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ABSTRACT BOOK*

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a single phase can be obtained by calcining the mixture of constituent oxides from x=0 to 0.4. With the increase of La^{3+} content, the fluorite structure is still maintained. But, the relative intensity of diffraction peaks is changed and its lattice parameter is deviated from the theoretically ideal value.

Solid electrolytes based on lithium-containing lanthanum metaniobates with defect-perovskite structure

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The interest in lithium-containing lanthanum metaniobates (LML) is due to the possibility to produce on their basis solid electrolytes with lithium ion conduction for highly efficient electrochemical devices. Characteristic features of their crystal lattice are the presence of channels in the structure, in which lithium ions are located and over which ionic transport is effected and vacancies, which enable a free migration of lithium ions. In this study, the conditions for the formation of LML, produced by method of solid-phase reactions, their structure and lithium ion conduction in them have been investigated (with refinement of the unit cell parameters, atomic coordinates, Me-O bond lengths, and occupancy of sites) as a function of the amount of lithium. The intermediate phases and the sequence of solid-phase reactions in the synthesis LML have been determined. The homogeneity region of solid solutions LML with orthorhombically distorted perovskite has been established. It has been shown that when lanthanum ions are substituted by lithium ions in lanthanum metaniobate, a complex mechanism of solid solution formation takes place. The effect of the dispersion medium (water, acetone, ethyl alcohol) on the activity of blend in the homogenizing grinding of the starting constituents has been investigated. A correlation between the chemical composition, crystal parameters of perovskites and conductivity value has been established. It has been shown that solid electrolytes with a high lithium ion conductivity value can be obtained on the basis of LML with defect-perovskite structure.

Ionic conductivity of CaO-Y_2O_3-ZrO_2 materials with constant oxygen vacancy concentration

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Structural modification of some solid electrolytes is one of possible ways to improve their electrical properties. The maximum conductivity of zirconia solid solutions is generally related to the stability limit of cubic phase regardless of the stabilising oxide. On the other hand, ionic conductivity level of zirconia is strongly dependent on the stabiliser. The present paper is focused on structural and electrical properties of co-stabilised zir-