SYNTHESIS, TRANSPORT PROPERTIES OF A SOLID ELECTROLYTE (Na$_2$SO$_4$)$_{1-x}$(Ga$_2$(SO$_4$)$_3$)$_x$ AND ALLOYING OF LEAD TELLURIDE WITH GALLIUM

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Conditions for obtaining of quasi-binary salt system (Na$_2$SO$_4$)$_{1-x}$(Ga$_2$(SO$_4$)$_3$)$_x$ are developed and the length of the region of its homogeneity is defined (x 0.00–0.07). The solid electrolyte (Na$_2$SO$_4$)$_{1-x}$(Ga$_2$(SO$_4$)$_3$)$_x$ is first synthesized, its conductivity by cations of gallium (III) is found. In the composition range 1.0–9.0 mol.% of (Ga$_2$(SO$_4$)$_3$)$_x$, and the temperature range 373–723 K transport properties are investigated: electric conductivity, numbers of the electron transport, the diffusion coefficients of gallium (III) cations. The possibility of using a solid electrolyte (Na$_2$SO$_4$)$_{0.95}$(Ga$_2$(SO$_4$)$_3$)$_{0.05}$ in the composition of an electrochemical cell for coulometric titration of lead telluride (Pb$_{146}$Te) is shown, temperature range 553–673 K of its operation is determined.

Keywords: solid electrolyte, transport characteristics, coulometric titration


REFERENCES


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