$Na_{11}U_5O_{16}$ Structure: A11B16C5_cP64_208_bfh_adm_ce-001

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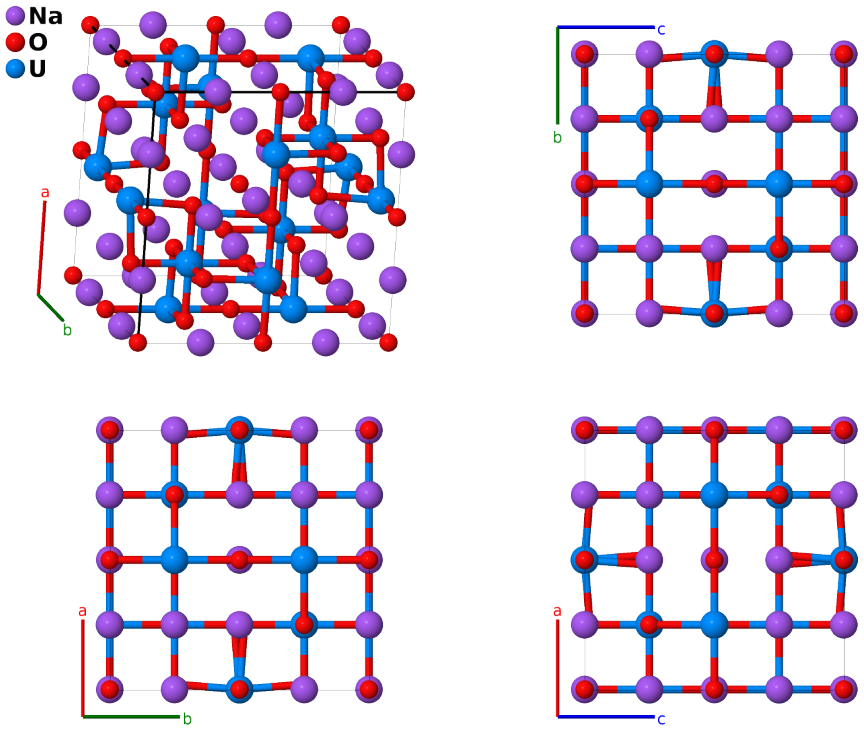
https://aflow.org/p/NFNJ

https://aflow.org/p/A11B16C5_cP64_208_bfh_adm_ce-001

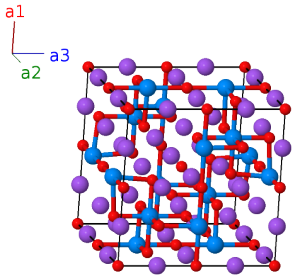


Prototype	$Na_{11}O_{16}U_5$
AFLOW prototype label	A11B16C5_cP64_208_bfh_adm_ce-001
ICSD	15137
Pearson symbol	cP64
Space group number	208
Space group symbol	$P4_232$
AFLOW prototype command	`aflow --proto=A11B16C5_cP64_208_bfh_adm_ce-001 --params=`a, x_7, x_8, y_8, z_8

- (Bartram, 1970) say the atoms were "arbitrarily placed" at the Wyckoff positions listed, with $z_8 = 0$. This gives a U_1-O_3 distance of 2.38Å. They then set $z_8 = -0.02$ (0.52 using our origin), giving a distance of 2.19Å, which they consider "more reasonable," but the other U-O distances remain at 2.39Å. If we find a refinement of this structure we will update this page.

Simple Cubic primitive vectors

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



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	0	=	0	(2a)	O I
$\mathbf{B_2}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(2a)	O I
$\mathbf{B_3}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(4b)	Na I
$\mathbf{B_4}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(4b)	Na I
$\mathbf{B_5}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(4b)	Na I
$\mathbf{B_6}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(4b)	Na I
$\mathbf{B_7}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(4c)	U I
$\mathbf{B_8}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(4c)	U I
$\mathbf{B_9}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(4c)	U I
$\mathbf{B_{10}}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(4c)	U I
$\mathbf{B_{11}}$	=	$\frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(6d)	O II
$\mathbf{B_{12}}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(6d)	O II
$\mathbf{B_{13}}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}}$	(6d)	O II
$\mathbf{B_{14}}$	=	$\frac{1}{2}\,\mathbf{a}_2$	=	$\frac{1}{2}a\,\hat{\mathbf{y}}$	(6d)	O II
$\mathbf{B_{15}}$	=	$\frac{1}{2}\,\mathbf{a}_1$	=	$\frac{1}{2}a\,\hat{\mathbf{x}}$	(6d)	O II
$\mathbf{B_{16}}$	=	$\frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{z}}$	(6d)	O II
$\mathbf{B_{17}}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(6e)	U II
$\mathbf{B_{18}}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(6e)	U II
$\mathbf{B_{19}}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}}$	(6e)	U II
$\mathbf{B_{20}}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}}$	(6e)	U II
$\mathbf{B_{21}}$	=	$\frac{1}{2}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(6e)	U II
$\mathbf{B_{22}}$	=	$\frac{1}{2}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(6e)	U II
$\mathbf{B_{23}}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}}$	(6f)	Na II
$\mathbf{B_{24}}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}}$	(6f)	Na II
$\mathbf{B_{25}}$	=	$\frac{1}{4}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(6f)	Na II
$\mathbf{B_{26}}$	=	$\frac{3}{4}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(6f)	Na II
$\mathbf{B_{27}}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(6f)	Na II
$\mathbf{B_{28}}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(6f)	Na II

