

ONE AND TWO-PHOTONS EXCITATION OF AMINONAPHTHALIMIDE–BODIPY DYADS: BIOLOGICAL APPLICATION

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Boron dipyrromethene (BODIPY) dyes are commonly commercialized chromophores that have attracted immense interest as versatile tools in biological chemistry [1]. However, the generally very small Stokes shifts of BODIPY dyes may cause re-absorption or effects from excitation-light scattering, which is a potential drawback for their application, especially in bioimaging. One strategy to avoid this problem is the integration of BODIPY dyes as acceptors in bi- or multichromophoric arrays, some of them qualifying as energy transfer cassettes where donor and acceptor units are electronically non-conjugated [2]. In this communication we present a series of aminonaphthalimide–BODIPY energy transfer cassettes that shown very fast and efficient BODIPY fluorescence sensitization. This was observed upon one- and two-photon excitation, which extends the application range of the investigated bichromophoric dyads in terms of accessible excitation wavelengths. In comparison with the direct excitation of the BODIPY chromophore, the two-photon absorption cross-section δ of the dyads is significantly incremented by the presence of the aminonaphthalimide [3].

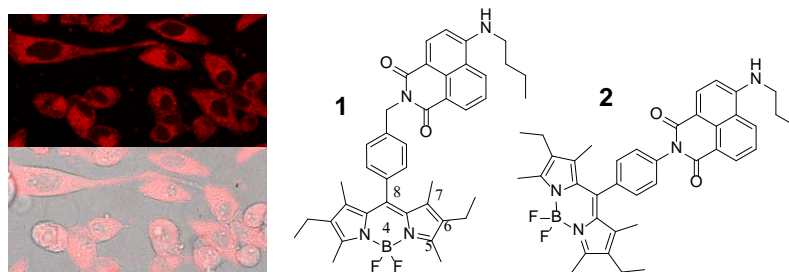


Figure 1. Aminonaphthalimide–BODIPY dyads.

The applicability of the new probes in the one- and two-photon excitation mode was demonstrated, both in solution and supported on silica nanoparticles, in a proof-of-principle approach in the fluorescence imaging of HeLa cells.

[1] Ulrich, G., Ziessel, R., Harriman, A. *Angew. Chem. Int. Ed.* **2008**, *47*, 1184-1201.

[2] Fan, J., Hu, M., Zhan, P., Peng, X. *Chem. Soc. Rev.* **2013**, *42*, 29-43.

[3] Collado, D., Remón, P., Vida, Y., Nájera, F., Sen, P., Pischel, U., Pérez-Inestrosa, E. *Chem. Asian J.* **2014**, *9*, 797-804.