$K_2Ta_4O_9F_4$ Structure: A2B13C4_hP57_168_d_c6d_2d-001

This structure originally had the label `A2B13C4_hP57_168_d_c6d_2d`. Calls to that address will be redirected here.

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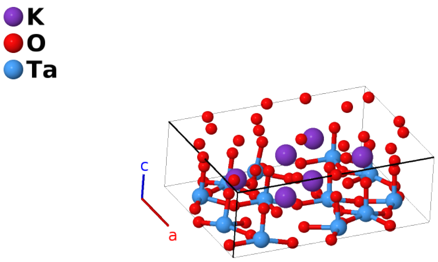
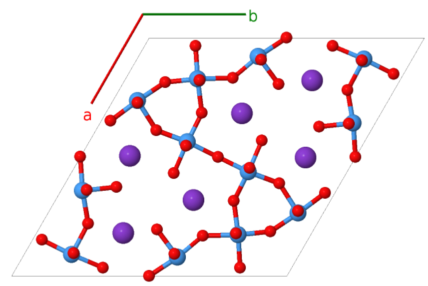
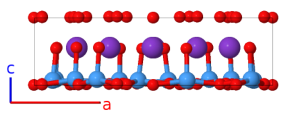
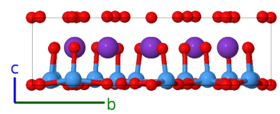
https://aflow.org/p/6140

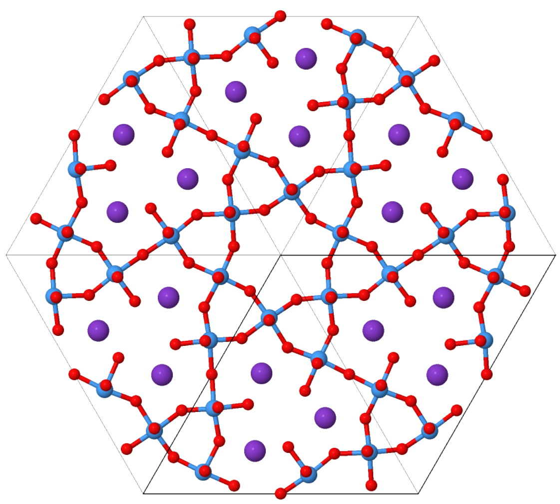
https://aflow.org/p/A2B13C4_hP57_168_d_c6d_2d-001

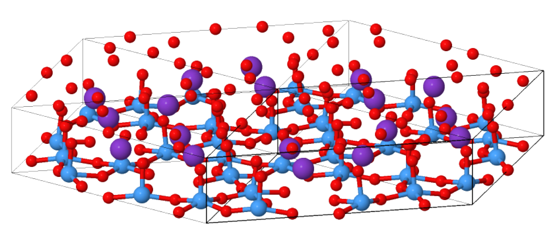












Prototype	$F_4K_2O_9Ta_4$
AFLOW prototype label	A2B13C4_hP57_168_d_c6d_2d-001

ICSD	8204
Pearson symbol	hP57
Space group number	168
Space group symbol	$P6$
AFLOW prototype command	`aflow --proto=A2B13C4_hP57_168_d_c6d_2d-001` `--params=`$a, c/a, z_1, x_2, y_2, z_2, x_3, y_3, z_3, x_4, y_4, z_4, x_5, y_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}$

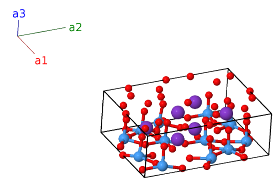
- The sites we label "O" are actually 69.2% oxygen and 30.8% fluorine.
- Space group $P6$ #168 allows an arbitary choice of the origin of the z-axis. Here we set $z_1 = 0$.

