Ga_4Ni_3 Structure: A4B3_cI112_230_af_g-001

This structure previously used the label(s) `A4B3_cI112_230_af_g`. Calls to these addresses will be redirected here.

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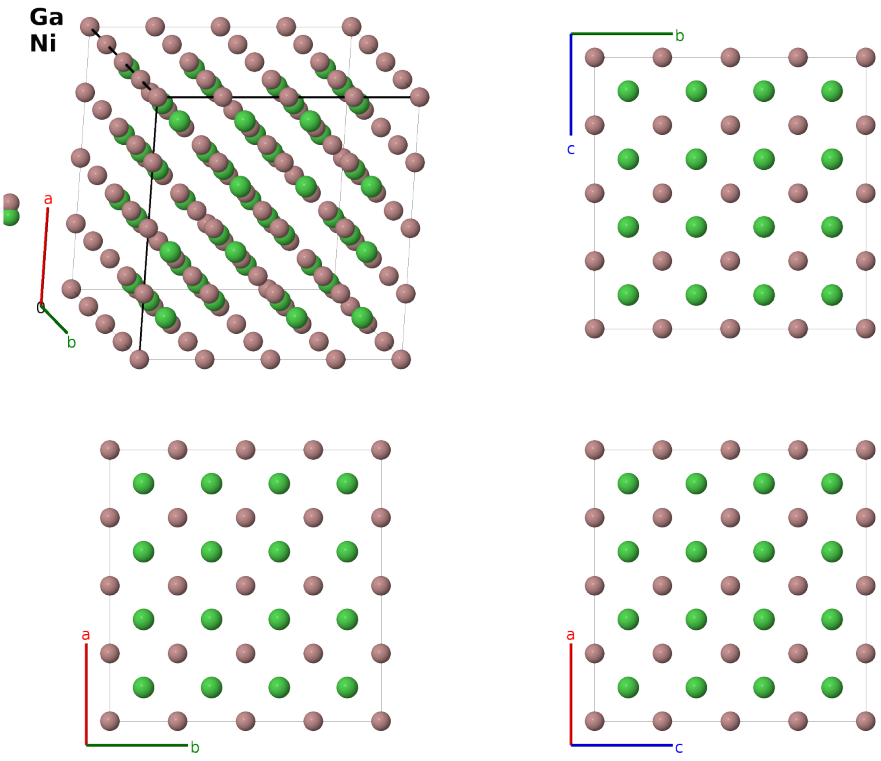
https://aflow.org/prototype-encyclopedia/K0Z6

https://aflow.org/prototype-encyclopedia/A4B3_cI112_230_af_g-001

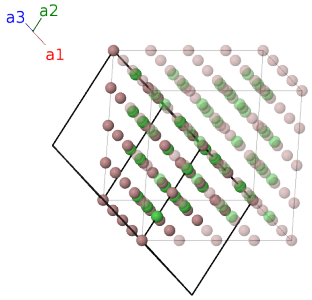


Prototype	Ga_4Ni_3
AFLOW prototype label	A4B3_cI112_230_af_g-001
ICSD	103864
CCDC	1661798
Pearson symbol	cI112
Space group number	230
Space group symbol	$Ia\bar{3}d$
AFLOW prototype command	`aflow --proto=A4B3_cI112_230_af_g-001 --params=`a, x_2, y_3

- This is a simple defect superstructure of the CsCl ($B2$) structure. If GaNi $B2$ is expanded into a 128 atom supercell, we can describe it using space group $Ia\bar{3}d$ #230, with Ga atoms on the (16a) and (48f) Wyckoff sites and Ni atoms on the (16b) and (48g) sites. Removing the Ni atoms from the (16b) sites yields this structure.

