

BN-Doped Fluorophores as Fluorescent Uridine Analogues

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Fluorescent nucleobases are novel tools used in a wide variety of chemical, biophysical, structural, and biomedical applications. Polycyclic aromatic hydrocarbons (PAHs), like pyrene, phenanthrene or perylene have been used either as non-canonical nucleobases or linked to common canonical nucleobases, to combine the advantages of an extended fluorophore and the ability for base pairing.^[1] BN-doping of such fluorophores results in tuned photophysical properties.^[2] We prepared unprecedented organic–inorganic hybrid nucleosides, by synthesizing ethynyl substituted BN-doped phenanthrene and pyrene compounds and coupled them with 5-iodo-2'-deoxyuridine.^[3] The novel nucleosides showed different stability properties and photophysical behaviors.

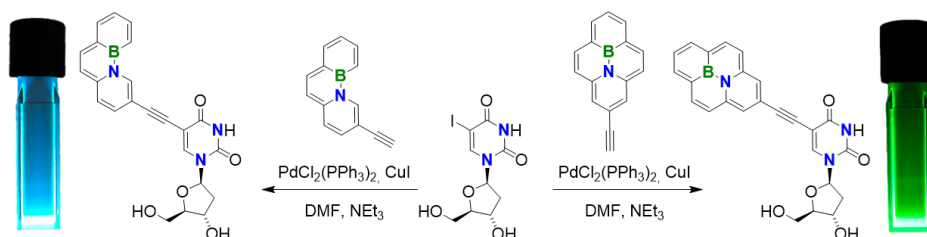


Figure 1: Synthesis of the BN-nucleosides and fluorescence thereof under UV irradiation.

References:

- [1] a) W. Xu, K. M. Chan, E. T. Kool, *Nat. Chem.* 2017, 9, 1043-1055; b) C. Steinmetzger, C. Bauerlein, C. Höbartner, *Angew. Chem. Int. Ed.* 2020, 59, 6760-6764.
- [2] a) J. D. Bosdet, C. A. Jaska, W. E. Piers, T. S. Sorensen, M. Parvez, *Org. Lett.* 2007, 9, 1395-1398; b) J. D. Bosdet, W. E. Piers, T. S. Sorensen, M. Parvez, *Angew. Chem. Int. Ed.* 2007, 46, 4940-4943.
- [3] M. Müller, H. Neitz, C. Höbartner, H. Helten, *Org. Lett.* 2024, 26, 1051-1055.