

## Singlet oxygen production from excited singlet and triplet states of anthracene derivatives in acetonitrile

Olea, A. F.

Wilkinson, F.

The efficiencies of singlet oxygen production from the singlet and triplet states of a series of anthracene derivatives in acetonitrile are reported. For anthracene and for all of the anthracene meso derivatives studied, the efficiency of singlet oxygen production from triplet states quenched by oxygen,  $\phi_T$ , is found to be unity, with the exception of 9-methoxyanthracene, where the value drops to one-third. The efficiencies of singlet oxygen production from excited singlet states quenched by oxygen,  $\phi_S$  in acetonitrile as solvent, are lower than in cyclohexane and vary from zero to one-half. In addition, the fractions of singlet states quenched by oxygen which yield triplet states, with or without singlet oxygen production,  $\phi_{TO_2}$ , for anthracene and 9-methyl-, 9-phenyl-, and 9,10-dichloroanthracene were measured and the values were found to vary from 0.57 to 0.83. Kinetic considerations allow the determination of estimates of this fraction for the other derivatives.

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