Body-centered Cubic primitive vectors

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



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	0	=	0	(16a)	Ga I
$\mathbf{B_2}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{y}}$	(16a)	Ga I
$\mathbf{B_3}$	=	$\frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}}$	(16a)	Ga I
$\mathbf{B_4}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2$	=	$\frac{1}{2}a\,\hat{\mathbf{z}}$	(16a)	Ga I
$\mathbf{B_5}$	=	$\frac{1}{2}\,\mathbf{a}_1$	=	$-\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(16a)	Ga I
$\mathbf{B_6}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(16a)	Ga I
$\mathbf{B_7}$	=	$\frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} - \frac{1}{4}a\,\hat{\mathbf{z}}$	(16a)	Ga I
$\mathbf{B_8}$	=	$\frac{1}{2}\,\mathbf{a}_2$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} - \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(16a)	Ga I
$\mathbf{B_9}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \left(x_2 + \frac{1}{4}\right)\,\mathbf{a}_2 + x_2\,\mathbf{a}_3$	=	$ax_2\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{10}}$	=	$\frac{3}{4}\,\mathbf{a}_1 - \left(x_2 - \frac{1}{4}\right)\,\mathbf{a}_2 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_2\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{11}}$	=	$x_2\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \left(x_2 + \frac{1}{4}\right)\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + ax_2\,\hat{\mathbf{y}}$	(48f)	Ga II
$\mathbf{B_{12}}$	=	$-\left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 - \left(x_2 - \frac{1}{4}\right)\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} - ax_2\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{13}}$	=	$\left(x_2 + \frac{1}{4}\right)\,\mathbf{a}_1 + x_2\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{y}} + ax_2\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{14}}$	=	$-\left(x_2 - \frac{1}{4}\right)\,\mathbf{a}_1 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} - ax_2\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{15}}$	=	$\left(x_2 + \frac{1}{4}\right)\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + x_2\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + a\left(x_2 - \frac{1}{4}\right)\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{16}}$	=	$-\left(x_2 - \frac{1}{4}\right)\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} - a\left(x_2 - \frac{1}{4}\right)\,\hat{\mathbf{y}}$	(48f)	Ga II
$\mathbf{B_{17}}$	=	$\frac{3}{4}\,\mathbf{a}_1 + x_2\,\mathbf{a}_2 + \left(x_2 + \frac{1}{4}\right)\,\mathbf{a}_3$	=	$a\left(x_2 - \frac{1}{4}\right)\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{18}}$	=	$\frac{1}{4}\,\mathbf{a}_1 - \left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(x_2 - \frac{1}{4}\right)\,\mathbf{a}_3$	=	$-a\left(x_2 - \frac{1}{4}\right)\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{19}}$	=	$-\left(x_2 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_2 - \frac{1}{4}\right)\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{y}} - a\left(x_2 - \frac{1}{4}\right)\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{20}}$	=	$x_2\,\mathbf{a}_1 + \left(x_2 + \frac{1}{4}\right)\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + a\left(x_2 - \frac{1}{4}\right)\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{21}}$	=	$\frac{3}{4}\,\mathbf{a}_1 - \left(x_2 - \frac{3}{4}\right)\,\mathbf{a}_2 - x_2\,\mathbf{a}_3$	=	$-ax_2\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(48f)	Ga II
$\mathbf{B_{22}}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \left(x_2 + \frac{3}{4}\right)\,\mathbf{a}_2 + \left(x_2 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_2 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(48f)	Ga II

