Epididymite ($BeHNaO_8Si_3$, $S4_7$) Structure: ABCD8E3_oP112_62_d_2c_d_4c6d_3d-001

This structure originally had the label `ABCD8E3_oP112_62_d_2c_d_4c6d_3d`. Calls to that address will be redirected here.

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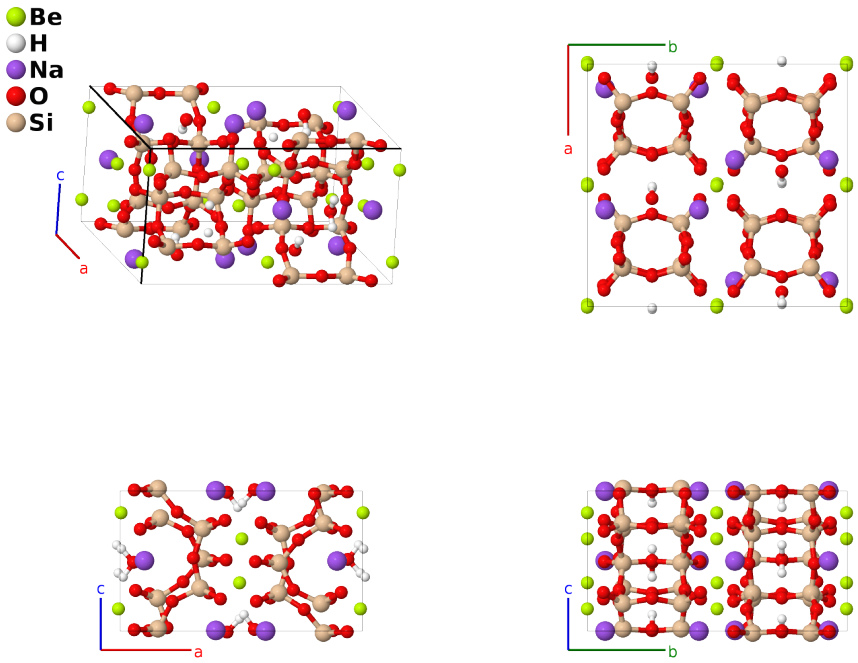
https://aflow.org/p/QQ21

https://aflow.org/p/ABCD8E3_oP112_62_d_2c_d_4c6d_3d-001

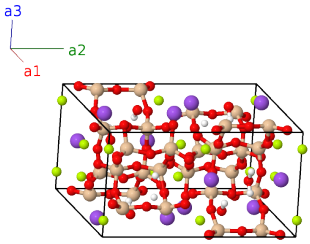


Prototype	$BeHNaO_8Si_3$
AFLOW prototype label	ABCD8E3_oP112_62_d_2c_d_4c6d_3d-001
***Strukturbericht* designation**	$S4_7$
Mineral name	epididymite
ICSD	160817
Pearson symbol	oP112
Space group number	62
Space group symbol	*Pnma*
AFLOW prototype command	`aflow --proto=ABCD8E3_oP112_62_d_2c_d_4c6d_3d-001 --params=`$a, b/a, c/a, x_1, z_1, x_2, z_2, x_3, z_3, x_4, z_4, x_5, z_5, x_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}, x_{14}, y_{14}, z_{14}, x_{15}, y_{15}, z_{15}, x_{16}, y_{16}, z_{16}, x_{17}, y_{17}, z_{17}$

- (Ito, 1934)'s original determination of the epididymite structure, designated as $S4_7$ by (Gottfried, 1937), was flawed, even in the author's estimation. In particular, both the Si-O and Si-Be distances are very small, with Si-Be less than 1Å.
- Ito and many later authors assumed that the hydrogen atoms formed OH radicals, but (Gatta, 2008) found that the hydrogen atoms were actually a part of a water molecule.
- Since the (Ito, 1934) structure is not even suitable for starting first-principles calculations and the (Gatta, 2008) structure maintains the *Pnma* #62 space group, we have dropped the former and designate the later as $S4_7$.
- Epididymite and its diomorph, eudidymite, are two forms of hydrated sodium beryllium silicate which are stable under ambient conditions. (Gatta, 2008)

