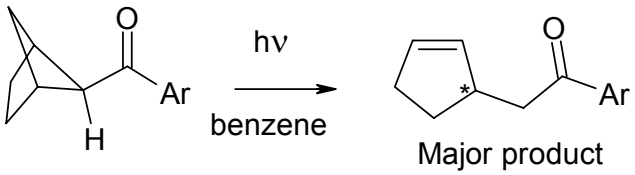
Asymmetric Photochemical Synthesis through the Use of Crystalline Ammonium Carboxylate Salts

Jason Jechow, John R. Scheffer* and Wujiong Xia

Department of Chemistry, University of British Columbia, 2036 Main Mall, Vancouver, British Columbia

Achiral exo-bicyclohexylaromatic ketones are known to undergo the Norrish type II reaction to produce the following chiral product in racemic form[1].



The goal of my project was to carry out this reaction enantioselectively through the use of the solid-state ionic chiral auxiliary method. In this method, the reactant bicyclohexylphenyl ketone was equipped with a carboxylic acid group (in the para position of the benzene ring) to which an optically pure amine was attached by salt formation. Salts such as these are required to crystallize in chiral space groups, which provide asymmetric reaction cavities capable of differentiating enantiomeric transition states. Irradiation of these materials in the solid state leads to enantiomerically enriched products in moderate to high enantiomeric excess depending on the amine employed[2]. The synthesis of the required starting material along with the results of preliminary photochemical experiments will be presented and discussed.

1 Padwa, A.; Eisenberg, W. *J. Am. Chem. Soc.* **1970**, 92, 2590.
2 Scheffer, J.R. *Can. J. Chem.* **2001**, 79, 349.