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
$\mathbf{B_1}$	=	$\frac{1}{2} \mathbf{a}_1 + z_1 \mathbf{a}_3$	=	$\frac{1}{4} a \, \hat{\mathbf{x}} - \frac{\sqrt{3}}{4} a \, \hat{\mathbf{y}} + c z_1 \, \hat{\mathbf{z}}$	(3c)	O I
$\mathbf{B_2}$	=	$\frac{1}{2} \mathbf{a}_2 + z_1 \mathbf{a}_3$	=	$\frac{1}{4} a \, \hat{\mathbf{x}} + \frac{\sqrt{3}}{4} a \, \hat{\mathbf{y}} + c z_1 \, \hat{\mathbf{z}}$	(3c)	O I
$\mathbf{B_3}$	=	$\frac{1}{2} \mathbf{a}_1 + \frac{1}{2} \mathbf{a}_2 + z_1 \mathbf{a}_3$	=	$\frac{1}{2} a \, \hat{\mathbf{x}} + c z_1 \, \hat{\mathbf{z}}$	(3c)	O I
$\mathbf{B_4}$	=	$x_2 \mathbf{a}_1 + y_2 \mathbf{a}_2 + z_2 \mathbf{a}_3$	=	$\frac{1}{2} a \left(x_2 + y_2\right) \hat{\mathbf{x}} - \frac{\sqrt{3}}{2} a \left(x_2 - y_2\right) \hat{\mathbf{y}} + c z_2 \, \hat{\mathbf{z}}$	(6d)	K I
$\mathbf{B_5}$	=	$-y_2 \mathbf{a}_1 + \left(x_2 - y_2\right) \mathbf{a}_2 + z_2 \mathbf{a}_3$	=	$\frac{1}{2} a \left(x_2 - 2y_2\right) \hat{\mathbf{x}} + \frac{\sqrt{3}}{2} a x_2 \, \hat{\mathbf{y}} + c z_2 \, \hat{\mathbf{z}}$	(6d)	K I
$\mathbf{B_6}$	=	$-\left(x_2 - y_2\right) \mathbf{a}_1 - x_2 \mathbf{a}_2 + z_2 \mathbf{a}_3$	=	$-\frac{1}{2} a \left(2x_2 - y_2\right) \hat{\mathbf{x}} - \frac{\sqrt{3}}{2} a y_2 \, \hat{\mathbf{y}} + c z_2 \, \hat{\mathbf{z}}$	(6d)	K I
$\mathbf{B_7}$	=	$-x_2 \mathbf{a}_1 - y_2 \mathbf{a}_2 + z_2 \mathbf{a}_3$	=	$-\frac{1}{2} a \left(x_2 + y_2\right) \hat{\mathbf{x}} + \frac{\sqrt{3}}{2} a \left(x_2 - y_2\right) \hat{\mathbf{y}} + c z_2 \, \hat{\mathbf{z}}$	(6d)	K I
$\mathbf{B_8}$	=	$y_2 \mathbf{a}_1 - \left(x_2 - y_2\right) \mathbf{a}_2 + z_2 \mathbf{a}_3$	=	$\frac{1}{2} a \left(-x_2 + 2y_2\right) \hat{\mathbf{x}} - \frac{\sqrt{3}}{2} a x_2 \, \hat{\mathbf{y}} + c z_2 \, \hat{\mathbf{z}}$	(6d)	K I
$\mathbf{B_9}$	=	$\left(x_2 - y_2\right) \mathbf{a}_1 + x_2 \mathbf{a}_2 + z_2 \mathbf{a}_3$	=	$\frac{1}{2} a \left(2x_2 - y_2\right) \hat{\mathbf{x}} + \frac{\sqrt{3}}{2} a y_2 \, \hat{\mathbf{y}} + c z_2 \, \hat{\mathbf{z}}$	(6d)	K I
$\mathbf{B_{10}}$	=	$x_3 \mathbf{a}_1 + y_3 \mathbf{a}_2 + z_3 \mathbf{a}_3$	=	$\frac{1}{2} a \left(x_3 + y_3\right) \hat{\mathbf{x}} - \frac{\sqrt{3}}{2} a \left(x_3 - y_3\right) \hat{\mathbf{y}} + c z_3 \, \hat{\mathbf{z}}$	(6d)	O II