Simple Orthorhombic primitive vectors

$$\begin{aligned}\mathbf{a_1} &= a\,\hat{\mathbf{x}}\\ \mathbf{a_2} &= b\,\hat{\mathbf{y}}\\ \mathbf{a_3} &= c\,\hat{\mathbf{z}}\end{aligned}$$



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	$x_1\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + z_1\,\mathbf{a}_3$	=	$ax_1\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} + cz_1\,\hat{\mathbf{z}}$	(4c)	H I
$\mathbf{B_2}$	=	$-\left(x_1 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \left(z_1 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_1 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} + c\left(z_1 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	H I
$\mathbf{B_3}$	=	$-x_1\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - z_1\,\mathbf{a}_3$	=	$-ax_1\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} - cz_1\,\hat{\mathbf{z}}$	(4c)	H I
$\mathbf{B_4}$	=	$\left(x_1 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 - \left(z_1 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_1 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} - c\left(z_1 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	H I
$\mathbf{B_5}$	=	$x_2\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + z_2\,\mathbf{a}_3$	=	$ax_2\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} + cz_2\,\hat{\mathbf{z}}$	(4c)	H II
$\mathbf{B_6}$	=	$-\left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \left(z_2 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_2 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} + c\left(z_2 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	H II
$\mathbf{B_7}$	=	$-x_2\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - z_2\,\mathbf{a}_3$	=	$-ax_2\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} - cz_2\,\hat{\mathbf{z}}$	(4c)	H II
$\mathbf{B_8}$	=	$\left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 - \left(z_2 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} - c\left(z_2 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	H II
$\mathbf{B_9}$	=	$x_3\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + z_3\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} + cz_3\,\hat{\mathbf{z}}$	(4c)	O I
$\mathbf{B_{10}}$	=	$-\left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \left(z_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} + c\left(z_3 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	O I
$\mathbf{B_{11}}$	=	$-x_3\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - z_3\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} - cz_3\,\hat{\mathbf{z}}$	(4c)	O I
$\mathbf{B_{12}}$	=	$\left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 - \left(z_3 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} - c\left(z_3 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	O I
$\mathbf{B_{13}}$	=	$x_4\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(4c)	O II
$\mathbf{B_{14}}$	=	$-\left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \left(z_4 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_4 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} + c\left(z_4 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	O II
$\mathbf{B_{15}}$	=	$-x_4\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - z_4\,\mathbf{a}_3$	=	$-ax_4\,\hat{\mathbf{x}} + \frac{3}{4}b\,\hat{\mathbf{y}} - cz_4\,\hat{\mathbf{z}}$	(4c)	O II
$\mathbf{B_{16}}$	=	$\left(x_4 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 - \left(z_4 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_4 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} - c\left(z_4 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	O II
$\mathbf{B_{17}}$	=	$x_5\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}} + \frac{1}{4}b\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(4c)	O III

$$\mathbf{B_{18}} = -\left(x_5-\tfrac{1}{2}\right)\mathbf{a}_1+\tfrac{3}{4}\mathbf{a}_2+\left(z_5+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_5-\tfrac{1}{2}\right)\hat{\mathbf{x}}+\tfrac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_5+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4c) \quad \text{O III}$$

$$\mathbf{B_{19}} = -x_5\,\mathbf{a}_1+\tfrac{3}{4}\mathbf{a}_2-z_5\,\mathbf{a}_3 = -ax_5\,\hat{\mathbf{x}}+\tfrac{3}{4}b\,\hat{\mathbf{y}}-cz_5\,\hat{\mathbf{z}} \quad (4c) \quad \text{O III}$$

$$\mathbf{B_{20}} = \left(x_5+\tfrac{1}{2}\right)\mathbf{a}_1+\tfrac{1}{4}\mathbf{a}_2-\left(z_5-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_5+\tfrac{1}{2}\right)\hat{\mathbf{x}}+\tfrac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_5-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4c) \quad \text{O III}$$

