GENERALIZED EQUATIONS FOR IONIC AND MOLECULAR TRANSPORT IN ELECTROLYTE SOLUTIONS THROUGH MEMBRANE STRUCTURES, TAKING ELECTROMAGNETIC PROCESSES INTO ACCOUNT

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S u m m a r y

Generalized equations, which describe the transport of ions and molecules in an electrolyte solution through a reverse osmotic membrane under the action of the temperature and concentration gradients and the difference between the external and osmotic pressures and which include the dielectric properties of the solution, membrane, and filtrate as parameters, have been obtained. Making use of the Zubarev nonequilibrium statistical operator method, the generalized transport equations for ions and molecules in the system "electrolyte solution–membrane–filtrate" have been derived in the framework of the diffusive and viscous motion models. The electromagnetic transport processes have been taken into account for the system under investigation by averaging the Maxwell's microscopic equations.