

Zn₄₀Mo₇Sn₁₂ Structure:

A7B12C40_cF944_226_abi_j_efgh2ij-001

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- D. Hicks, M. J. Mehl, M. Esters, C. Osos, O. Levy, G. L. W. Hart, C. Toher, and S. Curtarolo, *The AFLOW Library of Crystallographic Prototypes: Part 3*, Comput. Mater. Sci. **199**, 110450 (2021), doi: 10.1016/j.commatsci.2021.110450.

<https://aflow.org/prototype-encyclopedia/SA5V>

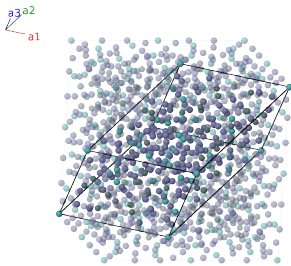
https://aflow.org/prototype-encyclopedia/A7B12C40_cF944_226_abi_j_efgh2ij-001

Prototype	Mo ₇ Sn ₁₂ Zn ₄₀
AFLOW prototype label	A7B12C40_cF944_226_abi_j_efgh2ij-001
ICSD	407962
CCDC	1725480
Pearson symbol	cF944
Space group number	226
Space group symbol	$Fm\bar{3}c$
AFLOW prototype command	<pre>aflow --proto=A7B12C40_cF944_226_abi_j_efgh2ij-001 --params=a, x₃, x₄, x₅, y₆, y₇, z₇, y₈, z₈, y₉, z₉, x₁₀, y₁₀, z₁₀, x₁₁, y₁₁, z₁₁</pre>

- (Hillebrecht, 1997) state that the Zn II (48f) site is only occupied 68% of the time, while the Zn III site is occupied 91% of the time. This makes the nominal composition of this structure Zn_{38.68}Mo₇Sn₁₂. The ICSD CIF list the occupation as 100% for all sites, but we have edited the AFLOW CIF to reflect the published occupations.

Face-centered Cubic primitive vectors

$$\begin{aligned}\mathbf{a}_1 &= \frac{1}{2}a\hat{\mathbf{y}} + \frac{1}{2}a\hat{\mathbf{z}} \\ \mathbf{a}_2 &= \frac{1}{2}a\hat{\mathbf{x}} + \frac{1}{2}a\hat{\mathbf{z}} \\ \mathbf{a}_3 &= \frac{1}{2}a\hat{\mathbf{x}} + \frac{1}{2}a\hat{\mathbf{y}}\end{aligned}$$



Basis vectors

	Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B}_1$	$= \frac{1}{4}\mathbf{a}_1 + \frac{1}{4}\mathbf{a}_2 + \frac{1}{4}\mathbf{a}_3$	$=$	$\frac{1}{4}a\hat{\mathbf{x}} + \frac{1}{4}a\hat{\mathbf{y}} + \frac{1}{4}a\hat{\mathbf{z}}$	(8a)	Mo I
$\mathbf{B}_2$	$= \frac{3}{4}\mathbf{a}_1 + \frac{3}{4}\mathbf{a}_2 + \frac{3}{4}\mathbf{a}_3$	$=$	$\frac{3}{4}a\hat{\mathbf{x}} + \frac{3}{4}a\hat{\mathbf{y}} + \frac{3}{4}a\hat{\mathbf{z}}$	(8a)	Mo I