$$\mathbf{B_{21}} = x_6\,\mathbf{a}_1+\tfrac{1}{4}\mathbf{a}_2+z_6\,\mathbf{a}_3 = ax_6\,\hat{\mathbf{x}}+\tfrac{1}{4}b\,\hat{\mathbf{y}}+cz_6\,\hat{\mathbf{z}} \quad (4c) \quad \text{O IV}$$

$$\mathbf{B_{22}} = -\left(x_6-\tfrac{1}{2}\right)\mathbf{a}_1+\tfrac{3}{4}\mathbf{a}_2+\left(z_6+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_6-\tfrac{1}{2}\right)\hat{\mathbf{x}}+\tfrac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_6+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4c) \quad \text{O IV}$$

$$\mathbf{B_{23}} = -x_6\,\mathbf{a}_1+\tfrac{3}{4}\mathbf{a}_2-z_6\,\mathbf{a}_3 = -ax_6\,\hat{\mathbf{x}}+\tfrac{3}{4}b\,\hat{\mathbf{y}}-cz_6\,\hat{\mathbf{z}} \quad (4c) \quad \text{O IV}$$

$$\mathbf{B_{24}} = \left(x_6+\tfrac{1}{2}\right)\mathbf{a}_1+\tfrac{1}{4}\mathbf{a}_2-\left(z_6-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_6+\tfrac{1}{2}\right)\hat{\mathbf{x}}+\tfrac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_6-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (4c) \quad \text{O IV}$$

$$\mathbf{B_{25}} = x_7\,\mathbf{a}_1+y_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3 = ax_7\,\hat{\mathbf{x}}+by_7\,\hat{\mathbf{y}}+cz_7\,\hat{\mathbf{z}} \quad (8d) \quad \text{Be I}$$

$$\mathbf{B_{26}} = -\left(x_7-\tfrac{1}{2}\right)\mathbf{a}_1-y_7\,\mathbf{a}_2+\left(z_7+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_7-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_7\,\hat{\mathbf{y}}+c\left(z_7+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Be I}$$

$$\mathbf{B_{27}} = -x_7\,\mathbf{a}_1+\left(y_7+\tfrac{1}{2}\right)\mathbf{a}_2-z_7\,\mathbf{a}_3 = -ax_7\,\hat{\mathbf{x}}+b\left(y_7+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_7\,\hat{\mathbf{z}} \quad (8d) \quad \text{Be I}$$

$$\mathbf{B_{28}} = \left(x_7+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_7-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_7-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_7+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_7-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_7-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Be I}$$

$$\mathbf{B_{29}} = -x_7\,\mathbf{a}_1-y_7\,\mathbf{a}_2-z_7\,\mathbf{a}_3 = -ax_7\,\hat{\mathbf{x}}-by_7\,\hat{\mathbf{y}}-cz_7\,\hat{\mathbf{z}} \quad (8d) \quad \text{Be I}$$

$$\mathbf{B_{30}} = \left(x_7+\tfrac{1}{2}\right)\mathbf{a}_1+y_7\,\mathbf{a}_2-\left(z_7-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_7+\tfrac{1}{2}\right)\hat{\mathbf{x}}+by_7\,\hat{\mathbf{y}}-c\left(z_7-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Be I}$$

$$\mathbf{B_{31}} = x_7\,\mathbf{a}_1-\left(y_7-\tfrac{1}{2}\right)\mathbf{a}_2+z_7\,\mathbf{a}_3 = ax_7\,\hat{\mathbf{x}}-b\left(y_7-\tfrac{1}{2}\right)\hat{\mathbf{y}}+cz_7\,\hat{\mathbf{z}} \quad (8d) \quad \text{Be I}$$

$$\mathbf{B_{32}} = -\left(x_7-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_7+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_7+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_7-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_7+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_7+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Be I}$$

$$\mathbf{B_{33}} = x_8\,\mathbf{a}_1+y_8\,\mathbf{a}_2+z_8\,\mathbf{a}_3 = ax_8\,\hat{\mathbf{x}}+by_8\,\hat{\mathbf{y}}+cz_8\,\hat{\mathbf{z}} \quad (8d) \quad \text{Na I}$$

