$Zr_{21}Re_{25}$ Structure: A25B21_hR92_167_b2e3f_e3f-001

This structure originally had the label `A25B21_hR92_167_b2e3f_e3f`. Calls to that address will be redirected here.

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

https://aflow.org/p/1BVC

https://aflow.org/p/A25B21_hR92_167_b2e3f_e3f-001

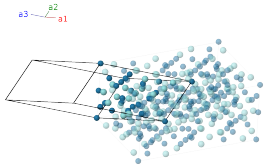
Prototype	$Re_{25}Zr_{21}$
AFLOW prototype label	A25B21_hR92_167_b2e3f_e3f-001
ICSD	105909
Pearson symbol	hR92
Space group number	167
Space group symbol	$R\bar{3}c$
AFLOW prototype command	`aflow --proto=A25B21_hR92_167_b2e3f_e3f-001 --params=`$a, c/a, x_2, x_3, x_4, x_5, y_5, z_5, x_6, y_6, z_6, x_7, y_7, z_7, x_8, y_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}$

Other compounds with this structure

$Hf_{21}Re_{25}$, $Mg_{21}Zn_{25}$, $Ti_{21}Mn_{25}$, $Ti_{21}Re_{25}$

Rhombohedral primitive vectors

$$\mathbf{a_1} = \frac{1}{2}a\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,\hat{\mathbf{y}} + \frac{1}{3}c\,\hat{\mathbf{z}}$$
$$\mathbf{a_2} = \frac{1}{\sqrt{3}}a\,\hat{\mathbf{y}} + \frac{1}{3}c\,\hat{\mathbf{z}}$$
$$\mathbf{a_3} = -\frac{1}{2}a\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,\hat{\mathbf{y}} + \frac{1}{3}c\,\hat{\mathbf{z}}$$



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	0	=	0	(2b)	Re I
$\mathbf{B_2}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}c\,\hat{\mathbf{z}}$	(2b)	Re I
$\mathbf{B_3}$	=	$x_2\,\mathbf{a}_1 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{8}a\,(4x_2 - 1)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{8}a\,(4x_2 - 1)\,\hat{\mathbf{y}} + \frac{1}{4}c\,\hat{\mathbf{z}}$	(6e)	Re II
$\mathbf{B_4}$	=	$\frac{1}{4}\,\mathbf{a}_1 + x_2\,\mathbf{a}_2 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{8}a\,(4x_2 - 1)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{8}a\,(4x_2 - 1)\,\hat{\mathbf{y}} + \frac{1}{4}c\,\hat{\mathbf{z}}$	(6e)	Re II
$\mathbf{B_5}$	=	$-\left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + x_2\,\mathbf{a}_3$	=	$-a\left(x_2 - \frac{1}{4}\right)\,\hat{\mathbf{x}} + \frac{1}{4}c\,\hat{\mathbf{z}}$	(6e)	Re II
$\mathbf{B_6}$	=	$-x_2\,\mathbf{a}_1 + \left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$-\frac{1}{8}a\,(4x_2 + 3)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{24}a\,(12x_2 + 1)\,\hat{\mathbf{y}} + \frac{5}{12}c\,\hat{\mathbf{z}}$	(6e)	Re II
$\mathbf{B_7}$	=	$\frac{3}{4}\,\mathbf{a}_1 - x_2\,\mathbf{a}_2 + \left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-\frac{1}{8}a\,(4x_2 - 1)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{24}a\,(12x_2 + 5)\,\hat{\mathbf{y}} + \frac{5}{12}c\,\hat{\mathbf{z}}$	(6e)	Re II
$\mathbf{B_8}$	=	$\left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - x_2\,\mathbf{a}_3$	=	$a\left(x_2 + \frac{1}{4}\right)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,\hat{\mathbf{y}} + \frac{5}{12}c\,\hat{\mathbf{z}}$	(6e)	Re II
$\mathbf{B_9}$	=	$x_3\,\mathbf{a}_1 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{8}a\,(4x_3 - 1)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{8}a\,(4x_3 - 1)\,\hat{\mathbf{y}} + \frac{1}{4}c\,\hat{\mathbf{z}}$	(6e)	Re III