$\mathbf{B}_3$	$=$	0	$=$	0	$(8b)$	Mo II
$\mathbf{B}_4$	$=$	$\frac{1}{2}\mathbf{a}_1 + \frac{1}{2}\mathbf{a}_2 + \frac{1}{2}\mathbf{a}_3$	$=$	$\frac{1}{2}a\hat{\mathbf{x}} + \frac{1}{2}a\hat{\mathbf{y}} + \frac{1}{2}a\hat{\mathbf{z}}$	$(8b)$	Mo II
$\mathbf{B}_5$	$=$	$-x_3\mathbf{a}_1 + x_3\mathbf{a}_2 + x_3\mathbf{a}_3$	$=$	$ax_3\hat{\mathbf{x}}$	$(48e)$	Zn I
$\mathbf{B}_6$	$=$	$x_3\mathbf{a}_1 - x_3\mathbf{a}_2 - x_3\mathbf{a}_3$	$=$	$-ax_3\hat{\mathbf{x}}$	$(48e)$	Zn I
$\mathbf{B}_7$	$=$	$x_3\mathbf{a}_1 - x_3\mathbf{a}_2 + x_3\mathbf{a}_3$	$=$	$ax_3\hat{\mathbf{y}}$	$(48e)$	Zn I
$\mathbf{B}_8$	$=$	$-x_3\mathbf{a}_1 + x_3\mathbf{a}_2 - x_3\mathbf{a}_3$	$=$	$-ax_3\hat{\mathbf{y}}$	$(48e)$	Zn I
$\mathbf{B}_9$	$=$	$x_3\mathbf{a}_1 + x_3\mathbf{a}_2 - x_3\mathbf{a}_3$	$=$	$ax_3\hat{\mathbf{z}}$	$(48e)$	Zn I
$\mathbf{B}_{10}$	$=$	$-x_3\mathbf{a}_1 - x_3\mathbf{a}_2 + x_3\mathbf{a}_3$	$=$	$-ax_3\hat{\mathbf{z}}$	$(48e)$	Zn I
$\mathbf{B}_{11}$	$=$	$(x_3 + \frac{1}{2})\mathbf{a}_1 - (x_3 - \frac{1}{2})\mathbf{a}_2 +$ $(x_3 + \frac{1}{2})\mathbf{a}_3$	$=$	$\frac{1}{2}a\hat{\mathbf{x}} + a(x_3 + \frac{1}{2})\hat{\mathbf{y}} + \frac{1}{2}a\hat{\mathbf{z}}$	$(48e)$	Zn I
$\mathbf{B}_{12}$	$=$	$-(x_3 - \frac{1}{2})\mathbf{a}_1 + (x_3 + \frac{1}{2})\mathbf{a}_2 -$ $(x_3 - \frac{1}{2})\mathbf{a}_3$	$=$	$\frac{1}{2}a\hat{\mathbf{x}} - a(x_3 - \frac{1}{2})\hat{\mathbf{y}} + \frac{1}{2}a\hat{\mathbf{z}}$	$(48e)$	Zn I
$\mathbf{B}_{13}$	$=$	$-(x_3 - \frac{1}{2})\mathbf{a}_1 + (x_3 + \frac{1}{2})\mathbf{a}_2 +$ $(x_3 + \frac{1}{2})\mathbf{a}_3$	$=$	$a(x_3 + \frac{1}{2})\hat{\mathbf{x}} + \frac{1}{2}a\hat{\mathbf{y}} + \frac{1}{2}a\hat{\mathbf{z}}$	$(48e)$	Zn I
$\mathbf{B}_{14}$	$=$	$(x_3 + \frac{1}{2})\mathbf{a}_1 - (x_3 - \frac{1}{2})\mathbf{a}_2 -$ $(x_3 - \frac{1}{2})\mathbf{a}_3$	$=$	$-a(x_3 - \frac{1}{2})\hat{\mathbf{x}} + \frac{1}{2}a\hat{\mathbf{y}} + \frac{1}{2}a\hat{\mathbf{z}}$	$(48e)$	Zn I
$\mathbf{B}_{15}$	$=$	$-(x_3 - \frac{1}{2})\mathbf{a}_1 - (x_3 - \frac{1}{2})\mathbf{a}_2 +$ $(x_3 + \frac{1}{2})\mathbf{a}_3$	$=$	$\frac{1}{2}a\hat{\mathbf{x}} + \frac{1}{2}a\hat{\mathbf{y}} - a(x_3 - \frac{1}{2})\hat{\mathbf{z}}$	$(48e)$	Zn I
$\mathbf{B}_{16}$	$=$	$(x_3 + \frac{1}{2})\mathbf{a}_1 + (x_3 + \frac{1}{2})\mathbf{a}_2 -$ $(x_3 - \frac{1}{2})\mathbf{a}_3$	$=$	$\frac{1}{2}a\hat{\mathbf{x}} + \frac{1}{2}a\hat{\mathbf{y}} + a(x_3 + \frac{1}{2})\hat{\mathbf{z}}$	$(48e)$	Zn I
$\mathbf{B}_{17}$	$=$	$-(x_4 - \frac{1}{2})\mathbf{a}_1 + x_4\mathbf{a}_2 + x_4\mathbf{a}_3$	$=$	$ax_4\hat{\mathbf{x}} + \frac{1}{4}a\hat{\mathbf{y}} + \frac{1}{4}a\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{18}$	$=$	$x_4\mathbf{a}_1 - (x_4 - \frac{1}{2})\mathbf{a}_2 - (x_4 - \frac{1}{2})\mathbf{a}_3$	$=$	$-a(x_4 - \frac{1}{2})\hat{\mathbf{x}} + \frac{1}{4}a\hat{\mathbf{y}} + \frac{1}{4}a\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{19}$	$=$	$x_4\mathbf{a}_1 - (x_4 - \frac{1}{2})\mathbf{a}_2 + x_4\mathbf{a}_3$	$=$	$\frac{1}{4}a\hat{\mathbf{x}} + ax_4\hat{\mathbf{y}} + \frac{1}{4}a\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{20}$	$=$	$-(x_4 - \frac{1}{2})\mathbf{a}_1 + x_4\mathbf{a}_2 -$ $(x_4 - \frac{1}{2})\mathbf{a}_3$	$=$	$\frac{1}{4}a\hat{\mathbf{x}} - a(x_4 - \frac{1}{2})\hat{\mathbf{y}} + \frac{1}{4}a\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{21}$	$=$	$x_4\mathbf{a}_1 + x_4\mathbf{a}_2 - (x_4 - \frac{1}{2})\mathbf{a}_3$	$=$	$\frac{1}{4}a\hat{\mathbf{x}} + \frac{1}{4}a\hat{\mathbf{y}} + ax_4\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{22}$	$=$	$-(x_4 - \frac{1}{2})\mathbf{a}_1 - (x_4 - \frac{1}{2})\mathbf{a}_2 +$ $x_4\mathbf{a}_3$	$=$	$\frac{1}{4}a\hat{\mathbf{x}} + \frac{1}{4}a\hat{\mathbf{y}} - a(x_4 - \frac{1}{2})\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{23}$	$=$	$(x_4 + \frac{1}{2})\mathbf{a}_1 - x_4\mathbf{a}_2 - x_4\mathbf{a}_3$	$=$	$-ax_4\hat{\mathbf{x}} + \frac{1}{4}a\hat{\mathbf{y}} + \frac{1}{4}a\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{24}$	$=$	$-x_4\mathbf{a}_1 + (x_4 + \frac{1}{2})\mathbf{a}_2 +$ $(x_4 + \frac{1}{2})\mathbf{a}_3$	$=$	$a(x_4 + \frac{1}{2})\hat{\mathbf{x}} + \frac{1}{4}a\hat{\mathbf{y}} + \frac{1}{4}a\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{25}$	$=$	$-x_4\mathbf{a}_1 + (x_4 + \frac{1}{2})\mathbf{a}_2 - x_4\mathbf{a}_3$	$=$	$\frac{1}{4}a\hat{\mathbf{x}} - ax_4\hat{\mathbf{y}} + \frac{1}{4}a\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{26}$	$=$	$(x_4 + \frac{1}{2})\mathbf{a}_1 - x_4\mathbf{a}_2 + (x_4 + \frac{1}{2})\mathbf{a}_3$	$=$	$\frac{1}{4}a\hat{\mathbf{x}} + a(x_4 + \frac{1}{2})\hat{\mathbf{y}} + \frac{1}{4}a\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{27}$	$=$	$-x_4\mathbf{a}_1 - x_4\mathbf{a}_2 + (x_4 + \frac{1}{2})\mathbf{a}_3$	$=$	$\frac{1}{4}a\hat{\mathbf{x}} + \frac{1}{4}a\hat{\mathbf{y}} - ax_4\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{28}$	$=$	$(x_4 + \frac{1}{2})\mathbf{a}_1 + (x_4 + \frac{1}{2})\mathbf{a}_2 - x_4\mathbf{a}_3$	$=$	$\frac{1}{4}a\hat{\mathbf{x}} + \frac{1}{4}a\hat{\mathbf{y}} + a(x_4 + \frac{1}{2})\hat{\mathbf{z}}$	$(48f)$	Zn II
$\mathbf{B}_{29}$	$=$	$x_5\mathbf{a}_1 + x_5\mathbf{a}_2 + x_5\mathbf{a}_3$	$=$	$ax_5\hat{\mathbf{x}} + ax_5\hat{\mathbf{y}} + ax_5\hat{\mathbf{z}}$	$(64g)$	Zn III
$\mathbf{B}_{30}$	$=$	$x_5\mathbf{a}_1 + x_5\mathbf{a}_2 - 3x_5\mathbf{a}_3$	$=$	$-ax_5\hat{\mathbf{x}} - ax_5\hat{\mathbf{y}} + ax_5\hat{\mathbf{z}}$	$(64g)$	Zn III
$\mathbf{B}_{31}$	$=$	$x_5\mathbf{a}_1 - 3x_5\mathbf{a}_2 + x_5\mathbf{a}_3$	$=$	$-ax_5\hat{\mathbf{x}} + ax_5\hat{\mathbf{y}} - ax_5\hat{\mathbf{z}}$	$(64g)$	Zn III
$\mathbf{B}_{32}$	$=$	$-3x_5\mathbf{a}_1 + x_5\mathbf{a}_2 + x_5\mathbf{a}_3$	$=$	$ax_5\hat{\mathbf{x}} - ax_5\hat{\mathbf{y}} - ax_5\hat{\mathbf{z}}$	$(64g)$	Zn III
$\mathbf{B}_{33}$	$=$	$-(x_5 - \frac{1}{2})\mathbf{a}_1 - (x_5 - \frac{1}{2})\mathbf{a}_2 +$ $(3x_5 + \frac{1}{2})\mathbf{a}_3$	$=$	$a(x_5 + \frac{1}{2})\hat{\mathbf{x}} + a(x_5 + \frac{1}{2})\hat{\mathbf{y}} - a(x_5 - \frac{1}{2})\hat{\mathbf{z}}$	$(64g)$	Zn III
$\mathbf{B}_{34}$	$=$	$-(x_5 - \frac{1}{2})\mathbf{a}_1 - (x_5 - \frac{1}{2})\mathbf{a}_2 -$ $(x_5 - \frac{1}{2})\mathbf{a}_3$	$=$	$-a(x_5 - \frac{1}{2})\hat{\mathbf{x}} - a(x_5 - \frac{1}{2})\hat{\mathbf{y}} -$ $a(x_5 - \frac{1}{2})\hat{\mathbf{z}}$	$(64g)$	Zn III

