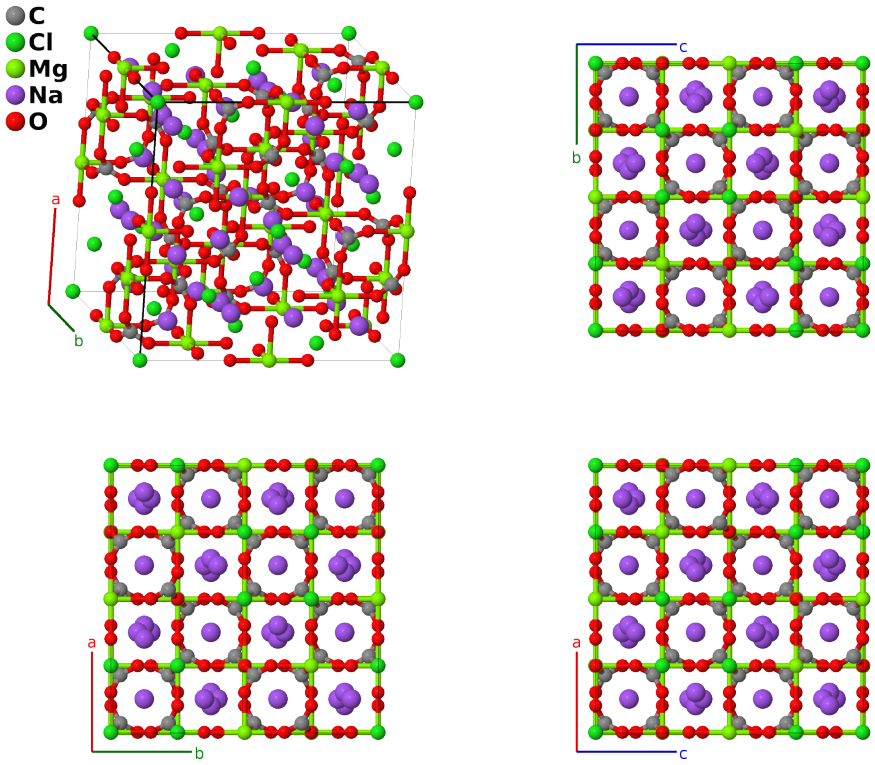
$G7_3$ [$Na_3MgCl(CO_3)_2$] Structure (*Obsolete*): A2BCD3E6_cF208_227_e_c_d_f_g-001

This structure originally had the label `A2BCD3E6_cF208_227_e_c_d_f_g`. 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/8XP6

https://aflow.org/p/A2BCD3E6_cF208_227_e_c_d_f_g-001

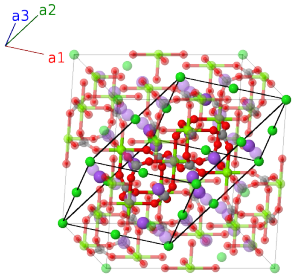


Prototype	$C_2ClMgNa_3O_6$
AFLOW prototype label	A2BCD3E6_cF208_227_e_c_d_f_g-001
***Strukturbericht* designation**	$G7_3$
Mineral name	northupite
ICSD	27790
Pearson symbol	cF208
Space group number	227
Space group symbol	$Fd\bar{3}m$
AFLOW prototype command	`aflow --proto=A2BCD3E6_cF208_227_e_c_d_f_g-001 --params=`a, x_3, x_4, x_5, z_5

- This is the original structure determined by (Shiba, 1931) and given the designation $G7_3$ in (Hermann, 1937). (Negro, 1975) showed that the correct structure was actually related to cubic pyrochlore. The two structures are very similar, and a displacement of the oxygen atoms by less than 1Å brings the two structures into agreement.

Face-centered Cubic primitive vectors

$$\begin{aligned}
\mathbf{a_1} &= \tfrac{1}{2}a\,\hat{\mathbf{y}} + \tfrac{1}{2}a\,\hat{\mathbf{z}} \\
\mathbf{a_2} &= \tfrac{1}{2}a\,\hat{\mathbf{x}} + \tfrac{1}{2}a\,\hat{\mathbf{z}} \\
\mathbf{a_3} &= \tfrac{1}{2}a\,\hat{\mathbf{x}} + \tfrac{1}{2}a\,\hat{\mathbf{y}}
\end{aligned}$$