$$
\begin{array}{lcccccc}
\mathbf{B_{10}} & = & \frac{1}{4}\,\mathbf{a}_1 + x_3\,\mathbf{a}_2 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{1}{8}a\,(4x_3-1)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{8}a\,(4x_3-1)\,\hat{\mathbf{y}} + \frac{1}{4}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Re III} \\
\mathbf{B_{11}} & = & -\left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + x_3\,\mathbf{a}_3 & = & -a\left(x_3 - \frac{1}{4}\right)\,\hat{\mathbf{x}} + \frac{1}{4}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Re III} \\
\mathbf{B_{12}} & = & -x_3\,\mathbf{a}_1 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3 & = & -\frac{1}{8}a\,(4x_3+3)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{24}a\,(12x_3+1)\,\hat{\mathbf{y}} + \frac{5}{12}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Re III} \\
\mathbf{B_{13}} & = & \frac{3}{4}\,\mathbf{a}_1 - x_3\,\mathbf{a}_2 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_3 & = & -\frac{1}{8}a\,(4x_3-1)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{24}a\,(12x_3+5)\,\hat{\mathbf{y}} + \frac{5}{12}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Re III} \\
\mathbf{B_{14}} & = & \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - x_3\,\mathbf{a}_3 & = & a\left(x_3 + \frac{1}{4}\right)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,\hat{\mathbf{y}} + \frac{5}{12}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Re III} \\
\mathbf{B_{15}} & = & x_4\,\mathbf{a}_1 - \left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3 & = & \frac{1}{8}a\,(4x_4-1)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{8}a\,(4x_4-1)\,\hat{\mathbf{y}} + \frac{1}{4}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Zr I} \\
\mathbf{B_{16}} & = & \frac{1}{4}\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 - \left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{1}{8}a\,(4x_4-1)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{8}a\,(4x_4-1)\,\hat{\mathbf{y}} + \frac{1}{4}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Zr I} \\
\mathbf{B_{17}} & = & -\left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + x_4\,\mathbf{a}_3 & = & -a\left(x_4 - \frac{1}{4}\right)\,\hat{\mathbf{x}} + \frac{1}{4}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Zr I} \\
\mathbf{B_{18}} & = & -x_4\,\mathbf{a}_1 + \left(x_4 + \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3 & = & -\frac{1}{8}a\,(4x_4+3)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{24}a\,(12x_4+1)\,\hat{\mathbf{y}} + \frac{5}{12}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Zr I} \\
\mathbf{B_{19}} & = & \frac{3}{4}\,\mathbf{a}_1 - x_4\,\mathbf{a}_2 + \left(x_4 + \frac{1}{2}\right)\,\mathbf{a}_3 & = & -\frac{1}{8}a\,(4x_4-1)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{24}a\,(12x_4+5)\,\hat{\mathbf{y}} + \frac{5}{12}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Zr I} \\
\mathbf{B_{20}} & = & \left(x_4 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - x_4\,\mathbf{a}_3 & = & a\left(x_4 + \frac{1}{4}\right)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,\hat{\mathbf{y}} + \frac{5}{12}c\,\hat{\mathbf{z}} & \text{(6e)} & \text{Zr I} \\
\mathbf{B_{21}} & = & x_5\,\mathbf{a}_1 + y_5\,\mathbf{a}_2 + z_5\,\mathbf{a}_3 & = & \frac{1}{2}a\,(x_5 - z_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(x_5 - 2y_5 + z_5)\,\hat{\mathbf{y}} + \frac{1}{3}c\,(x_5 + y_5 + z_5)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{22}} & = & z_5\,\mathbf{a}_1 + x_5\,\mathbf{a}_2 + y_5\,\mathbf{a}_3 & = & -\frac{1}{2}a\,(y_5 - z_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(2x_5 - y_5 - z_5)\,\hat{\mathbf{y}} + \frac{1}{3}c\,(x_5 + y_5 + z_5)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{23}} & = & y_5\,\mathbf{a}_1 + z_5\,\mathbf{a}_2 + x_5\,\mathbf{a}_3 & = & -\frac{1}{2}a\,(x_5 - y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(x_5 + y_5 - 2z_5)\,\hat{\mathbf{y}} + \frac{1}{3}c\,(x_5 + y_5 + z_5)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{24}} & = & -\left(z_5 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_5 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(x_5 - \frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{1}{2}a\,(x_5 - z_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(x_5 - 2y_5 + z_5)\,\hat{\mathbf{y}} - \frac{1}{6}c\,(2x_5 + 2y_5 + 2z_5 - 3)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{25}} & = & -\left(y_5 