New boron chelated pyrrole-derived dyes: Potential for fluorescent sensors?

Wim Dehaen, Thanh Chung Pham, Jianjun Huang, Kexin Yu, Daniel Escudero
Department of Chemistry, KU Leuven, Belgium
E-mail: *wim.dehaen@kuleuven.be*

Open TASQ seminar

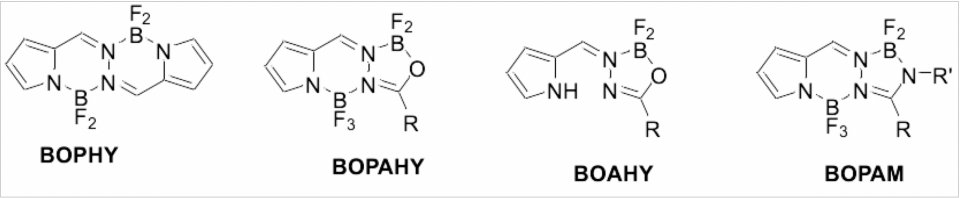
Friday September 20th, 2024, 10.00 a.m. CEST,
Library of Faculty of Chemistry

BODIPY is a well-known boron chelated dipyrromethane-derived fluorescent molecule. Many applications in sensing have been described [1] and the synthetic versatility is great due to the many possibilities for postfunctionalisation [2]. In the last years, we have described a number of alternative boron (bis)chelated structures that share some of the characteristics of the BODIPY dyes, such as the bischelated BOPHY, which are readily prepared from simple pyrrole-2-aldehyde building blocks [3].

More recently, we described BOPAHY and BOAHY chromofores available from the same aldehydes after bischelation or monochelation with difluoroboron. Some sensing behavior of BOAHY derivatives towards hypochlorite and applications in bioimaging of mitochondria were described [4].

The latest addition to the bron chelated pyrrole derivatives to be reported from our group was the BOPAM stem. Again, a straightforward on pot method allows to prepare BOPAM derivatives which can be postfunctionalized or modified to become NIR-dyes [5].

These new dyes have a great but as yet unexplored potential to be used in fluorescent sensing, we will show the synthetic possibilities and look forward to any discussion about collaborations.



References:

[1] N. Boens, V. Leen, and W. Dehaen, *Chem. Soc. Rev.* **2012**, 41, 1130-1172.

[2] N. Boens, B. Verbelen, M. J. Ortiz, L. Jiao, W. Dehaen, *Coord. Chem. Rev.* **2019**, 399, 213024.

[3] S. Boodts, J. Hofkens, W. Dehaen, *Dyes & Pigm.* **2017**, 142, 249-254 ; S. Boodts, E. Fron, J. Hofkens, W. Dehaen, *Coord. Chem. Rev.* **2018**, 371, 1-10.

[4] BOAHY and BOPAHY: S. Pookkandam Parambil, F. de Jong, K. Veys, J. Huang, S. P. Veettil, D. Verhaeghe, L. Van Meervelt, D. Escudero, M. Van der Auweraer, W. Dehaen, *Chem. Commun. 2020*, 56, 5791-5794; J. Huang, D. Zheng, Y. Fang, W. Dehaen, *Spectrochim. Acta, A: Mol. Biomol. Spectr.* **2023**, 303, 123201; J. Huang, X. Zhao, D. Escudero, L. Van Meervelt, D. Zheng, Y. Fang, W. Dehaen, *Dyes & Pigm.* **2024**, 221, 111826.

[5] BOPAM: J. Huang, F. d. Jong, D. M. E. v. Raamsdonk, J. Vandenwijngaerden, A. Inoue, D. Escudero, L. V. Meervelt, M. V. d. Auweraer, W. Dehaen, *Adv. Opt. Mater* **2023**, 2301328.