$\mathbf{B_{29}}$	=	$x_7\,\mathbf{a}_1$	=	$ax_7\,\hat{\mathbf{x}}$	(12h)	Na III
$\mathbf{B_{30}}$	=	$-x_7\,\mathbf{a}_1$	=	$-ax_7\,\hat{\mathbf{x}}$	(12h)	Na III
$\mathbf{B_{31}}$	=	$x_7\,\mathbf{a}_2$	=	$ax_7\,\hat{\mathbf{y}}$	(12h)	Na III
$\mathbf{B_{32}}$	=	$-x_7\,\mathbf{a}_2$	=	$-ax_7\,\hat{\mathbf{y}}$	(12h)	Na III
$\mathbf{B_{33}}$	=	$x_7\,\mathbf{a}_3$	=	$ax_7\,\hat{\mathbf{z}}$	(12h)	Na III
$\mathbf{B_{34}}$	=	$-x_7\,\mathbf{a}_3$	=	$-ax_7\,\hat{\mathbf{z}}$	(12h)	Na III
$\mathbf{B_{35}}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \left(x_7 + \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + a\left(x_7 + \frac{1}{2}\right)\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(12h)	Na III
$\mathbf{B_{36}}$	=	$\frac{1}{2}\,\mathbf{a}_1 - \left(x_7 - \frac{1}{2}\right)\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} - a\left(x_7 - \frac{1}{2}\right)\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(12h)	Na III
$\mathbf{B_{37}}$	=	$\left(x_7 + \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$a\left(x_7 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(12h)	Na III
$\mathbf{B_{38}}$	=	$-\left(x_7 - \frac{1}{2}\right)\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$-a\left(x_7 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(12h)	Na III
$\mathbf{B_{39}}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2 - \left(x_7 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}} - a\left(x_7 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12h)	Na III
$\mathbf{B_{40}}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2 + \left(x_7 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}} + a\left(x_7 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(12h)	Na III
$\mathbf{B_{41}}$	=	$x_8\,\mathbf{a}_1 + y_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}} + ay_8\,\hat{\mathbf{y}} + az_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{42}}$	=	$-x_8\,\mathbf{a}_1 - y_8\,\mathbf{a}_2 + z_8\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}} - ay_8\,\hat{\mathbf{y}} + az_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{43}}$	=	$-x_8\,\mathbf{a}_1 + y_8\,\mathbf{a}_2 - z_8\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}} + ay_8\,\hat{\mathbf{y}} - az_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{44}}$	=	$x_8\,\mathbf{a}_1 - y_8\,\mathbf{a}_2 - z_8\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}} - ay_8\,\hat{\mathbf{y}} - az_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{45}}$	=	$z_8\,\mathbf{a}_1 + x_8\,\mathbf{a}_2 + y_8\,\mathbf{a}_3$	=	$az_8\,\hat{\mathbf{x}} + ax_8\,\hat{\mathbf{y}} + ay_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{46}}$	=	$z_8\,\mathbf{a}_1 - x_8\,\mathbf{a}_2 - y_8\,\mathbf{a}_3$	=	$az_8\,\hat{\mathbf{x}} - ax_8\,\hat{\mathbf{y}} - ay_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{47}}$	=	$-z_8\,\mathbf{a}_1 - x_8\,\mathbf{a}_2 + y_8\,\mathbf{a}_3$	=	$-az_8\,\hat{\mathbf{x}} - ax_8\,\hat{\mathbf{y}} + ay_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{48}}$	=	$-z_8\,\mathbf{a}_1 + x_8\,\mathbf{a}_2 - y_8\,\mathbf{a}_3$	=	$-az_8\,\hat{\mathbf{x}} + ax_8\,\hat{\mathbf{y}} - ay_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{49}}$	=	$y_8\,\mathbf{a}_1 + z_8\,\mathbf{a}_2 + x_8\,\mathbf{a}_3$	=	$ay_8\,\hat{\mathbf{x}} + az_8\,\hat{\mathbf{y}} + ax_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{50}}$	=	$-y_8\,\mathbf{a}_1 + z_8\,\mathbf{a}_2 - x_8\,\mathbf{a}_3$	=	$-ay_8\,\hat{\mathbf{x}} + az_8\,\hat{\mathbf{y}} - ax_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{51}}$	=	$y_8\,\mathbf{a}_1 - z_8\,\mathbf{a}_2 - x_8\,\mathbf{a}_3$	=	$ay_8\,\hat{\mathbf{x}} - az_8\,\hat{\mathbf{y}} - ax_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{52}}$	=	$-y_8\,\mathbf{a}_1 - z_8\,\mathbf{a}_2 + x_8\,\mathbf{a}_3$	=	$-ay_8\,\hat{\mathbf{x}} - az_8\,\hat{\mathbf{y}} + ax_8\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{53}}$	=	$\left(y_8 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(x_8 + \frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_8 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(y_8 