$$\mathbf{B_{34}} = -\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_1-y_8\,\mathbf{a}_2+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_8\,\hat{\mathbf{y}}+c\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Na I}$$

$$\mathbf{B_{35}} = -x_8\,\mathbf{a}_1+\left(y_8+\tfrac{1}{2}\right)\mathbf{a}_2-z_8\,\mathbf{a}_3 = -ax_8\,\hat{\mathbf{x}}+b\left(y_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_8\,\hat{\mathbf{z}} \quad (8d) \quad \text{Na I}$$

$$\mathbf{B_{36}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_8-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_8-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Na I}$$

$$\mathbf{B_{37}} = -x_8\,\mathbf{a}_1-y_8\,\mathbf{a}_2-z_8\,\mathbf{a}_3 = -ax_8\,\hat{\mathbf{x}}-by_8\,\hat{\mathbf{y}}-cz_8\,\hat{\mathbf{z}} \quad (8d) \quad \text{Na I}$$

$$\mathbf{B_{38}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1+y_8\,\mathbf{a}_2-\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}+by_8\,\hat{\mathbf{y}}-c\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Na I}$$

$$\mathbf{B_{39}} = x_8\,\mathbf{a}_1-\left(y_8-\tfrac{1}{2}\right)\mathbf{a}_2+z_8\,\mathbf{a}_3 = ax_8\,\hat{\mathbf{x}}-b\left(y_8-\tfrac{1}{2}\right)\hat{\mathbf{y}}+cz_8\,\hat{\mathbf{z}} \quad (8d) \quad \text{Na I}$$

$$\mathbf{B_{40}} = -\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_8+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Na I}$$

$$\mathbf{B_{41}} = x_9\,\mathbf{a}_1+y_9\,\mathbf{a}_2+z_9\,\mathbf{a}_3 = ax_9\,\hat{\mathbf{x}}+by_9\,\hat{\mathbf{y}}+cz_9\,\hat{\mathbf{z}} \quad (8d) \quad \text{O V}$$

$$\mathbf{B_{42}} = -\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_1-y_9\,\mathbf{a}_2+\left(z_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_9\,\hat{\mathbf{y}}+c\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O V}$$

$$\mathbf{B_{43}} = -x_9\,\mathbf{a}_1+\left(y_9+\tfrac{1}{2}\right)\mathbf{a}_2-z_9\,\mathbf{a}_3 = -ax_9\,\hat{\mathbf{x}}+b\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_9\,\hat{\mathbf{z}} \quad (8d) \quad \text{O V}$$

$$\mathbf{B_{44}} = \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O V}$$

$$\mathbf{B_{45}} = -x_9\,\mathbf{a}_1-y_9\,\mathbf{a}_2-z_9\,\mathbf{a}_3 = -ax_9\,\hat{\mathbf{x}}-by_9\,\hat{\mathbf{y}}-cz_9\,\hat{\mathbf{z}} \quad (8d) \quad \text{O V}$$

$$\mathbf{B_{46}} = \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_1+y_9\,\mathbf{a}_2-\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{x}}+by_9\,\hat{\mathbf{y}}-c\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O V}$$

$$\mathbf{B_{47}} = x_9\,\mathbf{a}_1-\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_2+z_9\,\mathbf{a}_3 = ax_9\,\hat{\mathbf{x}}-b\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{y}}+cz_9\,\hat{\mathbf{z}} \quad (8d) \quad \text{O V}$$

$$\mathbf{B_{48}} = -\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_9+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O V}$$

$$\mathbf{B_{49}} = x_{10}\,\mathbf{a}_1+y_{10}\,\mathbf{a}_2+z_{10}\,\mathbf{a}_3 = ax_{10}\,\hat{\mathbf{x}}+by_{10}\,\hat{\mathbf{y}}+cz_{10}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VI}$$

$$\mathbf{B_{50}} = -\left(x_{10}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{10}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{10}\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VI}$$

$$\mathbf{B_{51}} = -x_{10}\,\mathbf{a}_1 + \left(y_{10}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{10}\,\mathbf{a}_3 = -ax_{10}\,\hat{\mathbf{x}} + b\left(y_{10}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{10}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VI}$$

