PHASE EQUILIBRIA OF MIXED CATIONIC-NONIONIC SURFACTANT/ALCOHOL/WATER SYSTEM

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ABSTRACT

The importance of sugar-based surfactants as a substitute for petrochemical based surfactants has received wide coverage of attention due to its unique natural properties. Studies on a mixed cationic-nonionic surfactant system of cetyltrimethlammonium bromide (CTAB) and GlUCAMATE SSE-20 (sugar based surfactant) / pentanol / water were carried out at room temperature (27±1°C). Method employed for determination of CMC is surface tension. The experimental CMC for GLUCAMATE SSE-20 was found to be 1.15 X 10^{-5} mole/L. Results indicated that the composition of 0.4 mole fraction of CTAB exhibit a stable and the largest micelle area. Results also indicated that the mixture behaved nonideally (synergistic interaction). The corresponding molecular interaction parameter value, β was concluded to be below –6.

ABSTRAK

Kepentingan surfaktan daripada terbitan glukos sebagai pengganti kepada surfaktan daripda terbitan petrokimia semakin mendapat perhatian disebabkan sifat-sifat semulajadi yang unik. Kajian terhadap system surfaktan setiltrimetilammonium bromida (CTAB) dan Glucamate SSE-20 campuran / pentanol / air telah dilakukan pada suhu bilik (27 ±1°C). Keputusan menunjukkan bahawa komposisi 0.4 pecahan mol CTAB adalah paling stabil dan mempunyai kawasan misel yang terbesar. Kaedah tegangan permukaan digunakan bagi penentuan CMC (ciritcal micelle concentration). Nilai CMC bagi surfaktant GLUCAMATE SSE-20 dan surfaktant yang didapati secara eksperimen ialah masing-masing 1.15 X 10^{-5} dan 9.95 X 10^{-4} mol/L. Keputusan juga menunjukkan bahawa campuran tersebut menunjukkan sifat tidak unggul (sinergi) yang ketara. Nilai parameter interaksi molekul, β didapati kurang daripada –6.