

反相高效液相色谱中溶质保留过程的热力学研究4: 焓熵补偿

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摘要 依据液相色谱中溶质计量置换保留模型,对溶质在反相液相色谱(RPLC)保留过程及其吸附、解吸附过程中的焓熵补偿进行了研究,证实了在RPLC中焓熵补偿确实存在。从焓熵补偿的定义出发,从理论上证明了溶质在保留过程中的焓熵补偿温度本质上为溶质保留值的收敛温度,其数值为Z对1/T线性作图的斜率与截距之比。与惯常计算焓熵补偿温度的方法相比,本文的方法所得补偿温度更为合理且不受流动相中强溶剂浓度变化的影响。

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Studies on thermodynamics in solute retention of reversed-phase high performance liquid chromatography IV. Enthalpy-entropy compensation

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Abstract Based on the stoichiometric displacement model for retention in liquid chromatography, the behavior of enthalpy-entropy compensation in the processes of retention, adsorption and desorption of solute in reversed-phase liquid chromatography (RPLC) was observed and investigated respectively. It was proved that enthalpy-entropy compensation really existed in RPLC. Furthermore, it was theoretically derived that enthalpy-entropy compensation temperature of solute in RPLC intrinsically should be its convergency temperature and equal to the ratio of the slope to the intercept obtained from the linear plot of Z vs 1/T. In addition, compared to that obtained from the estimated method in common use, the compensation temperature of solute in retention process obtained in this study is not only more accurate and reasonable, but also independent of the concentration of the strong solvent in the mobile phase used.

Key words [HIGH SPEED LIQUID CHROMATOGRAPHY](#) [REVERSED PHASE CHROMATOGRAPHY](#) [SOLUTE](#)

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