



## SORPTION OF IONIC ASSOCIATES BY POLYURETHANE FOAMS. REGULARITIES AND APPLICATION

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Sorption regularities by polyurethane foams (PUF) depending on the hydrophobicity of the cation and/or anion moieties of ionic associates, the charge of the cation or anion, the salt composition of solution, the structure of polymeric link of PUF have been investigated. As examples, ionic associates with acid or basic dyes, complexes of Fe(II), Cu(I), Cu(II), Ru(II) with 1,10-phenanthroline, associates of cationic surfactants with 4-nitrophenylazophenolate have been employed. The comparative evaluation of the hydrophobicity and polarity of PUFs of different trade marks has been carried out by standard method with piren as fluorescent probe. Scheme of sorption of the investigated compounds that incorporates "dissolving" of hydrophobic anion and/or cation of ionic associate in hydrophobic polymer films forming the frame of the polyurethane foams has been offered and justified. The main role of hydrophobic interactions in the system sorbent-sorbate in sorption of ionic associates has been shown.

It has been established that sorption of ionic associates of Rhodamine dyes (RAn) complexes of metals with 1,10-phenanthroline  $[\text{Fe}(\text{Phen})_3]\text{An}_2$ ,  $[\text{Ru}(\text{Phen})_3]\text{An}_2$ ,  $[\text{Cu}(\text{Phen})_2]\text{An}$ ,  $[\text{Cu}(\text{Phen})_2]\text{An}_2$  is increased with the increase of size of the anion-partner and the decrease of its energy hydration in a consequence:  $\text{Cl}^- < \text{Br}^- < \text{NO}_3^- < \text{I}^- < \text{SCN}^- < \text{ClO}_4^-$ . Linear relationship between values of a coefficient of distribution ( $\lg D$ ) and hydration energies of the anions partners is observed. The most effective counterions are proven to be the anions of surfactants.

Sorption depends on the charge of particles included in ionic associate, the double-charged forms of dyes being sorbed worse than single-charged, and the double-charged cation  $[\text{Cu}(\text{Phen})_2]^{2+}$  being sorbed worse than  $[\text{Cu}(\text{Phen})_2]^+$ .

It has been established that polyurethane foams based on ethers and modified by salts of alkaline metals can serve as cation and anion exchangers. Direct spectroscopic proofs of the ionic associates dissociation in a phase of PUF have been obtained.

Methods of concentration and sorption photometric determination of Fe(III), Ru(II), Si, P, As, phenols, ionic surfactants in waters, based on sorption of ionic associates by polyurethane foams have been developed.