Study of Photoactivatable Processes

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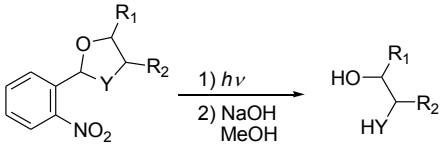
Photoactivatable processes have been of interest not only for synthetic applications but also for many promising applications in biologically related areas.[1]

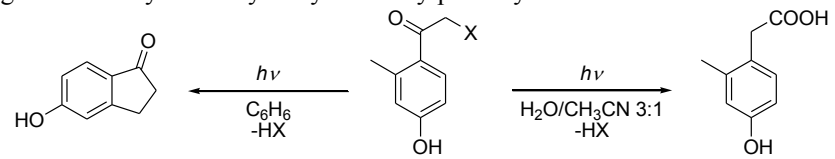
Photoremovable protecting groups (PPG) have been intensively studied in last few decades because they are an excellent tool for protection and easy deprotection of various functionalities.[2] *o*-Nitrobenzyl (*o*NB),[3] *p*-hydroxyphenacyl (*p*HP)[4] and *o*-methylphenacyl (*o*MP)[5] chromophores are among the most widely used PPGs.[6] To determine the scope and limitations of their utilization, we carried out a series of projects on their mechanistic and synthetic photochemical behavior.

*o*NB has been shown as a promising and useful PPG for both aliphatic and aromatic diols, as well as mercaptoalcohols along with a study of the mechanism of its two-step deprotection.[7]

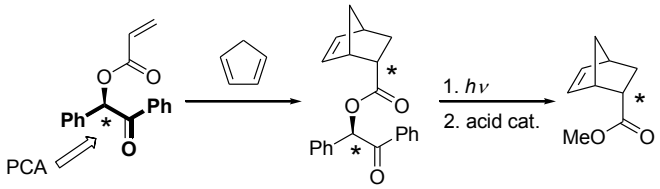


Y = O, S

A clean bifurcation between a Type II photochemistry[8] and photo-Favorskii rearrangement[9] has been discovered in a chromophore combining *p*HP and *o*MP functionalities depending on water content in media.[10] In addition an analogous reactivity of a *o*-hydroxy-*o*'-methylphenacyl PPG has been examined.



The desyl chromophore[11] is analogous to that of phenacyl, but contains an asymmetric carbon. We employed this chromophore as a "photoremovable chiral auxiliary" to introduce a new reagentless method for cleaving-off the chiral auxiliary.[12]



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