$$
\begin{array}{lcccccll}
\mathbf{B_{23}} & = & -x_2\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-\left(x_2-\frac{3}{4}\right)\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{x}}-ax_2\,\hat{\mathbf{y}} & (48f) & \text{Ga II}\\
\mathbf{B_{24}} & = & \left(x_2+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+\left(x_2+\frac{3}{4}\right)\,\mathbf{a}_3 & = & \frac{1}{4}a\,\hat{\mathbf{x}}+a\left(x_2+\frac{1}{2}\right)\,\hat{\mathbf{y}} & (48f) & \text{Ga II}\\
\mathbf{B_{25}} & = & -\left(x_2-\frac{3}{4}\right)\,\mathbf{a}_1-x_2\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & \frac{3}{4}a\,\hat{\mathbf{y}}-ax_2\,\hat{\mathbf{z}} & (48f) & \text{Ga II}\\
\mathbf{B_{26}} & = & \left(x_2+\frac{3}{4}\right)\,\mathbf{a}_1+\left(x_2+\frac{1}{2}\right)\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3 & = & \frac{1}{4}a\,\hat{\mathbf{y}}+a\left(x_2+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (48f) & \text{Ga II}\\
\mathbf{B_{27}} & = & -\left(x_2-\frac{3}{4}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-x_2\,\mathbf{a}_3 & = & -\frac{1}{4}a\,\hat{\mathbf{x}}-a\left(x_2-\frac{1}{4}\right)\,\hat{\mathbf{y}}+\frac{1}{2}a\,\hat{\mathbf{z}} & (48f) & \text{Ga II}\\
\mathbf{B_{28}} & = & \left(x_2+\frac{3}{4}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(x_2+\frac{1}{2}\right)\,\mathbf{a}_3 & = & \frac{1}{4}a\,\hat{\mathbf{x}}+a\left(x_2+\frac{1}{4}\right)\,\hat{\mathbf{y}}+\frac{1}{2}a\,\hat{\mathbf{z}} & (48f) & \text{Ga II}\\
\mathbf{B_{29}} & = & \frac{1}{4}\,\mathbf{a}_1-x_2\,\mathbf{a}_2-\left(x_2-\frac{3}{4}\right)\,\mathbf{a}_3 & = & -a\left(x_2-\frac{1}{4}\right)\,\hat{\mathbf{x}}+\frac{1}{2}a\,\hat{\mathbf{y}}-\frac{1}{4}a\,\hat{\mathbf{z}} & (48f) & \text{Ga II}\\
\mathbf{B_{30}} & = & \frac{3}{4}\,\mathbf{a}_1+\left(x_2+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_2+\frac{3}{4}\right)\,\mathbf{a}_3 & = & a\left(x_2+\frac{1}{4}\right)\,\hat{\mathbf{x}}+\frac{1}{2}a\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}} & (48f) & \text{Ga II}\\
\mathbf{B_{31}} & = & \left(x_2+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_2+\frac{3}{4}\right)\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & \frac{1}{2}a\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+a\left(x_2+\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48f) & \text{Ga II}\\
\mathbf{B_{32}} & = & -x_2\,\mathbf{a}_1-\left(x_2-\frac{3}{4}\right)\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3 & = & \frac{1}{2}a\,\hat{\mathbf{x}}-\frac{1}{4}a\,\hat{\mathbf{y}}-a\left(x_2-\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48f) & \text{Ga II}\\
\mathbf{B_{33}} & = & \frac{1}{4}\,\mathbf{a}_1-\left(y_3-\frac{3}{8}\right)\,\mathbf{a}_2+\left(y_3+\frac{1}{8}\right)\,\mathbf{a}_3 & = & \frac{1}{8}a\,\hat{\mathbf{x}}+ay_3\,\hat{\mathbf{y}}-a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{34}} & = & -\left(2y_3-\frac{3}{4}\right)\,\mathbf{a}_1-\left(y_3-\frac{1}{8}\right)\,\mathbf{a}_2-\left(y_3-\frac{3}{8}\right)\,\mathbf{a}_3 & = & -\frac{1}{8}a\,\hat{\mathbf{x}}-a\left(y_3-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{35}} & = & \left(2y_3+\frac{3}{4}\right)\,\mathbf{a}_1+\left(y_3+\frac{1}{8}\right)\,\mathbf{a}_2+\left(y_3+\frac{3}{8}\right)\,\mathbf{a}_3 & = & -\frac{1}{8}a\,\hat{\mathbf{x}}+a\left(y_3+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{36}} & = & \frac{1}{4}\,\mathbf{a}_1+\left(y_3+\frac{3}{8}\right)\,\mathbf{a}_2-\left(y_3-\frac{1}{8}\right)\,\mathbf{a}_3 & = & \frac{1}{8}a\,\hat{\mathbf{x}}-ay_3\,\hat{\mathbf{y}}+a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{37}} & = & \left(y_3+\frac{1}{8}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(y_3-\frac{3}{8}\right)\,\mathbf{a}_3 & = & -a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{x}}+\frac{1}{8}a\,\hat{\mathbf{y}}+ay_3\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{38}} & = & -\left(y_3-\frac{3}{8}\right)\,\mathbf{a}_1-\left(2y_3-\frac{3}{4}\right)\,\mathbf{a}_2-\left(y_3-\frac{1}{8}\right)\,\mathbf{a}_3 & = & -a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{x}}-\frac{1}{8}a\,\hat{\mathbf{y}}-a\left(y_3-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{39}} & = & \left(y_3+\frac{3}{8}\right)\,\mathbf{a}_1+\left(2y_3+\frac{3}{4}\right)\,\mathbf{a}_2+\left(y_3+\frac{1}{8}\right)\,\mathbf{a}_3 & = & a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{x}}-\frac{1}{8}a\,\hat{\mathbf{y}}+a\left(y_3+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{40}} & = & -\left(y_3-\frac{1}{8}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+\left(y_3+\frac{3}{8}\right)\,\mathbf{a}_3 & = & a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{x}}+\frac{1}{8}a\,\hat{\mathbf{y}}-ay_3\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{41}} & = & -\left(y_3-\frac{3}{8}\right)\,\mathbf{a}_1+\left(y_3+\frac{1}{8}\right)\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3 & = & ay_3\,\hat{\mathbf{x}}-a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{y}}+\frac{1}{8}a\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{42}} & = & -\left(y_3-\frac{1}{8}\right)\,\mathbf{a}_1-\left(y_3-\frac{3}{8}\right)\,\mathbf{a}_2-\left(2y_3-\frac{3}{4}\right)\,\mathbf{a}_3 & = & -a\left(y_3-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{y}}-\frac{1}{8}a\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{43}} & = & \left(y_3+\frac{1}{8}\right)\,\mathbf{a}_1+\left(y_3+\frac{3}{8}\right)\,\mathbf{a}_2+\left(2y_3+\frac{3}{4}\right)\,\mathbf{a}_3 & = & a\left(y_3+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{y}}-\frac{1}{8}a\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{44}} & = & \left(y_3+\frac{3}{8}\right)\,\mathbf{a}_1-\left(y_3-\frac{1}{8}\right)\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3 & = & -ay_3\,\hat{\mathbf{x}}+a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{y}}+\frac{1}{8}a\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{45}} & = & \frac{3}{4}\,\mathbf{a}_1+\left(y_3+\frac{5}{8}\right)\,\mathbf{a}_2-\left(y_3-\frac{7}{8}\right)\,\mathbf{a}_3 & = & \frac{3}{8}a\,\hat{\mathbf{x}}-a\left(y_3-\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{46}} & = & \left(2y_3+\frac{1}{4}\right)\,\mathbf{a}_1+\left(y_3+\frac{7}{8}\right)\,\mathbf{a}_2+\left(y_3+\frac{5}{8}\right)\,\mathbf{a}_3 & = & \frac{5}{8}a\,\hat{\mathbf{x}}+ay_3\,\hat{\mathbf{y}}+a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{47}} & = & -\left(2y_3-\frac{1}{4}\right)\,\mathbf{a}_1-\left(y_3-\frac{7}{8}\right)\,\mathbf{a}_2-\left(y_3-\frac{5}{8}\right)\,\mathbf{a}_3 & = & \frac{5}{8}a\,\hat{\mathbf{x}}-ay_3\,\hat{\mathbf{y}}-a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{48}} & = & \frac{3}{4}\,\mathbf{a}_1-\left(y_3-\frac{5}{8}\right)\,\mathbf{a}_2+\left(y_3+\frac{7}{8}\right)\,\mathbf{a}_3 & = & \frac{3}{8}a\,\hat{\mathbf{x}}+a\left(y_3+\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{49}} & = & -\left(y_3-\frac{7}{8}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(y_3+\frac{5}{8}\right)\,\mathbf{a}_3 & = & a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{x}}+\frac{3}{8}a\,\hat{\mathbf{y}}-a\left(y_3-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{50}} & = & \left(y_3+\frac{5}{8}\right)\,\mathbf{a}_1+\left(2y_3+\frac{1}{4}\right)\,\mathbf{a}_2+\left(y_3+\frac{7}{8}\right)\,\mathbf{a}_3 & = & a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{x}}+\frac{5}{8}a\,\hat{\mathbf{y}}+ay_3\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{51}} & = & -\left(y_3-\frac{5}{8}\right)\,\mathbf{a}_1-\left(2y_3-\frac{1}{4}\right)\,\mathbf{a}_2-\left(y_3-\frac{7}{8}\right)\,\mathbf{a}_3 & = & -a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{x}}+\frac{5}{8}a\,\hat{\mathbf{y}}-ay_3\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{52}} & = & \left(y_3+\frac{7}{8}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-\left(y_3-\frac{5}{8}\right)\,\mathbf{a}_3 & = & -a\left(y_3-\frac{1}{4}\right)\,\hat{\mathbf{x}}+\frac{3}{8}a\,\hat{\mathbf{y}}+a\left(y_3+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (48g) & \text{Ni I}\\
\mathbf{B_{53}} & = & \left(y_3+\frac{5}{8}\right)\,\mathbf{a}_1-\left(y_3-\frac{7}{8}\right)\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3 & = & -a\left(y_3-\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(y_3+\frac{1}{4}\right)\,\hat{\mathbf{y}}+\frac{3}{8}a\,\hat{\mathbf{z}} & (48g) & \text{Ni I}
\end{array}
$$

