$NaTi_2(PS_4)_3$ Structure: A13B6C24D4_hP188_184_2a4d_2d_8d_bd-001

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https://aflow.org/p/7PRY

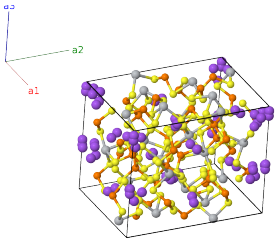
https://aflow.org/p/A13B6C24D4_hP188_184_2a4d_2d_8d_bd-001

Prototype	$NaP_3S_{12}Ti_2$
AFLOW prototype label	A13B6C24D4_hP188_184_2a4d_2d_8d_bd-001
ICSD	81997
Pearson symbol	hP188
Space group number	184
Space group symbol	$P6cc$
AFLOW prototype command	`aflow --proto=A13B6C24D4_hP188_184_2a4d_2d_8d_bd-001 --params=`$a, c/a, z_1, z_2, z_3, x_4, y_4, z_4, x_5, y_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}, x_{14}, y_{14}, z_{14}, x_{15}, y_{15}, z_{15}, x_{16}, y_{16}, z_{16}, x_{17}, y_{17}, z_{17}, x_{18}, y_{18}, z_{18}$

- None of the sodium sites is even half filled. The occupations are: Na-I 23%, Na-II 35%, Na-III 25%, Na-IV 10%, and Na-V 9%. The phosphorous, sulfur, and titanium sites are all filled.
- Space group $P6cc$ #184 allows an arbitrary origin for the z-axis. We choose $z_3 = 0$ for the Ti-I site.

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
$\mathbf{B_1}$	=	$z_1\,\mathbf{a}_3$	=	$cz_1\,\hat{\mathbf{z}}$	(2a)	Na I
$\mathbf{B_2}$	=	$\left(z_1 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$c\left(z_1 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(2a)	Na I
$\mathbf{B_3}$	=	$z_2\,\mathbf{a}_3$	=	$cz_2\,\hat{\mathbf{z}}$	(2a)	Na II
$\mathbf{B_4}$	=	$\left(z_2 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$c\left(z_2 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(2a)	Na II
$\mathbf{B_5}$	=	$\frac{1}{3}\,\mathbf{a}_1 + \frac{2}{3}\,\mathbf{a}_2 + z_3\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,\hat{\mathbf{y}} + cz_3\,\hat{\mathbf{z}}$	(4b)	Ti I
$\mathbf{B_6}$	=	$\frac{2}{3}\,\mathbf{a}_1 + \frac{1}{3}\,\mathbf{a}_2 + z_3\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,\hat{\mathbf{y}} + cz_3\,\hat{\mathbf{z}}$	(4b)	Ti I
$\mathbf{B_7}$	=	$\frac{1}{3}\,\mathbf{a}_1 + \frac{2}{3}\,\mathbf{a}_2 + \left(z_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,\hat{\mathbf{y}} + c\left(z_3 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4b)	Ti I

