



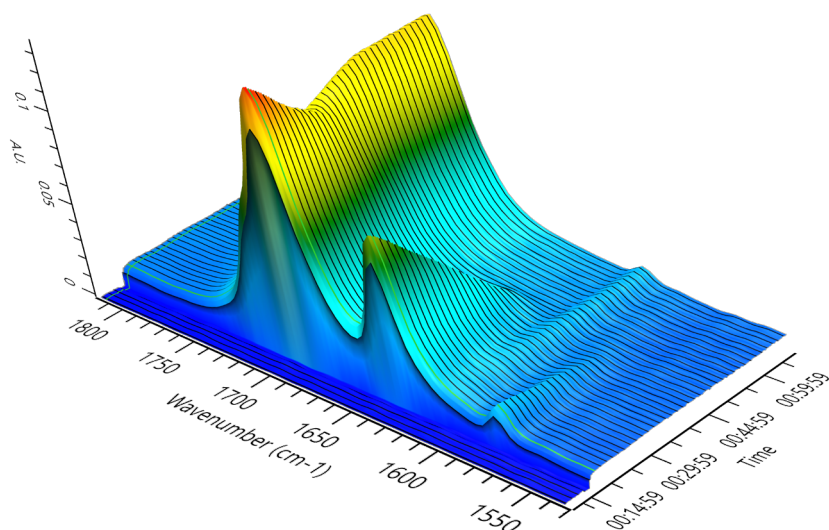
TIBCHEMICALS

TIB Heterogeneous Catalysts

Heterogeneous catalysts are commonly used in the chemical, petrochemical or pharmaceutical industry. Typical applications include the elimination of pollutants from flue gases, the conversion of crude oil to liquid fuels, the production of base chemicals and the synthesis of fine chemicals or pharmaceuticals. Nowadays most chemical products rely on catalysis at some production point with a majority on heterogeneous catalysis.

The synthesis of fine chemicals and pharmaceuticals often requires one or more hydrogenation steps. The activation of molecular hydrogen is crucial and in most cases achieved by using heterogeneous powder catalysts based on the elements Ni, Pd, Pt in a batch process.

TIB Chemicals has developed a portfolio of heterogeneous powder catalysts based on highly dispersed palladium or platinum on activated carbon carriers that show high activity in the hydrogenation of alkenes.



Hydrogenation of alkenes:

Monitoring of reaction species using in situ IR-spectroscopy.

Catalysts – A Passion for Reactions

TIB KAT® stands world wide for high-quality catalysts from TIB Chemicals – one of the leading suppliers for specialty chemicals. With strong innovative power and many years of experience, we develop individual solutions for complex fields of application. TIB Chemicals means performance with passion – check it out!

Catalyst	Relative Activity crotonic acid [%]	Relative Activity cinnamic acid [%]
Reference Pt/C	100	100
TIB KAT PT 05211	124	138
TIB KAT PT 05212	113	146
TIB KAT PT 05213	120	123
TIB KAT PT 05311	136	-
TIB KAT PT 05411	124	-

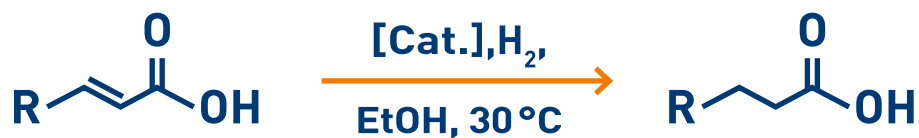
Hydrogenation of alkenes with 5% Pt/C catalysts:

- a) 0.3 M crotonic acid in EtOH, 2.0% catalyst, H₂ (1 bar), 30 °C
 b) 0.3 M cinnamic acid in EtOH, 5.0% catalyst, H₂ (1 bar), 30 °C

Catalyst	Relative Activity crotonic acid [%]	Relative Activity cinnamic acid [%]
Reference Pd/C	-	100
TIB KAT PD 05411	-	102

Hydrogenation of alkenes with 5% Pd/C catalysts:

0.3 M cinnamic acid in EtOH, 0.4% catalyst, H₂ (1 bar), 30 °C



Hydrogenation of alkenes with TIB Heterogeneous Catalysts:

crotonic acid (R=Me), cinnamic acid (R=Ph), [Cat.] = 5% Pd/C or 5% Pt/C



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