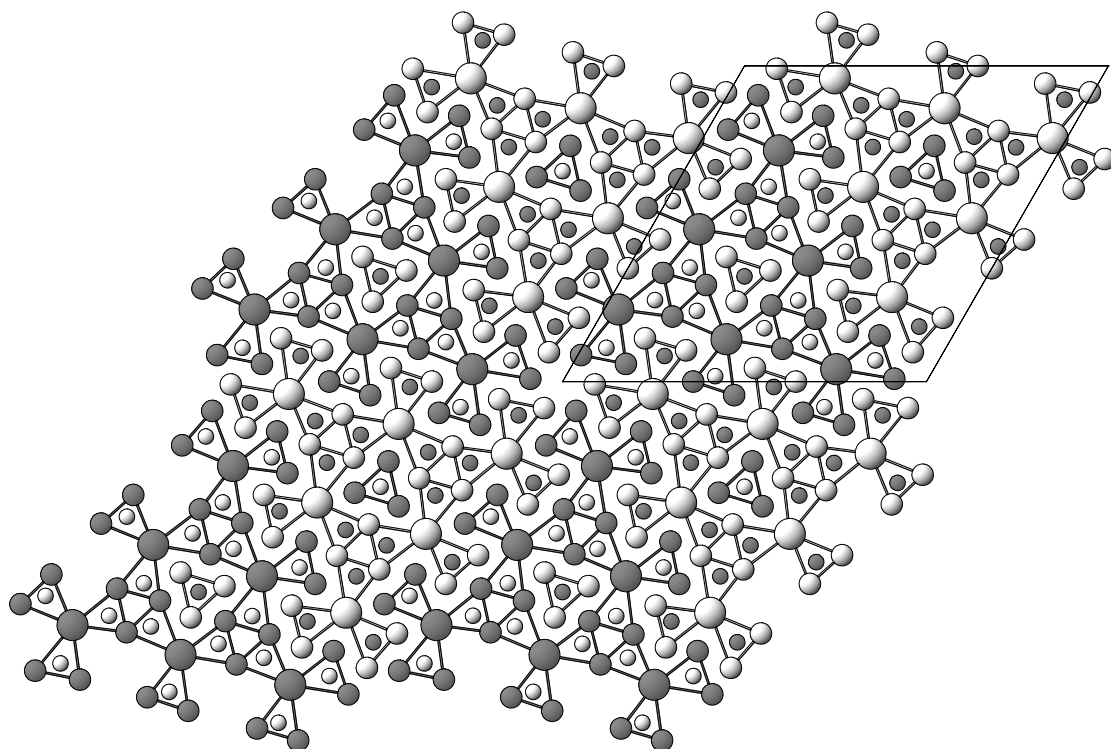


**U<sub>6</sub>Co<sub>30</sub>Si<sub>19</sub>** [1]

Structural features: Infinite columns of base-linked SiCo<sub>6</sub>Co<sub>3</sub> and Si(U<sub>2</sub>Co<sub>4</sub>)Co<sub>3</sub> tricapped and Si(U<sub>2</sub>Co<sub>4</sub>)Co<sub>2</sub> bicapped trigonal prisms share atoms to form a 3D-framework with six-fold propeller-like columns centered by a prism column shifted by  $c/2$ . See Fig. IV.83.

Fig. IV.83. U<sub>6</sub>Co<sub>30</sub>Si<sub>19</sub>

Arrangement of Si(U<sub>2</sub>Co<sub>4</sub>) and SiCo<sub>6</sub> trigonal prisms (Si atoms small, U atoms large, Co atoms medium) viewed along [001]. Light and dark atoms are shifted by  $c/2$ .

Yarmolyuk Y.P. et al. (1980) [1]

Co<sub>30</sub>Si<sub>19</sub>U<sub>6</sub>

$a = 2.114$ ,  $c = 0.36933$  nm,  $c/a = 0.175$ ,  $V = 1.4294$  nm<sup>3</sup>,  $Z = 2$

site	Wyck.	sym.	$x$	$y$	$z$	occ.	atomic environment
Co1	6h	$m..$	0.0	0.359	$\frac{1}{4}$		cuboctahedron Si <sub>4</sub> Co <sub>5</sub> U <sub>3</sub>
Si2	6h	$m..$	0.017	0.589	$\frac{1}{4}$		tricapped trigonal prism Co <sub>7</sub> U <sub>2</sub>
Co3	6h	$m..$	0.043	0.493	$\frac{1}{4}$		11-vertex polyhedron Si <sub>4</sub> Co <sub>5</sub> U <sub>2</sub>
Si4	6h	$m..$	0.067	0.174	$\frac{1}{4}$		monocapped trigonal prism Co <sub>7</sub>
Co5	6h	$m..$	0.093	0.084	$\frac{1}{4}$		10-vertex polyhedron Si <sub>3</sub> Co <sub>7</sub>
Si6	6h	$m..$	0.125	0.383	$\frac{1}{4}$		10-vertex polyhedron Co <sub>6</sub> Si <sub>2</sub> U <sub>2</sub>
Co7	6h	$m..$	0.158	0.295	$\frac{1}{4}$		11-vertex polyhedron Si <sub>4</sub> Co <sub>5</sub> U <sub>2</sub>
Si8	6h	$m..$	0.169	0.53	$\frac{1}{4}$		10-vertex polyhedron Co <sub>6</sub> Si <sub>2</sub> U <sub>2</sub>
Co9	6h	$m..$	0.202	0.056	$\frac{1}{4}$		cuboctahedron Si <sub>4</sub> Co <sub>5</sub> U <sub>3</sub>
Co10	6h	$m..$	0.253	0.648	$\frac{1}{4}$		cuboctahedron Si <sub>4</sub> Co <sub>6</sub> U <sub>2</sub>

Si11	6h	m..	0.257	0.481	$\frac{1}{4}$	square prism (cube) Co <sub>6</sub> Si <sub>2</sub>
U12	6h	m..	0.2677	0.2284	$\frac{1}{4}$	23-vertex polyhedron Si <sub>9</sub> Co <sub>12</sub> U <sub>2</sub>
Co13	6h	m..	0.29	0.389	$\frac{1}{4}$	13-vertex polyhedron Si <sub>5</sub> Co <sub>5</sub> U <sub>3</sub>
Si14	6h	m..	0.321	0.081	$\frac{1}{4}$	tricapped trigonal prism Co <sub>7</sub> U <sub>2</sub>
Co15	6h	m..	0.405	0.206	$\frac{1}{4}$	11-vertex polyhedron Si <sub>5</sub> Co <sub>6</sub>
Co16	6h	m..	0.448	0.344	$\frac{1}{4}$	11-vertex polyhedron Si <sub>5</sub> Co <sub>6</sub>
U17	6h	m..	0.5174	0.1341	$\frac{1}{4}$	23-vertex polyhedron Si <sub>9</sub> Co <sub>12</sub> U <sub>2</sub>
Co18	6h	m..	0.547	0.306	$\frac{1}{4}$	11-vertex polyhedron Si <sub>5</sub> Co <sub>6</sub>
Si19	2d	-6..	$\frac{2}{3}$	$\frac{1}{3}$	$\frac{1}{4}$	tricapped trigonal prism Co <sub>9</sub>

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Experimental: single crystal, diffractometer, X-rays, R = 0.069

References: [1] Yarmolyuk Y.P., Aksel'rud L.G., Fundamenskii V.S., Gladyshevskii E.I. (1980), Sov. Phys. Crystallogr. 25, 97-98 (Kristallografiya 25, 169-171).