$\mathbf{B_8}$	=	$\frac{2}{3}\,\mathbf{a}_1 + \frac{1}{3}\,\mathbf{a}_2 + \left(z_3+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,\hat{\mathbf{y}} + c\left(z_3+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4b)	Ti I
$\mathbf{B_9}$	=	$x_4\,\mathbf{a}_1 + y_4\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_4+y_4)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_4-y_4)\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{10}}$	=	$-y_4\,\mathbf{a}_1 + (x_4-y_4)\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_4-2y_4)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_4\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{11}}$	=	$-(x_4-y_4)\,\mathbf{a}_1 - x_4\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_4-y_4)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_4\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{12}}$	=	$-x_4\,\mathbf{a}_1 - y_4\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_4+y_4)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_4-y_4)\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{13}}$	=	$y_4\,\mathbf{a}_1 - (x_4-y_4)\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_4+2y_4)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_4\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{14}}$	=	$(x_4-y_4)\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_4-y_4)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_4\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{15}}$	=	$-y_4\,\mathbf{a}_1 - x_4\,\mathbf{a}_2 + \left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_4+y_4)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_4-y_4)\,\hat{\mathbf{y}} + c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{16}}$	=	$-(x_4-y_4)\,\mathbf{a}_1 + y_4\,\mathbf{a}_2 + \left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_4+2y_4)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_4\,\hat{\mathbf{y}} + c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{17}}$	=	$x_4\,\mathbf{a}_1 + (x_4-y_4)\,\mathbf{a}_2 + \left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_4-y_4)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_4\,\hat{\mathbf{y}} + c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{18}}$	=	$y_4\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 + \left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_4+y_4)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_4-y_4)\,\hat{\mathbf{y}} + c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{19}}$	=	$(x_4-y_4)\,\mathbf{a}_1 - y_4\,\mathbf{a}_2 + \left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_4-2y_4)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_4\,\hat{\mathbf{y}} + c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{20}}$	=	$-x_4\,\mathbf{a}_1 - (x_4-y_4)\,\mathbf{a}_2 + \left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_4-y_4)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_4\,\hat{\mathbf{y}} + c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na III
$\mathbf{B_{21}}$	=	$x_5\,\mathbf{a}_1 + y_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_5+y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_5-y_5)\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{22}}$	=	$-y_5\,\mathbf{a}_1 + (x_5-y_5)\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_5-2y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{23}}$	=	$-(x_5-y_5)\,\mathbf{a}_1 - x_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_5-y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{24}}$	=	$-x_5\,\mathbf{a}_1 - y_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_5+y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_5-y_5)\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{25}}$	=	$y_5\,\mathbf{a}_1 - (x_5-y_5)\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_5+2y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{26}}$	=	$(x_5-y_5)\,\mathbf{a}_1 + x_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_5-y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{27}}$	=	$-y_5\,\mathbf{a}_1 - x_5\,\mathbf{a}_2 + \left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_5+y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_5-y_5)\,\hat{\mathbf{y}} + c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{28}}$	=	$-(x_5-y_5)\,\mathbf{a}_1 + y_5\,\mathbf{a}_2 + \left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_5+2y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_5\,\hat{\mathbf{y}} + c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{29}}$	=	$x_5\,\mathbf{a}_1 + (x_5-y_5)\,\mathbf{a}_2 + \left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_5-y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_5\,\hat{\mathbf{y}} + c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{30}}$	=	$y_5\,\mathbf{a}_1 + x_5\,\mathbf{a}_2 + \left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_5+y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_5-y_5)\,\hat{\mathbf{y}} + c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{31}}$	=	$(x_5-y_5)\,\mathbf{a}_1 - y_5\,\mathbf{a}_2 + \left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_5-2y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_5\,\hat{\mathbf{y}} + c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{32}}$	=	$-x_5\,\mathbf{a}_1 - (x_5-y_5)\,\mathbf{a}_2 + \left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_5-y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_5\,\hat{\mathbf{y}} + c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na IV
$\mathbf{B_{33}}$	=	$x_6\,\mathbf{a}_1 + y_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_6+y_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_6-y_6)\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(12d)	Na V
$\mathbf{B_{34}}$	=	$-y_6\,\mathbf{a}_1 + (x_6-y_6)\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_6-2y_6)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(12d)	Na V
$\mathbf{B_{35}}$	=	$-(x_6-y_6)\,\mathbf{a}_1 - x_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_6-y_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(12d)	Na V
$\mathbf{B_{36}}$	=	$-x_6\,\mathbf{a}_1 - y_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_6+y_6)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_6-y_6)\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(12d)	Na V
$\mathbf{B_{37}}$	=	$y_6\,\mathbf{a}_1 - (x_6-y_6)\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_6+2y_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(12d)	Na V
$\mathbf{B_{38}}$	=	$(x_6-y_6)\,\mathbf{a}_1 + x_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_6-y_6)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(12d)	Na V
$\mathbf{B_{39}}$	=	$-y_6\,\mathbf{a}_1 - x_6\,\mathbf{a}_2 + \left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_6+y_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_6-y_6)\,\hat{\mathbf{y}} + c\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na V
$\mathbf{B_{40}}$	=	$-(x_6-y_6)\,\mathbf{a}_1 + y_6\,\mathbf{a}_2 + \left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_6+2y_6)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_6\,\hat{\mathbf{y}} + c\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na V
$\mathbf{B_{41}}$	=	$x_6\,\mathbf{a}_1 + (x_6-y_6)\,\mathbf{a}_2 + \left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_6-y_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_6\,\hat{\mathbf{y}} + c\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Na V

$$\mathbf{B_{42}} = y_6\,\mathbf{a}_1 + x_6\,\mathbf{a}_2 + \left(z_6+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_6+y_6)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_6-y_6)\,\hat{\mathbf{y}} + c\left(z_6+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na V}$$

$$\mathbf{B_{43}} = (x_6-y_6)\,\mathbf{a}_1 - y_6\,\mathbf{a}_2 + \left(z_6+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_6-2y_6)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_6\,\hat{\mathbf{y}} + c\left(z_6+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na V}$$

$$\mathbf{B_{44}} = -x_6\,\mathbf{a}_1 - (x_6-y_6)\,\mathbf{a}_2 + \left(z_6+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_6-y_6)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_6\,\hat{\mathbf{y}} + c\left(z_6+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na V}$$

