Generalized equations for transport of ions and molecules in electrolyte solution through membrane structures. Taking electromagnetic processes into account

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Using the method of nonequilibrium statistical operator of D.N. Zubarev we obtained the generalized transport equations for the ions and molecules of the system "solution of electrolyte–membrane–filtrate" in the cases of diffusive and viscous motion, the driving forces for which are gradients of temperature, concentration, difference of the external and osmotic pressures and dielectric properties of solution, membrane and filtrate. The electromagnetic transfer processes are taken into consideration by means of averaging of Maxwell microscopic equations for the system mentioned above.