

# Kristallstrukturen mit Bausteinen des $\text{CaBe}_2\text{Ge}_2$ -Typs – Die Verbindungen $\text{Sm}_2\text{Pt}_6\text{P}_3$ und $\text{Ca}_2\text{Pd}_3\text{Sb}_4$

Crystal Structures with  $\text{CaBe}_2\text{Ge}_2$ -Type Units – The Compounds  $\text{Sm}_2\text{Pt}_6\text{P}_3$  and  $\text{Ca}_2\text{Pd}_3\text{Sb}_4$

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Single crystals of  $\text{Sm}_2\text{Pt}_6\text{P}_3$  ( $a = 4.095(1)$ ,  $c = 45.313(9)$  Å) were prepared by heating the elements in a melt of NaCl/KCl at 1100 °C. The compound crystallizes with a new tetragonal type of structure ( $I4_1/amd$ ;  $Z = 4$ ) consisting of units which correspond to the  $\text{CaBe}_2\text{Ge}_2$  type except for one significant difference: In the layer of  $\text{PPt}_4$  tetrahedra only two of four P positions are occupied. Therefore this layer is built up by corner- instead of edge-sharing  $\text{PPt}_4$  tetrahedra. Four of these units are stacked along [001]. Single crystals of  $\text{Ca}_2\text{Pd}_3\text{Sb}_4$  ( $a = 4.506(1)$ ,  $c = 41.538(8)$  Å) were obtained by reaction of the elements at 900 °C. The crystal structure ( $I4/mmm$ ;  $Z = 4$ ) consists of two blocks. The first one has the composition  $\text{CaPd}_2\text{Sb}_3$  and can be derived from the  $\text{CaBe}_2\text{Ge}_2$  type. In the second one (formula  $\text{CaPdSb}$ ) the atoms are arranged analogous to the  $\text{CeMg}_2\text{Si}_2$  type. Both blocks alternate along [001].

*Key words:* Phosphide, Antimonide, Palladium, Platinum, Crystal Structures