

Micellar Catalyzed Dephosphorylation The Role of Hydrophobicity of the Nucleophile

Bunton, Clifford A.

Sepulveda, Luis

Cationic micelles of hexadecyltrimethyl ammonium bromide (CTABr) increase the rate of dephosphorylation of *p*-nitrophenyldiphenyl phosphate (PNPDPP) by aryloxy ions by factors of almost 104. The rate-surfactant profiles for reactions of *p*-ethyl-, *p*-propyl-, *p*-*t*-butyl- and *p*-*t*-amyl-phenoxide ion and of 2-naphtholate ion can be interpreted quantitatively in terms of the distributions of the two reactants between aqueous and micellar pseudophases. The second order rate constants in the micellar pseudophase are slightly smaller than in water, showing that the rate enhancements are due largely to concentration of reactants at the water-micelle interface. Similar conclusions can be drawn from analysis of the micellar catalysis of the dephosphorylation by oximate ions of *p*-nitrobenzaldehyde and 2-quinoline carbaldehyde. Copyright © 1979 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim