

Enantioselective Organocatalysis: Synthesis and Application of Novel Organocatalysts.

Organocatalysis can be utilised for the construction of enantiopure complex organic molecules, thus providing an alternative or a complement to organometallic and enzymatic catalysts, with a strong potential for green chemistry and industrial applications. The term "organocatalysis" describes the acceleration of chemical reactions through the addition of a substoichiometric quantity of a small organic molecule. One of the most described organic catalysts is proline, an aminoacid. However, most new organocatalysts are not general, i.e., they work very well in one or a few reaction types but do not give satisfactory results in a different transformation. Therefore, there is a need to develop new organocatalysts which are easily recycable and possess enhanced catalytic properties.

The aim of this project is to develop new organocatalysts from tartaric acid, which is a very abundant and cheap chiral starting material and is available in both enantiomeric forms. All new organocatalysts synthesised will be tested in several kind of reactions. The structure of the catalysts will be changed in order to increase their reactivity and stereoselectivity and to study the mechanistic aspects of the catalytic cycle.

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