

Bromide/chloride counterion exchange at the surfaces of dioctadecyldimethylammonium vesicles

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The exchange between bromide and chloride counterions at the surfaces of dioctadecyldimethylammonium vesicles has been examined through fluorescence quenching experiments. The quenching of the fluorescence of vesicle-incorporated naphthalene derivatives by bromide counterions has been studied under different experimental conditions. The data are analyzed by following the pseudophase ion-exchange model and assuming that the observed quenching is a direct function of the local quencher concentration at the vesicle surfaces. The fluorescence quenching behavior is found to be accounted for by the ion-exchange formalism when experiments are performed on vesicles having the same ionic composition for the contacting solution at both the outer and inner aqueous pseudophases. From this type of experiment, a bromide/chloride counterion exchange constant equal to 4 ± 1 is obtained. Experiments performed by addition of a vesicle solution containing a single counterion (chloride) to an isotonic sol