

Isothermal Binary Liquid-Vapour Equilibria and the EGC-Method

I. General Aspects

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Zusammenfassung

Die Methode der „Equal-G Curve“ wird hier eingeführt für die isothermen Gleichgewichte zwischen binären Flüssigkeits- und Dampfgemischen. Gezeigt wird, daß die EGC auf anschauliche Weise den Zusammenhang darstellt zwischen dem experimentellen Dampfdruckdiagramm und der Zusatzfunktion für die molaren Gibbschen Energien der flüssigen Mischungen.

Survey

In this paper the method of the “equal-G curve” is presented for isothermal binary equilibria between liquid and vapour. On the basis of the EGC concept it is shown that a simple relation exists between the experimental phase diagram and the deviation from ideal behaviour of the liquid phase as expressed by the excess Gibbs energy.

Introduction

For a system composed of a binary liquid state in combination with a binary vapour state the Gibbs energies, G , can, under isothermal conditions, be represented by two surfaces in GPX space. P stands for pressure and X denotes the mole fraction of the second component. Fig. 1 gives a cross-section of that space for a certain value of P . Since in the case shown by this Figure pressure and temperature, T , are already fixed, the condition of equilibrium requires that for any *overall composition* the Gibbs energy must be minimal. This implies that for compositions in the range from $X = 0$ to $X = X_e^l$ the liquid phases are stable and that for compositions between $X = X_e^v$ and