

PHOTOPHYSICAL PROPERTIES OF GREEN-EMITTING POLYFLUORINATED 10-(1H-1,2,3-TRIAZOL-1-YL)PYRIDO[1,2-A]INDOLE FLUOROPHORES*

T.D. Moseev¹, M. V. Varaksin^{1,2}, D. A. Gorlov, A. P. Krinochkin^{1,2}, D. S. Kopchuk^{1,2}, G. V. Zyryanov^{1,2}, O. N. Chupakhin^{1,2*}, V. N. Charushin^{1,2}

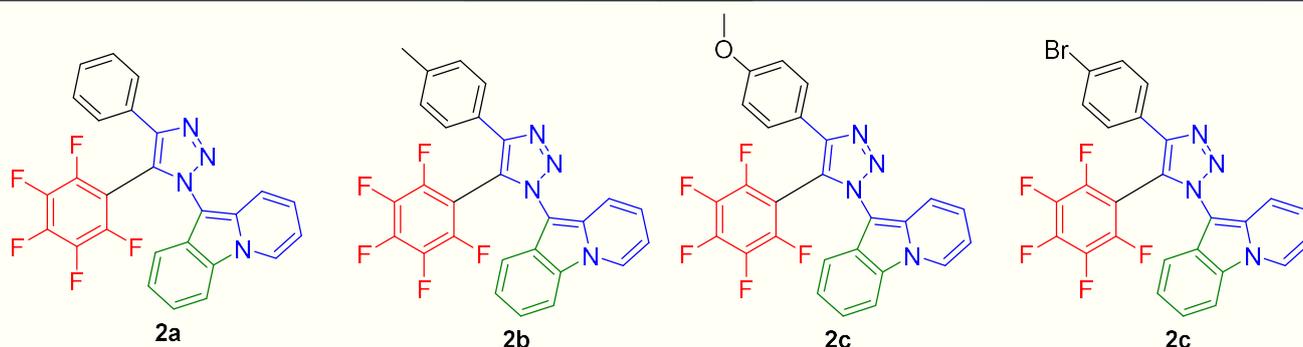


¹Ural Federal University, 19 Mira Str.,
620002 Ekaterinburg, Russia

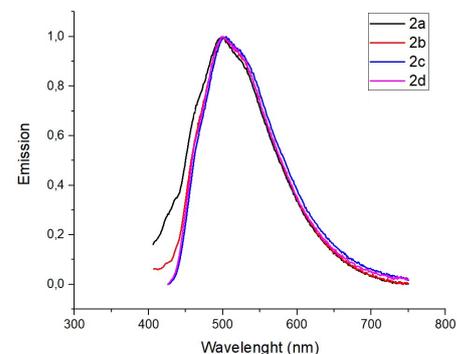
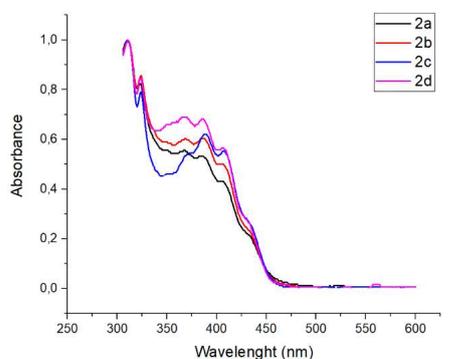
²Institute of Organic Synthesis,
Ural Branch of the Russian
Academy of Sciences, 22 S.
Kovalevskaya Str., 620041
Ekaterinburg, Russia



Incorporation of fluorine atoms or fluorinated fragments into organic molecules seems to be one of the most challenging synthetic strategy enabling one to obtain new compounds and materials with the desired properties, thus solving such problems as enhancing bioavailability, reducing toxicity, and appearance of some specific photophysical effects.



Scheme 1. Selected 10-(1H-1,2,3-triazol-1-yl)pyrido[1,2-a]indole Fluorophores for photophysical studies



It has been found that the absorbance spectra for the obtained compounds **2(a-d)** contain a complex structure of peaks at 407-368 nm and two strong maxima at approximately 325 and 310 nm, whereas there is a peak in the region of 330 nm in case of compound **3c** (Figure 2).

The emission spectra for the synthesized compounds **2(a-d)** and **3c** in MeCN solution at ambient temperature have been measured at an excitation wavelength corresponding to the long wavelength maximum in the absorption spectra.

Typical emission maxima obtained upon irradiation of the solutions were found to be in the green light region at 500 nm excluding the case of compound **3c**, which shows emission maxima in blue light region at 425 nm (Figure 3).

Entry	Compound	λ_{abs} (nm) ^a	λ_{em} (nm) ^b	Stokes shift (nm/cm ⁻¹)	Quantum yield (%) ^c
1	2a	387, 369, 323, 310	500	113/5839	1.0
2	2b	387, 369, 324, 311	500	113/5839	1.1
3	2c	407, 386, 368, 324, 310	501	98/4610	2.6
4	2d	406, 386, 368, 323, 311	500	94/4630	0.8

In addition, the “structure - photochemical properties” correlations for the synthesized compounds depending on the nature of the substituents at C(4) position of the triazole ring have also been revealed calculating the fluorescence quantum yields. In particular, the donor substituents, such as *p*-methoxyphenyl (**2c**), *p*-tolyl (**2b**) have been shown to favour the quantum yield to be slightly increased (2.6% for **2c** and 1.1% for **2b**) in the comparison with ones for compounds **2a** and **2d** bearing phenyl (1%) or *p*-bromophenyl (0.8%) fragments.