$$\mathbf{B_{54}} = \left(y_3 + \tfrac{7}{8}\right)\mathbf{a}_1 + \left(y_3 + \tfrac{5}{8}\right)\mathbf{a}_2 + \left(2y_3 + \tfrac{1}{4}\right)\mathbf{a}_3 = ay_3\,\hat{\mathbf{x}} + a\left(y_3 + \tfrac{1}{4}\right)\hat{\mathbf{y}} + \tfrac{5}{8}a\,\hat{\mathbf{z}} \quad (48g) \quad \text{Ni I}$$

$$\mathbf{B_{55}} = -\left(y_3 - \tfrac{7}{8}\right)\mathbf{a}_1 - \left(y_3 - \tfrac{5}{8}\right)\mathbf{a}_2 - \left(2y_3 - \tfrac{1}{4}\right)\mathbf{a}_3 = -ay_3\,\hat{\mathbf{x}} - a\left(y_3 - \tfrac{1}{4}\right)\hat{\mathbf{y}} + \tfrac{5}{8}a\,\hat{\mathbf{z}} \quad (48g) \quad \text{Ni I}$$

$$\mathbf{B_{56}} = -\left(y_3 - \tfrac{5}{8}\right)\mathbf{a}_1 + \left(y_3 + \tfrac{7}{8}\right)\mathbf{a}_2 + \tfrac{3}{4}\mathbf{a}_3 = a\left(y_3 + \tfrac{1}{2}\right)\hat{\mathbf{x}} - a\left(y_3 - \tfrac{1}{4}\right)\hat{\mathbf{y}} + \tfrac{3}{8}a\,\hat{\mathbf{z}} \quad (48g) \quad \text{Ni I}$$

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Found in

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First cited in

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