

The Hexagonal Laves Phase MgIr_2

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Z. Naturforsch. **59b**, 943 – 946 (2004);
received June 1, 2004

The hexagonal Laves phase MgIr_2 was synthesized from the elements in a sealed tantalum tube in an induction furnace. MgIr_2 was investigated by powder and single crystal X-ray data: $P6_3/mmc$, $a = 516.9(1)$, $c = 838.5(2)$ pm, $wR2 = 0.0771$, 135 F^2 values, and 11 variable parameters. The magnesium atoms have coordination number (CN) 16 (12 Ir + 4 Mg), while the smaller iridium atoms, Ir1 and Ir2, both have CN 12 (6 Ir + 6 Mg). The Ir–Ir distances within the three-dimensional network of face- and corner-sharing $\text{Ir}_{4/2}$ tetrahedra range from 250 to 267 pm. The magnesium atoms have one shorter (306 pm) and three longer (319 pm) magnesium contacts. The crystal chemistry of MgIr_2 is briefly discussed and compared with the other binary Mg–Ir intermetallics.

Key words: Magnesium, Iridium, Crystal Structure,
Solid State Synthesis