

Turkish Journal of Chemistry

Turkish Journal

of

Chemistry

High Rates of Fluorescence Quenching Between Perylene Dodecyldiimide and Certain π -Electron Donors

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 [Keywords](#)
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Abstract: Perylene bis-n-dodecyl diimide is found to quench fluorescence emissions of naphthalene, phenanthrene and dihydrocarbazolocarbazole molecules at rates of 4.4×10^{11} , 2.8×10^{12} and $2.5 \times 10^4 \text{ M}^{-1} \text{ sec}^{-1}$, in respective order of aromaticity. These unusually high rates of fluorescence quenchings are attributed to Perrin model static quenching and presence of electron transfer through singlet excited state of perylene diimide. Calculated free energy of electron transfer, $\Delta G_{ET} = -120.5$ kJ/mol, between perylene diimide and dihydrocarbazolocarbazole is taken as evidence for observation of high fluorescence quenching rate for carbazolocarbazole molecule. Keywords: Fluorescence quenching, Photoenergy transfer, Perylene diimide and Carbazolocarbazole



Turk. J. Chem., 21, (1997), 363-368.

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