$\mathbf{B}_{35} =$	$-(x_5 - \frac{1}{2}) \mathbf{a}_1 + (3x_5 + \frac{1}{2}) \mathbf{a}_2 -$	$=$	$a(x_5 + \frac{1}{2}) \hat{\mathbf{x}} - a(x_5 - \frac{1}{2}) \hat{\mathbf{y}} + a(x_5 + \frac{1}{2}) \hat{\mathbf{z}}$	(64g)	Zn III
	$(x_5 - \frac{1}{2}) \mathbf{a}_3$				
$\mathbf{B}_{36} =$	$(3x_5 + \frac{1}{2}) \mathbf{a}_1 - (x_5 - \frac{1}{2}) \mathbf{a}_2 -$	$=$	$-a(x_5 - \frac{1}{2}) \hat{\mathbf{x}} + a(x_5 + \frac{1}{2}) \hat{\mathbf{y}} +$	(64g)	Zn III
	$(x_5 - \frac{1}{2}) \mathbf{a}_3$		$a(x_5 + \frac{1}{2}) \hat{\mathbf{z}}$		
$\mathbf{B}_{37} =$	$-x_5 \mathbf{a}_1 - x_5 \mathbf{a}_2 - x_5 \mathbf{a}_3$	$=$	$-ax_5 \hat{\mathbf{x}} - ax_5 \hat{\mathbf{y}} - ax_5 \hat{\mathbf{z}}$	(64g)	Zn III
$\mathbf{B}_{38} =$	$-x_5 \mathbf{a}_1 - x_5 \mathbf{a}_2 + 3x_5 \mathbf{a}_3$	$=$	$ax_5 \hat{\mathbf{x}} + ax_5 \hat{\mathbf{y}} - ax_5 \hat{\mathbf{z}}$	(64g)	Zn III
$\mathbf{B}_{39} =$	$-x_5 \mathbf{a}_1 + 3x_5 \mathbf{a}_2 - x_5 \mathbf{a}_3$	$=$	$ax_5 \hat{\mathbf{x}} - ax_5 \hat{\mathbf{y}} + ax_5 \hat{\mathbf{z}}$	(64g)	Zn III
$\mathbf{B}_{40} =$	$3x_5 \mathbf{a}_1 - x_5 \mathbf{a}_2 - x_5 \mathbf{a}_3$	$=$	$-ax_5 \hat{\mathbf{x}} + ax_5 \hat{\mathbf{y}} + ax_5 \hat{\mathbf{z}}$	(64g)	Zn III
$\mathbf{B}_{41} =$	$(x_5 + \frac{1}{2}) \mathbf{a}_1 + (x_5 + \frac{1}{2}) \mathbf{a}_2 -$	$=$	$-a(x_5 - \frac{1}{2}) \hat{\mathbf{x}} - a(x_5 - \frac{1}{2}) \hat{\mathbf{y}} +$	(64g)	Zn III
	$(3x_5 - \frac{1}{2}) \mathbf{a}_3$		$a(x_5 + \frac{1}{2}) \hat{\mathbf{z}}$		
$\mathbf{B}_{42} =$	$(x_5 + \frac{1}{2}) \mathbf{a}_1 + (x_5 + \frac{1}{2}) \mathbf{a}_2 +$	$=$	$a(x_5 + \frac{1}{2}) \hat{\mathbf{x}} + a(x_5 + \frac{1}{2}) \hat{\mathbf{y}} + a(x_5 + \frac{1}{2}) \hat{\mathbf{z}}$	(64g)	Zn III
	$(x_5 + \frac{1}{2}) \mathbf{a}_3$				
$\mathbf{B}_{43} =$	$(x_5 + \frac{1}{2}) \mathbf{a}_1 - (3x_5 - \frac{1}{2}) \mathbf{a}_2 +$	$=$	$-a(x_5 - \frac{1}{2}) \hat{\mathbf{x}} + a(x_5 + \frac{1}{2}) \hat{\mathbf{y}} -$	(64g)	Zn III
	$(x_5 + \frac{1}{2}) \mathbf{a}_3$		$a(x_5 - \frac{1}{2}) \hat{\mathbf{z}}$		
$\mathbf{B}_{44} =$	$-(3x_5 - \frac{1}{2}) \mathbf{a}_1 + (x_5 + \frac{1}{2}) \mathbf{a}_2 +$	$=$	$a(x_5 + \frac{1}{2}) \hat{\mathbf{x}} - a(x_5 - \frac{1}{2}) \hat{\mathbf{y}} - a(x_5 - \frac{1}{2}) \hat{\mathbf{z}}$	(64g)	Zn III
	$(x_5 + \frac{1}{2}) \mathbf{a}_3$				
$\mathbf{B}_{45} =$	$(2y_6 + \frac{3}{4}) \mathbf{a}_1 + \frac{1}{4} \mathbf{a}_2 + \frac{1}{4} \mathbf{a}_3$	$=$	$\frac{1}{4} a \hat{\mathbf{x}} + a(y_6 + \frac{1}{2}) \hat{\mathbf{y}} + a(y_6 + \frac{1}{2}) \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{46} =$	$\frac{1}{4} \mathbf{a}_1 + (2y_6 + \frac{3}{4}) \mathbf{a}_2 -$	$=$	$\frac{3}{4} a \hat{\mathbf{x}} - a(y_6 - \frac{1}{2}) \hat{\mathbf{y}} + a(y_6 + \frac{1}{2}) \hat{\mathbf{z}}$	(96h)	Zn IV
	$(2y_6 - \frac{3}{4}) \mathbf{a}_3$				
$\mathbf{B}_{47} =$	$\frac{1}{4} \mathbf{a}_1 - (2y_6 - \frac{3}{4}) \mathbf{a}_2 +$	$=$	$\frac{3}{4} a \hat{\mathbf{x}} + a(y_6 + \frac{1}{2}) \hat{\mathbf{y}} - a(y_6 - \frac{1}{2}) \hat{\mathbf{z}}$	(96h)	Zn IV
	$(2y_6 + \frac{3}{4}) \mathbf{a}_3$				
$\mathbf{B}_{48} =$	$-(2y_6 - \frac{3}{4}) \mathbf{a}_1 + \frac{1}{4} \mathbf{a}_2 + \frac{1}{4} \mathbf{a}_3$	$=$	$\frac{1}{4} a \hat{\mathbf{x}} - a(y_6 - \frac{1}{2}) \hat{\mathbf{y}} - a(y_6 - \frac{1}{2}) \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{49} =$	$\frac{1}{4} \mathbf{a}_1 + (2y_6 + \frac{3}{4}) \mathbf{a}_2 + \frac{1}{4} \mathbf{a}_3$	$=$	$a(y_6 + \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{4} a \hat{\mathbf{y}} + a(y_6 + \frac{1}{2}) \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{50} =$	$-(2y_6 - \frac{3}{4}) \mathbf{a}_1 + \frac{1}{4} \mathbf{a}_2 +$	$=$	$a(y_6 + \frac{1}{2}) \hat{\mathbf{x}} + \frac{3}{4} a \hat{\mathbf{y}} - a(y_6 - \frac{1}{2}) \hat{\mathbf{z}}$	(96h)	Zn IV
	$(2y_6 + \frac{3}{4}) \mathbf{a}_3$				
$\mathbf{B}_{51} =$	$(2y_6 + \frac{3}{4}) \mathbf{a}_1 + \frac{1}{4} \mathbf{a}_2 -$	$=$	$-a(y_6 - \frac{1}{2}) \hat{\mathbf{x}} + \frac{3}{4} a \hat{\mathbf{y}} + a(y_6 + \frac{1}{2}) \hat{\mathbf{z}}$	(96h)	Zn IV
	$(2y_6 - \frac{3}{4}) \mathbf{a}_3$				
$\mathbf{B}_{52} =$	$\frac{1}{4} \mathbf{a}_1 - (2y_6 - \frac{3}{4}) \mathbf{a}_2 + \frac{1}{4} \mathbf{a}_3$	$=$	$-a(y_6 - \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{4} a \hat{\mathbf{y}} - a(y_6 - \frac{1}{2}) \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{53} =$	$\frac{1}{4} \mathbf{a}_1 + \frac{1}{4} \mathbf{a}_2 + (2y_6 + \frac{3}{4}) \mathbf{a}_3$	$=$	$a(y_6 + \frac{1}{2}) \hat{\mathbf{x}} + a(y_6 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{4} a \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{54} =$	$(2y_6 + \frac{3}{4}) \mathbf{a}_1 - (2y_6 - \frac{3}{4}) \mathbf{a}_2 +$	$=$	$-a(y_6 - \frac{1}{2}) \hat{\mathbf{x}} + a(y_6 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{3}{4} a \hat{\mathbf{z}}$	(96h)	Zn IV
	$\frac{1}{4} \mathbf{a}_3$				
$\mathbf{B}_{55} =$	$-(2y_6 - \frac{3}{4}) \mathbf{a}_1 + (2y_6 + \frac{3}{4}) \mathbf{a}_2 +$	$=$	$a(y_6 + \frac{1}{2}) \hat{\mathbf{x}} - a(y_6 - \frac{1}{2}) \hat{\mathbf{y}} + \frac{3}{4} a \hat{\mathbf{z}}$	(96h)	Zn IV
	$\frac{1}{4} \mathbf{a}_3$				
$\mathbf{B}_{56} =$	$\frac{1}{4} \mathbf{a}_1 + \frac{1}{4} \mathbf{a}_2 - (2y_6 - \frac{3}{4}) \mathbf{a}_3$	$=$	$-a(y_6 - \frac{1}{2}) \hat{\mathbf{x}} - a(y_6 - \frac{1}{2})$		

