عنوان مقاله:

Micellar properties and Partial phase diagram of cetyltrimethylammonium bromide and cetylpyridinium chloride in vicinity of Krafft point from conductometry and dynamic light scattering measurements

محل انتشار:

مقالات مروری و پژوهشی شیمی, دوره 7, شماره 8 (سال: 1403)

تعداد صفحات اصل مقاله: 13

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خلاصه مقاله:

Solubility and micelle formation of cetyltrimethylammonium bromide CTAB andcetylpyridinium chloride CPC surfactants in aqueous solution have been studied bytensiometry, conductometry, and dynamic light scattering (DLS) in vicinity ofKrafft point. Parameters such as the critical micelle concentration (cmc), Kraffttemperature (Tk), average micelle aggregation number (n) and phase diagram ofsurfactants in water were determined and thermodynamic micellization process wasdiscussed in light of enthalpy and entropy contributions. It is shown that unlikeCTAB surfactants which exhibit incubation time independent micellar behavior,CPC surfactants show two solubility curves around Krafft temperature leading tocomplex temperature conductivity concentration plots. The change of solubility andcmc with temperature were investigated according to the mass actionthermodynamic model and permit to extract free energies of micelles formation andto draw partial phase diagram for each surfactant. Dynamic light scatteringtechniques shows that according to the incubation conditions, different populationof micelles can be released in the vicinity of Krafft temperature.

کلمات کلیدی:

conductivity, Surfactants, Dynamic Light Scattering, Krafft point, CMC, phase diagram, thermodynamic parameters