Photoremovable chiral auxiliary[1]

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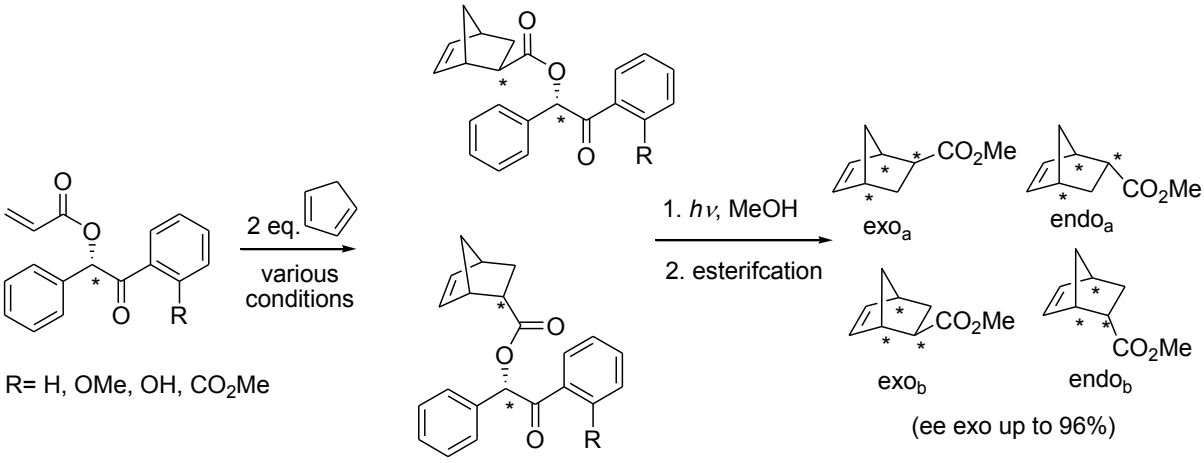
Chiral auxiliaries are optically active groups, temporarily covalently attached to the prochiral substrate, that induce a selective formation of one of the enantiomeric products during a stereoselective reaction. When the reaction stereochemistry is achieved, the auxiliary is removed. The benzoin group has already been used as a photoremovable protecting group[2] for various functionalities, such as carboxylates,[3] hydroxy compounds,[6] and phosphates.[4,5]

Here we introduce a concept of *photoremovable chiral auxiliary* as a novel strategy in the field of asymmetric organic synthesis, which offers an auxiliary that can be removed upon irradiation. Enantiopure benzoin derivatives were utilized as such auxiliaries: A dienophile linked to this group underwent a Diels-Alder reaction with a diene in the presence of various catalysts and the auxiliary was removed photochemically. The released acids were obtained with very high enantiomeric excess in some cases.



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