

widespread systems are those in which reactants from a liquid or gaseous phase interact with a solid catalyst.

The heterogeneous catalyst is a catalyst existing in the reaction mixture as a separate phase. A catalytic reaction involving a heterogeneous catalyst necessarily takes place at the phase boundary. Unlike a homogeneous catalyst, the advantage of a heterogeneous catalyst is the ease of separating the reaction products from the catalyst.

High-boiling distillates are fractions of petroleum that cannot be distilled at atmospheric pressure without decomposition, e.g., gas oils.

High-sulfur petroleum is a general expression for petroleum having more than 1 wt % sulfur; this is a very approximate definition and should not be construed as having a high degree of accuracy because it does not take into consideration the molecular locale of the sulfur. All else being equal, there is little difference between petroleum having 0.99 wt% sulfur and petroleum having 1.01 wt% sulfur.

Hydrocarbon compounds are chemical compounds containing only carbon and hydrogen.

Hydrocarbon gasification process is a continuous, noncatalytic process in which hydrocarbons are gasified to produce hydrogen by air or oxygen.

Hydrocarbon resources are resources such as petroleum and natural gas that can produce naturally occurring hydrocarbons without the application of conversion processes.

Hydrocarbon-producing resource is a resource such as coal and oil shale (kerogen) which produce derived hydrocarbons by the application of conversion processes; the hydrocarbons so-produced are not naturally-occurring materials.

Hydrocracking is a catalytic process, the cracking of heavy hydrocarbons in the presence of hydrogen H_2 . In addition to cracking reactions, hydrogenolysis, hydrogenation of aromatic hydrocarbons, the opening of cycles in naphthenes, hydrodealkylation of alkylaromatic compounds and naphthenes occur. Hydrocracking catalysts can be oxides and sulphides of Ni, Co and Mo.

Hydrodenitrogenation is the removal of nitrogen by hydrotreating.

Hydrodemetallization is the removal of metallic constituents by hydrotreating.

Hydrogeneration is the chemical addition of hydrogen to a material in the presence of a catalyst.

Hydrodesulfurization is a catalytic process of the removal of sulfur from oil or its fractions by hydrogenation of sulfur-containing compounds to form hydrogen sulfide and convert to hydrocarbons and H_2S . The process is carried out in the presence of hydrogen H_2 . The catalysts are supported oxides of Co and Mo, which under the process conditions become sulfides.

Hydrogenolysis is a catalytic process of rupture of C-C or C-X bonds ($X = N, S, O$, etc.) in hydrocarbons under the action of hydrogen H_2 . It is carried out on catalysts of hydrogenation and dehydrogenation (for example, metal catalysts). Often, the hydrogenolysis reaction requires high temperatures and a strong binding of the reactants to the catalyst and is therefore difficult to implement.

A hydrometer is a device for measuring the density of liquids and solutions, made in the form of a float (a tube with divisions and a load below). By the depth of immersion of the hydrometer in a liquid or solution, their relative density is found.

Hydrothermal synthesis is a method of obtaining carriers and catalysts in aqueous solutions at temperatures above $100^\circ C$ and pressures above 1 atm. Under such conditions, water can dissolve many substances (oxides, silicates, sulfides), which under normal conditions are practically insoluble. Advantages of the method are the ability to synthesize large crystals of high quality, as well as the possibility of obtaining crystals of substances that are unstable near the melting point. The main parameters of hydrothermal synthesis are the initial pH of the medium, the duration and temperature of the synthesis, the amount of pressure in the system.

Hydrotreating is the removal of heteroatomic (nitrogen, oxygen, and sulfur) species by treatment of a feedstock or product at relatively low temperatures in the presence of hydrogen.