



BROMIDE AND PERCHLORATE BINDING TO MICELLES AND EFFECT OF CATALYSIS OF SULFOBETAINE MICELLES IN NUCLEOPHILIC REACTIONS

M.A. Farrukh¹, N.D. Gillitt², C.A. Bunton², P. Di Profio³, G. Savelli³, L. Marte³, F. Nome⁴

*1 - Pakistan Council for Science and Technology, Shahrah-e-Jamhuriat, Islamabad, Pakistan;
Departamento de Quimica, Universidade Federal de Santa Catarina, Florianopolis-SC 88040-900,
Brazil*

*2 - Department of Chemistry and Biochemistry, University of California, Santa Barbara,
California, USA*

3 - CEMIN, Dipartimento di Chimica, Universita di Perugia, 06100 Perugia, Italy

*4 - Departamento de Quimica, Universidade Federal de Santa Catarina, Florianopolis-SC 88040-
900, Brazil*

akhyar100@yahoo.com

With fully micellar bound substrates reactions of OH⁻ with benzoic anhydride, Bz₂O, and of Br⁻ with methyl naphthalene-2-sulfonate, MeONs, in micellized sulfobetaines are strongly inhibited by NaClO₄ which displaces the nucleophilic anions from the micellar pseudophases. The micellar incorporations of ClO₄⁻ and Br⁻ are estimated by use of an ion selective electrode, and by electrophoresis, and the partitioning of Br⁻ between water and micelles is related to changes in NMR spectral ⁷⁹Br⁻ line widths. The extents of inhibition by ClO₄⁻ of these nucleophilic reactions in the micellar pseudophase are related to quantitative displacement of the reactive anions from the micelles by ClO₄⁻. The kinetic data are correlated with physical evidence on the strong interactions between sulfobetaines and ClO₄⁻ which turn sulfobetaine micelles anionic and effectively provoke the displacement of OH⁻ and Br⁻.