

Reactor with a suspended catalyst was chosen to carry out hydrogenation over the swelling catalytic system. Unless the reactor with a fixed bed catalyst, it has a significant advantage - the possibility of creating conditions under which the swelling of catalyst does not interfere with mass exchange and heat exchange processes. Heat transfer in apparatus with a suspended catalyst is more effective and it is possible to provide reliable temperature control in the reaction zone.

The maximum degree of swelling of the developed polyvinylpyrrolidone-palladium catalysts is 10-15%.

Conclusions

Fixed on zinc oxide polymer-palladium catalysts for the process of selective hydrogenation of C₁₅ acetylene alcohol to olefin derivative under mild conditions have been developed. High stability and selectivity of the process is achieved by adding water-soluble PEG and PVPD to the ZnO supported palladium catalyst.

The role of polymers-modifiers in the formation of catalysts with uniform distribution of nanoscale particles (with diameters 4-8 nm) of active phase on the oxide surface is established. The functions of polymers are: prevention of agglomeration of highly dispersed catalytic centres, increasing catalytic activity and selectivity. It was shown that incorporation of polymer into catalytic system increases catalyst's activity by 3-10 times, selectivity by 7% and stability by 14 times.

Due to the formation of nanosized active phase particles on the surface of inorganic oxide the prepared palladium catalysts are very active and selective in hydrogenation of acetylene alcohols. The obtained compounds are used for preparation of pest-insect pheromones and other bioactive substance. All developed catalysts demonstrate some interesting properties and act as self-organized systems sensible to the reaction media. The advantages of use of developed catalysts are: high activity of polymer modified systems and selectivity of desired products formation; simple technique of catalysts synthesis; mild reaction conditions (energy saving processes); less content of active phase (1%wt Pd).

Process of continuous 3,7,11-trimethyldecane-1-ol-3 and 3,7,11,16-tetramethylhexadecane-1-ol-3 hydrogenation in fluidized bed reactor has been designed.

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