

Heterogeneously catalyzed alcohol oxidation in a high-pressure three-phase reactor

Due to the demand for green and economic reaction routes for the synthesis of value-added chemicals from alcohols, heterogeneous catalysis with the help of molecular oxygen as oxidant demonstrates great potential over traditional systems dominated by stoichiometric oxidants. The Parr Series 5000 Multiple Reactor System will be applied to study the catalytic behaviour of Pd-based catalysts in the selective oxidation of ethanol in the liquid phase. The configuration of the reaction setup, operation of batch autoclaves and quantification of reaction products will be introduced. The influences of reaction parameters on the conversion of ethanol and selectivities towards different oxidation products will be discussed by varying the reaction temperature, time, catalyst amount and ethanol concentration. The practice offers theoretical and experimental basics about the selective oxidation reaction of alcohols as well as the handling and operation of autoclaves and gas chromatography.