Sustainable Process Engineering

Chemical Reactor Engineering

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

Hydrogenation of Nitriles using foam Catalysts

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Introduction

Fatty amines are aliphatic amines with more than 8 carbon atoms in the hydrocarbon chain. They are excellent surfactants because of the polar amine group and non polar hydrocarbon tail. Fatty amines and its derivatives are of particular interest in industry due to the various commercial applications ranging from chemical synthesis to water treatment. In this project we are planning to study the kinetics of the hydrogenation reaction of nitriles (Lauronitrile) to amines.

Project summary

The hydrogenation reaction will be carried out in a batch reactor with the specified temperature and pressure to find out the intrinsic kinetics of the reaction and a model will be developed accordingly.

The development of foam catalyst and coating of the catalyst on the metallic (aluminium), ceramic (alumina) form to compare the efficiency of coated catalyst with the commercial catalyst in a foam reactor.

To study the mass transfer and kinetic limitations on the commercial catalyst coated on different foam supports and model the hydrogenation reaction of Nitriles using the foam catalysts.

Project goals

Experiment and model development of hydrogenation reaction using a metallic foam catalysts. Coating of the catalysts on alumina form and comparison of the activity with commercial catalysts

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