

Supramolecular Reversible On-Off Switch for Singlet Oxygen Using Cucurbit[n]uril Inclusion Complexes

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Abstract

A novel strategy to control the generation of singlet oxygen by a photosensitizer using cucurbit[n]urils inclusion complexes is shown herein, and the strategy has great potential for therapeutic applications. We show the basic requirements of the photosensitizer complexes in order to develop an on off switch for singlet oxygen that is reversible using competitive binding. The supramolecular strategy proposed in this paper avoids complex synthetic schemes in order to activate or deactivate the photosensitizer as previous work has shown and supports the use of biocompatible materials. Mechanistic insights into the control over the generation of singlet oxygen are provided, which strongly emphasize the key role of the cucurbit[n]uril macrocycles in the stabilization or deactivation of the triplet excited state.

Keywords

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