

Rh₅Ge₃ Structure: A3B5_oP16_55_ah_cgh-001

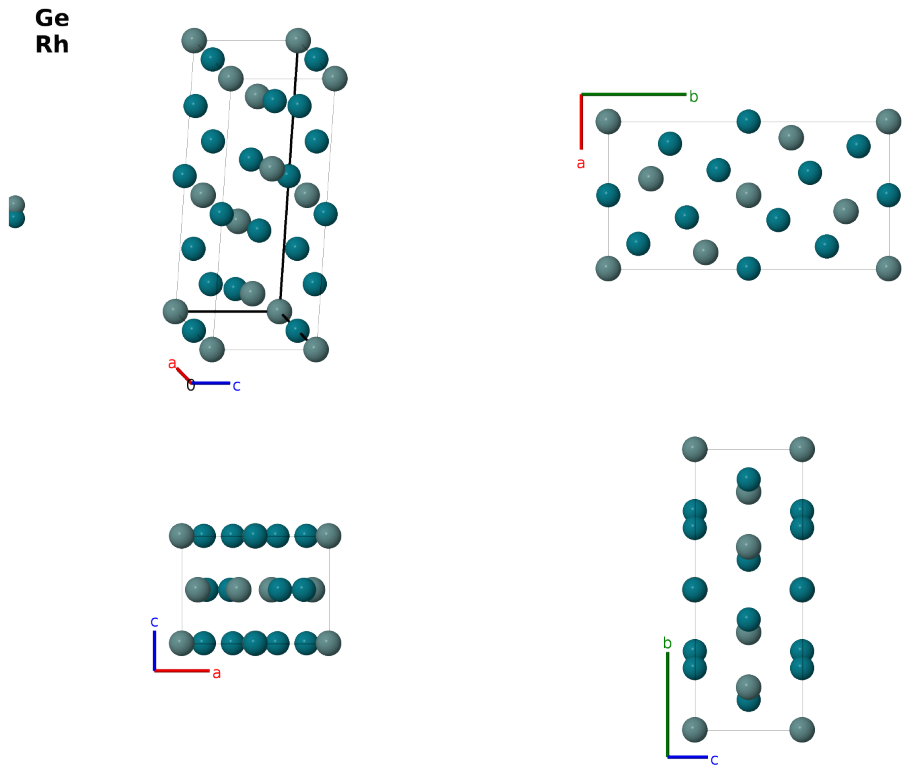
This structure previously used the label(s) **A3B5_oP16_55_ch_agh**. Calls to these addresses will be redirected here.

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<https://aflow.org/prototype-encyclopedia/WXAV>

https://aflow.org/prototype-encyclopedia/A3B5_oP16_55_ah_cgh-001



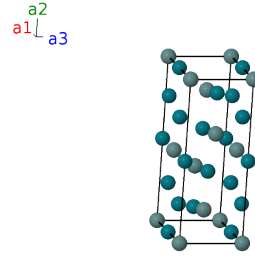
Prototype	Ge ₃ Rh ₅
AFLOW prototype label	A3B5_oP16_55_ah_cgh-001
ICSD	53891
CCDC	1618519
Pearson symbol	oP16
Space group number	55
Space group symbol	<i>Pbam</i>
AFLOW prototype command	<code>aflow --proto=A3B5_oP16_55_ah_cgh-001</code> <code>--params=a, b/a, c/a, x₃, y₃, x₄, y₄, x₅, y₅</code>

Other compounds with this structure

Pd₅Al₃, Pd₅Ga₃, Pd₅In₃, Pt₅Al₃, Rh₅Si₃

Simple Orthorhombic primitive vectors

$$\begin{aligned}\mathbf{a}_1 &= a \hat{\mathbf{x}} \\ \mathbf{a}_2 &= b \hat{\mathbf{y}} \\ \mathbf{a}_3 &= c \hat{\mathbf{z}}\end{aligned}$$



