

New Indium-rich Indides SrTIn_4 ($T = \text{Ni, Pd, Pt}$)

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The indium-rich indides SrTIn_4 ($T = \text{Ni, Pd, Pt}$) were synthesized from the elements by arc-melting and subsequent annealing at 670 K (SrNiIn_4) or by induction melting in sealed tantalum tubes. The three samples were investigated by powder and single crystal X-ray diffractometer data: YNiAl_4 -type, space group $Cmcm$, $a = 448.1(1)$, $b = 1707.3(3)$, $c = 732.6(1)$ pm, $wR2 = 0.067$, 717 F^2 values for SrNiIn_4 , $a = 454.7(2)$, $b = 1708.8(4)$, $c = 750.1(2)$ pm, $wR2 = 0.056$, 746 F^2 values for SrPdIn_4 , and $a = 455.6(2)$, $b = 1706.4(9)$, $c = 748.7(4)$ pm, $wR2 = 0.055$, 508 F^2 values for SrPtIn_4 with 24 variables per refinement. The transition metal and indium atoms build up complex three-dimensional $[\text{TIn}_4]$ polyanionic networks in which the strontium atoms fill distorted hexagonal channels. The indium atoms show distorted bcc indium cubes with short In–In distances as substructures within the $[\text{TIn}_4]$ networks. Each transition metal atom has seven nearest indium neighbors: 257 – 275 pm Ni–In in SrNiIn_4 and 267 – 281 pm Pd–In and Pt–In in SrPdIn_4 and SrPtIn_4 , respectively.

Key words: Intermetallics, Indium, Alkaline Earth Compounds