$\mathbf{B}_{64} =$	$\frac{3}{4} \mathbf{a}_1 + (2y_6 + \frac{1}{4}) \mathbf{a}_2 + \frac{3}{4} \mathbf{a}_3$	$=$	$a (y_6 + \frac{1}{2}) \hat{\mathbf{x}} + \frac{3}{4} a \hat{\mathbf{y}} + a (y_6 + \frac{1}{2}) \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{65} =$	$\frac{3}{4} \mathbf{a}_1 + \frac{3}{4} \mathbf{a}_2 - (2y_6 - \frac{1}{4}) \mathbf{a}_3$	$=$	$-a (y_6 - \frac{1}{2}) \hat{\mathbf{x}} - a (y_6 - \frac{1}{2}) \hat{\mathbf{y}} + \frac{3}{4} a \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{66} =$	$-(2y_6 - \frac{1}{4}) \mathbf{a}_1 + (2y_6 + \frac{1}{4}) \mathbf{a}_2 + \frac{3}{4} \mathbf{a}_3$	$=$	$a (y_6 + \frac{1}{2}) \hat{\mathbf{x}} - a (y_6 - \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{4} a \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{67} =$	$(2y_6 + \frac{1}{4}) \mathbf{a}_1 - (2y_6 - \frac{1}{4}) \mathbf{a}_2 + \frac{3}{4} \mathbf{a}_3$	$=$	$-a (y_6 - \frac{1}{2}) \hat{\mathbf{x}} + a (y_6 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{4} a \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{68} =$	$\frac{3}{4} \mathbf{a}_1 + \frac{3}{4} \mathbf{a}_2 + (2y_6 + \frac{1}{4}) \mathbf{a}_3$	$=$	$a (y_6 + \frac{1}{2}) \hat{\mathbf{x}} + a (y_6 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{3}{4} a \hat{\mathbf{z}}$	(96h)	Zn IV
$\mathbf{B}_{69} =$	$(y_7 + z_7) \mathbf{a}_1 - (y_7 - z_7) \mathbf{a}_2 + (y_7 - z_7) \mathbf{a}_3$	$=$	$ay_7 \hat{\mathbf{y}} + az_7 \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{70} =$	$-(y_7 - z_7) \mathbf{a}_1 + (y_7 + z_7) \mathbf{a}_2 - (y_7 + z_7) \mathbf{a}_3$	$=$	$-ay_7 \hat{\mathbf{y}} + az_7 \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{71} =$	$(y_7 - z_7) \mathbf{a}_1 - (y_7 + z_7) \mathbf{a}_2 + (y_7 + z_7) \mathbf{a}_3$	$=$	$ay_7 \hat{\mathbf{y}} - az_7 \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{72} =$	$-(y_7 + z_7) \mathbf{a}_1 + (y_7 - z_7) \mathbf{a}_2 - (y_7 - z_7) \mathbf{a}_3$	$=$	$-ay_7 \hat{\mathbf{y}} - az_7 \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{73} =$	$(y_7 - z_7) \mathbf{a}_1 + (y_7 + z_7) \mathbf{a}_2 - (y_7 - z_7) \mathbf{a}_3$	$=$	$az_7 \hat{\mathbf{x}} + ay_7 \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{74} =$	$-(y_7 + z_7) \mathbf{a}_1 - (y_7 - z_7) \mathbf{a}_2 + (y_7 + z_7) \mathbf{a}_3$	$=$	$az_7 \hat{\mathbf{x}} - ay_7 \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{75} =$	$(y_7 + z_7) \mathbf{a}_1 + (y_7 - z_7) \mathbf{a}_2 - (y_7 + z_7) \mathbf{a}_3$	$=$	$-az_7 \hat{\mathbf{x}} + ay_7 \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{76} =$	$-(y_7 - z_7) \mathbf{a}_1 - (y_7 + z_7) \mathbf{a}_2 + (y_7 - z_7) \mathbf{a}_3$	$=$	$-az_7 \hat{\mathbf{x}} - ay_7 \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{77} =$	$-(y_7 - z_7) \mathbf{a}_1 + (y_7 - z_7) \mathbf{a}_2 + (y_7 + z_7) \mathbf{a}_3$	$=$	$ay_7 \hat{\mathbf{x}} + az_7 \hat{\mathbf{y}}$	(96i)	Mo III
$\mathbf{B}_{78} =$	$(y_7 + z_7) \mathbf{a}_1 - (y_7 + z_7) \mathbf{a}_2 - (y_7 - z_7) \mathbf{a}_3$	$=$	$-ay_7 \hat{\mathbf{x}} + az_7 \hat{\mathbf{y}}$	(96i)	Mo III
$\mathbf{B}_{79} =$	$-(y_7 + z_7) \mathbf{a}_1 + (y_7 + z_7) \mathbf{a}_2 + (y_7 - z_7) \mathbf{a}_3$	$=$	$ay_7 \hat{\mathbf{x}} - az_7 \hat{\mathbf{y}}$	(96i)	Mo III
$\mathbf{B}_{80} =$	$(y_7 - z_7) \mathbf{a}_1 - (y_7 - z_7) \mathbf{a}_2 - (y_7 + z_7) \mathbf{a}_3$	$=$	$-ay_7 \hat{\mathbf{x}} - az_7 \hat{\mathbf{y}}$	(96i)	Mo III
$\mathbf{B}_{81} =$	$-(y_7 + z_7 - \frac{1}{2}) \mathbf{a}_1 + (y_7 - z_7 + \frac{1}{2}) \mathbf{a}_2 + (y_7 + z_7 + \frac{1}{2}) \mathbf{a}_3$	$=$	$a (y_7 + \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{2} a \hat{\mathbf{y}} - a (z_7 - \frac{1}{2}) \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{82} =$	$(y_7 - z_7 + \frac{1}{2}) \mathbf{a}_1 - (y_7 + z_7 - \frac{1}{2}) \mathbf{a}_2 + (-y_7 + z_7 + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a (y_7 - \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{2} a \hat{\mathbf{y}} - a (z_7 - \frac{1}{2}) \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{83} =$	$(-y_7 + z_7 + \frac{1}{2}) \mathbf{a}_1 + (y_7 + z_7 + \frac{1}{2}) \mathbf{a}_2 + (y_7 - z_7 + \frac{1}{2}) \mathbf{a}_3$	$=$	$a (y_7 + \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{2} a \hat{\mathbf{y}} + a (z_7 + \frac{1}{2}) \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{84} =$	$(y_7 + z_7 + \frac{1}{2}) \mathbf{a}_1 + (-y_7 + z_7 + \frac{1}{2}) \mathbf{a}_2 - (y_7 + z_7 - \frac{1}{2}) \mathbf{a}_3$	$=$	$-a (y_7 - \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{2} a \hat{\mathbf{y}} + a (z_7 + \frac{1}{2}) \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{85} =$	$(-y_7 + z_7 + \frac{1}{2}) \mathbf{a}_1 - (y_7 + z_7 - \frac{1}{2}) \mathbf{a}_2 + (y_7 + z_7 + \frac{1}{2}) \mathbf{a}_3$	$=$	$\frac{1}{2} a \hat{\mathbf{x}} + a (z_7 + \frac{1}{2}) \hat{\mathbf{y}} - a (y_7 - \frac{1}{2}) \hat{\mathbf{z}}$	(96i)	Mo III

