SYMMETRY PECULIARITIES OF THE INTRACRYSTALLINE FIELDS LAYERED SEMICONDUCTOR CRYSTALS $(PbI_2)_{(1-x)}$ $(BiI_3)_{(x)}$

IGOR VERTEGEL, EUGENE CHESNOKOV and ALEKSANDR OVCHARENKO, *Institute of Physics National Academy of Sciences of Ukraine 46, Prospect Nauki, 03680 Kiev, Ukraine*.

In this work the results of the investigation of the $^{127}$I NQR spectra at 77K for mixed layered semiconductor crystals $(PbI_2)_{(1-x)}$ $(BiI_3)_{(x)}$ in a wide range of value (0 <x <0.50) are presented. It is shown that in the range 0.05 <x <0.20 of admixture $PbI_2$ the observed behavior of parameters of the $^{127}$I NQR spectra testify about entrance of admixture atoms $PbI_2$ into the crystal layers. It is shown, that at 0.05 < x <0.20 clusters from groups of atoms $PbI_2$ insular type can be formed, which lay within the limits of the layers of crystal $(PbI_2)_{(1-x)}$ $(BiI_3)_{(x)}$. Upon further increasing of the containing of admixture $PbI_2$ in crystal $BiI_3$ the new $^{127}$I NQR line is appearing. The observed at x~0.20 the new line in spectrum $^{127}$I NQR can testify that the mixed crystal $(PbI_2)_{(1-x)}$ $(BiI_3)_{(x)}$ undergoes structural phase transition. It is concluded that at x>0.20 a new crystal presents a solid mixture glassy crystal of substitution type in which of $PbI_2$ atoms are fully or partially are ordering and lay between crystal[a] .

[a] A.I.Barabash, I.G.Vertegel, E.D.Chesnokov et.al., Ukr. J.Phys., 2011,vol.56, No.2, p.158-160.