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_5 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_5 - \frac{1}{2}\right)\,\mathbf{a}_3 & = & -\frac{1}{2}a\,(y_5 - z_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(2x_5 - y_5 - z_5)\,\hat{\mathbf{y}} - \frac{1}{6}c\,(2x_5 + 2y_5 + 2z_5 - 3)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{26}} & = & -\left(x_5 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(z_5 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(y_5 - \frac{1}{2}\right)\,\mathbf{a}_3 & = & -\frac{1}{2}a\,(x_5 - y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(x_5 + y_5 - 2z_5)\,\hat{\mathbf{y}} - \frac{1}{6}c\,(2x_5 + 2y_5 + 2z_5 - 3)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{27}} & = & -x_5\,\mathbf{a}_1 - y_5\,\mathbf{a}_2 - z_5\,\mathbf{a}_3 & = & -\frac{1}{2}a\,(x_5 - z_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(x_5 - 2y_5 + z_5)\,\hat{\mathbf{y}} - \frac{1}{3}c\,(x_5 + y_5 + z_5)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{28}} & = & -z_5\,\mathbf{a}_1 - x_5\,\mathbf{a}_2 - y_5\,\mathbf{a}_3 & = & \frac{1}{2}a\,(y_5 - z_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(2x_5 - y_5 - z_5)\,\hat{\mathbf{y}} - \frac{1}{3}c\,(x_5 + y_5 + z_5)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{29}} & = & -y_5\,\mathbf{a}_1 - z_5\,\mathbf{a}_2 - x_5\,\mathbf{a}_3 & = & \frac{1}{2}a\,(x_5 - y_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(x_5 + y_5 - 2z_5)\,\hat{\mathbf{y}} - \frac{1}{3}c\,(x_5 + y_5 + z_5)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{30}} & = & \left(z_5 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(y_5 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(x_5 + \frac{1}{2}\right)\,\mathbf{a}_3 & = & -\frac{1}{2}a\,(x_5 - z_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(x_5 - 2y_5 + z_5)\,\hat{\mathbf{y}} + \frac{1}{6}c\,(2x_5 + 2y_5 + 2z_5 + 3)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{31}} & = & \left(y_5 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(x_5 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(z_5 + \frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{1}{2}a\,(y_5 - z_5)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(2x_5 - y_5 - z_5)\,\hat{\mathbf{y}} + \frac{1}{6}c\,(2x_5 + 2y_5 + 2z_5 + 3)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re IV} \\
\mathbf{B_{32}} & = & \left(x_5 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(z_5 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(y_5 + \frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{1}{2}a\,(x_5 - y_5)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(x_5 + y_5 - 2z_5)\,\hat{\mathbf{y}} + \frac{1}{6}c\,(2x_5 + 2y_5 + 2z_5 + 3)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re 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 - z_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(x_6 - 2y_6 + z_6)\,\hat{\mathbf{y}} + \frac{1}{3}c\,(x_6 + y_6 + z_6)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re V} \\
\mathbf{B_{34}} & = & z_6\,\mathbf{a}_1 + x_6\,\mathbf{a}_2 + y_6\,\mathbf{a}_3 & = & -\frac{1}{2}a\,(y_6 - z_6)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(2x_6 - y_6 - z_6)\,\hat{\mathbf{y}} + \frac{1}{3}c\,(x_6 + y_6 + z_6)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re V} \\
\mathbf{B_{35}} & = & y_6\,\mathbf{a}_1 + z_6\,\mathbf{a}_2 + x_6\,\mathbf{a}_3 & = & -\frac{1}{2}a\,(x_6 - y_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(x_6 + y_6 - 2z_6)\,\hat{\mathbf{y}} + \frac{1}{3}c\,(x_6 + y_6 + z_6)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re V} \\
\mathbf{B_{36}} & = & -\left(z_6 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_6 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(x_6 - \frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{1}{2}a\,(x_6 - z_6)\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(x_6 - 2y_6 + z_6)\,\hat{\mathbf{y}} - \frac{1}{6}c\,(2x_6 + 2y_6 + 2z_6 - 3)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re V} \\
\mathbf{B_{37}} & = & -\left(y_6 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_6 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_6 - \frac{1}{2}\right)\,\mathbf{a}_3 & = & -\frac{1}{2}a\,(y_6 - z_6)\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(2x_6 - y_6 - z_6)\,\hat{\mathbf{y}} - \frac{1}{6}c\,(2x_6 + 2y_6 + 2z_6 - 3)\,\hat{\mathbf{z}} & \text{(12f)} & \text{Re V}
\end{array}
$$

