ADSORPTION OF TWEENS AND DODECYLPYRIDINIUM CHLORIDE FROM MIXED SOLUTION ON PARAFFIN

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Colloid-chemical properties of surface-active agents (surfactants) mixtures are being studied intensively in the last period of time. Great scientific interest is due to the fact that mixtures allow to control the properties of dispersed systems and processes, occurring in them much more effectively by, than the individual surfactants.

In this work, we assess the adsorption of the cationic surfactant - dodecylpyridinium chloride and nonionic surfactants - Tweens (-20, -40, -60, -80) from binary aqueous solutions on a surface of paraffin in a wide range of variations of their ratio in the solution and analyze the possibility of use of the main theories of adsorption to the description of the experimental adsorption isotherms.

The investigations have shown that the isotherms of total adsorption mixtures of Tweens and dodecylpyridinium chloride with different molar ratio of the components in aqueous solution (Fig.) on a surface of paraffin have a form similar to the form of isotherms L-type by Giles classification. With increasing of concentration of Tweens and dodecylpyridinium chloride in a mixed solution the value of the total adsorption of surfactant increases, which is due not only to the adsorption of individual molecules and ions of studied surfactants, but also of their mixed associates. It is shown that the use of the most common adsorption equations (equation of Freundlich, Langmuir, Hill - de Boer, and Hildebrand equation, obtained within the lattice model), developed for the phase boundary solid - gas, allow to describe the experimentally obtained adsorption isotherms of mixtures Tweens with dodecylpyridinium chloride from aqueous solutions on a surface of paraffin, and also to calculate the main parameters of the adsorption process and to suggest its possible mechanism. Adsorption of studied surfactant from mixed solutions on paraffin is due to dispersion forces between the solid surface and the hydrocarbon radicals of Tweens and dodecylpyridinium chloride.

The obtained results may contribute *to the* development *of* various technical processes, associated with the use of surfactant mixtures, and can be used to evaluation of the adsorption of surfactant mixtures on homogeneous solid surfaces.
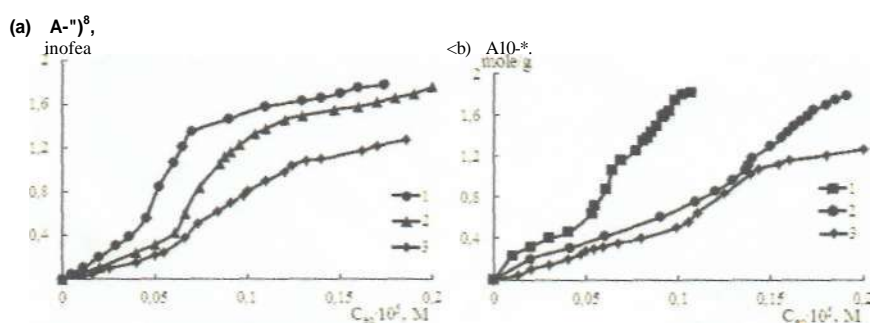
Fig. Isotherms of the total adsorption of mixtures of Tweens and dodecylpyridinium chloride from aqueous solutions on a surface of paraffin with molar ratio of Tween 0,2 (2), 0,5 (3), 0,8 (1) (a - mixture with Tween-40, b - mixture with Tween-80)