$\mathbf{B_{11}}$	=	$-y_3 \mathbf{a}_1 + \left(x_3 - y_3\right) \mathbf{a}_2 + z_3 \mathbf{a}_3$	=	$\frac{1}{2} a \left(x_3 - 2y_3\right) \hat{\mathbf{x}} + \frac{\sqrt{3}}{2} a x_3 \, \hat{\mathbf{y}} + c z_3 \, \hat{\mathbf{z}}$	(6d)	O II
$\mathbf{B_{12}}$	=	$-\left(x_3 - y_3\right) \mathbf{a}_1 - x_3 \mathbf{a}_2 + z_3 \mathbf{a}_3$	=	$-\frac{1}{2} a \left(2x_3 - y_3\right) \hat{\mathbf{x}} - \frac{\sqrt{3}}{2} a y_3 \, \hat{\mathbf{y}} + c z_3 \, \hat{\mathbf{z}}$	(6d)	O II
$\mathbf{B_{13}}$	=	$-x_3 \mathbf{a}_1 - y_3 \mathbf{a}_2 + z_3 \mathbf{a}_3$	=	$-\frac{1}{2} a \left(x_3 + y_3\right) \hat{\mathbf{x}} + \frac{\sqrt{3}}{2} a \left(x_3 - y_3\right) \hat{\mathbf{y}} + c z_3 \, \hat{\mathbf{z}}$	(6d)	O II
$\mathbf{B_{14}}$	=	$y_3 \mathbf{a}_1 - \left(x_3 - y_3\right) \mathbf{a}_2 + z_3 \mathbf{a}_3$	=	$\frac{1}{2} a \left(-x_3 + 2y_3\right) \hat{\mathbf{x}} - \frac{\sqrt{3}}{2} a x_3 \, \hat{\mathbf{y}} + c z_3 \, \hat{\mathbf{z}}$	(6d)	O II
$\mathbf{B_{15}}$	=	$\left(x_3 - y_3\right) \mathbf{a}_1 + x_3 \mathbf{a}_2 + z_3 \mathbf{a}_3$	=	$\frac{1}{2} a \left(2x_3 - y_3\right) \hat{\mathbf{x}} + \frac{\sqrt{3}}{2} a y_3 \, \hat{\mathbf{y}} + c z_3 \, \hat{\mathbf{z}}$	(6d)	O II
$\mathbf{B_{16}}$	=	$x_4 \mathbf{a}_1 + y_4 \mathbf{a}_2 + z_4 \mathbf{a}_3$	=	$\frac{1}{2} a \left(x_4 + y_4\right) \hat{\mathbf{x}} - \frac{\sqrt{3}}{2} a \left(x_4 - y_4\right) \hat{\mathbf{y}} + c z_4 \, \hat{\mathbf{z}}$	(6d)	O III
$\mathbf{B_{17}}$	=	$-y_4 \mathbf{a}_1 + \left(x_4 - y_4\right) \mathbf{a}_2 + z_4 \mathbf{a}_3$	=	$\frac{1}{2} a \left(x_4 - 2y_4\right) \hat{\mathbf{x}} + \frac{\sqrt{3}}{2} a x_4 \, \hat{\mathbf{y}} + c z_4 \, \hat{\mathbf{z}}$	(6d)	O III
$\mathbf{B_{18}}$	=	$-\left(x_4 - y_4\right) \mathbf{a}_1 - x_4 \mathbf{a}_2 + z_4 \mathbf{a}_3$	=	$-\frac{1}{2} a \left(2x_4 - y_4\right) \hat{\mathbf{x}} - \frac{\sqrt{3}}{2} a y_4 \, \hat{\mathbf{y}} + c z_4 \, \hat{\mathbf{z}}$	(6d)	O III
$\mathbf{B_{19}}$	=	$-x_4 \mathbf{a}_1 - y_4 \mathbf{a}_2 + z_4 \mathbf{a}_3$	=	$-\frac{1}{2} a \left(x_4 + y_4\right) \hat{\mathbf{x}} + \frac{\sqrt{3}}{2} a \left(x_4 - y_4\right) \hat{\mathbf{y}} + c z_4 \, \hat{\mathbf{z}}$	(6d)	O III