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	0	=	0	(16c)	Cl I
$\mathbf{B_2}$	=	$\frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}}$	(16c)	Cl I
$\mathbf{B_3}$	=	$\frac{1}{2}\,\mathbf{a}_2$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(16c)	Cl I
$\mathbf{B_4}$	=	$\frac{1}{2}\,\mathbf{a}_1$	=	$\frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(16c)	Cl I
$\mathbf{B_5}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(16d)	Mg I
$\mathbf{B_6}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(16d)	Mg I
$\mathbf{B_7}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(16d)	Mg I
$\mathbf{B_8}$	=	$\frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(16d)	Mg I
$\mathbf{B_9}$	=	$x_3\,\mathbf{a}_1 + x_3\,\mathbf{a}_2 + x_3\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}} + ax_3\,\hat{\mathbf{y}} + ax_3\,\hat{\mathbf{z}}$	(32e)	C I
$\mathbf{B_{10}}$	=	$x_3\,\mathbf{a}_1 + x_3\,\mathbf{a}_2 - \left(3x_3 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_3 - \frac{1}{4}\right)\,\hat{\mathbf{x}} - a\left(x_3 - \frac{1}{4}\right)\,\hat{\mathbf{y}} + ax_3\,\hat{\mathbf{z}}$	(32e)	C I
$\mathbf{B_{11}}$	=	$x_3\,\mathbf{a}_1 - \left(3x_3 - \frac{1}{2}\right)\,\mathbf{a}_2 + x_3\,\mathbf{a}_3$	=	$-a\left(x_3 - \frac{1}{4}\right)\,\hat{\mathbf{x}} + ax_3\,\hat{\mathbf{y}} - a\left(x_3 - \frac{1}{4}\right)\,\hat{\mathbf{z}}$	(32e)	C I
$\mathbf{B_{12}}$	=	$-\left(3x_3 - \frac{1}{2}\right)\,\mathbf{a}_1 + x_3\,\mathbf{a}_2 + x_3\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}} - a\left(x_3 - \frac{1}{4}\right)\,\hat{\mathbf{y}} - a\left(x_3 - \frac{1}{4}\right)\,\hat{\mathbf{z}}$	(32e)	C I
$\mathbf{B_{13}}$	=	$-x_3\,\mathbf{a}_1 - x_3\,\mathbf{a}_2 + \left(3x_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_3 + \frac{1}{4}\right)\,\hat{\mathbf{x}} + a\left(x_3 + \frac{1}{4}\right)\,\hat{\mathbf{y}} - ax_3\,\hat{\mathbf{z}}$	(32e)	C I
$\mathbf{B_{14}}$	=	$-x_3\,\mathbf{a}_1 - x_3\,\mathbf{a}_2 - x_3\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} - ax_3\,\hat{\mathbf{y}} - ax_3\,\hat{\mathbf{z}}$	(32e)	C I
$\mathbf{B_{15}}$	=	$-x_3\,\mathbf{a}_1 + \left(3x_3 + \frac{1}{2}\right)\,\mathbf{a}_2 - x_3\,\mathbf{a}_3$	=	$a\left(x_3 + \frac{1}{4}\right)\,\hat{\mathbf{x}} - ax_3\,\hat{\mathbf{y}} + a\left(x_3 + \frac{1}{4}\right)\,\hat{\mathbf{z}}$	(32e)	C I
$\mathbf{B_{16}}$	=	$\left(3x_3 + \frac{1}{2}\right)\,\mathbf{a}_1 - x_3\,\mathbf{a}_2 - x_3\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} + a\left(x_3 + \frac{1}{4}\right)\,\hat{\mathbf{y}} + a\left(x_3 + \frac{1}{4}\right)\,\hat{\mathbf{z}}$	(32e)	C I
$\mathbf{B_{17}}$	=	$-\left(x_4 - \frac{1}{4}\right)\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 + x_4\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}} + \frac{1}{8}a\,\hat{\mathbf{y}} + \frac{1}{8}a\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{18}}$	=	$x_4\,\mathbf{a}_1 - \left(x_4 - \frac{1}{4}\right)\,\mathbf{a}_2 - \left(x_4 - \frac{1}{4}\right)\,\mathbf{a}_3$	=	$-a\left(x_4 - \frac{1}{4}\right)\,\hat{\mathbf{x}} + \frac{1}{8}a\,\hat{\mathbf{y}} + \frac{1}{8}a\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{19}}$	=	$x_4\,\mathbf{a}_1 - \left(x_4 - \frac{1}{4}\right)\,\mathbf{a}_2 + x_4\,\mathbf{a}_3$	=	$\frac{1}{8}a\,\hat{\mathbf{x}} + ax_4\,\hat{\mathbf{y}} + \frac{1}{8}a\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{20}}$	=	$-\left(x_4 - \frac{1}{4}\right)\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 - \left(x_4 - \frac{1}{4}\right)\,\mathbf{a}_3$	=	$\frac{1}{8}a\,\hat{\mathbf{x}} - a\left(x_4 - \frac{1}{4}\right)\,\hat{\mathbf{y}} + \frac{1}{8}a\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{21}}$	=	$x_4\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 - \left(x_4 - \frac{1}{4}\right)\,\mathbf{a}_3$	=	$\frac{1}{8}a\,\hat{\mathbf{x}} + \frac{1}{8}a\,\hat{\mathbf{y}} + ax_4\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{22}}$	=	$-\left(x_4 - \frac{1}{4}\right)\,\mathbf{a}_1 - \left(x_4 - \frac{1}{4}\right)\,\mathbf{a}_2 + x_4\,\mathbf{a}_3$	=	$\frac{1}{8}a\,\hat{\mathbf{x}} + \frac{1}{8}a\,\hat{\mathbf{y}} - a\left(x_4 - \frac{1}{4}\right)\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{23}}$	=	$\left(x_4 + \frac{3}{4}\right)\,\mathbf{a}_1 - x_4\,\mathbf{a}_2 + \left(x_4 + \frac{3}{4}\right)\,\mathbf{a}_3$	=	$\frac{3}{8}a\,\hat{\mathbf{x}} + a\left(x_4 + \frac{3}{4}\right)\,\hat{\mathbf{y}} + \frac{3}{8}a\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{24}}$	=	$-x_4\,\mathbf{a}_1 + \left(x_4 + \frac{3}{4}\right)\,\mathbf{a}_2 - x_4\,\mathbf{a}_3$	=	$\frac{3}{8}a\,\hat{\mathbf{x}} - ax_4\,\hat{\mathbf{y}} + \frac{3}{8}a\,\hat{\mathbf{z}}$	(48f)	Na I

