

# The Red-edge Effect in the Spectra of Fluorenone and 4-Hydroxyfluorenone Alcohol Solutions

M. Józefowicz<sup>a</sup>, J. R. Heldt<sup>a</sup>, and J. Heldt<sup>a,b</sup>

<sup>a</sup> Institute of Experimental Physics, University of Gdańsk, PL 80-952 Gdańsk, Poland

<sup>b</sup> Institute of Physics, Pomeranian Pedagogical Academy, PL 76-200 Słupsk, Poland

Reprint requests to Dr. J. H.; Fax: (048)(059)341-31-75, E-mail: fizjh@julia.univ.gda.pl

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Photophysical parameters of fluorenone and 4-hydroxyfluorenone have been studied in various solvents using steady state and time-resolved spectroscopic measurements. The fluorescence spectrum of both molecules in hydrogen bonding solvents is inhomogeneously broadened and strongly red shifted in comparison to that determined in nonpolar and polar media. At 77 K the fluorescence spectra of the protic solvents are blue shifted (posses a changed intensity distribution) whereas in polar and nonpolar one they are red shifted. In H-bond solvents at 77 K the fluorescence spectra of both molecules show an excitation wavelength dependence – *the red-edge effect*. The observed changes of the spectra are confirmed by the results of fluorescence decay measurements. The obtained results are explained by taking into consideration the statistical distribution of the solute-solvent interaction energies and the correlations between the fluorescence rate  $k_f$ , solvent-cage relaxation rate  $\tau_R^{-1}$  and the vibronic relaxation rate  $\tau_V^{-1}$ .

*Key words:* Fluorenone; 4-Hydroxyfluorenone; Electronic Spectra; Red-edge Effect.