

Complexation in Surfactant Solutions: I. NMR Relaxation Study of Complexation of a Series of Transition Metals with Chelating Agents in Sodium Alkyl Sulfate Solutions

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Abstract

The effect of sodium decyl, dodecyl, and tetradecyl sulfates on the composition and stability of Ni(II), Cu(II), Mn(II), Gd(III), and Fe(III) complexes with chelating agents (iminodiacetic, hydroxyethyliminodiacetic, and nitrilotriacetic acids) is studied by the NMR relaxation method. An approach is proposed to quantitative treatment of association and complexation in anionic surfactant solutions. Computer simulation was used to estimate the association constants of Mn^{2+} , Cu^{2+} , Ni^{2+} , Gd^{3+} , Fe^{3+} , Na^{+} , and H^{+} with the micelles. These constants are nearly equal for equicharged ions, and in the series of the surfactants used they are close for dodecyl and tetradecyl sulfates.
