

Synthesis and Crystal Structure of the Praseodymium Orthoborate λ -PrBO₃

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The praseodymium orthoborate λ -PrBO₃ was synthesized from Pr₆O₁₁, B₂O₃, and PrF₃ under high-pressure / high-temperature conditions of 3 GPa and 800 °C in a Walker-type multianvil apparatus. The crystal structure was determined on the basis of single-crystal X-ray diffraction data, collected at room temperature. The title compound crystallizes in the orthorhombic aragonite-type structure, space group *Pnma*, with the lattice parameters $a = 577.1(2)$, $b = 506.7(2)$, $c = 813.3(2)$ pm, and $V = 0.2378(2)$ nm³, with $R_1 = 0.0400$ and $wR_2 = 0.0495$ (all data). Within the trigonal-planar BO₃ groups, the average B–O distance is 137.2 pm. The praseodymium atoms are ninefold coordinated by oxygen atoms.

Key words: High Pressure, Crystal Structure, Multianvil, Orthoborate, Aragonite