Crystal Structure of Eu_2PdSi_3

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Single crystals of Eu_2PdSi_3 were obtained from an arc-melted sample that was further annealed at 1020 K for seven days in a silica tube. The structure of Eu_2PdSi_3 was refined from single crystal X-ray diffractometer data: $P6/mmm$, a = 831.88(12), c = 435.88(9) pm, $wR2$ = 0.1175, 265 F^2 values, and 13 variable parameters. It crystallizes with the U_2RuSi_3 structure, a superstructure of the AlB_2 type. The palladium and silicon atoms form a planar two-dimensional $[PdSi_3]$ network. The two crystallographically different europium atoms have hexagonal prismatic coordinations $Eu1Si_{12}$ and $Eu2Pd_4Si_8$. The Pd–Si and Si–Si distances within the $[PdSi_3]$ network are 244 and 236 pm, respectively.

Key words: Silicide, Crystal Structure, Solid State Synthesis