$$\mathbf{B_{38}} = -\left(x_6-\tfrac{1}{2}\right)\mathbf{a}_1-\left(z_6-\tfrac{1}{2}\right)\mathbf{a}_2-\left(y_6-\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_6-y_6\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_6+y_6-2z_6\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_6+2y_6+2z_6-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re V}$$

$$\mathbf{B_{39}} = -x_6\,\mathbf{a}_1-y_6\,\mathbf{a}_2-z_6\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_6-z_6\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_6-2y_6+z_6\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_6+y_6+z_6\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re V}$$

$$\mathbf{B_{40}} = -z_6\,\mathbf{a}_1-x_6\,\mathbf{a}_2-y_6\,\mathbf{a}_3 = \tfrac{1}{2}a\left(y_6-z_6\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(2x_6-y_6-z_6\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_6+y_6+z_6\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re V}$$

$$\mathbf{B_{41}} = -y_6\,\mathbf{a}_1-z_6\,\mathbf{a}_2-x_6\,\mathbf{a}_3 = \tfrac{1}{2}a\left(x_6-y_6\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_6+y_6-2z_6\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_6+y_6+z_6\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re V}$$

$$\mathbf{B_{42}} = \left(z_6+\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_6+\tfrac{1}{2}\right)\mathbf{a}_2+\left(x_6+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_6-z_6\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_6-2y_6+z_6\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_6+2y_6+2z_6+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re V}$$

$$\mathbf{B_{43}} = \left(y_6+\tfrac{1}{2}\right)\mathbf{a}_1+\left(x_6+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_6+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(y_6-z_6\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(2x_6-y_6-z_6\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_6+2y_6+2z_6+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re V}$$

$$\mathbf{B_{44}} = \left(x_6+\tfrac{1}{2}\right)\mathbf{a}_1+\left(z_6+\tfrac{1}{2}\right)\mathbf{a}_2+\left(y_6+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(x_6-y_6\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_6+y_6-2z_6\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_6+2y_6+2z_6+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re V}$$

$$\mathbf{B_{45}} = x_7\,\mathbf{a}_1+y_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3 = \tfrac{1}{2}a\left(x_7-z_7\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_7-2y_7+z_7\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_7+y_7+z_7\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{46}} = z_7\,\mathbf{a}_1+x_7\,\mathbf{a}_2+y_7\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(y_7-z_7\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(2x_7-y_7-z_7\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_7+y_7+z_7\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{47}} = y_7\,\mathbf{a}_1+z_7\,\mathbf{a}_2+x_7\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_7-y_7\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_7+y_7-2z_7\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_7+y_7+z_7\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{48}} = -\left(z_7-\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_7-\tfrac{1}{2}\right)\mathbf{a}_2-\left(x_7-\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(x_7-z_7\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_7-2y_7+z_7\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_7+2y_7+2z_7-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{49}} = -\left(y_7-\tfrac{1}{2}\right)\mathbf{a}_1-\left(x_7-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_7-\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(y_7-z_7\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(2x_7-y_7-z_7\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_7+2y_7+2z_7-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{50}} = -\left(x_7-\tfrac{1}{2}\right)\mathbf{a}_1-\left(z_7-\tfrac{1}{2}\right)\mathbf{a}_2-\left(y_7-\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_7-y_7\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_7+y_7-2z_7\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_7+2y_7+2z_7-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{51}} = -x_7\,\mathbf{a}_1-y_7\,\mathbf{a}_2-z_7\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_7-z_7\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_7-2y_7+z_7\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_7+y_7+z_7\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{52}} = -z_7\,\mathbf{a}_1-x_7\,\mathbf{a}_2-y_7\,\mathbf{a}_3 = \tfrac{1}{2}a\left(y_7-z_7\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(2x_7-y_7-z_7\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_7+y_7+z_7\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{53}} = -y_7\,\mathbf{a}_1-z_7\,\mathbf{a}_2-x_7\,\mathbf{a}_3 = \tfrac{1}{2}a\left(x_7-y_7\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_7+y_7-2z_7\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_7+y_7+z_7\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{54}} = \left(z_7+\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_7+\tfrac{1}{2}\right)\mathbf{a}_2+\left(x_7+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_7-z_7\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_7-2y_7+z_7\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_7+2y_7+2z_7+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{55}} = \left(y_7+\tfrac{1}{2}\right)\mathbf{a}_1+\left(x_7+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_7+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(y_7-z_7\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(2x_7-y_7-z_7\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_7+2y_7+2z_7+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{56}} = \left(x_7+\tfrac{1}{2}\right)\mathbf{a}_1+\left(z_7+\tfrac{1}{2}\right)\mathbf{a}_2+\left(y_7+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(x_7-y_7\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_7+y_7-2z_7\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_7+2y_7+2z_7+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re VI}$$