$\mathbf{B_{20}}$	=	$y_4\,\mathbf{a}_1 - (x_4 - y_4)\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_4 + 2y_4)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_4\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(6d)	O III
$\mathbf{B_{21}}$	=	$(x_4 - y_4)\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_4 - y_4)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_4\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$	(6d)	O III
$\mathbf{B_{22}}$	=	$x_5\,\mathbf{a}_1 + y_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_5 + y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_5 - y_5)\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(6d)	O IV
$\mathbf{B_{23}}$	=	$-y_5\,\mathbf{a}_1 + (x_5 - y_5)\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_5 - 2y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(6d)	O IV
$\mathbf{B_{24}}$	=	$-(x_5 - y_5)\,\mathbf{a}_1 - x_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_5 - y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(6d)	O IV
$\mathbf{B_{25}}$	=	$-x_5\,\mathbf{a}_1 - y_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_5 + y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_5 - y_5)\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(6d)	O IV
$\mathbf{B_{26}}$	=	$y_5\,\mathbf{a}_1 - (x_5 - y_5)\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_5 + 2y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(6d)	O IV
$\mathbf{B_{27}}$	=	$(x_5 - y_5)\,\mathbf{a}_1 + x_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_5 - y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_5\,\hat{\mathbf{y}} + cz_5\,\hat{\mathbf{z}}$	(6d)	O IV
$\mathbf{B_{28}}$	=	$x_6\,\mathbf{a}_1 + y_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_6 + y_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_6 - y_6)\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(6d)	O V
$\mathbf{B_{29}}$	=	$-y_6\,\mathbf{a}_1 + (x_6 - y_6)\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_6 - 2y_6)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(6d)	O V
$\mathbf{B_{30}}$	=	$-(x_6 - y_6)\,\mathbf{a}_1 - x_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_6 - y_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(6d)	O V
$\mathbf{B_{31}}$	=	$-x_6\,\mathbf{a}_1 - y_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_6 + y_6)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_6 - y_6)\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(6d)	O V
$\mathbf{B_{32}}$	=	$y_6\,\mathbf{a}_1 - (x_6 - y_6)\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_6 + 2y_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(6d)	O V
$\mathbf{B_{33}}$	=	$(x_6 - y_6)\,\mathbf{a}_1 + x_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_6 - y_6)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_6\,\hat{\mathbf{y}} + cz_6\,\hat{\mathbf{z}}$	(6d)	O V
$\mathbf{B_{34}}$	=	$x_7\,\mathbf{a}_1 + y_7\,\mathbf{a}_2 + z_7\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_7 + y_7)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_7 - y_7)\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}}$	(6d)	O VI
$\mathbf{B_{35}}$	=	$-y_7\,\mathbf{a}_1 + (x_7 - y_7)\,\mathbf{a}_2 + z_7\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_7 - 2y_7)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_7\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}}$	(6d)	O VI
$\mathbf{B_{36}}$	=	$-(x_7 - y_7)\,\mathbf{a}_1 - x_7\,\mathbf{a}_2 + z_7\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_7 - y_7)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_7\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}}$	(6d)	O VI
$\mathbf{B_{37}}$	=	$-x_7\,\mathbf{a}_1 - y_7\,\mathbf{a}_2 + z_7\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_7 + y_7)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_7 - y_7)\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}}$	(6d)	O VI
$\mathbf{B_{38}}$	=	$y_7\,\mathbf{a}_1 - (x_7 - y_7)\,\mathbf{a}_2 + z_7\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_7 + 2y_7)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_7\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}}$	(6d)	O VI