$$\mathbf{B_{52}} = \left(x_{10}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{10}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{10}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{10}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{10}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{10}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VI}$$

$$\mathbf{B_{53}} = -x_{10}\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 - z_{10}\,\mathbf{a}_3 = -ax_{10}\,\hat{\mathbf{x}} - by_{10}\,\hat{\mathbf{y}} - cz_{10}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VI}$$

$$\mathbf{B_{54}} = \left(x_{10}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 - \left(z_{10}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{10}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{10}\,\hat{\mathbf{y}} - c\left(z_{10}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VI}$$

$$\mathbf{B_{55}} = x_{10}\,\mathbf{a}_1 - \left(y_{10}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 = ax_{10}\,\hat{\mathbf{x}} - b\left(y_{10}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VI}$$

$$\mathbf{B_{56}} = -\left(x_{10}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{10}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{10}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{10}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VI}$$

$$\mathbf{B_{57}} = x_{11}\,\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 = ax_{11}\,\hat{\mathbf{x}} + by_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VII}$$

$$\mathbf{B_{58}} = -\left(x_{11}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{11}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{11}\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VII}$$

$$\mathbf{B_{59}} = -x_{11}\,\mathbf{a}_1 + \left(y_{11}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{11}\,\mathbf{a}_3 = -ax_{11}\,\hat{\mathbf{x}} + b\left(y_{11}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{11}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VII}$$

$$\mathbf{B_{60}} = \left(x_{11}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{11}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{11}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{11}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{11}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{11}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VII}$$

$$\mathbf{B_{61}} = -x_{11}\,\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 - z_{11}\,\mathbf{a}_3 = -ax_{11}\,\hat{\mathbf{x}} - by_{11}\,\hat{\mathbf{y}} - cz_{11}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VII}$$

$$\mathbf{B_{62}} = \left(x_{11}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 - \left(z_{11}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{11}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{11}\,\hat{\mathbf{y}} - c\left(z_{11}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VII}$$

$$\mathbf{B_{63}} = x_{11}\,\mathbf{a}_1 - \left(y_{11}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 = ax_{11}\,\hat{\mathbf{x}} - b\left(y_{11}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VII}$$

$$\mathbf{B_{64}} = -\left(x_{11}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{11}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{11}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{11}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VII}$$

$$\mathbf{B_{65}} = x_{12}\,\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 = ax_{12}\,\hat{\mathbf{x}} + by_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VIII}$$

$$\mathbf{B_{66}} = -\left(x_{12}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{12}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{12}\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VIII}$$

$$\mathbf{B_{67}} = -x_{12}\,\mathbf{a}_1 + \left(y_{12}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{12}\,\mathbf{a}_3 = -ax_{12}\,\hat{\mathbf{x}} + b\left(y_{12}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{12}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VIII}$$

$$\mathbf{B_{68}} = \left(x_{12}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{12}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{12}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{12}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{12}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{12}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VIII}$$

$$\mathbf{B_{69}} = -x_{12}\,\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 - z_{12}\,\mathbf{a}_3 = -ax_{12}\,\hat{\mathbf{x}} - by_{12}\,\hat{\mathbf{y}} - cz_{12}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VIII}$$

$$\mathbf{B_{70}} = \left(x_{12}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 - \left(z_{12}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{12}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{12}\,\hat{\mathbf{y}} - c\left(z_{12}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VIII}$$

$$\mathbf{B_{71}} = x_{12}\,\mathbf{a}_1 - \left(y_{12}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 = ax_{12}\,\hat{\mathbf{x}} - b\left(y_{12}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O VIII}$$

$$\mathbf{B_{72}} = -\left(x_{12}-\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{12}+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{12}-\tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{12}+\tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O VIII}$$

$$\mathbf{B_{73}} = x_{13}\,\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 = ax_{13}\,\hat{\mathbf{x}} + by_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O IX}$$