$\mathbf{B}_{86} =$	$(y_7 + z_7 + \frac{1}{2}) \mathbf{a}_1 +$ $(y_7 - z_7 + \frac{1}{2}) \mathbf{a}_2 +$ $(-y_7 + z_7 + \frac{1}{2}) \mathbf{a}_3$	$=$	$\frac{1}{2}a \hat{\mathbf{x}} + a(z_7 + \frac{1}{2}) \hat{\mathbf{y}} + a(y_7 + \frac{1}{2}) \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{87} =$	$-(y_7 + z_7 - \frac{1}{2}) \mathbf{a}_1 +$ $(-y_7 + z_7 + \frac{1}{2}) \mathbf{a}_2 +$ $(y_7 - z_7 + \frac{1}{2}) \mathbf{a}_3$	$=$	$\frac{1}{2}a \hat{\mathbf{x}} - a(z_7 - \frac{1}{2}) \hat{\mathbf{y}} - a(y_7 - \frac{1}{2}) \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{88} =$	$(y_7 - z_7 + \frac{1}{2}) \mathbf{a}_1 +$ $(y_7 + z_7 + \frac{1}{2}) \mathbf{a}_2 -$ $(y_7 + z_7 - \frac{1}{2}) \mathbf{a}_3$	$=$	$\frac{1}{2}a \hat{\mathbf{x}} - a(z_7 - \frac{1}{2}) \hat{\mathbf{y}} + a(y_7 + \frac{1}{2}) \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{89} =$	$(y_7 - z_7 + \frac{1}{2}) \mathbf{a}_1 +$ $(-y_7 + z_7 + \frac{1}{2}) \mathbf{a}_2 +$ $(y_7 + z_7 + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(z_7 + \frac{1}{2}) \hat{\mathbf{x}} + a(y_7 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2}a \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{90} =$	$-(y_7 + z_7 - \frac{1}{2}) \mathbf{a}_1 +$ $(y_7 + z_7 + \frac{1}{2}) \mathbf{a}_2 +$ $(-y_7 + z_7 + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(z_7 + \frac{1}{2}) \hat{\mathbf{x}} - a(y_7 - \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2}a \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{91} =$	$(y_7 + z_7 + \frac{1}{2}) \mathbf{a}_1 -$ $(y_7 + z_7 - \frac{1}{2}) \mathbf{a}_2 +$ $(y_7 - z_7 + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(z_7 - \frac{1}{2}) \hat{\mathbf{x}} + a(y_7 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2}a \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{92} =$	$(-y_7 + z_7 + \frac{1}{2}) \mathbf{a}_1 +$ $(y_7 - z_7 + \frac{1}{2}) \mathbf{a}_2 -$ $(y_7 + z_7 - \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(z_7 - \frac{1}{2}) \hat{\mathbf{x}} - a(y_7 - \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2}a \hat{\mathbf{z}}$	(96i)	Mo III
$\mathbf{B}_{93} =$	$(y_8 + z_8) \mathbf{a}_1 - (y_8 - z_8) \mathbf{a}_2 +$ $(y_8 - z_8) \mathbf{a}_3$	$=$	$ay_8 \hat{\mathbf{y}} + az_8 \hat{\mathbf{z}}$	(96i)	Zn V
$\mathbf{B}_{94} =$	$-(y_8 - z_8) \mathbf{a}_1 + (y_8 + z_8) \mathbf{a}_2 -$ $(y_8 + z_8) \mathbf{a}_3$	$=$	$-ay_8 \hat{\mathbf{y}} + az_8 \hat{\mathbf{z}}$	(96i)	Zn V
$\mathbf{B}_{95} =$	$(y_8 - z_8) \mathbf{a}_1 - (y_8 + z_8) \mathbf{a}_2 +$ $(y_8 + z_8) \mathbf{a}_3$	$=$	$ay_8 \hat{\mathbf{y}} - az_8 \hat{\mathbf{z}}$	(96i)	Zn V
$\mathbf{B}_{96} =$	$-(y_8 + z_8) \mathbf{a}_1 + (y_8 - z_8) \mathbf{a}_2 -$ $(y_8 - z_8) \mathbf{a}_3$	$=$	$-ay_8 \hat{\mathbf{y}} - az_8 \hat{\mathbf{z}}$	(96i)	Zn V
$\mathbf{B}_{97} =$	$(y_8 - z_8) \mathbf{a}_1 + (y_8 + z_8) \mathbf{a}_2 -$ $(y_8 - z_8) \mathbf{a}_3$	$=$	$az_8 \hat{\mathbf{x}} + ay_8 \hat{\mathbf{z}}$	(96i)	Zn V
$\mathbf{B}_{98} =$	$-(y_8 + z_8) \mathbf{a}_1 - (y_8 - z_8) \mathbf{a}_2 +$ $(y_8 + z_8) \mathbf{a}_3$	$=$	$az_8 \hat{\mathbf{x}} - ay_8 \hat{\mathbf{z}}$	(96i)	Zn V
$\mathbf{B}_{99} =$	$(y_8 + z_8) \mathbf{a}_1 + (y_8 - z_8) \mathbf{a}_2 -$ $(y_8 + z_8) \mathbf{a}_3$	$=$	$-az_8 \hat{\mathbf{x}} + ay_8 \hat{\mathbf{z}}$	(96i)	Zn V
$\mathbf{B}_{100} =$	$-(y_8 - z_8) \mathbf{a}_1 - (y_8 + z_8) \mathbf{a}_2 +$ $(y_8 - z_8) \mathbf{a}_3$	$=$	$-az_8 \hat{\mathbf{x}} - ay_8 \hat{\mathbf{z}}$	(96i)	Zn V
$\mathbf{B}_{101} =$	$-(y_8 - z_8) \mathbf{a}_1 + (y_8 - z_8) \mathbf{a}_2 +$ $(y_8 + z_8) \mathbf{a}_3$	$=$	$ay_8 \hat{\mathbf{x}} + az_8 \hat{\mathbf{y}}$	(96i)	Zn V
$\mathbf{B}_{102} =$	$(y_8 + z_8) \mathbf{a}_1 - (y_8 + z_8) \mathbf{a}_2 -$ $(y_8 - z_8) \mathbf{a}_3$	$=$	$-ay_8 \hat{\mathbf{x}} + az_8 \hat{\mathbf{y}}$	(96i)	Zn V
$\mathbf{B}_{103} =$	$-(y_8 + z_8) \mathbf{a}_1 + (y_8 + z_8) \mathbf{a}_2 +$ $(y_8 - z_8) \mathbf{a}_3$	$=$	$ay_8 \hat{\mathbf{x}} - az_8 \hat{\mathbf{y}}$	(96i)	Zn V
$\mathbf{B}_{104} =$	$(y_8 - z_8) \mathbf{a}_1 - (y_8 - z_8) \mathbf{a}_2 -$ $(y_8 + z_8) \mathbf{a}_3$	$=$	$-ay_8 \hat{\mathbf{x}} - az_8 \hat{\mathbf{y}}$	(96i)	Zn V
$\mathbf{B}_{105} =$	$-(y_8 + z_8 - \frac{1}{2}) \mathbf{a}_1 +$ $(y_8 - z_8 + \frac{1}{2}) \mathbf{a}_2 +$ $(y_8 + z_8 + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(y_8 + \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{2}a \hat{\mathbf{y}} - a(z_8 - \frac{1}{2}) \hat{\mathbf{z}}$	(96i)	Zn V

