

# Synthesis and Crystal Structure of the High-pressure Cobalt Borate HP-CoB<sub>2</sub>O<sub>4</sub>

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*Z. Naturforsch.* **2010**, *65b*, 1311 – 1317; received August 18, 2010

The cobalt borate HP-CoB<sub>2</sub>O<sub>4</sub> was synthesized from Co<sub>3</sub>O<sub>4</sub> and B<sub>2</sub>O<sub>3</sub> under high-pressure / high-temperature conditions of 6.5 GPa and 950 °C. The structure of HP-CoB<sub>2</sub>O<sub>4</sub> is isotypic to HP-NiB<sub>2</sub>O<sub>4</sub> and β-FeB<sub>2</sub>O<sub>4</sub>, representing the third example of a borate, in which every BO<sub>4</sub> tetrahedron shares a common edge with a second one. HP-CoB<sub>2</sub>O<sub>4</sub> crystallizes in the space group *C2/c* (*Z* = 4) with the parameters *a* = 934.6(2), *b* = 562.0(2), *c* = 443.3(1) pm, β = 108.2(1)°, *V* = 0.2212(1) nm<sup>3</sup>, *R*<sub>1</sub> = 0.0218, and *wR*<sub>2</sub> = 0.0410 (all data). The structure consists of layers of BO<sub>4</sub> tetrahedra, that are interconnected *via* strings of edge-sharing FeO<sub>6</sub> octahedra.

*Key words:* Borate, High Pressure, Crystal Structure, Multianvil