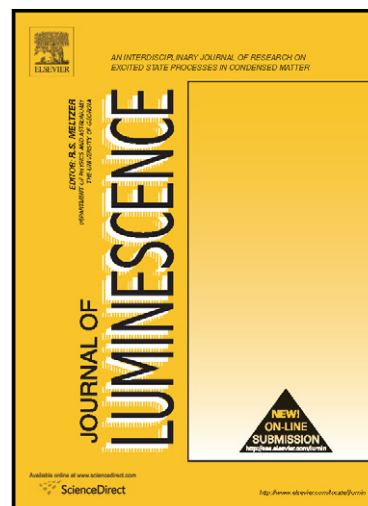


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Analysis of Fluorescence Quenching of Naphthalene by two Mercury Containing Organometallic Complexes.

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KEYWORDS: Gold; mercury; luminescence; fluorescence quenching; transient effects.

Abstract.

Two organometallic complexes, named $[\text{Hg}(2\text{-C}_6\text{H}_4\text{PPh}_2)_2]$ (**1**) and $\{[\text{Au}(\text{C}_6\text{F}_5)_2]\}_2\{\text{Hg}(2\text{-C}_6\text{H}_4\text{PPh}_2)_2\}$ (**2**) have been studied as quenchers of the fluorescence of naphthalene. Positive deviations were observed in the Stern–Volmer (S–V) plots for both quenchers. The analyses of the data reveals the existence of transient components in the dynamic quenching. The diffusion coefficients of these complexes have been obtained by two different methods, through the Stokes-Einstein equation, and from ^1H PGSE NMR experiments. With these values, and taking into account the experimental K_T constants, the radii of the transient quenching spheres were obtained, which show unusually large values.

1. Introduction

The quenching of fluorescence of aromatic hydrocarbons has been the subject of study for many groups during decades [1-14]. Haloalkanes have been the favorite quenchers chosen for these studies and several mechanisms have been proposed. The most favorable one involves a non-emissive exciplex intermediate formed through a collisional donor-acceptor interaction, mainly when a negligible overlap of donor-emission and acceptor-absorption spectra is observed [15-17]. The demonstration of this proposal is particularly difficult, since the direct observation of the non-fluorescent exciplex is not easy and,

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