

### **Fluorescence quenching studies of pyrene in SDS micelle solutions**

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The fluorescence of pyrene incorporated into sodium dodecyl sulphate micelles has been quenched by several neutral quenchers of different molecular size: acrylamide and its derivatives: bisacrylamide and dimethylacrylamide, as well as spin labels: TEMPONE and CTPO. The quenching data obtained in steady-state measurements were fitted to the Stern-Volmer equation by an iterative, non-linear least-squares computational method which allowed quantitative determination of the static- and dynamic- quenching terms. All the quenchers used were partitioned between micellar and aqueous phases. A method of analyzing fluorescence quenching data in a two-phase system is described and employed in order to determine the actual values of bimolecular quenching rate constants  $k_q$  and partition coefficients  $K_p$ . The calculated  $k_q$  values are approximately two orders of magnitude smaller in the micellar system than in the water pyrene solution, indicating that a strong diffusion barrier is formed by the micelle structure. No direct dependence of  $k_q$  on the molecular size of a quencher is evident. The results of this study suggest that the structure of the SDS micelle is loose and dynamic yet is still able to significantly hinder free diffusion of the quencher molecules.