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Receptor properties of calix[4]resorcinarenes toward tetramethylammonium and choline cations in micellar solutions of sodium dodecyl sulfate

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Abstract

Concentration range of solubilization of calix[4]resorcinarene (H 8L) in sodium dodecyl sulfate (SDS) micelles was found. The interaction of the deprotonated form of H8L (tetraanions [H4L] 4-) with tetramethylammonium (TMA) and choline cations in micellar solutions of SDS was studied by pH-metry and NMR spectroscopy. The concentration dependences of the change in the cloud point in a multicomponent system TMA (choline)-[H4L]4-SDS-tetrabutylammonium bromide were determined. A correlation of these dependences with host-guest binding processes was found. The sharp change in the cloud points of the corresponding micellar solutions in concentration regions of TMA ($0-5 \cdot 10^{-4}$ mol L⁻¹) and choline ($0-1.1 \cdot 10^{-3}$ mol L⁻¹) is caused by the formation of inclusion complexes TMA (choline)-[H4L] 4- at the interface of the aqueous and micellar pseudophases. © 2006 Springer Science+Business Media, Inc.

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Keywords

Calix[4]resorcinarene, Complex formation, Extraction, Sodium dodecyl sulfate, Solubilization