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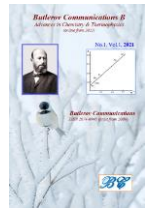

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Modeling of the specific electric conductivity of melts of halogenides RbHal (Hal – F, Cl, Br, I, At)

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Keywords: alkali metal's haloganides, salt melts, sodium, specific electrical conductivity, analytical description, forecast, relationship, viscosity, density, order number, ion radius, ion potential, electronegativity, temperature.

Abstract

The presented research is devoted to analytical description and modeling of the specific electrical conductivity for the individual rubidium haloganides melts RbHal (Hal – F, Cl, Br, I). Approximate mathematical equations were obtained during the analytical description using the Table Curve 2D, Table Curve 3D software packages. These equations describe the dependence of the specific electrical conductivity $\varkappa$ of the individual rubidium haloganides melts RbHal (Hal – F, Cl, Br, I) with the halogen order number $\varkappa = f(Z)$, with the halide-ion ionic radius $\varkappa = f(r)$, with ionic potential Hal^{-} $\varkappa = f(1/r)$. The relationship of $\varkappa$(RbHal) with such physicochemical properties as viscosity and density is considered. Using M.Kh. Karapetyants comparative methods, analytical dependences were obtained and graphical dependencies were plotted in the temperature range (T_m + n) (n = 5, 10, 50, 75, 100, 150, 200° higher the haloganides melting temperature). These dependencies made it possible to calculate and to forecast the RbAt specific electrical conductivity, the numerical values of $\varkappa$ for which are absent in the reference literature. A comparative analysis of the obtained numerical value $\varkappa$(RbAt) with the specific electrical conductivity of lithium, sodium and potassium astatides, calculated earlier. Analytical description and modeling of specific electrical conductivity of RbAt based on the relationship $\varkappa$(RbAt) with viscosity (reduced viscosity) and density (reduced density) of rubidium halide melts were carried out in the coordinates "property – property" and "property 1 – property 2, property 3". Recommendations are given on the choice of an equation for the analytical description of the rubidium haloganides specific electrical conductivity and forecasting $\varkappa$(RbAt).

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