

Influence of poly(ethylene glycol) on the phase behaviour of sodium dodecyl sulfate/1-pentanol/water systems.

ABSTRACT

The phase behavior of SDS/1-pentanol/water system in the presence of poly(ethylene glycol), PEG, was determined at $27.0 \pm 0.5^\circ\text{C}$. The addition of PEGs, namely, mPEG2000, mPEG8000 and PEG5000, changes both the isotropic and liquid crystalline phases indicating the presence of surfactant-polymer interaction in the system, respectively. The increase of polymer chain length and content in the system decreases both the isotropic and liquid crystalline regions. It is believed that the absence of methyl group in the mPEG goes through different surfactant-polymer conformation as the change in isotropic region is different between mPEG(2000 and 8000) and PEG5000. The presence of polymers (mPEG2000, mPEG8000, and PEG5000) in the isotropic solution along 90:10 of SDS:1-pentanol tie-line changes the packing and orientation of micelle.

Keyword: Isotropic region; Lamellar liquid crystalline; Micropolarity index; Phase behavior; Poly(ethylene glycol); Sodium dodecyl sulfate.