Ag(tcm)(pyz) [$AgC_8N_5H_4$] Structure: AB8C4D5_oP72_62_c_4c2d_2d_3cd-001

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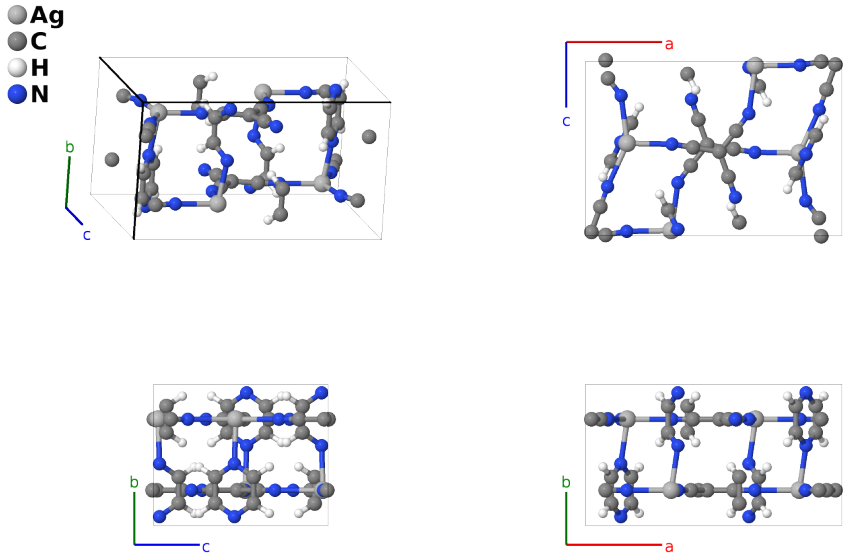
https://aflow.org/p/L9Y6

https://aflow.org/p/AB8C4D5_oP72_62_c_4c2d_2d_3cd-001

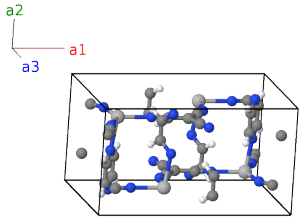


Prototype	$AgC_8H_4N_5$
AFLOW prototype label	AB8C4D5_oP72_62_c_4c2d_2d_3cd-001
CCDC	671414
Pearson symbol	oP72
Space group number	62
Space group symbol	*Pnma*
AFLOW prototype command	`aflow --proto=AB8C4D5_oP72_62_c_4c2d_2d_3cd-001 --params=`$a, b/a, c/a, x_1, z_1, x_2, z_2, x_3, z_3, x_4, z_4, x_5, z_5, x_6, z_6, x_7, z_7, x_8, z_8, x_9, y_9, z_9, x_{10}, y_{10}, z_{10}, x_{11}, y_{11}, z_{11}, x_{12}, y_{12}, z_{12}, x_{13}, y_{13}, z_{13}$

- In the chemical literature tcm=tricyanomethanide ($C(CN)_3^-$), and phz=pyrazine.

