



PARTICIPATION OF THE ANIONIC SURFACTANTS IN PHOTOCHEMICAL TRANSFORMATION

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In order to elucidate photochemical transformations in the presence of anionic surfactants has been modeled the systems in the composition of which were present: sodium lauryl sulfonate (STA anionic), hydrogen peroxide ($C(H_2O_2) = 10^{-2} M$) and transition metal ions Cu (II) and Fe (III). The study of the photochemical processes of sodium lauryl sulphonate was performed at $pH \approx 7$ average characteristic of natural water. The spectrum of ultraviolet radiation (UV) has been enhanced bactericidal UV lamp with wavelength 253.7 nm. The concentration of sodium lauryl sulphonate was followed spectrophotometrically photochemical transformations (NOVA 60 spectrophotometer) at wavelength $\lambda = 665$ nm.

Initially it was studied the destruction of sodium lauryl sulphonate without irradiation. It has been found that this system does not carry out the oxidation. By irradiating the system consists of various concentrations of substrate (STA - H₂O) has increased the speed of photochemical $1,37 \cdot 10^{-8} M/s$ up to $6,77 \cdot 10^{-8} M/s$.

Introduction into the system of a steady supply of the hydrogen peroxide at various concentrations of anionic STA has increased the speed of photochemical from 3.1 up to $8,4 \cdot 10^{-8} mol/l*s$.

In order to see the influence of transition metal ions on photochemical oxidation of sodium lauryl sulphonate, was modeled systems: *STA - Cu(II) - H₂O₂* and *STA - Fe(III) - H₂O₂*. When the concentration of the transition metal Cu(II) and Fe(III) is a constant of $10^{-4} M$, there was observed more pronounced increase in the rate of photochemical system comprising anionic STA and copper ions, $2,94 \cdot 10^{-8} M/s$ up to $6,2 \cdot 10^{-8} M/s$. At neutral pH, ions of Fe (III) are in the micro colloidal form, which is much lower than reactivity of Cu (II) ions. Cu (II) Ions at neutral pH is in ionic form and their work is much higher. Therefore, Cu (II) ions are more effective catalysts in the processes of transformation photochemical of anionic surfactants.

References:

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