$$\mathbf{B_{57}} = x_8\,\mathbf{a}_1+y_8\,\mathbf{a}_2+z_8\,\mathbf{a}_3 = \tfrac{1}{2}a\left(x_8-z_8\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_8-2y_8+z_8\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_8+y_8+z_8\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{58}} = z_8\,\mathbf{a}_1+x_8\,\mathbf{a}_2+y_8\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(y_8-z_8\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(2x_8-y_8-z_8\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_8+y_8+z_8\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{59}} = y_8\,\mathbf{a}_1+z_8\,\mathbf{a}_2+x_8\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_8-y_8\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_8+y_8-2z_8\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_8+y_8+z_8\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{60}} = -\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_8-\tfrac{1}{2}\right)\mathbf{a}_2-\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(x_8-z_8\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_8-2y_8+z_8\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_8+2y_8+2z_8-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Re V}$$

$$\mathbf{B_{61}} = -\left(y_8-\tfrac{1}{2}\right)\mathbf{a}_1-\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(y_8-z_8\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(2x_8-y_8-z_8\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_8+2y_8+2z_8-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{62}} = -\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_1-\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_2-\left(y_8-\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_8-y_8\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_8+y_8-2z_8\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_8+2y_8+2z_8-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{63}} = -x_8\,\mathbf{a}_1-y_8\,\mathbf{a}_2-z_8\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_8-z_8\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_8-2y_8+z_8\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_8+y_8+z_8\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{64}} = -z_8\,\mathbf{a}_1-x_8\,\mathbf{a}_2-y_8\,\mathbf{a}_3 = \tfrac{1}{2}a\left(y_8-z_8\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(2x_8-y_8-z_8\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_8+y_8+z_8\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{65}} = -y_8\,\mathbf{a}_1-z_8\,\mathbf{a}_2-x_8\,\mathbf{a}_3 = \tfrac{1}{2}a\left(x_8-y_8\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_8+y_8-2z_8\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_8+y_8+z_8\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{66}} = \left(z_8+\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_8+\tfrac{1}{2}\right)\mathbf{a}_2+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_8-z_8\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_8-2y_8+z_8\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_8+2y_8+2z_8+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{67}} = \left(y_8+\tfrac{1}{2}\right)\mathbf{a}_1+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(y_8-z_8\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(2x_8-y_8-z_8\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_8+2y_8+2z_8+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{68}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_2+\left(y_8+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(x_8-y_8\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_8+y_8-2z_8\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_8+2y_8+2z_8+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr II}$$

