

# Abstract

This master's thesis is focused on the preparation of new planar chiral fused *N*-heterocyclic [2.2]paracyclophanes via kinetic resolution combined with our newly developed directed C–H activation/annulation methodology.

The first part of this thesis focuses on optimizing the reaction conditions for the C–H activation/annulation sequence of [2.2]paracyclophane derivatives and 1,2-dialkyl/1,2-diaryl alkynes, aiming to increase the variability of the annulated products. In the second part of the project, optically pure [2.2]paracyclophane derivatives with the suitable directing group were prepared via kinetic resolution and subsequently utilized to prepare chiral annulated products with phenylpropyne derivatives, 1,2-dialkyl, and symmetric 1,2-diaryl alkynes. The final part of the work explores the possible application of kinetic resolution during the C–H activation step, employing prepared chiral ruthenium complexes and racemic starting material.

Key words: *[2.2]paracyclophane, kinetic resolution, C–H activation, annulation, planar chirality*