TWO-PHOTON FLUORESCENCE AS TOOL FOR IMAGING IN CELLS

D. Collado[1,2], Y. Vida[1,2], F. Najera[1,2], V. F. Pais[3], P. Remón[3], A. Domínguez[3], A. Ros[4], U. Pischel[3], E. Pérez-Inestrosa[1,2]

[1] Department of Organic Chemistry, Universidad de Málaga IBIMA, Spain, dcollado@uma.es
[2] Andalusian Centre for Nanomedicine and Biotechnology-BIONAND, Parque Tecnológico de Andalucía, 29590 Málaga, Spain
[3] CIQSO - Center for Research in Sustainable Chemistry and Department of Chemistry, Universidad de Huelva, Spain
[4] Institute for Chemical Research (CSIC-US) and Department of Organic Chemistry, University of Seville, C/Prof. García González 1, 41012 Seville, Spain

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Fluorescent probes are essential tools for studying biological systems. The last decade has witnessed particular interest in the development of two-photon excitable probes, due to their advantageous features in tissue imaging compared to one-photon probes [1]. Recently, we have designed and synthesized an aminonaphthalimide–BODIPY derivative as energy transfer cassette which was found to show very fast and efficient BODIPY fluorescence sensitization [2]. 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 order to increase the two-photon absorption of the system the aminonaphthalimide fluorophore was replaced with a Prodan analogue, which presents a variety of applications as probes and labels in biology [3]. The two-photon absorption cross-section δ of the dyads is significantly incremented by the presence of the 6-acetyl-2-naphthylamine donor group.

We also explore in this communication the use of new fluorophores based on four-coordinate organoboron N,C-chelates containing an arylisoquinoline skeleton in confocal fluorescence microscopy that show significant two-photon absorption cross sections and allow the use of excitation wavelengths in the near-infrared region [4].

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