$$\mathbf{B_{45}} = x_7\,\mathbf{a}_1 + y_7\,\mathbf{a}_2 + z_7\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_7+y_7)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_7-y_7)\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{46}} = -y_7\,\mathbf{a}_1 + (x_7-y_7)\,\mathbf{a}_2 + z_7\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_7-2y_7)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_7\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{47}} = -(x_7-y_7)\,\mathbf{a}_1 - x_7\,\mathbf{a}_2 + z_7\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_7-y_7)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_7\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{48}} = -x_7\,\mathbf{a}_1 - y_7\,\mathbf{a}_2 + z_7\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_7+y_7)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_7-y_7)\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{49}} = y_7\,\mathbf{a}_1 - (x_7-y_7)\,\mathbf{a}_2 + z_7\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_7+2y_7)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_7\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{50}} = (x_7-y_7)\,\mathbf{a}_1 + x_7\,\mathbf{a}_2 + z_7\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_7-y_7)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_7\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{51}} = -y_7\,\mathbf{a}_1 - x_7\,\mathbf{a}_2 + \left(z_7+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_7+y_7)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_7-y_7)\,\hat{\mathbf{y}} + c\left(z_7+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{52}} = -(x_7-y_7)\,\mathbf{a}_1 + y_7\,\mathbf{a}_2 + \left(z_7+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_7+2y_7)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_7\,\hat{\mathbf{y}} + c\left(z_7+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{53}} = x_7\,\mathbf{a}_1 + (x_7-y_7)\,\mathbf{a}_2 + \left(z_7+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_7-y_7)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_7\,\hat{\mathbf{y}} + c\left(z_7+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{54}} = y_7\,\mathbf{a}_1 + x_7\,\mathbf{a}_2 + \left(z_7+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_7+y_7)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_7-y_7)\,\hat{\mathbf{y}} + c\left(z_7+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{55}} = (x_7-y_7)\,\mathbf{a}_1 - y_7\,\mathbf{a}_2 + \left(z_7+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_7-2y_7)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_7\,\hat{\mathbf{y}} + c\left(z_7+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{56}} = -x_7\,\mathbf{a}_1 - (x_7-y_7)\,\mathbf{a}_2 + \left(z_7+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_7-y_7)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_7\,\hat{\mathbf{y}} + c\left(z_7+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{Na VI}$$

$$\mathbf{B_{57}} = x_8\,\mathbf{a}_1 + y_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_8+y_8)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_8-y_8)\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{58}} = -y_8\,\mathbf{a}_1 + (x_8-y_8)\,\mathbf{a}_2 + z_8\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_8-2y_8)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{59}} = -(x_8-y_8)\,\mathbf{a}_1 - x_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_8-y_8)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{60}} = -x_8\,\mathbf{a}_1 - y_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_8+y_8)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_8-y_8)\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{61}} = y_8\,\mathbf{a}_1 - (x_8-y_8)\,\mathbf{a}_2 + z_8\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_8+2y_8)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{62}} = (x_8-y_8)\,\mathbf{a}_1 + x_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_8-y_8)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{63}} = -y_8\,\mathbf{a}_1 - x_8\,\mathbf{a}_2 + \left(z_8+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_8+y_8)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_8-y_8)\,\hat{\mathbf{y}} + c\left(z_8+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{64}} = -(x_8-y_8)\,\mathbf{a}_1 + y_8\,\mathbf{a}_2 + \left(z_8+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_8+2y_8)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_8\,\hat{\mathbf{y}} + c\left(z_8+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{65}} = x_8\,\mathbf{a}_1 + (x_8-y_8)\,\mathbf{a}_2 + \left(z_8+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_8-y_8)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_8\,\hat{\mathbf{y}} + c\left(z_8+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{66}} = y_8\,\mathbf{a}_1 + x_8\,\mathbf{a}_2 + \left(z_8+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_8+y_8)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_8-y_8)\,\hat{\mathbf{y}} + c\left(z_8+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{67}} = (x_8-y_8)\,\mathbf{a}_1 - y_8\,\mathbf{a}_2 + \left(z_8+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_8-2y_8)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_8\,\hat{\mathbf{y}} + c\left(z_8+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{68}} = -x_8\,\mathbf{a}_1 - (x_8-y_8)\,\mathbf{a}_2 + \left(z_8+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_8-y_8)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_8\,\hat{\mathbf{y}} + c\left(z_8+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P I}$$

$$\mathbf{B_{69}} = x_9\,\mathbf{a}_1 + y_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_9+y_9)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_9-y_9)\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{70}} = -y_9\,\mathbf{a}_1 + (x_9-y_9)\,\mathbf{a}_2 + z_9\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_9-2y_9)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{71}} = -(x_9-y_9)\,\mathbf{a}_1 - x_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_9-y_9)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{72}} = -x_9\,\mathbf{a}_1 - y_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_9+y_9)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_9-y_9)\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{73}} = y_9\,\mathbf{a}_1 - (x_9-y_9)\,\mathbf{a}_2 + z_9\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_9+2y_9)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{74}} = (x_9-y_9)\,\mathbf{a}_1 + x_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_9-y_9)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{75}} = -y_9\,\mathbf{a}_1 - x_9\,\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_9+y_9)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_9-y_9)\,\hat{\mathbf{y}} + c\left(z_9+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{76}} = -(x_9-y_9)\,\mathbf{a}_1 + y_9\,\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_9+2y_9)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_9\,\hat{\mathbf{y}} + c\left(z_9+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{77}} = x_9\,\mathbf{a}_1 + (x_9-y_9)\,\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_9-y_9)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_9\,\hat{\mathbf{y}} + c\left(z_9+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{78}} = y_9\,\mathbf{a}_1 + x_9\,\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_9+y_9)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_9-y_9)\,\hat{\mathbf{y}} + c\left(z_9+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{79}} = (x_9-y_9)\,\mathbf{a}_1 - y_9\,\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_9-2y_9)\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_9\,\hat{\mathbf{y}} + c\left(z_9+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{80}} = -x_9\,\mathbf{a}_1 - (x_9-y_9)\,\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_9-y_9)\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_9\,\hat{\mathbf{y}} + c\left(z_9+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{P II}$$