$$\mathbf{B_{69}} = x_9\,\mathbf{a}_1+y_9\,\mathbf{a}_2+z_9\,\mathbf{a}_3 = \tfrac{1}{2}a\left(x_9-z_9\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_9-2y_9+z_9\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_9+y_9+z_9\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{70}} = z_9\,\mathbf{a}_1+x_9\,\mathbf{a}_2+y_9\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(y_9-z_9\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(2x_9-y_9-z_9\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_9+y_9+z_9\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{71}} = y_9\,\mathbf{a}_1+z_9\,\mathbf{a}_2+x_9\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_9-y_9\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_9+y_9-2z_9\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_9+y_9+z_9\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{72}} = -\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_2-\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(x_9-z_9\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_9-2y_9+z_9\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_9+2y_9+2z_9-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{73}} = -\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_1-\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(y_9-z_9\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(2x_9-y_9-z_9\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_9+2y_9+2z_9-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{74}} = -\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_1-\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_2-\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_9-y_9\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_9+y_9-2z_9\right)\hat{\mathbf{y}}-\tfrac{1}{6}c\left(2x_9+2y_9+2z_9-3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{75}} = -x_9\,\mathbf{a}_1-y_9\,\mathbf{a}_2-z_9\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_9-z_9\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_9-2y_9+z_9\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_9+y_9+z_9\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{76}} = -z_9\,\mathbf{a}_1-x_9\,\mathbf{a}_2-y_9\,\mathbf{a}_3 = \tfrac{1}{2}a\left(y_9-z_9\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(2x_9-y_9-z_9\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_9+y_9+z_9\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{77}} = -y_9\,\mathbf{a}_1-z_9\,\mathbf{a}_2-x_9\,\mathbf{a}_3 = \tfrac{1}{2}a\left(x_9-y_9\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(x_9+y_9-2z_9\right)\hat{\mathbf{y}}-\tfrac{1}{3}c\left(x_9+y_9+z_9\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{78}} = \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_9+\tfrac{1}{2}\right)\mathbf{a}_2+\left(x_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -\tfrac{1}{2}a\left(x_9-z_9\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_9-2y_9+z_9\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_9+2y_9+2z_9+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{79}} = \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_1+\left(x_9+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_9+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(y_9-z_9\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(2x_9-y_9-z_9\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_9+2y_9+2z_9+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{80}} = \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_1+\left(z_9+\tfrac{1}{2}\right)\mathbf{a}_2+\left(y_9+\tfrac{1}{2}\right)\mathbf{a}_3 = \tfrac{1}{2}a\left(x_9-y_9\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_9+y_9-2z_9\right)\hat{\mathbf{y}}+\tfrac{1}{6}c\left(2x_9+2y_9+2z_9+3\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr III}$$

$$\mathbf{B_{81}} = x_{10}\,\mathbf{a}_1+y_{10}\,\mathbf{a}_2+z_{10}\,\mathbf{a}_3 = \tfrac{1}{2}a\left(x_{10}-z_{10}\right)\hat{\mathbf{x}}-\tfrac{\sqrt{3}}{6}a\left(x_{10}-2y_{10}+z_{10}\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_{10}+y_{10}+z_{10}\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr IV}$$

$$\mathbf{B_{82}} = z_{10}\,\mathbf{a}_1+x_{10}\,\mathbf{a}_2+y_{10}\,\mathbf{a}_3 = -\tfrac{1}{2}a\left(y_{10}-z_{10}\right)\hat{\mathbf{x}}+\tfrac{\sqrt{3}}{6}a\left(2x_{10}-y_{10}-z_{10}\right)\hat{\mathbf{y}}+\tfrac{1}{3}c\left(x_{10}+y_{10}+z_{10}\right)\hat{\mathbf{z}} \quad (12f) \quad \text{Zr IV}$$

