$Ho_5Ni_{19}P_{12}$	*hP*36	(189) *P*-62*m* – $k^2jg^2f^3ca$

$Ho_5Ni_{19}P_{12}$ [1]; $Dy_5Ru_{19}P_{12}$ [3]; $Nd_5Cu_{19-x}P_{12}$ [2]
Structural features: Infinite columns of base-linked $P(Ho_2Ni_4)Ni_3$ and $P(Ho_4Ni_2)Ni_3$ tricapped trigonal prisms share atoms to form a 3D-framework (a framework of base- and edge-linked prisms with 6-fold prism columns shifted by *c*/2 in channels). Ordering variant of $Hf_2Co_4P_3$, $[Ho_5Ni_3]Ni_{16}P_{12}$. See Fig. IV.7.

Pivan J.Y. et al. (1985) [1]
$Ho_5Ni_{19}P_{12}$
$a = 1.2288$, $c = 0.3762$ nm, $c/a = 0.306$, $V = 0.4919$ nm^3, $Z = 1$

site	Wyck.	sym.	*x*	*y*	*z*	occ.	atomic environment
P1	6*k*	*m*..	0.1685	0.4826	$^1/_2$		tricapped trigonal prism Ni_7Ho_2
Ni2	6*k*	*m*..	0.3574	0.4854	$^1/_2$		cuboctahedron $P_4Ni_5Ho_3$
Ni3	6*j*	*m*..	0.1848	0.3747	0		cuboctahedron $P_4Ni_5Ho_3$
Ni4	3*g*	*m*2*m*	0.2862	0	$^1/_2$		cuboctahedron $P_4Ni_6Ho_2$
Ho5	3*g*	*m*2*m*	0.8167	0	$^1/_2$		22-vertex polyhedron $P_8Ni_{10}Ho_4$
P6	3*f*	*m*2*m*	0.173	0	0		square pyramid Ni_5
Ni7	3*f*	*m*2*m*	0.4397	0	0		13-vertex polyhedron P_5Ni_8
P8	3*f*	*m*2*m*	0.642	0	0		tricapped trigonal prism Ni_7Ho_2
Ho9	2*c*	-6..	$^1/_3$	$^2/_3$	0		23-vertex polyhedron $P_9Ni_{12}Ho_2$
Ni10	1*a*	-62*m*	0	0	0		tricapped trigonal prism P_3Ho_6

Experimental: single crystal, diffractometer, X-rays, R = 0.049

Remarks: Preliminary data in [4].

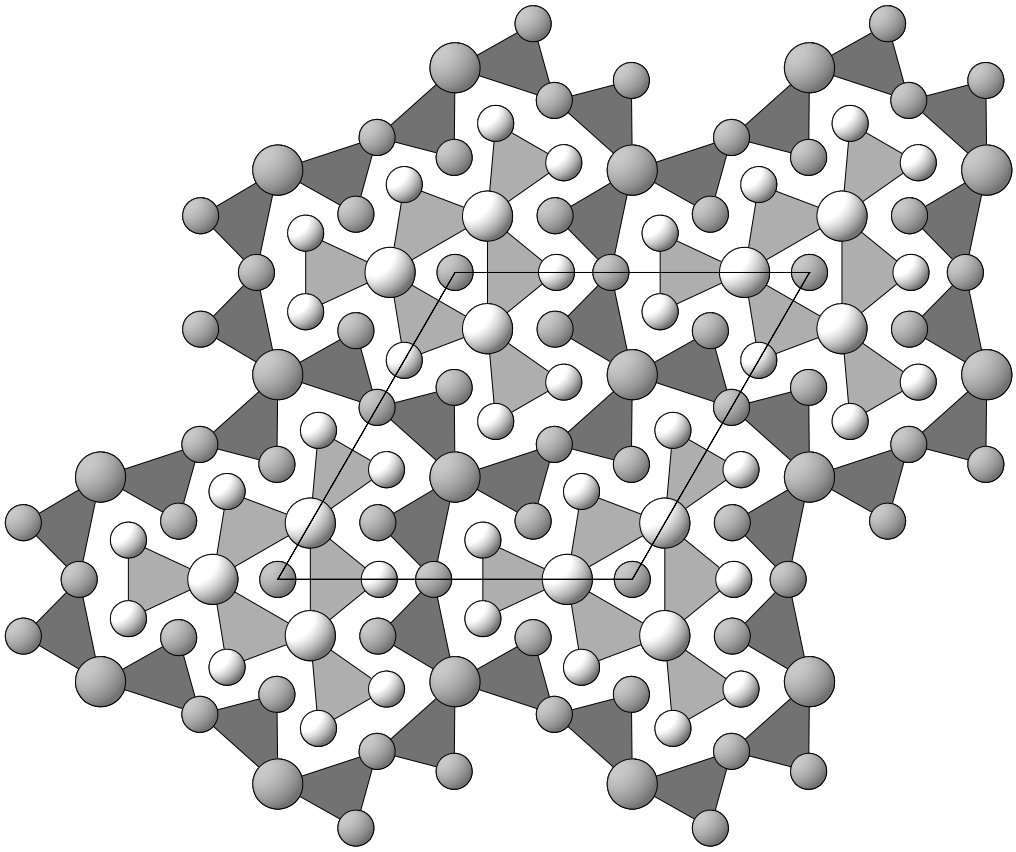

Fig. IV.7. **$Ho_5Ni_{19}P_{12}$**

Arrangement of P(Ho_2Ni_4) and P(Ho_4Ni_2) trigonal prisms (Ho atoms large, Ni atoms small) and additional Ni atoms viewed along [001]. Light and dark prisms are shifted by *c*/2.

References: [1] Pivan J.Y., Guérin R., Sergent M. (1985), Inorg. Chim. Acta 109, 221-224. [2] Oryshchyn S.V., Chykhrii S.I., Babizhets'kii V.S., Kuz'ma Y.B. (1991), Dokl. Akad. Nauk Ukr. SSR 1991(6), 138-141. [3] Ghetta V., Chaudouet P., Madar R., Sénateur J.P., Lambert Andron B. (1989), J. Less-Common Met. 146, 299-307. [4] Pivan J.Y., Guérin R., Sergent M. (1984), C. R. Acad. Sci., Ser. II 299, 689-692.