

## ABSTRACT

### ENANTIOSELECTIVE CONJUGATE ADDITION OF THIOPHENOL TO 2-CYCLOHEXEN-1-ONE

Asymmetric conjugate addition of thiophenol to 2-cyclohexen-1-one induced by a chiral catalyst under mild and neutral conditions was studied using a combinatorial approach. Several ligands were tested alone as potential organic catalysts as well as their combination with nickel and cobalt salts in-situ as possible organometallic catalysts. This study represents the first use of Jacobsen's catalyst for the asymmetric addition of thiophenol to 2-cyclohexen-1-one. The highest optical yield using *R*-Jacobsen's catalyst (24% ee) was obtained at 25 °C in a toluene-water solvent system.

A method was developed for determining % ee using a gas chromatograph equipped with a cyclodextrin-based chiral column and hydrogen as the mobile phase. The GC method was compared to a <sup>1</sup>H-NMR method for estimating % ee that uses a chiral shift reagent. The GC method served as the primary tool for obtaining % ee data in this study.

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