$$\mathbf{B_{74}} = -\left(x_{13}-\tfrac{1}{2}\right)\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{13}-\tfrac{1}{2}\right)\hat{\mathbf{x}} - by_{13}\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O IX}$$

$$\mathbf{B_{75}} = -x_{13}\,\mathbf{a}_1 + \left(y_{13}+\tfrac{1}{2}\right)\mathbf{a}_2 - z_{13}\,\mathbf{a}_3 = -ax_{13}\,\hat{\mathbf{x}} + b\left(y_{13}+\tfrac{1}{2}\right)\hat{\mathbf{y}} - cz_{13}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O IX}$$

$$\mathbf{B_{76}} = \left(x_{13}+\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{13}-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{13}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{13}+\tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{13}-\tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{13}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O IX}$$

$$\mathbf{B_{77}} = -x_{13}\,\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 - z_{13}\,\mathbf{a}_3 = -ax_{13}\,\hat{\mathbf{x}} - by_{13}\,\hat{\mathbf{y}} - cz_{13}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O IX}$$

$$\mathbf{B_{78}} = \left(x_{13}+\tfrac{1}{2}\right)\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 - \left(z_{13}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{13}+\tfrac{1}{2}\right)\hat{\mathbf{x}} + by_{13}\,\hat{\mathbf{y}} - c\left(z_{13}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O IX}$$

$$\mathbf{B_{79}} = x_{13}\,\mathbf{a}_1 - \left(y_{13}-\tfrac{1}{2}\right)\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 = ax_{13}\,\hat{\mathbf{x}} - b\left(y_{13}-\tfrac{1}{2}\right)\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} \quad (8d) \quad \text{O IX}$$

$$\mathbf{B_{80}} = -\left(x_{13}-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_{13}+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_{13}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{13}-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_{13}+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_{13}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O IX}$$

$$\mathbf{B_{81}} = x_{14}\mathbf{a}_1+y_{14}\mathbf{a}_2+z_{14}\mathbf{a}_3 = ax_{14}\hat{\mathbf{x}}+by_{14}\hat{\mathbf{y}}+cz_{14}\hat{\mathbf{z}} \quad (8d) \quad \text{O X}$$

$$\mathbf{B_{82}} = -\left(x_{14}-\tfrac{1}{2}\right)\mathbf{a}_1-y_{14}\mathbf{a}_2+\left(z_{14}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{14}-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_{14}\hat{\mathbf{y}}+c\left(z_{14}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O X}$$

$$\mathbf{B_{83}} = -x_{14}\mathbf{a}_1+\left(y_{14}+\tfrac{1}{2}\right)\mathbf{a}_2-z_{14}\mathbf{a}_3 = -ax_{14}\hat{\mathbf{x}}+b\left(y_{14}+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_{14}\hat{\mathbf{z}} \quad (8d) \quad \text{O X}$$

$$\mathbf{B_{84}} = \left(x_{14}+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_{14}-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_{14}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{14}+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{14}-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{14}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O X}$$

$$\mathbf{B_{85}} = -x_{14}\mathbf{a}_1-y_{14}\mathbf{a}_2-z_{14}\mathbf{a}_3 = -ax_{14}\hat{\mathbf{x}}-by_{14}\hat{\mathbf{y}}-cz_{14}\hat{\mathbf{z}} \quad (8d) \quad \text{O X}$$

$$\mathbf{B_{86}} = \left(x_{14}+\tfrac{1}{2}\right)\mathbf{a}_1+y_{14}\mathbf{a}_2-\left(z_{14}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{14}+\tfrac{1}{2}\right)\hat{\mathbf{x}}+by_{14}\hat{\mathbf{y}}-c\left(z_{14}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O X}$$

$$\mathbf{B_{87}} = x_{14}\mathbf{a}_1-\left(y_{14}-\tfrac{1}{2}\right)\mathbf{a}_2+z_{14}\mathbf{a}_3 = ax_{14}\hat{\mathbf{x}}-b\left(y_{14}-\tfrac{1}{2}\right)\hat{\mathbf{y}}+cz_{14}\hat{\mathbf{z}} \quad (8d) \quad \text{O X}$$

