



ENHANCING SUSTAINABILITY IN CARBON DIOXIDE HYDROGENATION THROUGH PROCESS INTENSIFICATION

Masoud Shirzadi Ahoudashti

Department of Applied and Environmental Chemistry, University of Szeged, Rerrich Béla tér 1, H-6720 Szeged, Hungary

e-mail: masoud.shirzadi.2022@gmail.com

ABSTRACT

Delves into the pivotal role of process intensification in advancing carbon dioxide (CO₂) hydrogenation, is a crucial aspect of sustainable energy conversion and solving environmental problems. We explore the optimization of reaction conditions, catalysts, reactors, and processes design to elevate the efficiency of CO₂-direct Fischer Tropsch processes. Through innovative technologies such as hybrid catalyst-adsorbent materials, dynamic operations, integrated with various processes design, we aim to achieve higher conversion rates and selectivity beyond equilibrium constrains. Our research emphasizes the integration of process intensification methods to address challenges and propel greener, more effective CO₂ hydrogenation strategies for the production of more valuable products.

Keywords: CO₂-direct Fischer Tropsch, Process intensification