Simple Orthorhombic primitive vectors

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



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	$x_1\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+z_1\,\mathbf{a}_3$	=	$ax_1\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}+cz_1\,\hat{\mathbf{z}}$	(4c)	Ag I
$\mathbf{B_2}$	=	$-\left(x_1-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(z_1+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_1-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_1+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	Ag I
$\mathbf{B_3}$	=	$-x_1\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-z_1\,\mathbf{a}_3$	=	$-ax_1\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}-cz_1\,\hat{\mathbf{z}}$	(4c)	Ag I
$\mathbf{B_4}$	=	$\left(x_1+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(z_1-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_1+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_1-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	Ag I
$\mathbf{B_5}$	=	$x_2\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+z_2\,\mathbf{a}_3$	=	$ax_2\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}+cz_2\,\hat{\mathbf{z}}$	(4c)	C I
$\mathbf{B_6}$	=	$-\left(x_2-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(z_2+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_2-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_2+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	C I
$\mathbf{B_7}$	=	$-x_2\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-z_2\,\mathbf{a}_3$	=	$-ax_2\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}-cz_2\,\hat{\mathbf{z}}$	(4c)	C I
$\mathbf{B_8}$	=	$\left(x_2+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(z_2-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_2+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_2-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	C I
$\mathbf{B_9}$	=	$x_3\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+z_3\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}+cz_3\,\hat{\mathbf{z}}$	(4c)	C II
$\mathbf{B_{10}}$	=	$-\left(x_3-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(z_3+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_3-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_3+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	C II
$\mathbf{B_{11}}$	=	$-x_3\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-z_3\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}-cz_3\,\hat{\mathbf{z}}$	(4c)	C II
$\mathbf{B_{12}}$	=	$\left(x_3+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(z_3-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_3+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_3-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	C II
$\mathbf{B_{13}}$	=	$x_4\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+z_4\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}+cz_4\,\hat{\mathbf{z}}$	(4c)	C III
$\mathbf{B_{14}}$	=	$-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(z_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	C III
$\mathbf{B_{15}}$	=	$-x_4\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-z_4\,\mathbf{a}_3$	=	$-ax_4\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}-cz_4\,\hat{\mathbf{z}}$	(4c)	C III
$\mathbf{B_{16}}$	=	$\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(z_4-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_4-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	C III
$\mathbf{B_{17}}$	=	$x_5\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}+cz_5\,\hat{\mathbf{z}}$	(4c)	C IV
$\mathbf{B_{18}}$	=	$-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	C IV
$\mathbf{B_{19}}$	=	$-x_5\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	=	$-ax_5\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}-cz_5\,\hat{\mathbf{z}}$	(4c)	C IV
$\mathbf{B_{20}}$	=	$\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	C IV
$\mathbf{B_{21}}$	=	$x_6\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+z_6\,\mathbf{a}_3$	=	$ax_6\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}+cz_6\,\hat{\mathbf{z}}$	(4c)	N I
$\mathbf{B_{22}}$	=	$-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	N I
$\mathbf{B_{23}}$	=	$-x_6\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-z_6\,\mathbf{a}_3$	=	$-ax_6\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}-cz_6\,\hat{\mathbf{z}}$	(4c)	N I
$\mathbf{B_{24}}$	=	$\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	N I
$\mathbf{B_{25}}$	=	$x_7\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+z_7\,\mathbf{a}_3$	=	$ax_7\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}+cz_7\,\hat{\mathbf{z}}$	(4c)	N II
$\mathbf{B_{26}}$	=	$-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	N II
$\mathbf{B_{27}}$	=	$-x_7\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-z_7\,\mathbf{a}_3$	=	$-ax_7\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}-cz_7\,\hat{\mathbf{z}}$	(4c)	N II
$\mathbf{B_{28}}$	=	$\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	N II
$\mathbf{B_{29}}$	=	$x_8\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+z_8\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}+cz_8\,\hat{\mathbf{z}}$	(4c)	N III
$\mathbf{B_{30}}$	=	$-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}+c\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	N III
$\mathbf{B_{31}}$	=	$-x_8\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-z_8\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}}+\frac{3}{4}b\,\hat{\mathbf{y}}-cz_8\,\hat{\mathbf{z}}$	(4c)	N III
$\mathbf{B_{32}}$	=	$\left(x_8+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(z_8-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}b\,\hat{\mathbf{y}}-c\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(4c)	N III