$$\mathbf{B_{81}} = x_{10}\,\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{10}+y_{10})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{10}-y_{10})\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{82}} = -y_{10}\,\mathbf{a}_1 + (x_{10}-y_{10})\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{10}-2y_{10})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{83}} = -(x_{10}-y_{10})\,\mathbf{a}_1 - x_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{10}-y_{10})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{84}} = -x_{10}\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{10}+y_{10})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{10}-y_{10})\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{85}} = y_{10}\,\mathbf{a}_1 - (x_{10}-y_{10})\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{10}+2y_{10})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{86}} = (x_{10}-y_{10})\,\mathbf{a}_1 + x_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{10}-y_{10})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{87}} = -y_{10}\,\mathbf{a}_1 - x_{10}\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{10}+y_{10})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{10}-y_{10})\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{88}} = -(x_{10}-y_{10})\,\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{10}+2y_{10})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_{10}\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{89}} = x_{10}\,\mathbf{a}_1 + (x_{10}-y_{10})\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{10}-y_{10})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_{10}\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{90}} = y_{10}\,\mathbf{a}_1 + x_{10}\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{10}+y_{10})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{10}-y_{10})\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{91}} = (x_{10}-y_{10})\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{10}-2y_{10})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_{10}\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{92}} = -x_{10}\,\mathbf{a}_1 - (x_{10}-y_{10})\,\mathbf{a}_2 + \left(z_{10}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{10}-y_{10})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_{10}\,\hat{\mathbf{y}} + c\left(z_{10}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S I}$$

$$\mathbf{B_{93}} = x_{11}\,\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{11}+y_{11})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{11}-y_{11})\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{94}} = -y_{11}\,\mathbf{a}_1 + (x_{11}-y_{11})\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{11}-2y_{11})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{95}} = -(x_{11}-y_{11})\,\mathbf{a}_1 - x_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{11}-y_{11})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{96}} = -x_{11}\,\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{11}+y_{11})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{11}-y_{11})\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{97}} = y_{11}\,\mathbf{a}_1 - (x_{11}-y_{11})\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{11}+2y_{11})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{98}} = (x_{11}-y_{11})\,\mathbf{a}_1 + x_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{11}-y_{11})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_{11}\,\hat{\mathbf{y}} + cz_{11}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{99}} = -y_{11}\,\mathbf{a}_1 - x_{11}\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{11}+y_{11})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{11}-y_{11})\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{100}} = -(x_{11}-y_{11})\,\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{11}+2y_{11})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_{11}\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{101}} = x_{11}\,\mathbf{a}_1 + (x_{11}-y_{11})\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{11}-y_{11})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_{11}\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{102}} = y_{11}\,\mathbf{a}_1 + x_{11}\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{11}+y_{11})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{11}-y_{11})\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\,\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{103}} = (x_{11}-y_{11})\,\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{11}-2y_{11})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_{11}\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{104}} = -x_{11}\,\mathbf{a}_1 - (x_{11}-y_{11})\,\mathbf{a}_2 + \left(z_{11}+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{11}-y_{11})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_{11}\,\hat{\mathbf{y}} + c\left(z_{11}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S II}$$

$$\mathbf{B_{105}} = x_{12}\,\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{12}+y_{12})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{12}-y_{12})\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{106}} = -y_{12}\,\mathbf{a}_1 + (x_{12}-y_{12})\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{12}-2y_{12})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{107}} = -(x_{12}-y_{12})\,\mathbf{a}_1 - x_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{12}-y_{12})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{108}} = -x_{12}\,\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{12}+y_{12})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{12}-y_{12})\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{109}} = y_{12}\,\mathbf{a}_1 - (x_{12}-y_{12})\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{12}+2y_{12})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{110}} = (x_{12}-y_{12})\,\mathbf{a}_1 + x_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{12}-y_{12})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_{12}\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{111}} = -y_{12}\,\mathbf{a}_1 - x_{12}\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{12}+y_{12})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{12}-y_{12})\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{112}} = -(x_{12}-y_{12})\,\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{12}+2y_{12})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_{12}\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{113}} = x_{12}\,\mathbf{a}_1 + (x_{12}-y_{12})\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{12}-y_{12})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_{12}\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{114}} = y_{12}\,\mathbf{a}_1 + x_{12}\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{12}+y_{12})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{12}-y_{12})\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{115}} = (x_{12}-y_{12})\,\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{12}-2y_{12})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_{12}\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{116}} = -x_{12}\,\mathbf{a}_1 - (x_{12}-y_{12})\,\mathbf{a}_2 + \left(z_{12}+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{12}-y_{12})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_{12}\,\hat{\mathbf{y}} + c\left(z_{12}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S III}$$

