

University of Groningen

Asymmetric Cu-catalyzed 1,2 and 1,4-additions of Grignard reagents

Calvo Gonzalez, Beatriz Carmen

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:

2018

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Calvo Gonzalez, B. C. (2018). *Asymmetric Cu-catalyzed 1,2 and 1,4-additions of Grignard reagents: Development of new substrates and their application in total synthesis*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

5. Outlook and perspectives

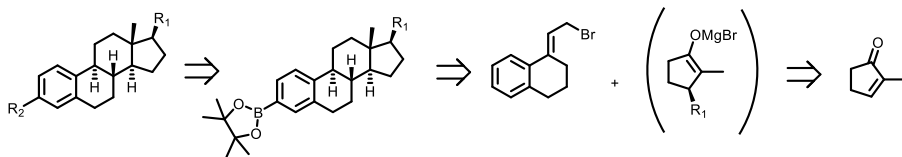
In this thesis, the goal of broadening the scope of the methodology for the Cu-catalysed 1,4- and 1,2-additions and was accomplished.

We also aimed for the application of this methodology to organic synthesis. We were pleased to employ our catalytic system to the synthesis of new steroid derivatives.

However, due to time concerns, not all the research and not all the syntheses could be performed. And there are topics in this thesis, in which more research, or more optimization, could be done in the future.

For example, in chapter 3, methodology to perform enantioselective Cu-catalyzed 1,2-additions to new cyclic substrates was developed. However, due to a lack of time, we were not able to further apply this methodology to total synthesis.

In chapter 4, two steroid derivatives are made. An interesting addition would be the synthesis of more steroid derivatives; either by changing the Grignard reagent in the conjugate addition step, or by having a different functional group in the aromatic ring (scheme 1). Since these molecules are new, and steroids are biologically active molecules, it would be an interesting addition to do biological tests with these new steroid derivatives.



Scheme 1: Retrosynthesis of possible steroid hybrids containing different substituents R₁ and R₂.