$Lu_3Co_{7.77}Sn_4$	*hP*30	(186) $P6_3mc$ – c^4b^2a

$Lu_3Co_{7.77}Sn_4$ [2]; $Ca_3Ni_8In_4$ [3]
Structural features: $Lu_3(Co_3)$ layers (the Lu atoms and the centers of Co_3 triangles form a triangle mesh) and puckered Co_5Sn_4 layers (a CoSn hexagon mesh with every fourth hexagon centered by an additional Co) alternate along [001]. Lu_3 trigonal clusters perpendicular to [001] are interconnected via Lu-Lu distances of similar length to form a 3D-framework. Substitution derivative of $BaLi_4$.

Canepa F. et al. (2000) [1]
$Co_{7.93}Lu_3Sn_4$
a = 0.8757, c = 0.7446 nm, c/a = 0.850, V = 0.4945 nm^3, Z = 2

site	Wyck.	sym.	x	y	z	occ.	atomic environment
Co1	6*c*	.*m*.	0.163	0.837	0.0598		pseudo Frank-Kasper $Co_5Sn_4Lu_4$
Sn2	6*c*	.*m*.	0.1724	0.8276	0.4282		icosahedron Co_8Lu_4
Lu3	6*c*	.*m*.	0.5255	0.4745	0.2153		pseudo Frank-Kasper $Co_8Sn_6Lu_4$
Co4	6*c*	.*m*.	0.8983	0.1017	0.2464		icosahedron $Co_7Sn_3Lu_2$
Sn5	2*b*	3*m*.	$^1/_3$	$^2/_3$	0.0165		bicapped square prism Co_4Lu_6
Co6	2*b*	3*m*.	$^1/_3$	$^2/_3$	0.3693	0.93	pseudo Frank-Kasper $Sn_4Lu_6Co_3$
Co7	2*a*	3*m*.	0	0	0.0		icosahedron Co_9Sn_3

Transformation from published data: origin shift 0 0 0.2847
Experimental: single crystal, diffractometer, X-rays, R = 0.035

Remarks: Identical to the phases called RCo_3Sn in the literature. Vacancies were observed only for the Lu-compound.

References: [1] Canepa F., Cirafici S., Fornasini M.L., Manfrinetti P., Merlo F., Palenzona A., Pani M. (2000), J. Alloys Compd. 297, 109-113. [2] Skolozdra R., Garcia Landa B., Fruchart D., Gignoux D., Soubeyroux J.L., Aksel'rud L. (1996), J. Alloys Compd. 235, 210-215. [3] Zaremba V.I., Muts I.R., Kalychak Y.M., Hoffmann R.D., Pöttgen R. (2001), J. Solid State Chem. 160, 415-420.