

the ideal equilibration conditions during analysis, these data are most reliable and could be suggested as standards.

Our results suggest that in order to compare gas chromatographic retention data, it is not necessary to reproduce working conditions. A chromatogram obtained under a definite set of conditions can be compared with one obtained under different conditions, providing equilibrium of flow rate and temperature is attained and columns of the same stationary phase are used. The validity of this statement has been proved for the terpenic hydrocarbons; we do not see why this should not apply to other systems.

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Received April 1st, 1963

J. Chromatog., 12 (1963) 536-539

Gas chromatographic analysis of polar-non polar mixtures

In the study of thermodynamic properties of multicomponent mixtures, such as vapor-liquid equilibrium compositions, the gas chromatographic technique has been used extensively. The methods commonly used in the determination of concentrations from a chromatograph assume that either the peak height or the peak area is proportional to the concentrations of the components present in the mixture. Recently, WAGNER AND WEBER¹ studied polar-non polar mixtures, such as ethanol-benzene-heptane, and proposed a modified method in which the mole fraction ratio to the peak area ratio is considered constant, namely:

$$\frac{(x_i/x_j) \text{ mole fraction}}{(x_i/x_j) \text{ peak area}} = K_{ij} \quad (1)$$

These constants and the condition that the sum of the mole fractions must be equal to unity were used to calculate the compositions.

We have determined the composition of ethanol-benzene-cyclohexane mixtures in this laboratory, using a Perkin-Elmer Model 154C Vapor Fractometer coupled with a Leeds and Northrup series 6000 Recorder and a Perkin-Elmer Model 194 Integrator. In the Vapor Fractometer, two 2-m type R columns were employed in series to separate the three components. A curve was obtained on a (x_i/x_j) mole fraction vs. (x_i/x_j) peak area

J. Chromatog., 12 (1963) 539-541

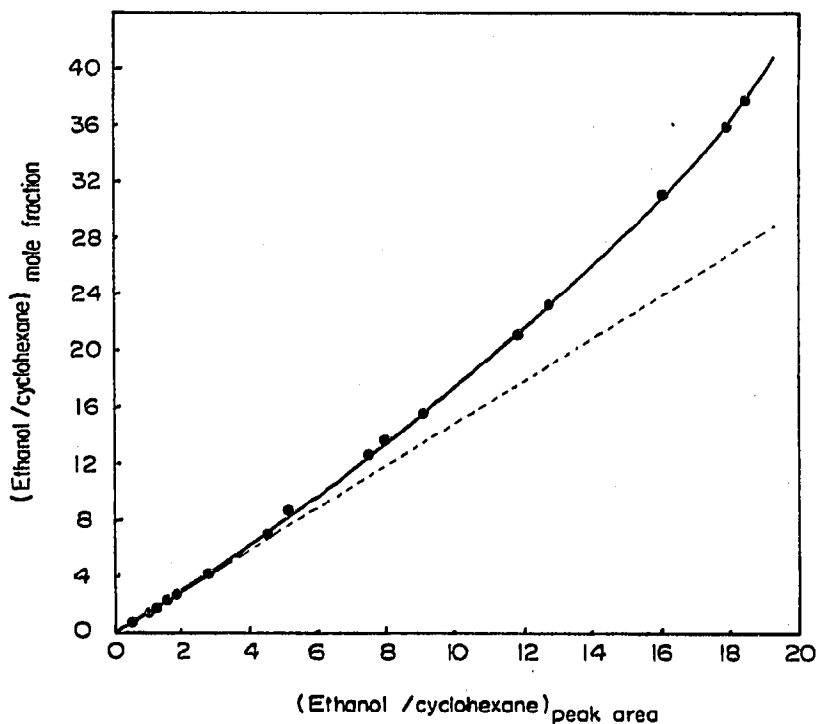


Fig. 1. Relationship between peak area ratios and mole fraction ratios of ethanol-cyclohexane in the ethanol-benzene-cyclohexane mixture.