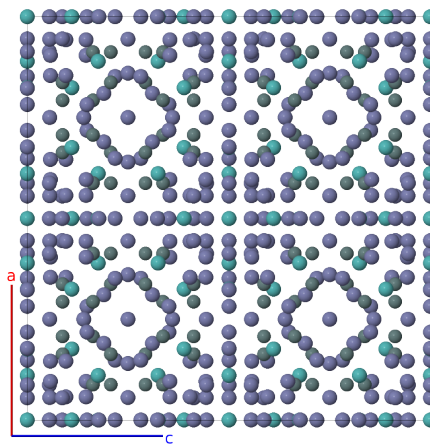
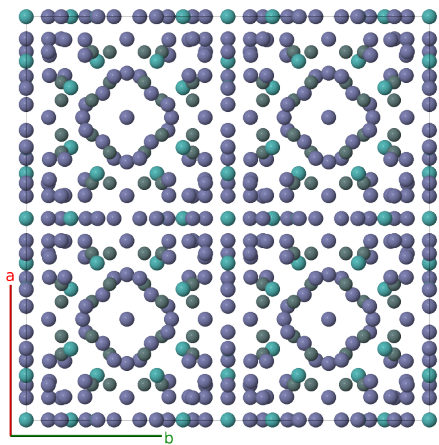
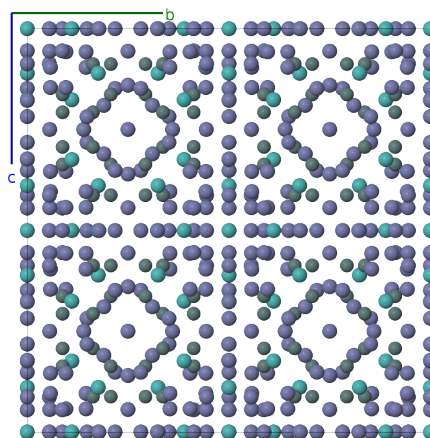
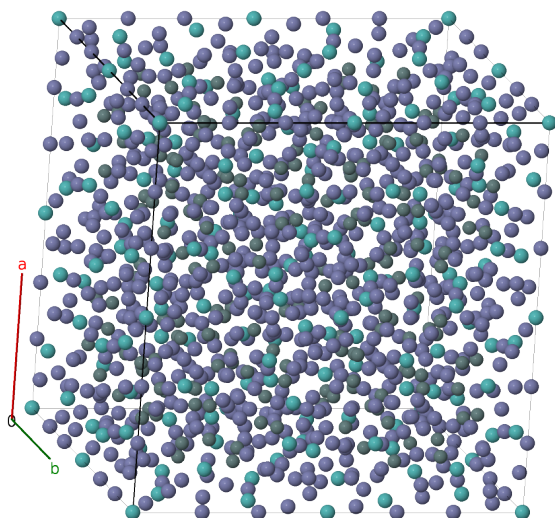
$$\begin{aligned}
\mathbf{B}_{124} &= \begin{matrix} -(y_9 - z_9) \mathbf{a}_1 - (y_9 + z_9) \mathbf{a}_2 + \\ (y_9 - z_9) \mathbf{a}_3 \end{matrix} = -az_9 \hat{\mathbf{x}} - ay_9 \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{125} &= \begin{matrix} -(y_9 - z_9) \mathbf{a}_1 + (y_9 - z_9) \mathbf{a}_2 + \\ (y_9 + z_9) \mathbf{a}_3 \end{matrix} = ay_9 \hat{\mathbf{x}} + az_9 \hat{\mathbf{y}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{126} &= \begin{matrix} (y_9 + z_9) \mathbf{a}_1 - (y_9 + z_9) \mathbf{a}_2 - \\ (y_9 - z_9) \mathbf{a}_3 \end{matrix} = -ay_9 \hat{\mathbf{x}} + az_9 \hat{\mathbf{y}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{127} &= \begin{matrix} -(y_9 + z_9) \mathbf{a}_1 + (y_9 + z_9) \mathbf{a}_2 + \\ (y_9 - z_9) \mathbf{a}_3 \end{matrix} = ay_9 \hat{\mathbf{x}} - az_9 \hat{\mathbf{y}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{128} &= \begin{matrix} (y_9 - z_9) \mathbf{a}_1 - (y_9 - z_9) \mathbf{a}_2 - \\ (y_9 + z_9) \mathbf{a}_3 \end{matrix} = -ay_9 \hat{\mathbf{x}} - az_9 \hat{\mathbf{y}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{129} &= \begin{matrix} -(y_9 + z_9 - \frac{1}{2}) \mathbf{a}_1 + \\ (y_9 - z_9 + \frac{1}{2}) \mathbf{a}_2 + \\ (y_9 + z_9 + \frac{1}{2}) \mathbf{a}_3 \end{matrix} = a(y_9 + \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{2}a \hat{\mathbf{y}} - a(z_9 - \frac{1}{2}) \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{130} &= \begin{matrix} (y_9 - z_9 + \frac{1}{2}) \mathbf{a}_1 - \\ (y_9 + z_9 - \frac{1}{2}) \mathbf{a}_2 + \\ (-y_9 + z_9 + \frac{1}{2}) \mathbf{a}_3 \end{matrix} = -a(y_9 - \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{2}a \hat{\mathbf{y}} - a(z_9 - \frac{1}{2}) \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{131} &= \begin{matrix} (-y_9 + z_9 + \frac{1}{2}) \mathbf{a}_1 + \\ (y_9 + z_9 + \frac{1}{2}) \mathbf{a}_2 + \\ (y_9 - z_9 + \frac{1}{2}) \mathbf{a}_3 \end{matrix} = a(y_9 + \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{2}a \hat{\mathbf{y}} + a(z_9 + \frac{1}{2}) \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{132} &= \begin{matrix} (y_9 + z_9 + \frac{1}{2}) \mathbf{a}_1 + \\ (-y_9 + z_9 + \frac{1}{2}) \mathbf{a}_2 - \\ (y_9 + z_9 - \frac{1}{2}) \mathbf{a}_3 \end{matrix} = -a(y_9 - \frac{1}{2}) \hat{\mathbf{x}} + \frac{1}{2}a \hat{\mathbf{y}} + a(z_9 + \frac{1}{2}) \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{133} &= \begin{matrix} (-y_9 + z_9 + \frac{1}{2}) \mathbf{a}_1 - \\ (y_9 + z_9 - \frac{1}{2}) \mathbf{a}_2 + \\ (y_9 + z_9 + \frac{1}{2}) \mathbf{a}_3 \end{matrix} = \frac{1}{2}a \hat{\mathbf{x}} + a(z_9 + \frac{1}{2}) \hat{\mathbf{y}} - a(y_9 - \frac{1}{2}) \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{134} &= \begin{matrix} (y_9 + z_9 + \frac{1}{2}) \mathbf{a}_1 + \\ (y_9 - z_9 + \frac{1}{2}) \mathbf{a}_2 + \\ (-y_9 + z_9 + \frac{1}{2}) \mathbf{a}_3 \end{matrix} = \frac{1}{2}a \hat{\mathbf{x}} + a(z_9 + \frac{1}{2}) \hat{\mathbf{y}} + a(y_9 + \frac{1}{2}) \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{135} &= \begin{matrix} -(y_9 + z_9 - \frac{1}{2}) \mathbf{a}_1 + \\ (-y_9 + z_9 + \frac{1}{2}) \mathbf{a}_2 + \\ (y_9 - z_9 + \frac{1}{2}) \mathbf{a}_3 \end{matrix} = \frac{1}{2}a \hat{\mathbf{x}} - a(z_9 - \frac{1}{2}) \hat{\mathbf{y}} - a(y_9 - \frac{1}{2}) \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{136} &= \begin{matrix} (y_9 - z_9 + \frac{1}{2}) \mathbf{a}_1 + \\ (y_9 + z_9 + \frac{1}{2}) \mathbf{a}_2 - \\ (y_9 + z_9 - \frac{1}{2}) \mathbf{a}_3 \end{matrix} = \frac{1}{2}a \hat{\mathbf{x}} - a(z_9 - \frac{1}{2}) \hat{\mathbf{y}} + a(y_9 + \frac{1}{2}) \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{137} &= \begin{matrix} (y_9 - z_9 + \frac{1}{2}) \mathbf{a}_1 + \\ (-y_9 + z_9 + \frac{1}{2}) \mathbf{a}_2 + \\ (y_9 + z_9 + \frac{1}{2}) \mathbf{a}_3 \end{matrix} = a(z_9 + \frac{1}{2}) \hat{\mathbf{x}} + a(y_9 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2}a \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{138} &= \begin{matrix} -(y_9 + z_9 - \frac{1}{2}) \mathbf{a}_1 + \\ (y_9 + z_9 + \frac{1}{2}) \mathbf{a}_2 + \\ (-y_9 + z_9 + \frac{1}{2}) \mathbf{a}_3 \end{matrix} = a(z_9 + \frac{1}{2}) \hat{\mathbf{x}} - a(y_9 - \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2}a \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{139} &= \begin{matrix} (y_9 + z_9 + \frac{1}{2}) \mathbf{a}_1 - \\ (y_9 + z_9 - \frac{1}{2}) \mathbf{a}_2 + \\ (y_9 - z_9 + \frac{1}{2}) \mathbf{a}_3 \end{matrix} = -a(z_9 - \frac{1}{2}) \hat{\mathbf{x}} + a(y_9 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2}a \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{140} &= \begin{matrix} (-y_9 + z_9 + \frac{1}{2}) \mathbf{a}_1 + \\ (y_9 - z_9 + \frac{1}{2}) \mathbf{a}_2 - \\ (y_9 + z_9 - \frac{1}{2}) \mathbf{a}_3 \end{matrix} = -a(z_9 - \frac{1}{2}) \hat{\mathbf{x}} - a(y_9 - \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2}a \hat{\mathbf{z}} & (96i) & \text{Zn VI} \\
\mathbf{B}_{141} &= \begin{matrix} (-x_{10} + y_{10} + z_{10}) \mathbf{a}_1 + \\ (x_{10} - y_{10} + z_{10}) \mathbf{a}_2 + \\ (x_{10} + y_{10} - z_{10}) \mathbf{a}_3 \end{matrix} = ax_{10} \hat{\mathbf{x}} + ay_{10} \hat{\mathbf{y}} + az_{10} \hat{\mathbf{z}} & (192j) & \text{Sn I}
\end{aligned}$$

