Synthesis and Characterization of Photo-Labile Agents

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Porphyrin chromophores possess extremely large absorptivities and intense absorption bands at long wavelengths. Therefore porphyrins show absorption bands between 400-500 nm with $\varepsilon \sim 80{,}000\ M^{-1}cm^{-1}$ and Q-bands in the region of 650-900nm with $\varepsilon \sim 20{,}000\ M^{-1}cm^{-1}$. Since chlorins show similar absorption features, they can be excited with low energy light. Introducing a photo-labile unit on the periphery the macrocycle can lead to generation of highly reactive radical intermediates that may have potential as phototherapeutic agents for photodynamic therapy (PDT). The diradical is thought to either abstract H-atoms from the DNA or protein backbones or insert into chemical bonds. As a result, both potential reactions can have significant biological impact. The synthesis and characterization of photo-labile diazo-oxo-chlorins will be presented.