

The Crystal Data of Ternary Rare Earth Borides,  $\text{RCo}_2\text{B}_2$ \*

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Compounds with the composition of  $\text{RCo}_2\text{B}_2$  (R=La, Nd, Sm, Gd, Tb, Dy, and Y) were prepared by arc-melting methods. Their crystal structure was investigated by means of X-ray diffraction. These ternary rare earth borides crystallize in the tetragonal lattice. The lattice parameters are  $a=3.616\pm 0.003 \text{ \AA}$  and  $c=10.215\pm 0.005 \text{ \AA}$  for  $\text{LaCo}_2\text{B}_2$  and  $a=3.561\pm 0.002 \text{ \AA}$  and  $c=9.358\pm 0.005 \text{ \AA}$  for  $\text{YCo}_2\text{B}_2$ . The good agreement between the X-ray diffraction intensities observed and those calculated shows that the ternary borides,  $\text{LaCo}_2\text{B}_2$  and  $\text{YCo}_2\text{B}_2$ , crystallize in the  $\text{ThCr}_2\text{Si}_2$ -type structure. The crystallographic data obtained for  $\text{LaCo}_2\text{B}_2$  and  $\text{YCo}_2\text{B}_2$  are as follows: space group  $14/mmm (D_{4h}^{17})$ ; R in 2(a), 4Co in 4(d), and 4B in 4(e) with  $z\sim 3/8$ . The boron atoms in this structure are situated at the center of a trigonal prism formed by four rare earth atoms and two cobalt atoms. We also found the  $\text{RCo}_2\text{B}_2$  compounds to be isostructural with  $\text{LaCo}_2\text{B}_2$  and  $\text{YCo}_2\text{B}_2$ , where R=Nd, Sm, Gd, Tb, and Dy. However, efforts to prepare  $\text{CeCo}_2\text{B}_2$  and  $\text{ErCo}_2\text{B}_2$  by arc-melting were unsuccessful.

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