$\mathbf{B}_{174} =$	$(x_{10} - y_{10} - z_{10}) \mathbf{a}_1 +$ $(x_{10} + y_{10} + z_{10}) \mathbf{a}_2 -$ $(x_{10} - y_{10} + z_{10}) \mathbf{a}_3$	$=$	$ay_{10} \hat{\mathbf{x}} - az_{10} \hat{\mathbf{y}} + ax_{10} \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{175} =$	$(x_{10} + y_{10} + z_{10}) \mathbf{a}_1 +$ $(x_{10} - y_{10} - z_{10}) \mathbf{a}_2 -$ $(x_{10} + y_{10} - z_{10}) \mathbf{a}_3$	$=$	$-ay_{10} \hat{\mathbf{x}} + az_{10} \hat{\mathbf{y}} + ax_{10} \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{176} =$	$-(x_{10} + y_{10} - z_{10}) \mathbf{a}_1 -$ $(x_{10} - y_{10} + z_{10}) \mathbf{a}_2 +$ $(x_{10} + y_{10} + z_{10}) \mathbf{a}_3$	$=$	$ay_{10} \hat{\mathbf{x}} + az_{10} \hat{\mathbf{y}} - ax_{10} \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{177} =$	$(-x_{10} + y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_1 +$ $(x_{10} - y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_2 -$ $(x_{10} + y_{10} + z_{10} - \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(y_{10} - \frac{1}{2}) \hat{\mathbf{x}} - a(x_{10} - \frac{1}{2}) \hat{\mathbf{y}} +$ $a(z_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{178} =$	$(x_{10} - y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_1 +$ $(-x_{10} + y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_2 +$ $(x_{10} + y_{10} - z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(y_{10} + \frac{1}{2}) \hat{\mathbf{x}} + a(x_{10} + \frac{1}{2}) \hat{\mathbf{y}} +$ $a(z_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{179} =$	$(x_{10} + y_{10} - z_{10} + \frac{1}{2}) \mathbf{a}_1 -$ $(x_{10} + y_{10} + z_{10} - \frac{1}{2}) \mathbf{a}_2 +$ $(x_{10} - y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(y_{10} - \frac{1}{2}) \hat{\mathbf{x}} + a(x_{10} + \frac{1}{2}) \hat{\mathbf{y}} -$ $a(z_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{180} =$	$-(x_{10} + y_{10} + z_{10} - \frac{1}{2}) \mathbf{a}_1 +$ $(x_{10} + y_{10} - z_{10} + \frac{1}{2}) \mathbf{a}_2 +$ $(-x_{10} + y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(y_{10} + \frac{1}{2}) \hat{\mathbf{x}} - a(x_{10} - \frac{1}{2}) \hat{\mathbf{y}} -$ $a(z_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{181} =$	$(x_{10} + y_{10} - z_{10} + \frac{1}{2}) \mathbf{a}_1 +$ $(-x_{10} + y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_2 -$ $(x_{10} + y_{10} + z_{10} - \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(x_{10} - \frac{1}{2}) \hat{\mathbf{x}} - a(z_{10} - \frac{1}{2}) \hat{\mathbf{y}} +$ $a(y_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{182} =$	$-(x_{10} + y_{10} + z_{10} - \frac{1}{2}) \mathbf{a}_1 +$ $(x_{10} - y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_2 +$ $(x_{10} + y_{10} - z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(x_{10} + \frac{1}{2}) \hat{\mathbf{x}} - a(z_{10} - \frac{1}{2}) \hat{\mathbf{y}} -$ $a(y_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{183} =$	$(-x_{10} + y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_1 +$ $(x_{10} + y_{10} - z_{10} + \frac{1}{2}) \mathbf{a}_2 +$ $(x_{10} - y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(x_{10} + \frac{1}{2}) \hat{\mathbf{x}} + a(z_{10} + \frac{1}{2}) \hat{\mathbf{y}} +$ $a(y_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{184} =$	$(x_{10} - y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_1 -$ $(x_{10} + y_{10} + z_{10} - \frac{1}{2}) \mathbf{a}_2 +$ $(-x_{10} + y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(x_{10} - \frac{1}{2}) \hat{\mathbf{x}} + a(z_{10} + \frac{1}{2}) \hat{\mathbf{y}} -$ $a(y_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{185} =$	$(x_{10} - y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_1 +$ $(x_{10} + y_{10} - z_{10} + \frac{1}{2}) \mathbf{a}_2 -$ $(x_{10} + y_{10} + z_{10} - \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(z_{10} - \frac{1}{2}) \hat{\mathbf{x}} - a(y_{10} - \frac{1}{2}) \hat{\mathbf{y}} +$ $a(x_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{186} =$	$(-x_{10} + y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_1 -$ $(x_{10} + y_{10} + z_{10} - \frac{1}{2}) \mathbf{a}_2 +$ $(x_{10} + y_{10} - z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(z_{10} - \frac{1}{2}) \hat{\mathbf{x}} + a(y_{10} + \frac{1}{2}) \hat{\mathbf{y}} -$ $a(x_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{187} =$	$-(x_{10} + y_{10} + z_{10} - \frac{1}{2}) \mathbf{a}_1 +$ $(-x_{10} + y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_2 +$ $(x_{10} - y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(z_{10} + \frac{1}{2}) \hat{\mathbf{x}} - a(y_{10} - \frac{1}{2}) \hat{\mathbf{y}} -$ $a(x_{10} - \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{188} =$	$(x_{10} + y_{10} - z_{10} + \frac{1}{2}) \mathbf{a}_1 +$ $(x_{10} - y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_2 +$ $(-x_{10} + y_{10} + z_{10} + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(z_{10} + \frac{1}{2}) \hat{\mathbf{x}} + a(y_{10} + \frac{1}{2}) \hat{\mathbf{y}} +$ $a(x_{10} + \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Sn I
$\mathbf{B}_{189} =$	$(-x_{11} + y_{11} + z_{11}) \mathbf{a}_1 +$ $(x_{11} - y_{11} + z_{11}) \mathbf{a}_2 +$ $(x_{11} + y_{11} - z_{11}) \mathbf{a}_3$	$=$	$ax_{11} \hat{\mathbf{x}} + ay_{11} \hat{\mathbf{y}} + az_{11} \hat{\mathbf{z}}$	(192j)	Zn VII

