Thermodynamics

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Abstract

Other thermodynamics quantities

There is nothing special about G and G/W_1. Other thermodynamic quantities yield similar equations. Taking volume V as an example, we have for a binary solution $V = n_1 v_1 + n_2 v_2$ and the corresponding Gibbs-Duhem equation at constant T and p, $n_1 \mathrm{d}v_1 + n_2 \mathrm{d}v_2 = 0$; v_1 and v_2 are the partial molar volumes. We have, at constant T and p,

$$\mathrm{d}(V/W_1) = v_2 \mathrm{d}m_2 \tag{1}$$

Thus the partial molar volume of the solute may be obtained as the slope of a graph of V/W_1 with respect to m_2 at constant temperature.

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