Yu. O. Plevachuk, V. M. Sklyarchuk, I. I. Shtablavyi, N. V. Faidyuk, R. N. Savchuk

PHYSICAL PROPERTIES OF THE EUTECTIC NaF-LiF-LaF_3 MELT IONIC LIQUID SYSTEM

Results of experimental studies on electrical conductivity, viscosity and thermo-electromotive force temperature dependencies of eutectic NaF-LiF-LaF_3 melt ionic liquid mixture in the temperature range of (580 ÷ 800) °C are presented. It has been found, that at the temperature of (675 ± 5) °C the ionic mixture thermo-electromotive force changes its sing to reverse, with this change being correlated with viscosity temperature dependence type readjustment occurring at the same temperature. It has been shown that the maximum value of liquid ionic mixture electrical conductivity is achieved at the temperature of (750 ± 5) °C. Obtained results could help in the molten salt reactor blanket design.

Keywords: molten salt reactor, blanket, metal fluoride, electrical conductivity, viscosity, thermo-electromotive force, ionic liquids.