$\mathbf{B}_{190} =$	$(x_{11} - y_{11} + z_{11}) \mathbf{a}_1 +$ $(-x_{11} + y_{11} + z_{11}) \mathbf{a}_2 -$ $(x_{11} + y_{11} + z_{11}) \mathbf{a}_3$	$=$	$-ax_{11} \hat{\mathbf{x}} - ay_{11} \hat{\mathbf{y}} + az_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{191} =$	$(x_{11} + y_{11} - z_{11}) \mathbf{a}_1 -$ $(x_{11} + y_{11} + z_{11}) \mathbf{a}_2 +$ $(-x_{11} + y_{11} + z_{11}) \mathbf{a}_3$	$=$	$-ax_{11} \hat{\mathbf{x}} + ay_{11} \hat{\mathbf{y}} - az_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{192} =$	$-(x_{11} + y_{11} + z_{11}) \mathbf{a}_1 +$ $(x_{11} + y_{11} - z_{11}) \mathbf{a}_2 +$ $(x_{11} - y_{11} + z_{11}) \mathbf{a}_3$	$=$	$ax_{11} \hat{\mathbf{x}} - ay_{11} \hat{\mathbf{y}} - az_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{193} =$	$(x_{11} + y_{11} - z_{11}) \mathbf{a}_1 +$ $(-x_{11} + y_{11} + z_{11}) \mathbf{a}_2 +$ $(x_{11} - y_{11} + z_{11}) \mathbf{a}_3$	$=$	$az_{11} \hat{\mathbf{x}} + ax_{11} \hat{\mathbf{y}} + ay_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{194} =$	$-(x_{11} + y_{11} + z_{11}) \mathbf{a}_1 +$ $(x_{11} - y_{11} + z_{11}) \mathbf{a}_2 +$ $(-x_{11} + y_{11} + z_{11}) \mathbf{a}_3$	$=$	$az_{11} \hat{\mathbf{x}} - ax_{11} \hat{\mathbf{y}} - ay_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{195} =$	$(-x_{11} + y_{11} + z_{11}) \mathbf{a}_1 +$ $(x_{11} + y_{11} - z_{11}) \mathbf{a}_2 -$ $(x_{11} + y_{11} + z_{11}) \mathbf{a}_3$	$=$	$-az_{11} \hat{\mathbf{x}} - ax_{11} \hat{\mathbf{y}} + ay_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{196} =$	$(x_{11} - y_{11} + z_{11}) \mathbf{a}_1 -$ $(x_{11} + y_{11} + z_{11}) \mathbf{a}_2 +$ $(x_{11} + y_{11} - z_{11}) \mathbf{a}_3$	$=$	$-az_{11} \hat{\mathbf{x}} + ax_{11} \hat{\mathbf{y}} - ay_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{197} =$	$(x_{11} - y_{11} + z_{11}) \mathbf{a}_1 +$ $(x_{11} + y_{11} - z_{11}) \mathbf{a}_2 +$ $(-x_{11} + y_{11} + z_{11}) \mathbf{a}_3$	$=$	$ay_{11} \hat{\mathbf{x}} + az_{11} \hat{\mathbf{y}} + ax_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{198} =$	$(-x_{11} + y_{11} + z_{11}) \mathbf{a}_1 -$ $(x_{11} + y_{11} + z_{11}) \mathbf{a}_2 +$ $(x_{11} - y_{11} + z_{11}) \mathbf{a}_3$	$=$	$-ay_{11} \hat{\mathbf{x}} + az_{11} \hat{\mathbf{y}} - ax_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{199} =$	$-(x_{11} + y_{11} + z_{11}) \mathbf{a}_1 +$ $(-x_{11} + y_{11} + z_{11}) \mathbf{a}_2 +$ $(x_{11} + y_{11} - z_{11}) \mathbf{a}_3$	$=$	$ay_{11} \hat{\mathbf{x}} - az_{11} \hat{\mathbf{y}} - ax_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{200} =$	$(x_{11} + y_{11} - z_{11}) \mathbf{a}_1 +$ $(x_{11} - y_{11} + z_{11}) \mathbf{a}_2 -$ $(x_{11} + y_{11} + z_{11}) \mathbf{a}_3$	$=$	$-ay_{11} \hat{\mathbf{x}} - az_{11} \hat{\mathbf{y}} + ax_{11} \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{201} =$	$(x_{11} - y_{11} - z_{11} + \frac{1}{2}) \mathbf{a}_1 -$ $(x_{11} - y_{11} + z_{11} - \frac{1}{2}) \mathbf{a}_2 +$ $(x_{11} + y_{11} + z_{11} + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(y_{11} + \frac{1}{2}) \hat{\mathbf{x}} + a(x_{11} + \frac{1}{2}) \hat{\mathbf{y}} -$ $a(z_{11} - \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{202} =$	$-(x_{11} - y_{11} + z_{11} - \frac{1}{2}) \mathbf{a}_1 +$ $(x_{11} - y_{11} - z_{11} + \frac{1}{2}) \mathbf{a}_2 -$ $(x_{11} + y_{11} - z_{11} - \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(y_{11} - \frac{1}{2}) \hat{\mathbf{x}} - a(x_{11} - \frac{1}{2}) \hat{\mathbf{y}} -$ $a(z_{11} - \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{203} =$	$-(x_{11} + y_{11} - z_{11} - \frac{1}{2}) \mathbf{a}_1 +$ $(x_{11} + y_{11} + z_{11} + \frac{1}{2}) \mathbf{a}_2 -$ $(x_{11} - y_{11} + z_{11} - \frac{1}{2}) \mathbf{a}_3$	$=$	$a(y_{11} + \frac{1}{2}) \hat{\mathbf{x}} - a(x_{11} - \frac{1}{2}) \hat{\mathbf{y}} +$ $a(z_{11} + \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{204} =$	$(x_{11} + y_{11} + z_{11} + \frac{1}{2}) \mathbf{a}_1 -$ $(x_{11} + y_{11} - z_{11} - \frac{1}{2}) \mathbf{a}_2 +$ $(x_{11} - y_{11} - z_{11} + \frac{1}{2}) \mathbf{a}_3$	$=$	$-a(y_{11} - \frac{1}{2}) \hat{\mathbf{x}} + a(x_{11} + \frac{1}{2}) \hat{\mathbf{y}} +$ $a(z_{11} + \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Zn VII
$\mathbf{B}_{205} =$	$-(x_{11} + y_{11} - z_{11} - \frac{1}{2}) \mathbf{a}_1 +$ $(x_{11} - y_{11} - z_{11} + \frac{1}{2}) \mathbf{a}_2 +$ $(x_{11} + y_{11} + z_{11} + \frac{1}{2}) \mathbf{a}_3$	$=$	$a(x_{11} + \frac{1}{2}) \hat{\mathbf{x}} + a(z_{11} + \frac{1}{2}) \hat{\mathbf{y}} -$ $a(y_{11} - \frac{1}{2}) \hat{\mathbf{z}}$	(192j)	Zn VII

[illegible]

Mo
Sn
Zn



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