Chromatography retention of RP-HPLC by the use of linear solvation energy relationships

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Linear solvation energy relationships (LSERs) are used to investigate the fundamental chemical interactions governing the retention of 9 aromatic compounds in 36 mobile phases on a C_{18} column. The systems studied involve sodium dodecyl sulfate (0.03-0.09 M) and two kinds of ion liquids (0.003-0.009 M), with 5 to 20 % acetonitrile in water as mobile phase modifiers. The ability of the LSERs to account for the chemical interactions underlying solute retention is shown. A comparison of predicted and experimental retention factors suggests that LSER formalism is able to reproduce adequately the experimental retention factors of the solutes studied in the different experimental conditions investigated.