



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Photophysical Properties and Electrochemistry of the N,N'-bis-n-butyl Derivative of Naphthalene Diimide

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Abstract: The spectral-luminescent properties and electrochemistry of the N,N'-bis-n-butyl derivative of naphthalene diimide were studied. The main photophysical parameters (quantum yield, rate constants of fluorescence and of non-radiative deactivation and fluorescence lifetime) were determined. The LUMO value (-3.51 eV) was determined by cyclic voltammetry. The N,N'-bis-n-butyl derivative of naphthalene diimide (BBND) shows 2 reversible reduction steps (-1.19 V and -1.75 V vs. Ferrocene) in chloroform. Quenching the fluorescence emissions of aromatic donor molecules in acetonitrile revealed the electron acceptor ability of the studied naphthalene diimide derivative. It has been found that, in contrast to perylene diimide derivatives, which form π -electron donor-acceptor complexes with aromatic donor molecules of naphthalene, phenanthrene, pyrene and perylene, BBND does not form π -electron-donor acceptor complexes with aromatic donor molecules.

Key Words: Spectral-luminescent properties, cyclic voltammetry, N,N'-bis-n-butyl derivative of naphthalene diimide

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