

ON THE ENTROPY HEAT AND MASS TRANSFER PROCESSES

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Sets out the laws of entropy. The analysis of heat and mass transfer processes of entropy in porous media.

Entropy, porous medium, heat and mass transfer process.

The purpose of research - to determine the degree of irreversibility of heat and mass transfer processes in porous media; eksergoekonomicheskuyu to evaluate these processes.

In the linear regime, the stationary states there are states in which the total entropy production reaches a minimum. This also ensures the stability of the stationary state. As a general principle of determining the state of the system is not in the far-from-equilibrium nonlinear regime. A state far from equilibrium can be instability and transition to new states organized. Next will be established thermodynamic conditions under which this may occur. Let's start with some general properties of the total entropy production R . First of all, consider the evolution due to small changes in the forces and flows.

Whenever the fluctuation of the system out of equilibrium, irreversible return it to the equilibrium state. The tendency of the system to reach an extremum of the thermodynamic potential and remain in this state makes the system stable. That is how the stability of the equilibrium state of the system is related to the existence of the thermodynamic potentials.

In contrast to equilibrium systems that convert to a state of minimum free energy nonequilibrium systems can develop unpredictably: their condition is not always uniquely determined by macroscopic equations. This stems from the fact that under the same set of conditions, the non-equilibrium system mo-zhet switch to different states. The reason for this may be fluk-tuatsii, small inhomogeneities,

defects or other random factors. For any particular system state will generally predskazat impossible. The new state is achieved in this way are often "ordered states" that have space-time organization.

As a result of the diffusion of nonequilibrium systems may be fluctuations in the concentration and spatial structures; in a closed system is the same dissipative processes blur the heterogeneity and bring the system to a homogeneous state [1, 2].

The problem of entropy production in the energy conversion systems was analyzed A. Bezhanov [3, 4]. The results obtained allowed to solve the problem of minimizing a heat exchange process, as well as optimizing the economic performance [5].

This method is widely used for the analysis of heat and mass transfer processes in porous media [6-12].

Of particular interest are the graphic dependence of the entropy generation of the relative pore radius for different values of Darcy.

Conclusion

Entropy is a measure of the energy efficiency of the investigated phenomena regarding the degree of entropy production depends essentially on the parameter, wherein - the porosity of the initial radius. With increasing values of entropy generation decreases asymptotically approaching zero.