Basis vectors

	Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B}_1$	= 0	=	0	(2a)	Ge I
$\mathbf{B}_2$	= $\frac{1}{2} \mathbf{a}_1 + \frac{1}{2} \mathbf{a}_2$	=	$\frac{1}{2} a \hat{\mathbf{x}} + \frac{1}{2} b \hat{\mathbf{y}}$	(2a)	Ge I
$\mathbf{B}_3$	= $\frac{1}{2} \mathbf{a}_2$	=	$\frac{1}{2} b \hat{\mathbf{y}}$	(2c)	Rh I
$\mathbf{B}_4$	= $\frac{1}{2} \mathbf{a}_1$	=	$\frac{1}{2} a \hat{\mathbf{x}}$	(2c)	Rh I
$\mathbf{B}_5$	= $x_3 \mathbf{a}_1 + y_3 \mathbf{a}_2$	=	$ax_3 \hat{\mathbf{x}} + by_3 \hat{\mathbf{y}}$	(4g)	Rh II
$\mathbf{B}_6$	= $-x_3 \mathbf{a}_1 - y_3 \mathbf{a}_2$	=	$-ax_3 \hat{\mathbf{x}} - by_3 \hat{\mathbf{y}}$	(4g)	Rh II
$\mathbf{B}_7$	= $-(x_3 - \frac{1}{2}) \mathbf{a}_1 + (y_3 + \frac{1}{2}) \mathbf{a}_2$	=	$-a(x_3 - \frac{1}{2}) \hat{\mathbf{x}} + b(y_3 + \frac{1}{2}) \hat{\mathbf{y}}$	(4g)	Rh II
$\mathbf{B}_8$	= $(x_3 + \frac{1}{2}) \mathbf{a}_1 - (y_3 - \frac{1}{2}) \mathbf{a}_2$	=	$a(x_3 + \frac{1}{2}) \hat{\mathbf{x}} - b(y_3 - \frac{1}{2}) \hat{\mathbf{y}}$	(4g)	Rh II
$\mathbf{B}_9$	= $x_4 \mathbf{a}_1 + y_4 \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	=	$ax_4 \hat{\mathbf{x}} + by_4 \hat{\mathbf{y}} + \frac{1}{2} c \hat{\mathbf{z}}$	(4h)	Ge II
$\mathbf{B}_{10}$	= $-x_4 \mathbf{a}_1 - y_4 \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	=	$-ax_4 \hat{\mathbf{x}} - by_4 \hat{\mathbf{y}} + \frac{1}{2} c \hat{\mathbf{z}}$	(4h)	Ge II
$\mathbf{B}_{11}$	= $-(x_4 - \frac{1}{2}) \mathbf{a}_1 + (y_4 + \frac{1}{2}) \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	=	$-a(x_4 - \frac{1}{2}) \hat{\mathbf{x}} + b(y_4 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2} c \hat{\mathbf{z}}$	(4h)	Ge II
$\mathbf{B}_{12}$	= $(x_4 + \frac{1}{2}) \mathbf{a}_1 - (y_4 - \frac{1}{2}) \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	=	$a(x_4 + \frac{1}{2}) \hat{\mathbf{x}} - b(y_4 - \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2} c \hat{\mathbf{z}}$	(4h)	Ge II
$\mathbf{B}_{13}$	= $x_5 \mathbf{a}_1 + y_5 \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	=	$ax_5 \hat{\mathbf{x}} + by_5 \hat{\mathbf{y}} + \frac{1}{2} c \hat{\mathbf{z}}$	(4h)	Rh III
$\mathbf{B}_{14}$	= $-x_5 \mathbf{a}_1 - y_5 \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	=	$-ax_5 \hat{\mathbf{x}} - by_5 \hat{\mathbf{y}} + \frac{1}{2} c \hat{\mathbf{z}}$	(4h)	Rh III
$\mathbf{B}_{15}$	= $-(x_5 - \frac{1}{2}) \mathbf{a}_1 + (y_5 + \frac{1}{2}) \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	=	$-a(x_5 - \frac{1}{2}) \hat{\mathbf{x}} + b(y_5 + \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2} c \hat{\mathbf{z}}$	(4h)	Rh III
$\mathbf{B}_{16}$	= $(x_5 + \frac{1}{2}) \mathbf{a}_1 - (y_5 - \frac{1}{2}) \mathbf{a}_2 + \frac{1}{2} \mathbf{a}_3$	=	$a(x_5 + \frac{1}{2}) \hat{\mathbf{x}} - b(y_5 - \frac{1}{2}) \hat{\mathbf{y}} + \frac{1}{2} c \hat{\mathbf{z}}$	(4h)	Rh III

References

- [1] S. Geller, *The rhodium-germanium system. I. The crystal structures of Rh₂Ge, Rh₅Ge₃ and RhGe*, Acta Cryst. **8**, 15–21 (1955), doi:10.1107/S0365110X55000030.

Found in

- [1] P. Villars and K. Cenzual, *Pearson's Crystal Data – Crystal Structure Database for Inorganic Compounds* (2013). ASM International.

First cited in

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