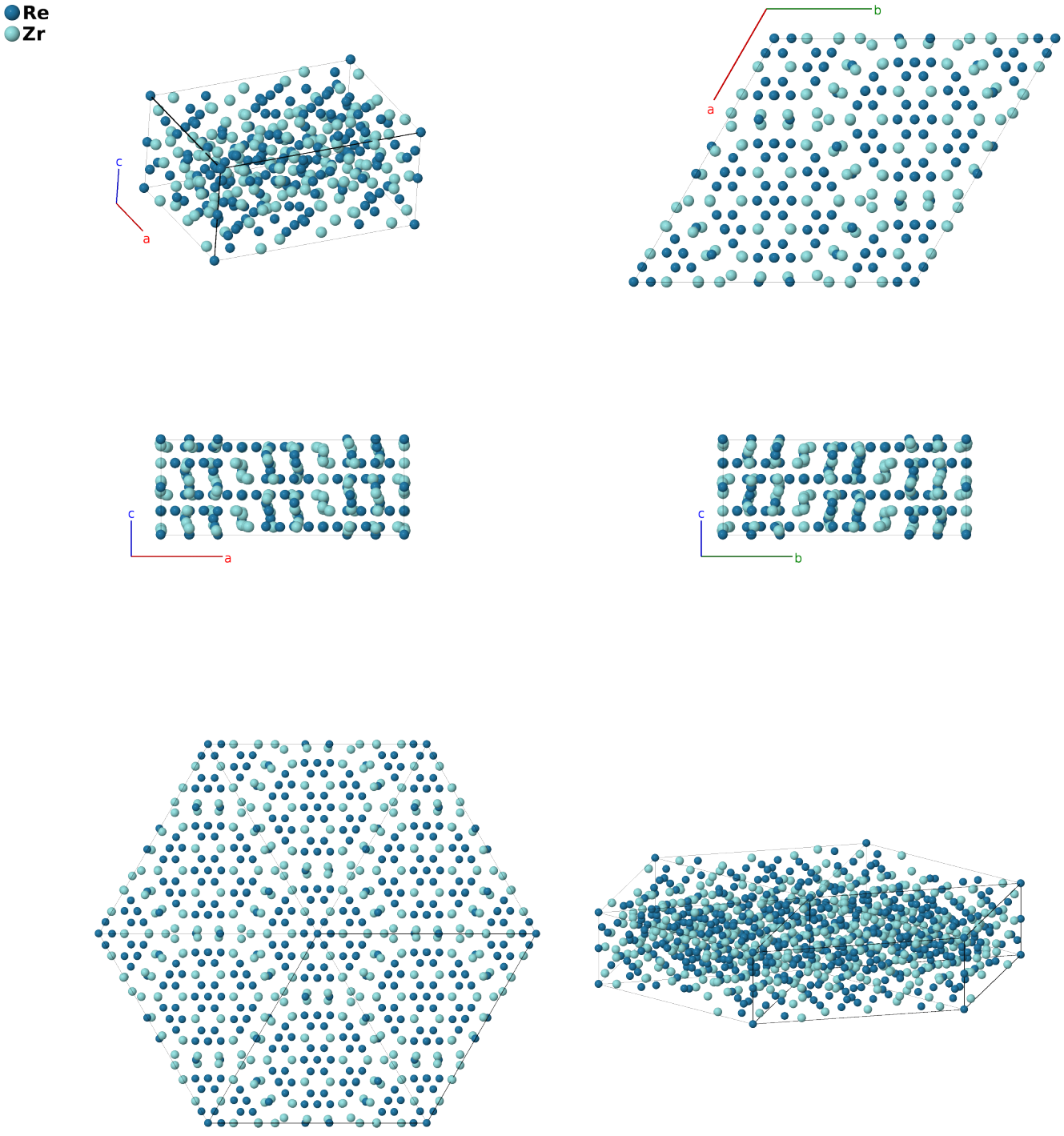
$\mathbf{B_{83}}$	$=$	$y_{10}\,\mathbf{a}_1 + z_{10}\,\mathbf{a}_2 + x_{10}\,\mathbf{a}_3$	$=$	$-\frac{1}{2}a\,(x_{10} - y_{10})\;\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(x_{10} + y_{10} - 2z_{10})\;\hat{\mathbf{y}} + \frac{1}{3}c\,(x_{10} + y_{10} + z_{10})\;\hat{\mathbf{z}}$	(12f)	Zr IV
$\mathbf{B_{84}}$	$=$	$-\left(z_{10} - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_{10} - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(x_{10} - \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$\frac{1}{2}a\,(x_{10} - z_{10})\;\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(x_{10} - 2y_{10} + z_{10})\;\hat{\mathbf{y}} - \frac{1}{6}c\,(2x_{10} + 2y_{10} + 2z_{10} - 3)\;\hat{\mathbf{z}}$	(12f)	Zr IV
$\mathbf{B_{85}}$	$=$	$-\left(y_{10} - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_{10} - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_{10} - \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-\frac{1}{2}a\,(y_{10} - z_{10})\;\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(2x_{10} - y_{10} - z_{10})\;\hat{\mathbf{y}} - \frac{1}{6}c\,(2x_{10} + 2y_{10} + 2z_{10} - 3)\;\hat{\mathbf{z}}$	(12f)	Zr IV
$\mathbf{B_{86}}$	$=$	$-\left(x_{10} - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(z_{10} - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(y_{10} - \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-\frac{1}{2}a\,(x_{10} - y_{10})\;\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(x_{10} + y_{10} - 2z_{10})\;\hat{\mathbf{y}} - \frac{1}{6}c\,(2x_{10} + 2y_{10} + 2z_{10} - 3)\;\hat{\mathbf{z}}$	(12f)	Zr IV
$\mathbf{B_{87}}$	$=$	$-x_{10}\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 - z_{10}\,\mathbf{a}_3$	$=$	$-\frac{1}{2}a\,(x_{10} - z_{10})\;\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(x_{10} - 2y_{10} + z_{10})\;\hat{\mathbf{y}} - \frac{1}{3}c\,(x_{10} + y_{10} + z_{10})\;\hat{\mathbf{z}}$	(12f)	Zr IV
$\mathbf{B_{88}}$	$=$	$-z_{10}\,\mathbf{a}_1 - x_{10}\,\mathbf{a}_2 - y_{10}\,\mathbf{a}_3$	$=$	$\frac{1}{2}a\,(y_{10} - z_{10})\;\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(2x_{10} - y_{10} - z_{10})\;\hat{\mathbf{y}} - \frac{1}{3}c\,(x_{10} + y_{10} + z_{10})\;\hat{\mathbf{z}}$	(12f)	Zr IV
