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Influence of pressure on the retention of resorcinarene-based cavitands

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Highlights

The pressure effect for cavity-shaped molecules was studied and the influence of the cavitand's structure was demonstrated.

The molar volume changes for apolar or polar analytes largely depend on the polarity of the stationary phase.

On a polar-embedded stationary phase, the pressure effect on retention is twice larger than on an apolar phase.

The alkyl chain length of the ligands has no influence on the molar volumes of the analytes in the studied phase system.

Abstract

The thermodynamics of the retention mechanism of resorcinarene-based cavitands in RPLC as well as the nature of the binding sites have been studied recently. In the present study, the influence of pressure on the retention of the cyclic tetramers on alkylsilyl and polar-embedded C₈ and C₁₈ stationary phases is investigated using aqueous methanol mobile phase. The pressure effect for cavity-shaped molecules has been scarcely studied so far. We observed that the retention factors of the analytes increased with the increase of the average column

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