

Ref. [20] (Moshkina E., Molchanova A., Boldyrev K., Molokeyev M., Bovina A. Synthesis and properties of copper metaborate crystals doped by nickel and manganese // To be published in Optics and Spectroscopy (2021).)

The manuscript is in work for publishing in special issue of "Optics and spectroscopy" devoted to Prof. Marina Popova anniversary. The part of the text concerning the lattice parameters of $\text{Cu}_{1-x}\text{Ni}_x\text{B}_2\text{O}_4$ ($x = 0.05, 0.1$) is:

Title: Synthesis and properties of copper metaborate crystals doped by nickel and manganese

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Crystal structure of $\text{Cu}_{1-x}\text{Ni}_x\text{B}_2\text{O}_4$ ($x = 0.05, 0.1$) has been analyzed by powder X-ray diffraction analysis. As a result of the experiment the single-phase of the samples has been confirmed, the lattice parameters have been obtained. The X-ray patterns were compared with the analogous one for the pure CuB_2O_4 from the database (card no.72-2024). The obtained results are presented in Table 1. In comparison with the pure CuB_2O_4 the lattice parameters of $\text{Cu}_{1-x}\text{Ni}_x\text{B}_2\text{O}_4$ ($x = 0.05, 0.1$) decreased. That can mean the presence of nickel in the substituted samples (ion radii: $R(\text{Ni}^{2+})=0.69 \text{ \AA}$, $R(\text{Cu}^{2+})=0.73 \text{ \AA}$).

Table 1. Lattice parameters of $\text{Cu}_{1-x}\text{Ni}_x\text{B}_2\text{O}_4$ ($x = 0, 0.05, 0.1$).

	CuB_2O_4	$\text{Cu}_{0.95}\text{Ni}_{0.05}\text{B}_2\text{O}_4$	$\text{Cu}_{0.9}\text{Ni}_{0.1}\text{B}_2\text{O}_4$
$a, \text{ \AA}$	11.50	11.49639 (13)	11.49494 (17)
$c, \text{ \AA}$	5.644	5.62437 (7)	5.62372 (9)
$V, \text{ \AA}^3$		743.36 (2)	743.08 (2)

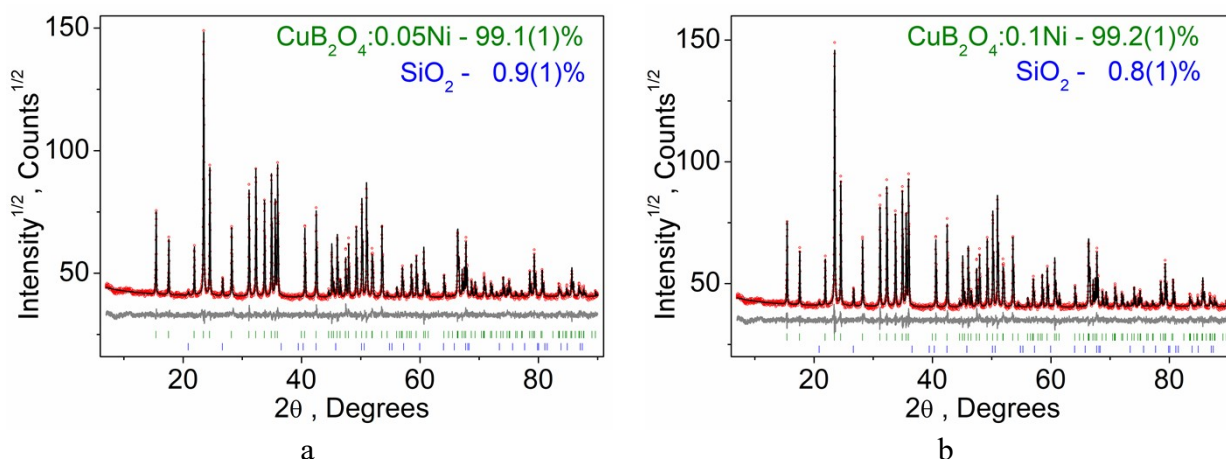


Figure 1. Difference Rietveld plot of $\text{Cu}_{1-x}\text{Ni}_x\text{B}_2\text{O}_4$: a) $x = 0.05$; b) $x = 0.1$. There are small impurity peaks (wt. ~1-2%) of SiO_2 appeared after grinding CuB_2O_4 single crystals in an agate mortar.