$$\mathbf{B_{117}} = x_{13}\,\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{13}+y_{13})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{13}-y_{13})\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{118}} = -y_{13}\,\mathbf{a}_1 + (x_{13}-y_{13})\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{13}-2y_{13})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{119}} = -(x_{13}-y_{13})\,\mathbf{a}_1 - x_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{13}-y_{13})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{120}} = -x_{13}\,\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{13}+y_{13})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{13}-y_{13})\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{121}} = y_{13}\,\mathbf{a}_1 - (x_{13}-y_{13})\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{13}+2y_{13})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{122}} = (x_{13}-y_{13})\,\mathbf{a}_1 + x_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{13}-y_{13})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{123}} = -y_{13}\,\mathbf{a}_1 - x_{13}\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{13}+y_{13})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{13}-y_{13})\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{124}} = -(x_{13}-y_{13})\,\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{13}+2y_{13})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_{13}\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{125}} = x_{13}\,\mathbf{a}_1 + (x_{13}-y_{13})\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{13}-y_{13})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ay_{13}\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{126}} = y_{13}\,\mathbf{a}_1 + x_{13}\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{13}+y_{13})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{13}-y_{13})\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{127}} = (x_{13}-y_{13})\,\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{13}-2y_{13})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}ax_{13}\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{128}} = -x_{13}\,\mathbf{a}_1 - (x_{13}-y_{13})\,\mathbf{a}_2 + \left(z_{13}+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{13}-y_{13})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ay_{13}\,\hat{\mathbf{y}} + c\left(z_{13}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12d) \quad \text{S IV}$$

$$\mathbf{B_{129}} = x_{14}\,\mathbf{a}_1 + y_{14}\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{14}+y_{14})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{14}-y_{14})\,\hat{\mathbf{y}} + cz_{14}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S V}$$

$$\mathbf{B_{130}} = -y_{14}\,\mathbf{a}_1 + (x_{14}-y_{14})\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{14}-2y_{14})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}ax_{14}\,\hat{\mathbf{y}} + cz_{14}\,\hat{\mathbf{z}} \quad (12d) \quad \text{S V}$$

$$\mathbf{B_{131}} = -(x_{14}-y_{14})\,\mathbf{a}_1 - x_{14}\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{14}-y_{14})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a y_{14}\,\hat{\mathbf{y}} + c z_{14}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{132}} = -x_{14}\,\mathbf{a}_1 - y_{14}\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{14}+y_{14})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{14}-y_{14})\,\hat{\mathbf{y}} + c z_{14}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{133}} = y_{14}\,\mathbf{a}_1 - (x_{14}-y_{14})\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{14}+2y_{14})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a x_{14}\,\hat{\mathbf{y}} + c z_{14}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{134}} = (x_{14}-y_{14})\,\mathbf{a}_1 + x_{14}\,\mathbf{a}_2 + z_{14}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{14}-y_{14})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a y_{14}\,\hat{\mathbf{y}} + c z_{14}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{135}} = -y_{14}\,\mathbf{a}_1 - x_{14}\,\mathbf{a}_2 + \left(z_{14}+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{14}+y_{14})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{14}-y_{14})\,\hat{\mathbf{y}} + c\left(z_{14}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{136}} = -(x_{14}-y_{14})\,\mathbf{a}_1 + y_{14}\,\mathbf{a}_2 + \left(z_{14}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{14}+2y_{14})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a x_{14}\,\hat{\mathbf{y}} + c\left(z_{14}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{137}} = x_{14}\,\mathbf{a}_1 + (x_{14}-y_{14})\,\mathbf{a}_2 + \left(z_{14}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{14}-y_{14})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a y_{14}\,\hat{\mathbf{y}} + c\left(z_{14}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{138}} = y_{14}\,\mathbf{a}_1 + x_{14}\,\mathbf{a}_2 + \left(z_{14}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{14}+y_{14})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{14}-y_{14})\,\hat{\mathbf{y}} + c\left(z_{14}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{139}} = (x_{14}-y_{14})\,\mathbf{a}_1 - y_{14}\,\mathbf{a}_2 + \left(z_{14}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{14}-2y_{14})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a x_{14}\,\hat{\mathbf{y}} + c\left(z_{14}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{140}} = -x_{14}\,\mathbf{a}_1 - (x_{14}-y_{14})\,\mathbf{a}_2 + \left(z_{14}+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{14}-y_{14})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a y_{14}\,\hat{\mathbf{y}} + c\left(z_{14}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S V}$$

