Simple Hexagonal ($HgSn_{6-10}$ A_f) Structure: A_hP1_191_a-001

This structure previously used the label(s) `A_hP1_191_a`. Calls to these addresses will be redirected here.

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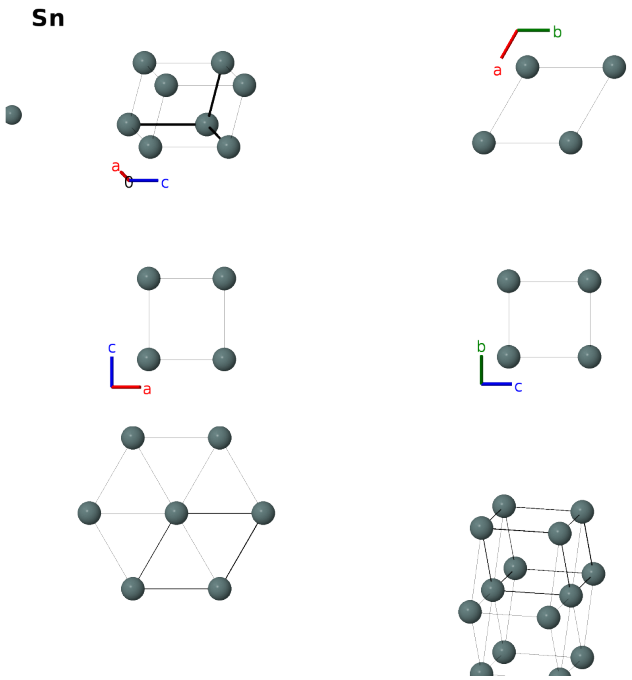
https://aflow.org/prototype-encyclopedia/3V7H

https://aflow.org/prototype-encyclopedia/A_hP1_191_a-001



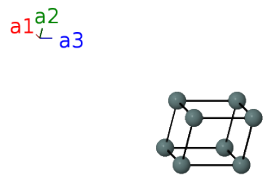
Prototype	$HgSn_{6-10}$
AFLOW prototype label	A_hP1_191_a-001
***Strukturbericht* designation**	A_f
ICSD	639211
CCDC	1758642
Pearson symbol	hP1
Space group number	191
Space group symbol	$P6/mmm$
AFLOW prototype command	`aflow --proto=A_hP1_191_a-001 --params=`$a, c/a$

Other compounds with this structure
Si (metastable), disordered phases of BiIn, $CdSn_{19}$, In_7Sb_3, InSb

- Unlike the simple cubic lattice, there are no elements which take this structure as the ground state. There is a metastable silicon phase with this structure. The prototype state is a mercury-tin alloy. Thus the atom type "M" represents an average of Hg and Sn atoms.

Hexagonal primitive vectors

$$\mathbf{a_1} = \frac{1}{2}a\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,\hat{\mathbf{y}}$$
$$\mathbf{a_2} = \frac{1}{2}a\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,\hat{\mathbf{y}}$$
$$\mathbf{a_3} = c\,\hat{\mathbf{z}}$$



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	0	=	0	(1a)	Sn I

References

[1] G. V. Raynor and J. A. Lee, *The tin-rich intermediate phases in the alloys of tin with cadmium, indium and mercury*, Acta Metall. **2**, 616–620 (1954), doi:10.1016/0001-6160(54)90197-2.

Found in

[1] P. Villars and L. Calvert, *Pearson's Handbook of Crystallographic Data for Intermetallic Phases* (ASM International, Materials Park, OH, 1991), 2nd edn.

First cited in

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