Phase ratio variation (PRV method)

Different volumes of the same aqueous solution were placed in several headspace vials. From the linear relationship between reciprocal peak area $\left(\frac{1}{A}\right)$ and the phase ratio β.

The phase ratio (β) of the vial which is the ratio of the volumes of the headspace (V_G) and the sample solution (V_S) :

$$\beta = \frac{V_G}{V_S} \quad (1)$$

$$\frac{1}{A} = a + b \cdot \beta \quad (2)$$

where

$$a = \frac{K}{f_i . C_S} \quad (3)$$

$$b = \frac{1}{f_i . C_S} \quad (4)$$

and

$$K = \frac{a}{b} \quad (5)$$

In another words, we can plot $\frac{1}{A}$ against β and carry out regression analysis of this plot, establishing its slope (b) and intercept (a).