$$\mathbf{B_{141}} = x_{15}\,\mathbf{a}_1 + y_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{15}+y_{15})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{15}-y_{15})\,\hat{\mathbf{y}} + c z_{15}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{142}} = -y_{15}\,\mathbf{a}_1 + (x_{15}-y_{15})\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{15}-2y_{15})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a x_{15}\,\hat{\mathbf{y}} + c z_{15}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{143}} = -(x_{15}-y_{15})\,\mathbf{a}_1 - x_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{15}-y_{15})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a y_{15}\,\hat{\mathbf{y}} + c z_{15}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{144}} = -x_{15}\,\mathbf{a}_1 - y_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{15}+y_{15})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{15}-y_{15})\,\hat{\mathbf{y}} + c z_{15}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{145}} = y_{15}\,\mathbf{a}_1 - (x_{15}-y_{15})\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{15}+2y_{15})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a x_{15}\,\hat{\mathbf{y}} + c z_{15}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{146}} = (x_{15}-y_{15})\,\mathbf{a}_1 + x_{15}\,\mathbf{a}_2 + z_{15}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{15}-y_{15})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a y_{15}\,\hat{\mathbf{y}} + c z_{15}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{147}} = -y_{15}\,\mathbf{a}_1 - x_{15}\,\mathbf{a}_2 + \left(z_{15}+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{15}+y_{15})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{15}-y_{15})\,\hat{\mathbf{y}} + c\left(z_{15}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{148}} = -(x_{15}-y_{15})\,\mathbf{a}_1 + y_{15}\,\mathbf{a}_2 + \left(z_{15}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{15}+2y_{15})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a x_{15}\,\hat{\mathbf{y}} + c\left(z_{15}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{149}} = x_{15}\,\mathbf{a}_1 + (x_{15}-y_{15})\,\mathbf{a}_2 + \left(z_{15}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{15}-y_{15})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a y_{15}\,\hat{\mathbf{y}} + c\left(z_{15}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{150}} = y_{15}\,\mathbf{a}_1 + x_{15}\,\mathbf{a}_2 + \left(z_{15}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{15}+y_{15})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{15}-y_{15})\,\hat{\mathbf{y}} + c\left(z_{15}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{151}} = (x_{15}-y_{15})\,\mathbf{a}_1 - y_{15}\,\mathbf{a}_2 + \left(z_{15}+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{15}-2y_{15})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a x_{15}\,\hat{\mathbf{y}} + c\left(z_{15}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{152}} = -x_{15}\,\mathbf{a}_1 - (x_{15}-y_{15})\,\mathbf{a}_2 + \left(z_{15}+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{15}-y_{15})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a y_{15}\,\hat{\mathbf{y}} + c\left(z_{15}+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VI}$$

$$\mathbf{B_{153}} = x_{16}\,\mathbf{a}_1 + y_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{16}+y_{16})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a\,(x_{16}-y_{16})\,\hat{\mathbf{y}} + c z_{16}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VII}$$

$$\mathbf{B_{154}} = -y_{16}\,\mathbf{a}_1 + (x_{16}-y_{16})\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(x_{16}-2y_{16})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a x_{16}\,\hat{\mathbf{y}} + c z_{16}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VII}$$

$$\mathbf{B_{155}} = -(x_{16}-y_{16})\,\mathbf{a}_1 - x_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(2x_{16}-y_{16})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a y_{16}\,\hat{\mathbf{y}} + c z_{16}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VII}$$

$$\mathbf{B_{156}} = -x_{16}\,\mathbf{a}_1 - y_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 = -\tfrac{1}{2}a\,(x_{16}+y_{16})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a\,(x_{16}-y_{16})\,\hat{\mathbf{y}} + c z_{16}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VII}$$

$$\mathbf{B_{157}} = y_{16}\,\mathbf{a}_1 - (x_{16}-y_{16})\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(-x_{16}+2y_{16})\,\hat{\mathbf{x}} - \tfrac{\sqrt{3}}{2}a x_{16}\,\hat{\mathbf{y}} + c z_{16}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VII}$$

$$\mathbf{B_{158}} = (x_{16}-y_{16})\,\mathbf{a}_1 + x_{16}\,\mathbf{a}_2 + z_{16}\,\mathbf{a}_3 = \tfrac{1}{2}a\,(2x_{16}-y_{16})\,\hat{\mathbf{x}} + \tfrac{\sqrt{3}}{2}a y_{16}\,\hat{\mathbf{y}} + c z_{16}\,\hat{\mathbf{z}} \quad (12\text{d}) \quad \text{S VII}$$

$\mathbf{B_{159}} = -y_{16}\,\mathbf{a}_1 - x_{16}\,\mathbf{a}_2 + \left(z_{16}+\frac{1}{2}\right)\,\mathbf{a}_3 = -\frac{1}{2}a\,(x_{16}+y_{16})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_{16}-y_{16})\,\hat{\mathbf{y}} + c\left(z_{16}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VII

$\mathbf{B_{160}} = -(x_{16}-y_{16})\,\mathbf{a}_1 + y_{16}\,\mathbf{a}_2 + \left(z_{16}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(-x_{16}+2y_{16})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_{16}\,\hat{\mathbf{y}} + c\left(z_{16}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VII

$\mathbf{B_{161}} = x_{16}\,\mathbf{a}_1 + (x_{16}-y_{16})\,\mathbf{a}_2 + \left(z_{16}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(2x_{16}-y_{16})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_{16}\,\hat{\mathbf{y}} + c\left(z_{16}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VII

$\mathbf{B_{162}} = y_{16}\,\mathbf{a}_1 + x_{16}\,\mathbf{a}_2 + \left(z_{16}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(x_{16}+y_{16})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_{16}-y_{16})\,\hat{\mathbf{y}} + c\left(z_{16}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VII

$\mathbf{B_{163}} = (x_{16}-y_{16})\,\mathbf{a}_1 - y_{16}\,\mathbf{a}_2 + \left(z_{16}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(x_{16}-2y_{16})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_{16}\,\hat{\mathbf{y}} + c\left(z_{16}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VII

$\mathbf{B_{164}} = -x_{16}\,\mathbf{a}_1 - (x_{16}-y_{16})\,\mathbf{a}_2 + \left(z_{16}+\frac{1}{2}\right)\,\mathbf{a}_3 = -\frac{1}{2}a\,(2x_{16}-y_{16})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_{16}\,\hat{\mathbf{y}} + c\left(z_{16}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VII

