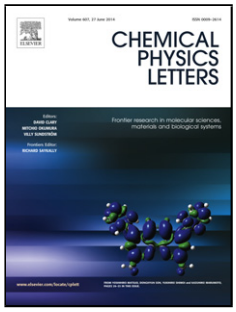

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Fluorenyl porphyrins for combined two-photon excited fluorescence and photosensitization

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Abstract

The two-photon absorption (2PA), the luminescence and the photosensitization properties of porphyrin-cored fluorenyl dendrimers and *meso*-substituted fluorenylporphyrin monomer, dimer and trimer are described. In comparison with model tetraphenylporphyrin, these compounds combine enhanced (non-resonant) 2PA cross-sections in the near infrared and enhanced fluorescence quantum yields, together with maintained singlet oxygen generation quantum yields. "Semi-disconnection" between fluorenyl groups and porphyrins (i.e. direct *meso* substitution) proved to be more efficient than non-conjugated systems (based on efficient FRET between fluorenyl antennae and porphyrins). These results are of interest for combined two-photon imaging and photodynamic therapy.

Introduction

Multiphotonics has gained increasing popularity in the life sciences over the last decade, in relation with the many advantages molecular multiphoton absorption[1-4] provides for biological or biomedical applications, such as multiphoton excited fluorescence imaging,[5-7] and photodynamic therapy (PDT),[8-14]. The advantages of two-photon absorption (2PA)