Structure Refinement of CePtSi and Hydrogenation Behavior of CePdGe, CePtSi and CePtGe

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Z. Naturforsch. **2007**, *62b,* 613 – 616;
received December 18, 2006

The intermetallic cerium compounds CePdGe, CePtSi, and CePtGe were synthesized from the elements by arc-melting and subsequent annealing. The structure of CePtSi was refined from single crystal X-ray diffraction data: LaPtSi-type (ordered α-$ThSi_2$ version), $I4_1md$, a = 419.6(1) and c = 1450.0(5) pm, $wR2$ = 0.0490, 362 F^2 values and 16 variables. The Pt–Si distances within the three-dimensional [PtSi] network are 242 pm, indicating strong Pt–Si interactions. Hydrogenation of the three compounds at 623 K and 4 MPa H_2 gave no indication for hydride formation.

Key words: Cerium Intermetallics, Hydrogenation