$$
\begin{array}{lcccccc}
\mathbf{B_{33}} & = & x_9\,\mathbf{a}_1 + y_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3 & = & a x_9\,\hat{\mathbf{x}} + b y_9\,\hat{\mathbf{y}} + c z_9\,\hat{\mathbf{z}} & \text{(8d)} & \text{C V} \\
\mathbf{B_{34}} & = & -\left(x_9 - \tfrac{1}{2}\right)\mathbf{a}_1 - y_9\,\mathbf{a}_2 + \left(z_9 + \tfrac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_9 - \tfrac{1}{2}\right)\hat{\mathbf{x}} - b y_9\,\hat{\mathbf{y}} + c\left(z_9 + \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{C V} \\
\mathbf{B_{35}} & = & -x_9\,\mathbf{a}_1 + \left(y_9 + \tfrac{1}{2}\right)\mathbf{a}_2 - z_9\,\mathbf{a}_3 & = & -a x_9\,\hat{\mathbf{x}} + b\left(y_9 + \tfrac{1}{2}\right)\hat{\mathbf{y}} - c z_9\,\hat{\mathbf{z}} & \text{(8d)} & \text{C V} \\
\mathbf{B_{36}} & = & \left(x_9 + \tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_9 - \tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_9 - \tfrac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_9 + \tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_9 - \tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_9 - \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{C V} \\
\mathbf{B_{37}} & = & -x_9\,\mathbf{a}_1 - y_9\,\mathbf{a}_2 - z_9\,\mathbf{a}_3 & = & -a x_9\,\hat{\mathbf{x}} - b y_9\,\hat{\mathbf{y}} - c z_9\,\hat{\mathbf{z}} & \text{(8d)} & \text{C V} \\
\mathbf{B_{38}} & = & \left(x_9 + \tfrac{1}{2}\right)\mathbf{a}_1 + y_9\,\mathbf{a}_2 - \left(z_9 - \tfrac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_9 + \tfrac{1}{2}\right)\hat{\mathbf{x}} + b y_9\,\hat{\mathbf{y}} - c\left(z_9 - \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{C V} \\
\mathbf{B_{39}} & = & x_9\,\mathbf{a}_1 - \left(y_9 - \tfrac{1}{2}\right)\mathbf{a}_2 + z_9\,\mathbf{a}_3 & = & a x_9\,\hat{\mathbf{x}} - b\left(y_9 - \tfrac{1}{2}\right)\hat{\mathbf{y}} + c z_9\,\hat{\mathbf{z}} & \text{(8d)} & \text{C V} \\
\mathbf{B_{40}} & = & -\left(x_9 - \tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_9 + \tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_9 + \tfrac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_9 - \tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_9 + \tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_9 + \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{C V} \\
\mathbf{B_{41}} & = & x_{10}\,\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 & = & a x_{10}\,\hat{\mathbf{x}} + b y_{10}\,\hat{\mathbf{y}} + c z_{10}\,\hat{\mathbf{z}} & \text{(8d)} & \text{C VI} \\
\mathbf{B_{42}} & = & -\left(x_{10} - \tfrac{1}{2}\right)\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 + \left(z_{10} + \tfrac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{10} - \tfrac{1}{2}\right)\hat{\mathbf{x}} - b y_{10}\,\hat{\mathbf{y}} + c\left(z_{10} + \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{C VI} \\
\mathbf{B_{43}} & = & -x_{10}\,\mathbf{a}_1 + \left(y_{10} + \tfrac{1}{2}\right)\mathbf{a}_2 - z_{10}\,\mathbf{a}_3 & = & -a x_{10}\,\hat{\mathbf{x}} + b\left(y_{10} + \tfrac{1}{2}\right)\hat{\mathbf{y}} - c z_{10}\,\hat{\mathbf{z}} & \text{(8d)} & \text{C VI} \\
\mathbf{B_{44}} & = & \left(x_{10} + \tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{10} - \tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{10} - \tfrac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{10} + \tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{10} - \tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{10} - \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{C VI} \\
\mathbf{B_{45}} & = & -x_{10}\,\mathbf{a}_1 - y_{10}\,\mathbf{a}_2 - z_{10}\,\mathbf{a}_3 & = & -a x_{10}\,\hat{\mathbf{x}} - b y_{10}\,\hat{\mathbf{y}} - c z_{10}\,\hat{\mathbf{z}} & \text{(8d)} & \text{C VI} \\
\mathbf{B_{46}} & = & \left(x_{10} + \tfrac{1}{2}\right)\mathbf{a}_1 + y_{10}\,\mathbf{a}_2 - \left(z_{10} - \tfrac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{10} + \tfrac{1}{2}\right)\hat{\mathbf{x}} + b y_{10}\,\hat{\mathbf{y}} - c\left(z_{10} - \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{C VI} \\
\mathbf{B_{47}} & = & x_{10}\,\mathbf{a}_1 - \left(y_{10} - \tfrac{1}{2}\right)\mathbf{a}_2 + z_{10}\,\mathbf{a}_3 & = & a x_{10}\,\hat{\mathbf{x}} - b\left(y_{10} - \tfrac{1}{2}\right)\hat{\mathbf{y}} + c z_{10}\,\hat{\mathbf{z}} & \text{(8d)} & \text{C VI} \\