$\mathbf{B_{89}}$	$=$	$-y_{10}\,\mathbf{a}_1 - z_{10}\,\mathbf{a}_2 - x_{10}\,\mathbf{a}_3$	$=$	$\frac{1}{2}a\,(x_{10} - y_{10})\;\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(x_{10} + y_{10} - 2z_{10})\;\hat{\mathbf{y}} - \frac{1}{3}c\,(x_{10} + y_{10} + z_{10})\;\hat{\mathbf{z}}$	(12f)	Zr IV
$\mathbf{B_{90}}$	$=$	$\left(z_{10} + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(y_{10} + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(x_{10} + \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-\frac{1}{2}a\,(x_{10} - z_{10})\;\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(x_{10} - 2y_{10} + z_{10})\;\hat{\mathbf{y}} + \frac{1}{6}c\,(2x_{10} + 2y_{10} + 2z_{10} + 3)\;\hat{\mathbf{z}}$	(12f)	Zr IV
$\mathbf{B_{91}}$	$=$	$\left(y_{10} + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(x_{10} + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(z_{10} + \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$\frac{1}{2}a\,(y_{10} - z_{10})\;\hat{\mathbf{x}} + \frac{\sqrt{3}}{6}a\,(2x_{10} - y_{10} - z_{10})\;\hat{\mathbf{y}} + \frac{1}{6}c\,(2x_{10} + 2y_{10} + 2z_{10} + 3)\;\hat{\mathbf{z}}$	(12f)	Zr IV
$\mathbf{B_{92}}$	$=$	$\left(x_{10} + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(z_{10} + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(y_{10} + \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$\frac{1}{2}a\,(x_{10} - y_{10})\;\hat{\mathbf{x}} - \frac{\sqrt{3}}{6}a\,(x_{10} + y_{10} - 2z_{10})\;\hat{\mathbf{y}} + \frac{1}{6}c\,(2x_{10} + 2y_{10} + 2z_{10} + 3)\;\hat{\mathbf{z}}$	(12f)	Zr IV

References

[1] K. Cenzual, E. Parthé, and R. M. Waterstrat, *$Zr_{21}Re_{25}$, a new rhombohedral structure type containing 12Å-thick infinite $MgZn_2$(Laves)-type columns*, Acta Crystallogr. Sect. C **42**, 261–266 (1986), doi:10.1107/S0108270186096555.

Found in

[1] R. Cerný and G. Renaudin, *The intermetallic compound $Mg_{21}Zn_{25}$*, Acta Crystallogr. Sect. C **58**, i154–i155 (2002), doi:10.1107/S0108270102018103.


Re
Zr
c
a
b
a
c
a
c
b