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P.S.B.23.

ELECTRON STRUCTURE OF THE NEW TERNARY INTERMETALLIC COMPOUNDS

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High-energy spectroscopy has been used to study the electron structure and valence state of new ternary intermetallic compounds, which crystallize in the ThCr2Si2 and CeNiSi2 types. The compounds which crystallize in CeNiSi2types have low temperate Curie.

The calculations of electron energy bands E(k) and partial DOS for compounds were performed by the semi relativistic linear muffin-tin orbital method (LMTO) without considerations of spin-orbit interactions. Effective filling numbers of electrons in different bands of components in R.E.M2X2 (R.E. = Y, Sc; M= Fe, Co, Ni, Cu, Pd, Rh; X= P, Si, Sn, Sb) compounds have been calculated. On the basis of the obtained, photoelectron, X-ray emission spectra and calculation of density of total and partial electron states in R.E.M2X2 compounds, the localization of electron of s- and p-states of X has been established within the energy ranges 14-7 eV and 7-2 eV, respectively.

These states of X are hybridized with 4p-states of M atoms. The electron occupation of the d-states of the M atoms has a dominant influence on the degree of their hybridization. Between the experimental and calculated X-ray emission spectra R.E.M2X2 good agreement has been obtained.

P.S.B.24.

STRUCTURAL AND ELECTRICAL PROPERTIES OF BARIUM-ZINC-TITANATE CERAMICS SINTERED AT 1300ºC

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The aim of this work was an investigation of structural and electrical properties of sintered barium-zinc-titanate ceramics. Mixtures of $BaCO_3$, ZnO and TiO_2 were mechanically activated in a planetary ball mill up to 80 minutes and sintered isothermally in air for 120 minutes at 1300^oC. The phase composition in the $BaCO_3$-ZnO-TiO_2 system after milling and sintering was analyzed using the XRD method. The existence of pure barium-zinc-titanate has been registered. Microstructure analyses were performed using SEM. The results of electric resistivity, capacitance and loss tangent of the sintered samples were correlated with the XRD and SEM results.