

Time-resolved fluorescence studies on excimer formation in polystyrene

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The kinetic scheme governing intramolecular excimer formation in polystyrene was investigated using high resolution time-resolved fluorescence measurements performed on a series of copolymers of styrene with methyl methacrylate. The identification of terms descriptive of the intramolecular chromophore concentration in the copolymer permitted the evaluation of the rate constants for the individual photophysical decay pathways. Contrary to previous reports concerning polystyrene, but in agreement with recent findings for naphthalene-containing polymers, the conventional two-component monomer–excimer kinetic scheme was found to be inadequate and a microheterogeneous distribution of monomer sites was identified. In addition, unambiguous evidence for the reverse dissociation of the excimer into excited state monomer was found.

Quenching of the charge transfer luminescence of tris(2,2'-bipyridine)Ru(II) by Co(III) ketoenolates

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The quenching of the charge transfer luminescence of $[\text{Ru}(\text{bipy})_3]\text{Cl}_2$ by a series of Co(III) ketoenolates in ethanolic solution was studied by a spectrofluorimetric technique. Stern–Volmer constants indicate that the quenching proceeds at essentially a diffusion-controlled limit. The quenching rate diminishes whenever bulky substituents within the ligand are present. The mechanism of quenching is thought to be electronic energy transfer to the ligand field states of the acceptor. Variations in the Stern–Volmer constants are attributed to poor orbital overlap during the quenching encounter. Differences between Co(III) and Cr(III) complexes with the same ligand reflect the influence of spin statistical factors on the quenching efficiency.