

A chromatographic study of methylene group contribution to the thermodynamics of solubilization of aliphatic monosubstituted homologs in sodium dodecyl sulfate micelles

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Abstract

A static gas-chromatographic analysis of the equilibrium vapors at 298 K was used to determine the distribution constants for some bromoalkanes, alcohols, alkylacetones, and nitriles in the aqueous solution-sodium dodecyl sulfate (SDS) micelles system. Based on the results of this study and the data available in the literature, the free energies of solubilization were derived for n-alkanes and seven series of monofunctional aliphatic derivatives. For all series, the free energies of solubilization of methylene groups were determined, which strongly depend on the nature of the group of the polar monofunctional derivative. The free energies of solubilization of methylene groups in SDS micelles are equal to a sum of the free energies of their solubilization in hexadecane and water.
