Solvent and compartmentalization effects on the photophysics of 4-(benzothiazol-2-yl)-N, N-diphenylaniline

Valdebenito, Silvana

Zanocco, Renzo

Günther, Germán

Lemp, Else

Zanocco, Antonio L.

The photophysical properties of 4-(benzothiazol-2-yl)-N,N-diphenylaniline, were studied in a series of solvents. UV-Vis absorption spectra are insensitive to solvent polarity whereas the fluorescence spectra in the same solvent set show an important solvatochromic effect leading to large Stokes shifts. Linear solvation energy relationships were employed to correlate the position of fluorescence spectra maxima with microscopic empirical solvent parameters. This study indicates that important intramolecular charge transfer takes place during the excitation process. In addition, an analysis of the solvatochromic behavior of the UV-Vis absorption and fluorescence spectra in terms of the Lippert-Mataga equation, shows a large increase of the excited-state dipole moment, which is also compatible with the formation of an intramolecular charge-transfer excited state. Given the above properties, we explored the potential of this fluorescent probe for the determination of thermodynamic parameter