substance: $Fe_{1-x}Co_xAs_2$, $Fe_{1-x}Ni_xAs_2$,
property: physical properties

$Fe_{1-x}Co_xAs_2$

complete miscibility; monoclinic for x > 0.8 (Fig. 1) [63R, 68R, 74K].

$Fe_{1-x}Ni_xAs_2$

homogeneity range: x = 0...0.7 [63R, 74K, 79K].

Fe and Ni keep their d-electron configuration regardless of composition [65P].

maximum of the ^{57}Fe Mössbauer chemical shift parameter at x = 0.3 [74K].

x = 0.5: no magnetic order at 10 K [79K].

a(*T*), *b*(*T*), *c*(*T*) [77K].

volume expansion coefficient

β	$3.6 \cdot 10^{-5}$ K^{-1}	T = 300 K	T = 300...600 K, increases at higher temperatures	77K

Comparative tables on structural data of transition metal dipnictides:

structure, chemical bond: see document ,

crystallographical data of compounds with octahedrally coordinated cations, see document .

References:

63R Roseboom, E. H.: Amer. Mineral. 48 (1963) 271.
65P Pearson, W. B.: Z. Krist. 121 (1965) 449.
68R Radcliffe, D., Berry, L. G.: Amer. Mineral. 53 (1968) 1856.
74K Kjekshus, A., Rakke, T.: Acta Chem. Scand. A28 (1974) 1001.
77K Kjekshus, A., Rakke, T.: Acta Chem. Scand. A31 (1977) 517.
79K Kjekshus, A., Peterzens, P. O., Rakke, T., Andresen, A. F.: Acta Chem. Scand. A33 (1979) 469.

Fig. 1.

$Fe_{1-x}Co_xAs_2$ and $Fe_{1-x}Co_xSb_2$. Monoclinic angle β' of the pseudo-marcasite cell vs. compositional parameter x [74K].