

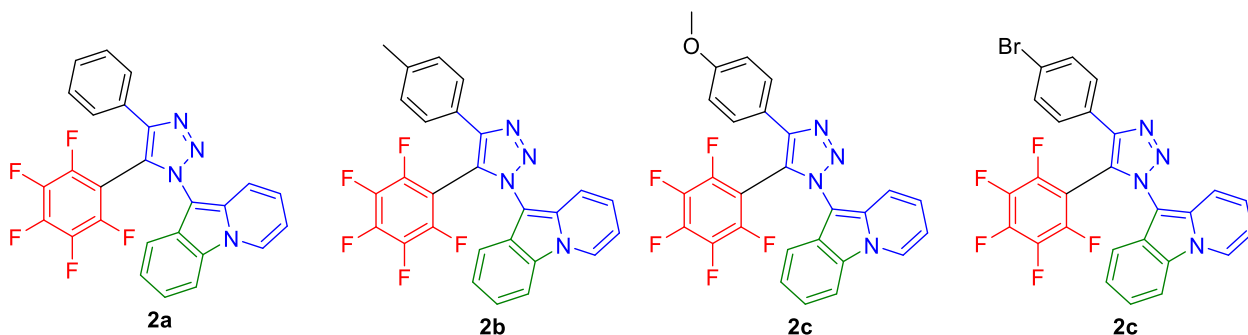
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## PHOTOPHYSICAL PROPERTIES OF GREEN-EMITTING POLYFLUORINATED 10-(1H-1,2,3-TRIAZOL-1-YL)PYRIDO[1,2-A]INDOLE FLUOROPHORES\*

**Keywords:** pyrido[1,2-a]indoles, fluorophores.

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. The UV–Vis and fluorescence spectra were recorded at 25 °C using a Shimadzu UV-1800 spectrophotometer and a HoribaFluoromax-4 Spectrofluorometer in MeCN and the results are summarized in table 1. All measurements were carried out at approximately concentration ( $C = 10^{-5}$  M) in MeCN. The absolute fluorescence quantum yields in solutions were determined using an integrating sphere.



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

To gain insight into the photophysical properties of the new polyfluorinated biheteroaryl fluorophore systems, the absorbance, emission spectra, and the luminescence life-time have extensively been studied.

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.

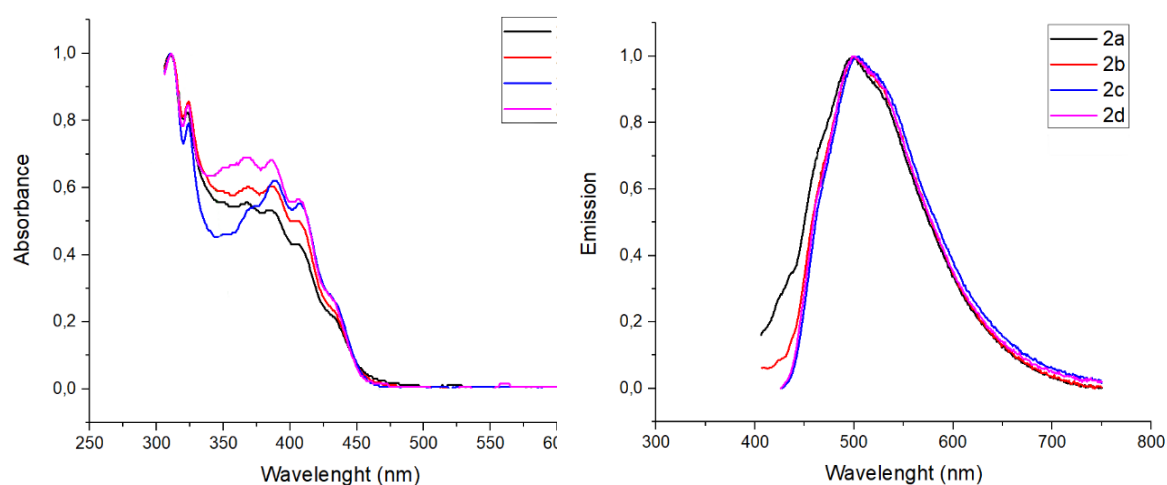


Figure 1. Absorbance and emission spectras of selected pyrido[1,2-a]indoles

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	$\lambda_{\text{abs}}$ (nm) <sup>a</sup>	$\lambda_{\text{em}}$ (nm) <sup>b</sup>	Stokes shift (nm/cm <sup>-1</sup> )	Quantum yield (%) <sup>c</sup>
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. It should be mentioned that the

fluorescence quantum yield is less than  $< 0.1\%$  in case of bipyridine **3c** with *p*-methoxyphenyl moiety.

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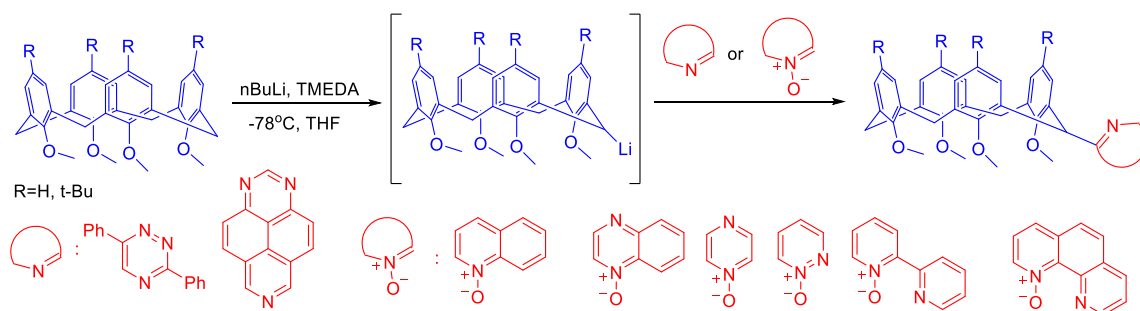
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## **SYNTHESIS OF MESO-SUBSTITUTED CALIX[4]ARENES VIA REACTION OF NUCLEOPHILIC SUBSTITUTION OF HYDROGEN (S<sub>N</sub><sup>H</sup>) IN AZINE OR AZINE-N-OXIDES\***

**Keywords:** Calix[4]arenes, azines, C-C coupling, nucleophilic substitution of hydrogen.

Calixarenes are known to be one of the key structural units in supramolecular chemistry. An enhanced interest in this promising class of macrocyclic compounds is due to wide opportunities of their practical use. Indeed, calixarenes proved to be effective receptors for selective extraction of metal ions, catalysts, chemosensors, transmembrane ion transporters, materials for nonlinear optics, biologically active substances etc.



Scheme 1. Synthesis of Meso-Substituted Calix[4]Arenes via Nucleophilic Substitution of Hydrogen (S<sub>N</sub><sup>H</sup>) in Azine or Azine-N-Oxides