SODIUM DODECYL SULPHATE ON MIXED MICELLIZATION WITH BRIJ 30

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ABSTRACT

In this work a binary mixtures comprising of anionic/nonionic surfactants was studied as a function of the mole fraction of the ionic surfactants. The anionic and nonionic surfactants used throughout the experiment were sodium dodecyl sulphate (SDS) and polyoxyethylene 4 lauryl ether ($C_{12}E_4$), respectively. This work is to study the influence of the chemical nature of head group and the type of counterion on the process of micellization in mixed surfactant systems, the cmc's of several mixtures of surfactants with the same length of hydrocarbon tail but different head groups have been determined as a function of the monomer composition (SDS) using surface tension measurements. It is observed that the mixed systems behaved slightly nonideally in the micelle solution. The mole fractions for the ionic surfactants in the mixed micelle was less than their corresponding values in the aqueous mixed solution. The lower value suggested that a nonionic-rich micelles were formed in the binary mixed solutions.

In emulsions and microemulsions it is well- known that surfactant mixtures can improve solubilization. In this case, adding SDS reduces the amount of nonionic to form a single phase. So, it is observed that mixed micelle of SDS and $C_{12}E_4$ perform small region of micelle solution in the phase diagram.

ABSTRAK

Dalam kajian ini, satu campuran dedua yang berasingan mengandungi surfaktan anionik/bukan ionik telah dikaji sebagai fungsi pecahan mol surfaktan ionik. Surfaktan anionik dan bukan ionik yang digunakan sepanjang kajian adalah natrium dodesil sulfat (SDS) dan polioksietilena 4 lauril eter ($C_{12}E_4$). Kajian ini adalah untuk mengenalpasti pengaruh semulajadi kimia ke atas 'kumpulan kepala' dan jenis-jenis ion yang terlibat dalam proses pembentukan misel bagi sistem surfaktan campuran. Nilai cmc bagi beberapa surfaktan campuran dengan ekor hidrokarbon yang sama panjang tetapi berbeza kumpulan kepalanya telah ditentukan sebagai fungsi kandungan monomer (SDS) dengan menggunakan kaedah tegangan permukaan. Didapati bahawa sistem campuran ini bertindak secara tak unggul dalam larutan misel. Pecahan untuk surfaktan ionik dalam misel campuran adalah rendah berbanding dengan nilai-nilai dalam akues campuran. Nilai yang rendah ini mencadangkan bahawa misel campuran yang terbentuk dalam sistem adalah mengandungi banyak surfaktan bukan ionik.

Dalam emulsi dan mikroemulsi, telah diketahui bahawa surfaktan campuran dapat memperbaiki keterlarutan. Dalam kes ini, penambahan SDS kepada surfaktan tak ionik dapat membantu pembentukan satu fasa. Jadi, diperhatikan bahawa misel campuaran SDS dan $C_{12}E_4$ telah membentuk suatu kawasan larutan misel yang kecil dalam gambarajah fasa.