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SYNTHESIS AND PHOTOPHYSICAL PROPERTIES OF 2-ARYL-4-(4-CYANOPHENYL)QUINAZOLINES

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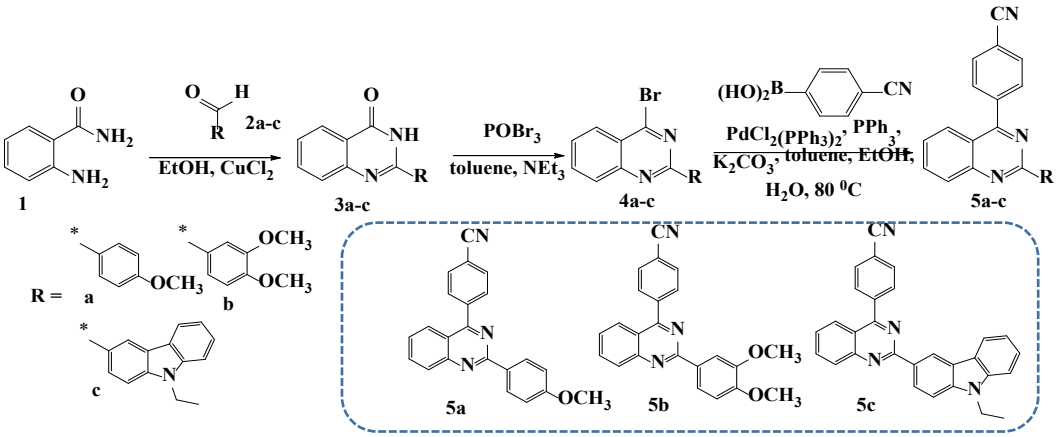
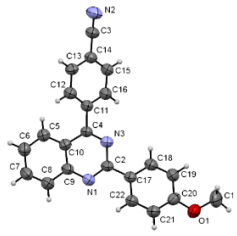
Abstract. The establishment of detailed structure–property relationships (SPRs) provides beneficial information for fine-tuning of the key characteristics and the rational design and synthesis of fluorophores. Quinazoline derivatives containing electron donating fragment at position 4 of quinazoline core were described previously by our research group.[1,2,3] Some quinazolines demonstrated strong fluorescent properties in solution as well as solvatochromic and sensing properties.

In this work we have designed and synthesized 4-(4-cyanophenyl)-quinazoline counterparts with electron donating unit at position 2. The target products **5a-c** were obtained by Pd-catalyzed cross coupling reaction between 4-bromo-derivatives **4a-c** and 4-cyanophenylboronic acid.



5a



	Solvent	λ_{abs}, nm	λ_{em}, nm	QY, %
5a	MeCN	**348**, 292, 258	505	<0.1
	Toluene	**352**, 297	447	<0.1
5b	MeCN	**314**, 280	595	< 0.1
	Toluene	**360**, 319	500	10.9
5c	MeCN	300	326, 421	< 0.1
	Toluene	**379**	500	23.2

The compounds were purified by column chromatography and the structure was confirmed by NMR-spectroscopy, mass-spectrometry and X-ray analysis data. The photophysical properties were measured in MeCN and toluene solutions, the fluorescent quantum yield is up to 23%.

References

1. Synthesis and photophysical properties of pyridyl- and quinolinyl-substituted 4-(4-aminophenyl)quinazolines / T. N. Moshkina, E. V. Nosova, A. E. Kopotilova [et al.] // J. Photochem. Photobiol. A. – 2022. – Vol. 429. – P. 113917.

2. Synthesis and photophysical studies of novel 4-aryl substituted 2-phenyl-, 2-(fluoren-2-yl)- and 2-cymantrenylquinazolines / E.V. Nosova, T. N. Moshkina, G.N. Lipunova [et al.] // Mendeleev Commun. – 2018. – Vol. 28, № 1. – P. 33–35.

3. Electron-withdrawing substituted quinazoline push-pull chromophores: synthesis, electrochemical, photophysical and second-order nonlinear optical properties / T.N. Moshkina, P. Le Poul, A. Barsella [et al.] // Eur. J. Org. Chem. – 2020. – Vol. 2020, № 33. – P. 5445–5454.

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