

Development of bases of design of stochastic processes in chemical technology taking into account the possible terms of incomplete information about the heterogenic systems.

State registration –0109U00373

Head - к.т.н., доц. Щербина В.Ю.

Results

When solving many applied problems encountered processes associated with the necessity to take account of stochastic properties of heterogeneous systems. Such problems regularly arise in a number of leading industries - chemical, petroleum, building materials, food and others, where important are hydrodynamic processes associated with separation at urahuvanni heterogeneity.

In connection with this arises the need for refined mathematical models and creation of information technologies for modeling nedeterminovanyh deterministic and complex engineering systems division process, taking into account not only deterministic but random factors and the likely involvement-stochastic modeling, as it largely determines the efficiency of the division, and is necessary for optimization of conditions for these processes.

The main result is developed deterministic and probabilistic mathematical models to study the processes of separation of heterogeneous systems in the vortex separation devices. It was suggested a new approach to solving some applied problems associated with stochastic processes in heterogeneous systems:

The generalized and applied theory, which enables not only solve the problem of stochastic separation of heterogeneous systems, and even many of these problems, and proposed a new approach to solving a variety of applications associated with stochastic processes for the vortex separation devices for chemical and other technologies .

A mathematical model allowing to analyze the process of separation, taking into account the random (stochastic) factors of separation of heterogeneous systems.

The proposed mathematical models that allow mathematically prove and justify the results, even performed at the level of continual mechanics, in terms of probability theory and system-information campaign.

The proposed methodology, which enables to calculate the necessary characteristics of devices, modes of technological parameters and determine the volume of the division, and they are more reliable than found by using well-defined mathematical models of continual mechanics, as well as in terms of probability when position calculations take into account all the really existing information about the system.

PDF