$\mathbf{B_{25}}$	$=$	$-x_4\,\mathbf{a}_1+\left(x_4+\frac{3}{4}\right)\,\mathbf{a}_2+\left(x_4+\frac{3}{4}\right)\,\mathbf{a}_3$	$=$	$a\left(x_4+\frac{3}{4}\right)\,\hat{\mathbf{x}}+\frac{3}{8}a\,\hat{\mathbf{y}}+\frac{3}{8}a\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{26}}$	$=$	$\left(x_4+\frac{3}{4}\right)\,\mathbf{a}_1-x_4\,\mathbf{a}_2-x_4\,\mathbf{a}_3$	$=$	$-ax_4\,\hat{\mathbf{x}}+\frac{3}{8}a\,\hat{\mathbf{y}}+\frac{3}{8}a\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{27}}$	$=$	$-x_4\,\mathbf{a}_1-x_4\,\mathbf{a}_2+\left(x_4+\frac{3}{4}\right)\,\mathbf{a}_3$	$=$	$\frac{3}{8}a\,\hat{\mathbf{x}}+\frac{3}{8}a\,\hat{\mathbf{y}}-ax_4\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{28}}$	$=$	$\left(x_4+\frac{3}{4}\right)\,\mathbf{a}_1+\left(x_4+\frac{3}{4}\right)\,\mathbf{a}_2-x_4\,\mathbf{a}_3$	$=$	$\frac{3}{8}a\,\hat{\mathbf{x}}+\frac{3}{8}a\,\hat{\mathbf{y}}+a\left(x_4+\frac{3}{4}\right)\,\hat{\mathbf{z}}$	(48f)	Na I
$\mathbf{B_{29}}$	$=$	$z_5\,\mathbf{a}_1+z_5\,\mathbf{a}_2+(2x_5-z_5)\,\mathbf{a}_3$	$=$	$ax_5\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}+az_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{30}}$	$=$	$z_5\,\mathbf{a}_1+z_5\,\mathbf{a}_2-\left(2x_5+z_5-\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{y}}+az_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{31}}$	$=$	$(2x_5-z_5)\,\mathbf{a}_1-\left(2x_5+z_5-\frac{1}{2}\right)\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	$=$	$-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}-a\left(z_5-\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{32}}$	$=$	$-\left(2x_5+z_5-\frac{1}{2}\right)\,\mathbf{a}_1+(2x_5-z_5)\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	$=$	$ax_5\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{y}}-a\left(z_5-\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{33}}$	$=$	$(2x_5-z_5)\,\mathbf{a}_1+z_5\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	$=$	$az_5\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{34}}$	$=$	$-\left(2x_5+z_5-\frac{1}{2}\right)\,\mathbf{a}_1+z_5\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	$=$	$az_5\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{35}}$	$=$	$z_5\,\mathbf{a}_1+(2x_5-z_5)\,\mathbf{a}_2-\left(2x_5+z_5-\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(z_5-\frac{1}{4}\right)\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{36}}$	$=$	$z_5\,\mathbf{a}_1-\left(2x_5+z_5-\frac{1}{2}\right)\,\mathbf{a}_2+(2x_5-z_5)\,\mathbf{a}_3$	$=$	$-a\left(z_5-\frac{1}{4}\right)\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{37}}$	$=$	$z_5\,\mathbf{a}_1+(2x_5-z_5)\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	$=$	$ax_5\,\hat{\mathbf{x}}+az_5\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{38}}$	$=$	$z_5\,\mathbf{a}_1-\left(2x_5+z_5-\frac{1}{2}\right)\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	$=$	$-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{x}}+az_5\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{39}}$	$=$	$-\left(2x_5+z_5-\frac{1}{2}\right)\,\mathbf{a}_1+z_5\,\mathbf{a}_2+(2x_5-z_5)\,\mathbf{a}_3$	$=$	$ax_5\,\hat{\mathbf{x}}-a\left(z_5-\frac{1}{4}\right)\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{40}}$	$=$	