$$\mathbf{B_{88}} = -\left(x_{14}-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_{14}+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_{14}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{14}-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_{14}+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_{14}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{O X}$$

$$\mathbf{B_{89}} = x_{15}\mathbf{a}_1+y_{15}\mathbf{a}_2+z_{15}\mathbf{a}_3 = ax_{15}\hat{\mathbf{x}}+by_{15}\hat{\mathbf{y}}+cz_{15}\hat{\mathbf{z}} \quad (8d) \quad \text{Si I}$$

$$\mathbf{B_{90}} = -\left(x_{15}-\tfrac{1}{2}\right)\mathbf{a}_1-y_{15}\mathbf{a}_2+\left(z_{15}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{15}-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_{15}\hat{\mathbf{y}}+c\left(z_{15}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si I}$$

$$\mathbf{B_{91}} = -x_{15}\mathbf{a}_1+\left(y_{15}+\tfrac{1}{2}\right)\mathbf{a}_2-z_{15}\mathbf{a}_3 = -ax_{15}\hat{\mathbf{x}}+b\left(y_{15}+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_{15}\hat{\mathbf{z}} \quad (8d) \quad \text{Si I}$$

$$\mathbf{B_{92}} = \left(x_{15}+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_{15}-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_{15}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{15}+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{15}-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{15}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si I}$$

$$\mathbf{B_{93}} = -x_{15}\mathbf{a}_1-y_{15}\mathbf{a}_2-z_{15}\mathbf{a}_3 = -ax_{15}\hat{\mathbf{x}}-by_{15}\hat{\mathbf{y}}-cz_{15}\hat{\mathbf{z}} \quad (8d) \quad \text{Si I}$$

$$\mathbf{B_{94}} = \left(x_{15}+\tfrac{1}{2}\right)\mathbf{a}_1+y_{15}\mathbf{a}_2-\left(z_{15}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{15}+\tfrac{1}{2}\right)\hat{\mathbf{x}}+by_{15}\hat{\mathbf{y}}-c\left(z_{15}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si I}$$

$$\mathbf{B_{95}} = x_{15}\mathbf{a}_1-\left(y_{15}-\tfrac{1}{2}\right)\mathbf{a}_2+z_{15}\mathbf{a}_3 = ax_{15}\hat{\mathbf{x}}-b\left(y_{15}-\tfrac{1}{2}\right)\hat{\mathbf{y}}+cz_{15}\hat{\mathbf{z}} \quad (8d) \quad \text{Si I}$$

$$\mathbf{B_{96}} = -\left(x_{15}-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_{15}+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_{15}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{15}-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_{15}+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_{15}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si I}$$

$$\mathbf{B_{97}} = x_{16}\mathbf{a}_1+y_{16}\mathbf{a}_2+z_{16}\mathbf{a}_3 = ax_{16}\hat{\mathbf{x}}+by_{16}\hat{\mathbf{y}}+cz_{16}\hat{\mathbf{z}} \quad (8d) \quad \text{Si II}$$

$$\mathbf{B_{98}} = -\left(x_{16}-\tfrac{1}{2}\right)\mathbf{a}_1-y_{16}\mathbf{a}_2+\left(z_{16}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{16}-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_{16}\hat{\mathbf{y}}+c\left(z_{16}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si II}$$

$$\mathbf{B_{99}} = -x_{16}\mathbf{a}_1+\left(y_{16}+\tfrac{1}{2}\right)\mathbf{a}_2-z_{16}\mathbf{a}_3 = -ax_{16}\hat{\mathbf{x}}+b\left(y_{16}+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_{16}\hat{\mathbf{z}} \quad (8d) \quad \text{Si II}$$

$$\mathbf{B_{100}} = \left(x_{16}+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_{16}-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_{16}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{16}+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{16}-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{16}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si II}$$

$$\mathbf{B_{101}} = -x_{16}\mathbf{a}_1-y_{16}\mathbf{a}_2-z_{16}\mathbf{a}_3 = -ax_{16}\hat{\mathbf{x}}-by_{16}\hat{\mathbf{y}}-cz_{16}\hat{\mathbf{z}} \quad (8d) \quad \text{Si II}$$

