A NEW, HIGH SENSITIVE POTENTIOMETRIC SENSOR FOR ANIONIC SURFACTANTS

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A new PVC plasticized liquid type anionic surfactant sensitive membrane has been prepared, based on 1,3-didecyl-2-methylimidazolium-tetraphenylborate as sensing ion-pair element and o-nitrophenyl-octylether as plasticiser. The membrane was incorporated in the Philips IS-561 electrode body. The effects of different proportions of the membrane components (ionophore, plasticisers, PVC) were studied. The electrode exhibited Nernstian response for dodecylbenzensulfonate and dodecylsulfate, and was used as end-point indicator for potentiometric surfactant titrations. The selectivity coefficients relating to the common inorganic and organic anions have been calculated by modeling of Nikolskii-Eisenman equation. Several commercial surfactants have been also titrated. The electrode enables the titration of shorter hydrocarbon chain anionic surfactants, as well. The standard solutions of 1,3-didecyl-2-methylimidazolium chloride, cetylpyridinium chloride, cetyltrimethylammonium bromide and Hyamine 1622 were used as cationic titrants.
The sensor has been used for potentiometric determination of single anionic surfactants, for 2-components mixture titration and anionic surfactant-soap mixture titration. The results were agreed with those obtained using standard two-phase titration method.

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