Poster Presentation

MS31.P01

New intermetallic La117Ru57Sn112.

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The new ternary compound with giant unit cell La117Ru57Sn112 has been yielded by interaction between pure components lanthanum, ruthenium and tin and investigated by X-ray diffraction and scanning electron microscopy (SEM) in combination with energy dispersive X-ray spectroscopy (EDX) means. Previously, intermetallics with cobalt of similar composition and structure were found in the ternary systems and Dy-Co-Sn and Pr-Co-Sn – Dy117Co57Sn112 and Pr117Co57Sn112 respectively [1, 2]. The intermetallic La117Ru57Sn112 crystallizes in a cubic Dy117Co57Sn112 type structure with space group Fm-3m (No. 225) and lattice parameter a = 31.529(5). A single-crystal suitable for the X-ray measurements was isolated from the of the equiatomic alloy La33.3Ru33.3Sn33.4. The structure was solved by means of direct methods and refined using the SHELXS-97 and SHELXL-97 programs (R1 = 0.033 for 1042 Fo > 4σ(Fo) and 0.061 for all collected data). The additional sample of the La40.2Ru19.9Sn39.9 composition was prepared and investigated X-ray by powder diffraction technique (CuKα1 radiation, 5 < 2Θ < 90°). The collected intensities data were refined by the Rietveld method using the La117Ru57Sn112 single crystal model and FullProf program. Based on a minimum of differences between the observed and calculated theoretically intensities one can judge the good convergence results.

[1] *P. Salamakha et al., Journal of Alloys and compounds 314 (2001) 177-180.,* ***[2]*** *W. He et al., Journal of Alloys and compounds 491 (2010) 49-52.*

Keywords: X-ray single-crystal diffraction, intermetallics