$\mathbf{B_{165}} = x_{17}\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = \frac{1}{2}a\,(x_{17}+y_{17})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_{17}-y_{17})\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{166}} = -y_{17}\,\mathbf{a}_1 + (x_{17}-y_{17})\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = \frac{1}{2}a\,(x_{17}-2y_{17})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{167}} = -(x_{17}-y_{17})\,\mathbf{a}_1 - x_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = -\frac{1}{2}a\,(2x_{17}-y_{17})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{168}} = -x_{17}\,\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = -\frac{1}{2}a\,(x_{17}+y_{17})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_{17}-y_{17})\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{169}} = y_{17}\,\mathbf{a}_1 - (x_{17}-y_{17})\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = \frac{1}{2}a\,(-x_{17}+2y_{17})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{170}} = (x_{17}-y_{17})\,\mathbf{a}_1 + x_{17}\,\mathbf{a}_2 + z_{17}\,\mathbf{a}_3 = \frac{1}{2}a\,(2x_{17}-y_{17})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_{17}\,\hat{\mathbf{y}} + cz_{17}\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{171}} = -y_{17}\,\mathbf{a}_1 - x_{17}\,\mathbf{a}_2 + \left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3 = -\frac{1}{2}a\,(x_{17}+y_{17})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_{17}-y_{17})\,\hat{\mathbf{y}} + c\left(z_{17}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{172}} = -(x_{17}-y_{17})\,\mathbf{a}_1 + y_{17}\,\mathbf{a}_2 + \left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(-x_{17}+2y_{17})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{173}} = x_{17}\,\mathbf{a}_1 + (x_{17}-y_{17})\,\mathbf{a}_2 + \left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(2x_{17}-y_{17})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{174}} = y_{17}\,\mathbf{a}_1 + x_{17}\,\mathbf{a}_2 + \left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(x_{17}+y_{17})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_{17}-y_{17})\,\hat{\mathbf{y}} + c\left(z_{17}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{175}} = (x_{17}-y_{17})\,\mathbf{a}_1 - y_{17}\,\mathbf{a}_2 + \left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(x_{17}-2y_{17})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{176}} = -x_{17}\,\mathbf{a}_1 - (x_{17}-y_{17})\,\mathbf{a}_2 + \left(z_{17}+\frac{1}{2}\right)\,\mathbf{a}_3 = -\frac{1}{2}a\,(2x_{17}-y_{17})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_{17}\,\hat{\mathbf{y}} + c\left(z_{17}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) S VIII

$\mathbf{B_{177}} = x_{18}\,\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = \frac{1}{2}a\,(x_{18}+y_{18})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_{18}-y_{18})\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}}$ (12d) Ti II

$\mathbf{B_{178}} = -y_{18}\,\mathbf{a}_1 + (x_{18}-y_{18})\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = \frac{1}{2}a\,(x_{18}-2y_{18})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}}$ (12d) Ti II

$\mathbf{B_{179}} = -(x_{18}-y_{18})\,\mathbf{a}_1 - x_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = -\frac{1}{2}a\,(2x_{18}-y_{18})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}}$ (12d) Ti II

$\mathbf{B_{180}} = -x_{18}\,\mathbf{a}_1 - y_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = -\frac{1}{2}a\,(x_{18}+y_{18})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_{18}-y_{18})\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}}$ (12d) Ti II

$\mathbf{B_{181}} = y_{18}\,\mathbf{a}_1 - (x_{18}-y_{18})\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = \frac{1}{2}a\,(-x_{18}+2y_{18})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}}$ (12d) Ti II

$\mathbf{B_{182}} = (x_{18}-y_{18})\,\mathbf{a}_1 + x_{18}\,\mathbf{a}_2 + z_{18}\,\mathbf{a}_3 = \frac{1}{2}a\,(2x_{18}-y_{18})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_{18}\,\hat{\mathbf{y}} + cz_{18}\,\hat{\mathbf{z}}$ (12d) Ti II

$\mathbf{B_{183}} = -y_{18}\,\mathbf{a}_1 - x_{18}\,\mathbf{a}_2 + \left(z_{18}+\frac{1}{2}\right)\,\mathbf{a}_3 = -\frac{1}{2}a\,(x_{18}+y_{18})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_{18}-y_{18})\,\hat{\mathbf{y}} + c\left(z_{18}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) Ti II