\mathbf{B_{48}} & = & -\left(x_{10} - \tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{10} + \tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{10} + \tfrac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{10} - \tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{10} + \tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{10} + \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{C VI} \\
\mathbf{B_{49}} & = & x_{11}\,\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 & = & a x_{11}\,\hat{\mathbf{x}} + b y_{11}\,\hat{\mathbf{y}} + c z_{11}\,\hat{\mathbf{z}} & \text{(8d)} & \text{H I} \\
\mathbf{B_{50}} & = & -\left(x_{11} - \tfrac{1}{2}\right)\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 + \left(z_{11} + \tfrac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{11} - \tfrac{1}{2}\right)\hat{\mathbf{x}} - b y_{11}\,\hat{\mathbf{y}} + c\left(z_{11} + \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{H I} \\
\mathbf{B_{51}} & = & -x_{11}\,\mathbf{a}_1 + \left(y_{11} + \tfrac{1}{2}\right)\mathbf{a}_2 - z_{11}\,\mathbf{a}_3 & = & -a x_{11}\,\hat{\mathbf{x}} + b\left(y_{11} + \tfrac{1}{2}\right)\hat{\mathbf{y}} - c z_{11}\,\hat{\mathbf{z}} & \text{(8d)} & \text{H I} \\
\mathbf{B_{52}} & = & \left(x_{11} + \tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{11} - \tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{11} - \tfrac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{11} + \tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{11} - \tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{11} - \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{H I} \\
\mathbf{B_{53}} & = & -x_{11}\,\mathbf{a}_1 - y_{11}\,\mathbf{a}_2 - z_{11}\,\mathbf{a}_3 & = & -a x_{11}\,\hat{\mathbf{x}} - b y_{11}\,\hat{\mathbf{y}} - c z_{11}\,\hat{\mathbf{z}} & \text{(8d)} & \text{H I} \\
\mathbf{B_{54}} & = & \left(x_{11} + \tfrac{1}{2}\right)\mathbf{a}_1 + y_{11}\,\mathbf{a}_2 - \left(z_{11} - \tfrac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{11} + \tfrac{1}{2}\right)\hat{\mathbf{x}} + b y_{11}\,\hat{\mathbf{y}} - c\left(z_{11} - \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{H I} \\
\mathbf{B_{55}} & = & x_{11}\,\mathbf{a}_1 - \left(y_{11} - \tfrac{1}{2}\right)\mathbf{a}_2 + z_{11}\,\mathbf{a}_3 & = & a x_{11}\,\hat{\mathbf{x}} - b\left(y_{11} - \tfrac{1}{2}\right)\hat{\mathbf{y}} + c z_{11}\,\hat{\mathbf{z}} & \text{(8d)} & \text{H I} \\
\mathbf{B_{56}} & = & -\left(x_{11} - \tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_{11} + \tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_{11} + \tfrac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{11} - \tfrac{1}{2}\right)\hat{\mathbf{x}} + b\left(y_{11} + \tfrac{1}{2}\right)\hat{\mathbf{y}} + c\left(z_{11} + \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{H I} \\
\mathbf{B_{57}} & = & x_{12}\,\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3 & = & a x_{12}\,\hat{\mathbf{x}} + b y_{12}\,\hat{\mathbf{y}} + c z_{12}\,\hat{\mathbf{z}} & \text{(8d)} & \text{H II} \\
\mathbf{B_{58}} & = & -\left(x_{12} - \tfrac{1}{2}\right)\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 + \left(z_{12} + \tfrac{1}{2}\right)\mathbf{a}_3 & = & -a\left(x_{12} - \tfrac{1}{2}\right)\hat{\mathbf{x}} - b y_{12}\,\hat{\mathbf{y}} + c\left(z_{12} + \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{H II} \\
\mathbf{B_{59}} & = & -x_{12}\,\mathbf{a}_1 + \left(y_{12} + \tfrac{1}{2}\right)\mathbf{a}_2 - z_{12}\,\mathbf{a}_3 & = & -a x_{12}\,\hat{\mathbf{x}} + b\left(y_{12} + \tfrac{1}{2}\right)\hat{\mathbf{y}} - c z_{12}\,\hat{\mathbf{z}} & \text{(8d)} & \text{H II} \\
\mathbf{B_{60}} & = & \left(x_{12} + \tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_{12} - \tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_{12} - \tfrac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{12} + \tfrac{1}{2}\right)\hat{\mathbf{x}} - b\left(y_{12} - \tfrac{1}{2}\right)\hat{\mathbf{y}} - c\left(z_{12} - \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{H II} \\
\mathbf{B_{61}} & = & -x_{12}\,\mathbf{a}_1 - y_{12}\,\mathbf{a}_2 - z_{12}\,\mathbf{a}_3 & = & -a x_{12}\,\hat{\mathbf{x}} - b y_{12}\,\hat{\mathbf{y}} - c z_{12}\,\hat{\mathbf{z}} & \text{(8d)} & \text{H II} \\
\mathbf{B_{62}} & = & \left(x_{12} + \tfrac{1}{2}\right)\mathbf{a}_1 + y_{12}\,\mathbf{a}_2 - \left(z_{12} - \tfrac{1}{2}\right)\mathbf{a}_3 & = & a\left(x_{12} + \tfrac{1}{2}\right)\hat{\mathbf{x}} + b y_{12}\,\hat{\mathbf{y}} - c\left(z_{12} - \tfrac{1}{2}\right)\hat{\mathbf{z}} & \text{(8d)} & \text{H II}
\end{array}
$$

