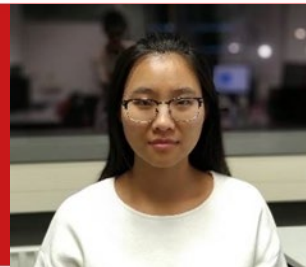


# Iron-based Catalysts for Carbon-Carbon Cross-coupling Reactions

Yuchao Deng



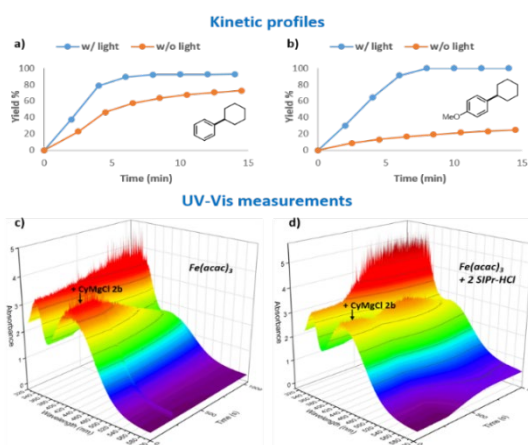
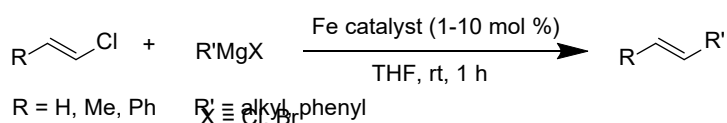
## Introduction

The cross-coupling reaction is a fundamental method to forge a carbon-carbon bond. These coupling reactions are key for the synthesis of drugs, natural products, optoelectronic materials, polymers, etc. Iron-catalyzed C-C coupling reactions have been extensively studied because they allow to avoid the use of toxic and expensive palladium or nickel complexes. In addition, if suitably controlled, iron-catalyzed reactions can be much faster than the corresponding reactions catalyzed by heavier metals.

## Project summary

Current potential topics: optimization of the iron catalytic systems and their application for the conversion of challenging substrates, e.g. aryl groups bearing electron-donating groups, vinylic halides, etc.

Key in our investigations is the use of light to accelerate the transformation. Substrates which were before totally inactive can be smoothly converted through the use of light. The use of flow reactors are key to further scale the chemistry



## Project goals

Typical MSc projects contain the development of new Fe catalysts, their application in cross coupling, study the effect of light and scale up of the reaction conditions in flow.

## Contact information

y.deng1@tue.nl, STO 1.40; t.noel@tue.nl, STO 1.37.