About mutual influence of transport processes and inner structure in condensed media

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Results of analysis of condensed media with anisotropic structure elements are presented in the report. Thermodynamics and nonequilibrium processes in such systems are described by additional physical values. The initiation and formation of spatial structures and their self organization in condensed media are possible thanks to chemical, radiation, ecological or biological transformations taking into account diffusion processes in such distributed systems.

The base of present research is Hamilton's approach. The mutual influence of the form and size of structure elements of medium on the mass transport processes are traced in detail. Conformational degrees of freedom are introduced as definite functions of distortion tensor. The full set of Poisson brackets for all the set of macroscopic values is obtained and nonlinear dynamic equations taking into account relaxation processes are introduced. General structure of dissipative flows is found and the possibility of existence of additional kinetic coefficients, which describe new mechanisms of relaxation in a medium, connected with inner structure presence is shown. Solutions of mentioned nonlinear equations in stationary and nonstationary cases in conditions with different geometry are obtained and their physical interpretation is given.