BIFUNCTIONAL AND HETEROBIFUNCTIONAL BODIPY MONOMERS AND THEIR USE AS GREEN-LIGHT PHOTOCLEAVABLE MACROMOLECULES

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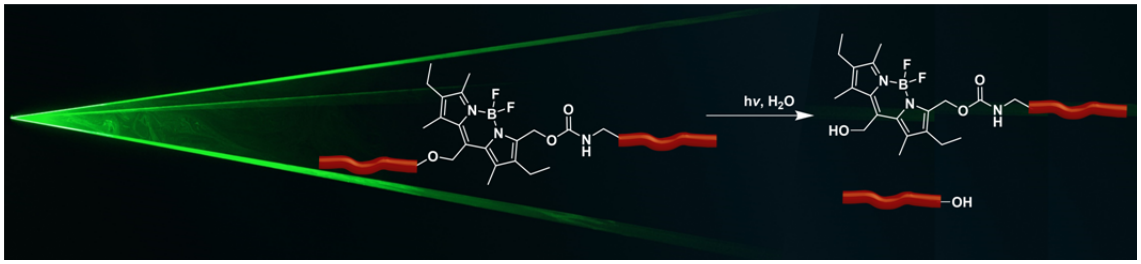

Figure 1. Green light photocleavable polymers based on BODIPY monomers

Photocages are chromophores able to covalently bind to a molecule and subsequently release it after irradiation with light of a specific wavelength. Most known photocages absorb in the UV region limiting their penetration depth in materials and restricting their application in biological or biomedical settings [1]. Boron dipyrromethene (BODIPY) compounds have recently gained significant interest in the field of photocaging due to excellent molar extinction coefficients and, more importantly, tunable absorption in the visible to near-infrared region ($\lambda > 500$ nm). In particular, the development of *meso*-methyl BODIPY derivatives allowed the evolution of tunable, modifiable and efficient caging groups further optimized offering high quantum yields of photorelease [2]. These compounds have therefore gained much interest as photocages in biological applications [3]. Herein we present novel bifunctional and heterobifunctional BODIPY based monomers which are designed for simple incorporation into macromolecules. We also present initial studies into their use as green-light photocleavable polymers and hydrogels, including polyurethanes (Fig 1), as well as photoreleasing macromolecular drug carriers. Such macromolecules could have wide-reaching potential applications due to the superior light penetration in materials along with biological tissues, compared to irradiation in the UV region, as well as positive photoresists in stereolithography.

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