Title:	Effect of di-(2-ethylhexyl)phosphoric acid on microstructure, cloud point and uranyl ion binding competence of Triton X-100 micelles
Authors:	Paliwal, Prerna (/jspui/browse?type=author&value=Paliwal%2C+Prerna)
Keywords:	di-(2-ethylhexyl)phosphoric acid microstructure surfactant, Triton X-100 (TX-100)
Issue Date:	2015
Publisher:	Elsevier B.V.
Citation:	Colloids and Surfaces A: Physicochemical and Engineering Aspects, 468 pp. 262-270
Abstract:	The incorporation of an extracting agent di-(2-ethylhexyl)phosphoric acid (D2EHPA) into non-ionic surfactant, Triton X-100 (TX-100) micelles was investigated by monitoring the microstructural changes using light scattering (LS) and small angle neutron scattering (SANS) techniques. Dynamic light scattering (DLS) studies indicate a gradual increase in the apparent diffusion coefficient (Da) of the micelles upon addition of D2EHPA, suggesting the incorporation of D2EHPA molecules into TX-100 micelles. Quantitative analysis of the SANS data for D2EHPA containing micelles indicates that the effective surface charge on the micelles increases with increasing concentration of D2EHPA, while the dimensions of the micelles remain almost same. Thus, the observed increase in Da of the micelles is attributed to the changes in the intermicellar interactions. The increase in repulsive interaction with addition of D2EHPA is also evident from an increase in the cloud point of the micellar solutions. The microstructural and cloud point changes occurred in D2EHPA containing micelles in the presence of an inorganic salt, sodium chloride (NaCl) further support the inclusion of D2EHPA molecules into TX-100 micelles. The binding of uranyl ions (UO22+) to TX-100-D2EHPA mixed micelles was ensured by monitoring a decrease in the intermicellar repulsion upon addition of uranyl nitrate hexahydrate and a subsequent decrease in the cloud point of the micelles. A red-shift in the absorption peaks of uranyl nitrate hexahydrate in the presence of TX-100-D2EHPA mixed micelles also confirms the binding of UO22+ to mixed micelles. The quantitative estimation of UO22+ bound to TX-100-D2EHPA mixed micelles was carried by cloud point extraction (CPE) method followed by spectrophotometric determination.
Description:	Only IISERM authors are available in the record. Only IISERM authors are available in the record.
URI:	https://www.sciencedirect.com/science/article/pii/S0927775714009819 (https://www.sciencedirect.com/science/article/pii/S0927775714009819) http://hdl.handle.net/123456789/2969 (http://hdl.handle.net/123456789/2969)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
Need to add pdf.odt (/jspui/bitstream/123456789/2969/1/Need%20to%20add%20pdf.odt)		8.63 kB	OpenDocument Text	View/Open (/jspui/bitstream/12345

Show full item record (/jspui/handle/123456789/2969?mode=full)

(/jspui/handle/123456789/2969/statistics)