SOME CHARACTERISTICS OF A THERMODYNAMICS OF INTERMOLECULAR INTERACTION IN SYSTEMS CONTAINING OF METAL IONS AND HIGH-MOLECULAR LIGANDS

Ospanova Alya, Murzagalieva Manshuk, Seilkhanova Gulziya, Ashimchan Nazgul, Amirgalieva Tursun

Kazakh National University named after al-Farabi.
480012, Republic of Kazakhstan, Almaty, 95A, Karasay-batyr Str.

Thermodynamics of processes of complex formation of metals ions with high-molecular ligands practically not investigated area. For wide practical use polymeric reagents the presence of the complete information about sizes of changes of Gibbs energy, enthalpy and entropy of processes of complex formation is necessary.

The structure of a formed complex is determined, standard thermodynamic characteristics of complex formation process ($\Delta_r G^\circ, \Delta_r H^\circ, \Delta_r S^\circ$) are estimated. The negative values indicate the possibility of complex formation processes between of metal ions and polyethyleneimine and enthalpy value indicate the exothermicity of these processes, that is characteristic for formation of donor-acceptor bonds at formation of a double polymermetal complex. The high entropy values indicate the formation of polymermetal complexes, oscillatory and rotary components significantly contribute to this process. Taking into account the experimental data in combination with literary ones, the scheme of interaction between components in the investigated system is proposed.

It is established, that the stability polymermetal complex system increases with the growth of ionic strength and decreases with temperature.

It is possible to explain the decrease of polymermetal complex stability of the investigated system the growth of temperature by exothermic character of the process of formation of polymermetal complex of metal ions with polyethyleneimine.

Ionic strength of the solution and temperature influences the analysis of the obtained experimental data shows that on stability of polymermetal complex with polyethyleneimine.