$\mathbf{B_{39}}$	=	$(x_7 - y_7)\,\mathbf{a}_1 + x_7\,\mathbf{a}_2 + z_7\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_7 - y_7)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_7\,\hat{\mathbf{y}} + cz_7\,\hat{\mathbf{z}}$	(6d)	O VI
$\mathbf{B_{40}}$	=	$x_8\,\mathbf{a}_1 + y_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_8 + y_8)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_8 - y_8)\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}}$	(6d)	O VII
$\mathbf{B_{41}}$	=	$-y_8\,\mathbf{a}_1 + (x_8 - y_8)\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_8 - 2y_8)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}}$	(6d)	O VII
$\mathbf{B_{42}}$	=	$-(x_8 - y_8)\,\mathbf{a}_1 - x_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_8 - y_8)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}}$	(6d)	O VII
$\mathbf{B_{43}}$	=	$-x_8\,\mathbf{a}_1 - y_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_8 + y_8)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_8 - y_8)\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}}$	(6d)	O VII
$\mathbf{B_{44}}$	=	$y_8\,\mathbf{a}_1 - (x_8 - y_8)\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_8 + 2y_8)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}}$	(6d)	O VII
$\mathbf{B_{45}}$	=	$(x_8 - y_8)\,\mathbf{a}_1 + x_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_8 - y_8)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_8\,\hat{\mathbf{y}} + cz_8\,\hat{\mathbf{z}}$	(6d)	O VII
$\mathbf{B_{46}}$	=	$x_9\,\mathbf{a}_1 + y_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_9 + y_9)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_9 - y_9)\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}}$	(6d)	Ta I
$\mathbf{B_{47}}$	=	$-y_9\,\mathbf{a}_1 + (x_9 - y_9)\,\mathbf{a}_2 + z_9\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_9 - 2y_9)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}}$	(6d)	Ta I
$\mathbf{B_{48}}$	=	$-(x_9 - y_9)\,\mathbf{a}_1 - x_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_9 - y_9)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}}$	(6d)	Ta I
$\mathbf{B_{49}}$	=	$-x_9\,\mathbf{a}_1 - y_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_9 + y_9)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_9 - y_9)\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}}$	(6d)	Ta I
$\mathbf{B_{50}}$	=	$y_9\,\mathbf{a}_1 - (x_9 - y_9)\,\mathbf{a}_2 + z_9\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_9 + 2y_9)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}}$	(6d)	Ta I
$\mathbf{B_{51}}$	=	$(x_9 - y_9)\,\mathbf{a}_1 + x_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_9 - y_9)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_9\,\hat{\mathbf{y}} + cz_9\,\hat{\mathbf{z}}$	(6d)	Ta I
$\mathbf{B_{52}}$	=	$x_{10}\,\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_{10} + y_{10})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,(x_{10} - y_{10})\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}}$	(6d)	Ta II
$\mathbf{B_{53}}$	=	$-y_{10}\,\mathbf{a}_1 + (x_{10} - y_{10})\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(x_{10} - 2y_{10})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ax_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}}$	(6d)	Ta II
$\mathbf{B_{54}}$	=	$-(x_{10} - y_{10})\,\mathbf{a}_1 - x_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(2x_{10} - y_{10})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ay_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}}$	(6d)	Ta II
$\mathbf{B_{55}}$	=	$-x_{10}\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3$	=	$-\frac{1}{2}a\,(x_{10} + y_{10})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,(x_{10} - y_{10})\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}}$	(6d)	Ta II
$\mathbf{B_{56}}$	=	$y_{10}\,\mathbf{a}_1 - (x_{10} - y_{10})\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(-x_{10} + 2y_{10})\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}ax_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}}$	(6d)	Ta II
$\mathbf{B_{57}}$	=	$(x_{10} - y_{10})\,\mathbf{a}_1 + x_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,(2x_{10} - y_{10})\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}ay_{10}\,\hat{\mathbf{y}} + cz_{10}\,\hat{\mathbf{z}}$	(6d)	Ta II

References

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