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(x_8 + \frac{1}{2}\right)\,\hat{\mathbf{y}} - a\left(z_8 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{54}}$	=	$-\left(y_8 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_8 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(z_8 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(y_8 - \frac{1}{2}\right)\,\hat{\mathbf{x}} - a\left(x_8 - \frac{1}{2}\right)\,\hat{\mathbf{y}} - a\left(z_8 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{55}}$	=	$\left(y_8 + \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_8 - \frac{1}{2}\right)\,\mathbf{a}_2 + \left(z_8 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(y_8 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - a\left(x_8 - \frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(z_8 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{56}}$	=	$-\left(y_8 - \frac{1}{2}\right)\,\mathbf{a}_1 + \left(x_8 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(z_8 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(y_8 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(x_8 + \frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(z_8 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{57}}$	=	$\left(x_8 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(z_8 + \frac{1}{2}\right)\,\mathbf{a}_2 - \left(y_8 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_8 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(z_8 + \frac{1}{2}\right)\,\hat{\mathbf{y}} - a\left(y_8 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{58}}$	=	$-\left(x_8 - \frac{1}{2}\right)\,\mathbf{a}_1 + \left(z_8 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(y_8 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_8 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(z_8 + \frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(y_8 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{59}}$	=	$-\left(x_8 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(z_8 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(y_8 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_8 - \frac{1}{2}\right)\,\hat{\mathbf{x}} - a\left(z_8 - \frac{1}{2}\right)\,\hat{\mathbf{y}} - a\left(y_8 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{60}}$	=	$\left(x_8 + \frac{1}{2}\right)\,\mathbf{a}_1 - \left(z_8 - \frac{1}{2}\right)\,\mathbf{a}_2 + \left(y_8 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_8 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - a\left(z_8 - \frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(y_8 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24m)	O III
$\mathbf{B_{61}}$	=	$\left(z_8 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(y_8 + \frac{1}{2}\right)\,\mathbf{a}_2 - \left(x_8 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(z_8 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(y_8 + \frac{1}{2}\right)\,\hat{\mathbf{y}} - a\left(x_8 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24m)	O III

$$\mathbf{B_{62}} = \left(z_8+\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_8-\tfrac{1}{2}\right)\mathbf{a}_2+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}-a\left(y_8-\tfrac{1}{2}\right)\hat{\mathbf{y}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24\text{m}) \quad \text{O III}$$

$$\mathbf{B_{63}} = -\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_1+\left(y_8+\tfrac{1}{2}\right)\mathbf{a}_2+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}+a\left(y_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24\text{m}) \quad \text{O III}$$

$$\mathbf{B_{64}} = -\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_8-\tfrac{1}{2}\right)\mathbf{a}_2-\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}-a\left(y_8-\tfrac{1}{2}\right)\hat{\mathbf{y}}-a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24\text{m}) \quad \text{O III}$$

References

[1] S. F. Bartram and R. E. Fryxell, *Preparation and crystal structure of $NaUO_3$ and $Na_{11}U_5O_{16}$*, J. Inorg. Nucl. Chem. **32**, 3701–3706 (1970), doi:10.1016/0022-1902(70)80187-7.