial P}\right)_T$?

From $g = \left(\frac{\partial g}{\partial T}\right)_P dT + \left(\frac{\partial g}{\partial P}\right)_T dP$ and $dg = dh - d(Ts) = Tds + vdP - Tds - sdT = vdP - sdT$ it can be seen that:

$$\left(\frac{\partial g}{\partial P}\right)_T = v$$