$$\mathbf{B_{102}} = \left(x_{16}+\tfrac{1}{2}\right)\mathbf{a}_1+y_{16}\mathbf{a}_2-\left(z_{16}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{16}+\tfrac{1}{2}\right)\hat{\mathbf{x}}+by_{16}\hat{\mathbf{y}}-c\left(z_{16}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si II}$$

$$\mathbf{B_{103}} = x_{16}\mathbf{a}_1-\left(y_{16}-\tfrac{1}{2}\right)\mathbf{a}_2+z_{16}\mathbf{a}_3 = ax_{16}\hat{\mathbf{x}}-b\left(y_{16}-\tfrac{1}{2}\right)\hat{\mathbf{y}}+cz_{16}\hat{\mathbf{z}} \quad (8d) \quad \text{Si II}$$

$$\mathbf{B_{104}} = -\left(x_{16}-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_{16}+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_{16}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{16}-\tfrac{1}{2}\right)\hat{\mathbf{x}}+b\left(y_{16}+\tfrac{1}{2}\right)\hat{\mathbf{y}}+c\left(z_{16}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si II}$$

$$\mathbf{B_{105}} = x_{17}\mathbf{a}_1+y_{17}\mathbf{a}_2+z_{17}\mathbf{a}_3 = ax_{17}\hat{\mathbf{x}}+by_{17}\hat{\mathbf{y}}+cz_{17}\hat{\mathbf{z}} \quad (8d) \quad \text{Si III}$$

$$\mathbf{B_{106}} = -\left(x_{17}-\tfrac{1}{2}\right)\mathbf{a}_1-y_{17}\mathbf{a}_2+\left(z_{17}+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_{17}-\tfrac{1}{2}\right)\hat{\mathbf{x}}-by_{17}\hat{\mathbf{y}}+c\left(z_{17}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si III}$$

$$\mathbf{B_{107}} = -x_{17}\mathbf{a}_1+\left(y_{17}+\tfrac{1}{2}\right)\mathbf{a}_2-z_{17}\mathbf{a}_3 = -ax_{17}\hat{\mathbf{x}}+b\left(y_{17}+\tfrac{1}{2}\right)\hat{\mathbf{y}}-cz_{17}\hat{\mathbf{z}} \quad (8d) \quad \text{Si III}$$

$$\mathbf{B_{108}} = \left(x_{17}+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_{17}-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_{17}-\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_{17}+\tfrac{1}{2}\right)\hat{\mathbf{x}}-b\left(y_{17}-\tfrac{1}{2}\right)\hat{\mathbf{y}}-c\left(z_{17}-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (8d) \quad \text{Si III}$$

$$\mathbf{B_{109}} = -x_{17}\mathbf{a}_1-y_{17}\mathbf{a}_2-z_{17}\mathbf{a}_3 = -ax_{17}\hat{\mathbf{x}}-by_{17}\hat{\mathbf{y}}-cz_{17}\hat{\mathbf{z}} \quad (8d) \quad \text{Si III}$$

$\mathbf{B_{110}} =$	$\left(x_{17}+\frac{1}{2}\right)\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 - \left(z_{17}-\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$a\left(x_{17}+\frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{17}\,\hat{\mathbf{y}} - c\left(z_{17}-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8d)	Si III
$\mathbf{B_{111}} =$	$x_{17}\,\mathbf{a}_1 - \left(y_{17}-\frac{1}{2}\right)\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3$	$=$	$ax_{17}\,\hat{\mathbf{x}} - b\left(y_{17}-\frac{1}{2}\right)\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$	(8d)	Si III
$\mathbf{B_{112}} =$	$-\left(x_{17}-\frac{1}{2}\right)\,\mathbf{a}_1 + \left(y_{17}+\frac{1}{2}\right)\,\mathbf{a}_2 + \left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{17}-\frac{1}{2}\right)\,\hat{\mathbf{x}} + b\left(y_{17}+\frac{1}{2}\right)\,\hat{\mathbf{y}} + c\left(z_{17}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8d)	Si III

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