# Deepening into the photorelease mechanism of avobenzone-based photocages

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Recently, a new photolabile protecting group (PPG) based on the avobenzone solar filter has been reported.[1] This new system was designed inspired on the well-known ability of phenacyl derivatives to act as PPG of chemical functions such as carboxylic acids, alcohols, amines, etc.[2] Thus far, this avobenzone-based photocage has found application for the simultaneous and controlled release of the abovementioned UV-filter along with two nonsteroidal anti-inflammatory drugs (NSAIDs) of topical use, ketoprofen (KP) and diclofenac (DF). This application is of especial interest due to the dual role of avobenzone as a PPG and as a UV filter, once released. When it works as a solar filter it provides protection against the adverse effects derived from the exposure to UV light in combination with xenobiotics, *i.e* phototoxicity and photoallergy.

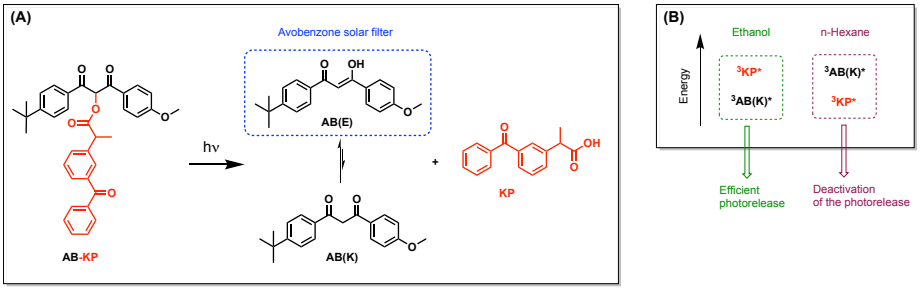


***Figure 1.*** *Photorelease of AB and KP from the AB-KP system (A) and a schematic representation of the solvent effect on the relative energetic order between the triplet states of the dyad components (B).*

Herein, we present a thorough study of the photophysical and photochemical properties of the avobenzone-ketoprofen system (AB-KP) in different solvents (ethanol and n-hexane).[3] Both molecular modeling and experimental techniques have been used to tackle the importance on the photorelease process of the relative energy of the avobenzone triplet state with regard to its caged compound. The results presented in this work are of high value on account of the design and optimization of the photorelease conditions of new sunscreen-based photocage systems.

## References

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