$(2x_5-z_5)\,\mathbf{a}_1+z_5\,\mathbf{a}_2-\left(2x_5+z_5-\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(x_5-\frac{1}{4}\right)\,\hat{\mathbf{x}}-a\left(z_5-\frac{1}{4}\right)\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{41}}$	$=$	$-z_5\,\mathbf{a}_1-z_5\,\mathbf{a}_2+\left(2x_5+z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{y}}-az_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{42}}$	$=$	$-z_5\,\mathbf{a}_1-z_5\,\mathbf{a}_2-(2x_5-z_5)\,\mathbf{a}_3$	$=$	$-ax_5\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}-az_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{43}}$	$=$	$-(2x_5-z_5)\,\mathbf{a}_1+\left(2x_5+z_5+\frac{1}{2}\right)\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	$=$	$a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}+a\left(z_5+\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{44}}$	$=$	$\left(2x_5+z_5+\frac{1}{2}\right)\,\mathbf{a}_1-(2x_5-z_5)\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	$=$	$-ax_5\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{y}}+a\left(z_5+\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{45}}$	$=$	$-(2x_5-z_5)\,\mathbf{a}_1-z_5\,\mathbf{a}_2+\left(2x_5+z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{x}}+a\left(z_5+\frac{1}{4}\right)\,\hat{\mathbf{y}}-ax_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{46}}$	$=$	$\left(2x_5+z_5+\frac{1}{2}\right)\,\mathbf{a}_1-z_5\,\mathbf{a}_2-(2x_5-z_5)\,\mathbf{a}_3$	$=$	$-ax_5\,\hat{\mathbf{x}}+a\left(z_5+\frac{1}{4}\right)\,\hat{\mathbf{y}}+a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{47}}$	$=$	$-z_5\,\mathbf{a}_1-(2x_5-z_5)\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	$=$	$-ax_5\,\hat{\mathbf{x}}-az_5\,\hat{\mathbf{y}}-ax_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{48}}$	$=$	$-z_5\,\mathbf{a}_1+\left(2x_5+z_5+\frac{1}{2}\right)\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	$=$	$a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{x}}-az_5\,\hat{\mathbf{y}}+a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{49}}$	$=$	$-z_5\,\mathbf{a}_1-(2x_5-z_5)\,\mathbf{a}_2+\left(2x_5+z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$a\left(z_5+\frac{1}{4}\right)\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{y}}-ax_5\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{50}}$	$=$	$-z_5\,\mathbf{a}_1+\left(2x_5+z_5+\frac{1}{2}\right)\,\mathbf{a}_2-(2x_5-z_5)\,\mathbf{a}_3$	$=$	$a\left(z_5+\frac{1}{4}\right)\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}+a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{51}}$	$=$	$\left(2x_5+z_5+\frac{1}{2}\right)\,\mathbf{a}_1-z_5\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	$=$	$-az_5\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{y}}+a\left(x_5+\frac{1}{4}\right)\,\hat{\mathbf{z}}$	(96g)	O I
$\mathbf{B_{52}}$	$=$	$-(2x_5-z_5)\,\mathbf{a}_1-z_5\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	$=$	$-az_5\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}-ax_5\,\hat{\mathbf{z}}$	(96g)	O I

References

[1] H. Shiba and T. Watanabé, *Les structures des cristaux de northupite, de northupite bromée et de tychite*, Compt. Rend. **193**, 1421–1423 (1931).

[2] C. Hermann, O. Lohrmann, and H. Philipp, eds., *Strukturbericht Band II 1928-1932* (Akademische Verlagsgesellschaft M. B. H., Leipzig, 1937).

Found in

[1] R. T. Downs and M. Hall-Wallace, *The American Mineralogist Crystal Structure Database*, Am. Mineral. **88**, 247–250 (2003).