Institute of Chemical Engineering

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Kinetics of the chemoselective reduction of carbonyl compounds in flow monolithic microreactors

Duration: 2017 - 2018
Description

The Meerwein-Ponndorf-Verley (MPV) reaction allows the selective reduction of carbonyl compounds under mild conditions using secondary alcohols as a hydrogen source. So far, only a few articles on the kinetics of this reaction in the presence of homo- or heterogeneous catalysts has been published. There is no such studies for flow monolithic microreactors.

The aim of the project is to investigate the kinetics of chemoselective reduction reactions of carbonyl compounds in microreactors with Lewis acidic centers, generated by zirconium, with attached propoxy- or oxo-ligands, introduced by post-synthesis immobilization of appropriate metal complexes on the surface of silica. The kinetic parameters of MPV reactions for powdered catalysts, obtained with the same active centers on mesostructural silica supports of SBA-15 type will be estimated.

Objective:
Kinetic parameters enable determining of the optimal conditions for the process, through the selection of appropriate catalysts and reaction conditions. Knowledge of the reactions rate is necessary for design the apparatus and enable control of the process. The results allow to compare the effectiveness of the proposed microreactors with traditionally used batch reactors.

Metryczka

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