

Polychlorinated biphenyl isomers: photolysis in aqueous systems

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The photochemical decomposition of isomers of chlorinated biphenyls in aqueous media was studied. The irradiation was conducted at the 300 nm maximum using a Rayonnet photochemical reactor. The rate of photodecomposition and quantum yield for each isomer were calculated. A correlation of photolytic half-lives with physicochemical properties of the isomers is presented. Photoproducts were identified using gas chromatography with mass spectrometry. The results of studies on the effects of the variation in light sources and the presence of humic acid and particulates in aqueous media are presented.

Static fluorescence quenching of aromatic hydrocarbons by the uranyl ion

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Fluorescence quenching rate constants for aromatic hydrocarbons quenched by the uranyl ion were measured in ethanol. Static quenching via the formation of a non-emissive complex already present in the ground state was observed. The dependence of the equilibrium constants on temperature shows a positive entropy variation that is responsible for the uranyl ion-hydrocarbon association. In non-polar solvents no static quenching was observed.

Photochemistry of the uranyl ion in solution

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There is a growing interest in the use of uranyl salts for solar energy because the excited state has a very high oxidation potential. We studied the reactions of this state by flash photolysis and time-resolved fluorescence.