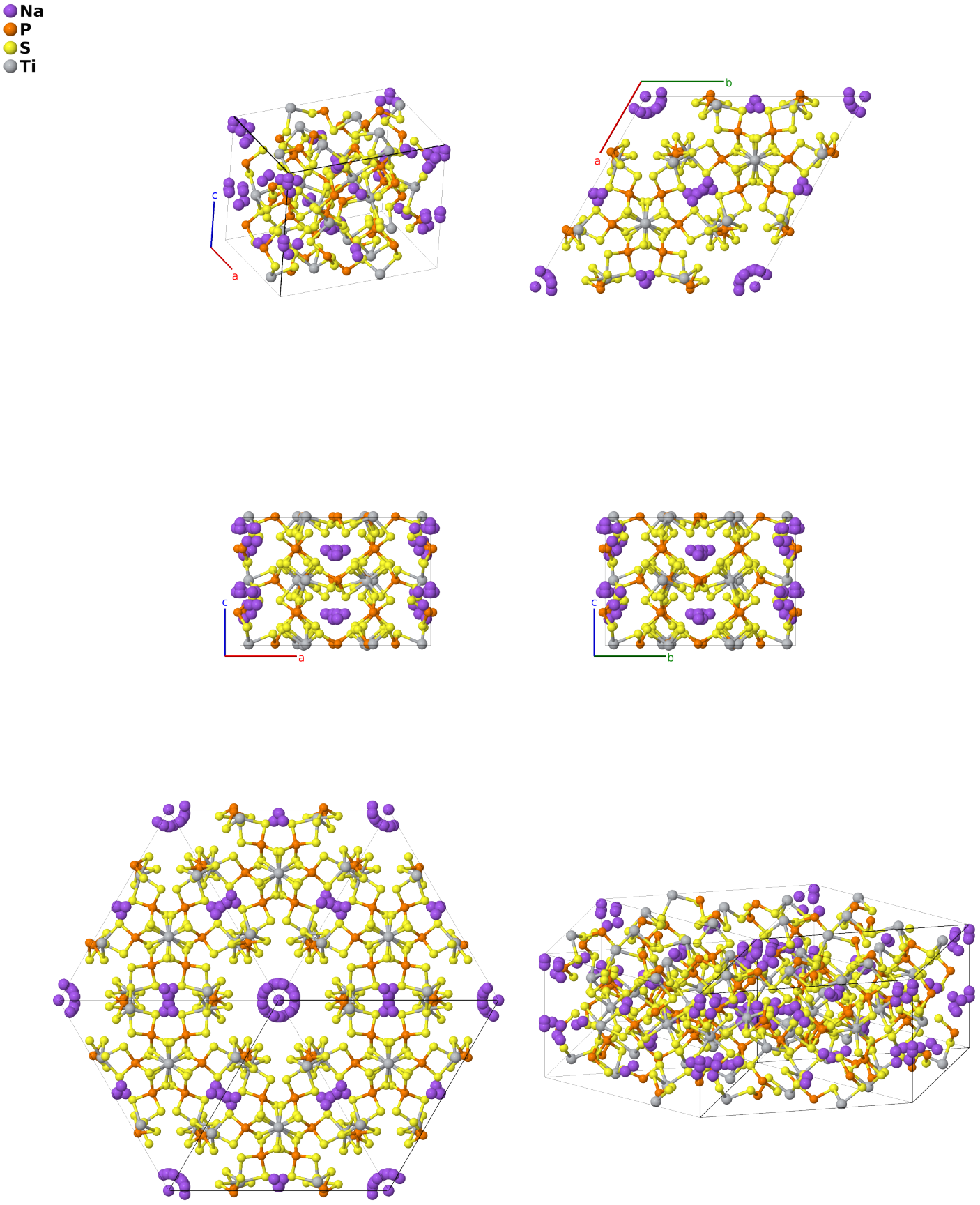
$\mathbf{B_{184}} = -(x_{18}-y_{18})\,\mathbf{a}_1 + y_{18}\,\mathbf{a}_2 + \left(z_{18}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(-x_{18}+2y_{18})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_{18}\,\hat{\mathbf{y}} + c\left(z_{18}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) Ti II

$\mathbf{B_{185}} = x_{18}\,\mathbf{a}_1 + (x_{18}-y_{18})\,\mathbf{a}_2 + \left(z_{18}+\frac{1}{2}\right)\,\mathbf{a}_3 = \frac{1}{2}a\,(2x_{18}-y_{18})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_{18}\,\hat{\mathbf{y}} + c\left(z_{18}+\frac{1}{2}\right)\,\hat{\mathbf{z}}$ (12d) Ti II

$\mathbf{B_{186}} =$	$y_{18}\,\mathbf{a}_1 + x_{18}\,\mathbf{a}_2 + \left(z_{18} + \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$\frac{1}{2}a\,(x_{18} + y_{18})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_{18} - y_{18})\,\hat{\mathbf{y}} + c\left(z_{18} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Ti II
$\mathbf{B_{187}} =$	$(x_{18} - y_{18})\,\mathbf{a}_1 - y_{18}\,\mathbf{a}_2 + \left(z_{18} + \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$\frac{1}{2}a\,(x_{18} - 2y_{18})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_{18}\,\hat{\mathbf{y}} + c\left(z_{18} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Ti II
$\mathbf{B_{188}} =$	$-x_{18}\,\mathbf{a}_1 - (x_{18} - y_{18})\,\mathbf{a}_2 + \left(z_{18} + \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-\frac{1}{2}a\,(2x_{18} - y_{18})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_{18}\,\hat{\mathbf{y}} + c\left(z_{18} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12d)	Ti II

References

[1] X. Cieren, J. Angenault, J.-C. Couturier, S. Jaulmes, M. Quarton, and F. Robert, *$NaTi_2(PS_4)_3$: A New Thiophosphate with an Interlocked Structure*, J. Solid State Chem. **121**, 230–235 (1996), doi:10.1006/jssc.1996.0032.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