Heterogeneous reaction engineering

ECTS
5 crédits

Hourly volume
37h

Introducing

Objectives

Know and explain the concepts of
- chemical catalysts
- heterogeneous reaction mechanisms and associated kinetic laws
- limiting step(s) in heterogeneous reactions
- apparent (overall) reaction rate
- dimensionless numbers (Hatta, Biot, Thiele, Weiss)
- effectiveness factor and enhancement factor

Establish an intrinsic kinetic law
Determine the limiting process(es) in a heterogeneous chemical reaction
Express dimensionless numbers used in heterogeneous reactions (Hatta, Biot, Thiele, Weisz) and explain their meaning
Express the apparent global rate of a chemical reaction depending on the working conditions
Select and design the most suitable reactor to perform a given reaction
Integrate and prioritize the mechanisms in order to model heterogeneous chemical reactors (batch or continuous)

Necessary prerequisites

Chemical reaction Engineering I (I2BERR12)
Chemical reaction Engineering II (I3BERR12)
Heat and mass transfer (I3BETF32)

Thermodynamics (I2BETH11)
Fluid properties (I3BEPF12)

Practical info

Location(s)

Toulouse