$\mathbf{B_{63}}$	$=$	$x_{12}\,\mathbf{a}_1 - \left(y_{12} - \frac{1}{2}\right)\,\mathbf{a}_2 + z_{12}\,\mathbf{a}_3$	$=$	$ax_{12}\,\hat{\mathbf{x}} - b\left(y_{12} - \frac{1}{2}\right)\,\hat{\mathbf{y}} + cz_{12}\,\hat{\mathbf{z}}$	(8d)	H II
$\mathbf{B_{64}}$	$=$	$-\left(x_{12} - \frac{1}{2}\right)\,\mathbf{a}_1 + \left(y_{12} + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(z_{12} + \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{12} - \frac{1}{2}\right)\,\hat{\mathbf{x}} + b\left(y_{12} + \frac{1}{2}\right)\,\hat{\mathbf{y}} + c\left(z_{12} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8d)	H II
$\mathbf{B_{65}}$	$=$	$x_{13}\,\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3$	$=$	$ax_{13}\,\hat{\mathbf{x}} + by_{13}\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}}$	(8d)	N IV
$\mathbf{B_{66}}$	$=$	$-\left(x_{13} - \frac{1}{2}\right)\,\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 + \left(z_{13} + \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{13} - \frac{1}{2}\right)\,\hat{\mathbf{x}} - by_{13}\,\hat{\mathbf{y}} + c\left(z_{13} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8d)	N IV
$\mathbf{B_{67}}$	$=$	$-x_{13}\,\mathbf{a}_1 + \left(y_{13} + \frac{1}{2}\right)\,\mathbf{a}_2 - z_{13}\,\mathbf{a}_3$	$=$	$-ax_{13}\,\hat{\mathbf{x}} + b\left(y_{13} + \frac{1}{2}\right)\,\hat{\mathbf{y}} - cz_{13}\,\hat{\mathbf{z}}$	(8d)	N IV
$\mathbf{B_{68}}$	$=$	$\left(x_{13} + \frac{1}{2}\right)\,\mathbf{a}_1 - \left(y_{13} - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_{13} - \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$a\left(x_{13} + \frac{1}{2}\right)\,\hat{\mathbf{x}} - b\left(y_{13} - \frac{1}{2}\right)\,\hat{\mathbf{y}} - c\left(z_{13} - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8d)	N IV
$\mathbf{B_{69}}$	$=$	$-x_{13}\,\mathbf{a}_1 - y_{13}\,\mathbf{a}_2 - z_{13}\,\mathbf{a}_3$	$=$	$-ax_{13}\,\hat{\mathbf{x}} - by_{13}\,\hat{\mathbf{y}} - cz_{13}\,\hat{\mathbf{z}}$	(8d)	N IV
$\mathbf{B_{70}}$	$=$	$\left(x_{13} + \frac{1}{2}\right)\,\mathbf{a}_1 + y_{13}\,\mathbf{a}_2 - \left(z_{13} - \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$a\left(x_{13} + \frac{1}{2}\right)\,\hat{\mathbf{x}} + by_{13}\,\hat{\mathbf{y}} - c\left(z_{13} - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8d)	N IV
$\mathbf{B_{71}}$	$=$	$x_{13}\,\mathbf{a}_1 - \left(y_{13} - \frac{1}{2}\right)\,\mathbf{a}_2 + z_{13}\,\mathbf{a}_3$	$=$	$ax_{13}\,\hat{\mathbf{x}} - b\left(y_{13} - \frac{1}{2}\right)\,\hat{\mathbf{y}} + cz_{13}\,\hat{\mathbf{z}}$	(8d)	N IV
$\mathbf{B_{72}}$	$=$	$-\left(x_{13} - \frac{1}{2}\right)\,\mathbf{a}_1 + \left(y_{13} + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(z_{13} + \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_{13} - \frac{1}{2}\right)\,\hat{\mathbf{x}} + b\left(y_{13} + \frac{1}{2}\right)\,\hat{\mathbf{y}} + c\left(z_{13} + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8d)	N IV

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