plot for the components ethanol and cyclohexane in the ternary mixture as shown in Fig. 1; eqn. (1) was only valid over a limited concentration range. This non-linear behavior presented difficulties in extrapolation. However, when $(x_i/x_j)_{\text{mole fraction}} / (x_i/x_j)_{\text{peak area}}$ was plotted against $(x_i/x_j)_{\text{peak area}}$, a straight line was obtained as shown in Fig. 2. The value of the constant b of the linear relationship:

$$\frac{(x_i/x_j)_{\text{mole fraction}}}{(x_i/x_j)_{\text{peak area}}} = a + b \left(\frac{x_i}{x_j} \right)_{\text{peak area}} \quad (2)$$

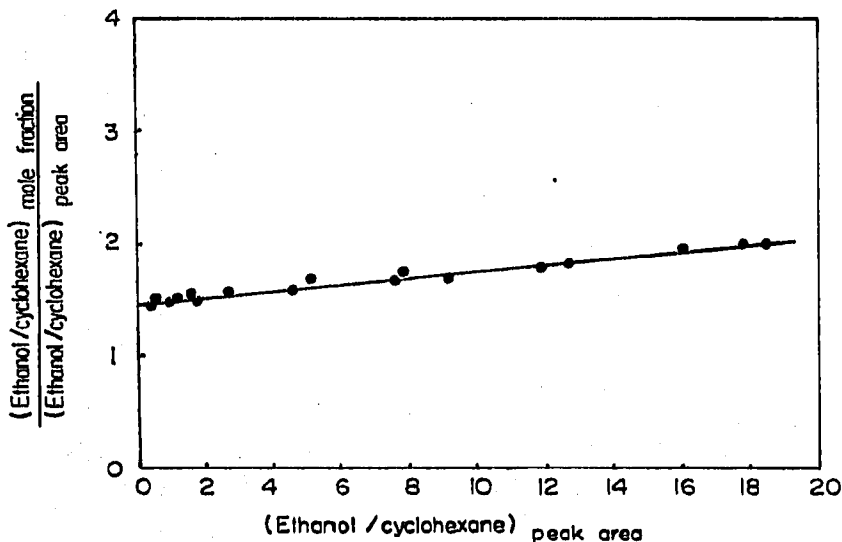


Fig. 2. Replot of data in Fig. 1 according to eqn. (2).

is small, indicating that at low $(x_i/x_j)_{\text{peak area}}$ values, eqn. (2) can be reduced to eqn. (1). However, at high $(x_i/x_j)_{\text{peak area}}$ values, considerable error would be introduced if the term $b(x_i/x_j)_{\text{peak area}}$ were neglected.

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Received April 5th, 1963

J. Chromatog., 12 (1963) 539-541

Revelation von Carbobenzoxy-Aminosäuren auf Dünnschichtchromatogrammen

Zur Revelation von Carbobenzoxy(Cbo)-Aminosäuren verwenden EHRHARDT UND CRAMER¹ $K_2Cr_2O_7$ in konz. H_2SO_4 . Die Erfassungsgrenze liegt bei etwa 3 μg .

Wir haben gefunden, dass die modifizierte Chlor-Tolidin-Reaktion² wesentlich sensitiver ist. Bei allen untersuchten Cbo-Aminosäuren* liessen sich Mengen von 0.5 μg noch deutlich erkennen.

Ausführung. Die Platte mit den zu revelierenden Substanzen wird, zwecks Befeuchtung der Schicht, kurz über kochendes Wasser gehalten und anschliessend mit Chlor behandelt². Vor dem Besprühen lässt man die Schicht 2-3 min gut lüften.

Sprühreagens²: 80 mg o-Tolidin + 15 ml Eisessig + 0.5 g Jodkali werden mit dest. Wasser auf 250 ml aufgefüllt.

Man besprüht zunächst eine Ecke des Chromatogramms; wird der Untergrund blau so muss die Platte länger gelüftet werden.

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Eingegangen den 10. April 1963

* Zwanzig Cbo-Aminosäuren in drei Fließmitteln.

** Direktor Prof. Dr. TH. KOLLER.

J. Chromatog., 12 (1963) 541