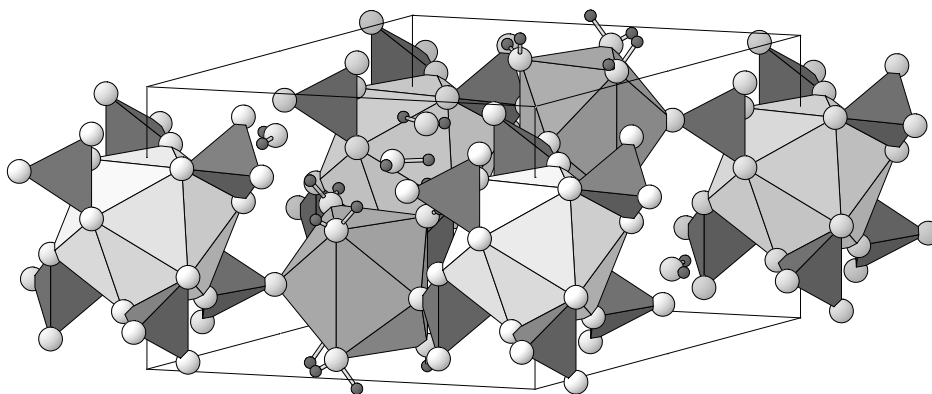


La₂(SO₄)₃·9H₂O [2]

Structural features: La(OH₂)₆O₃ tricapped trigonal prisms and infinite columns of face-linked LaO₁₂ icosahedra are interconnected via SO₄ tetrahedra (each LaO₁₂ icosahedron sharing edges with six surrounding tetrahedra) to form a 3D-framework; additional H₂O in voids. See Fig. IV.72.

Fig. IV.72. **La₂(SO₄)₃·9H₂O**

Arrangement of La(OH₂)₆O₃ tricapped trigonal prisms (medium), LaO₁₂ icosahedra (light), SO₄ tetrahedra (dark) and additional H₂O molecules (O atoms large, H atoms small). For clarity, LaO₁₂ icosahedra with the La atom at $z = 0$ or 1 are omitted.

Junk P.C. et al. (1999) [1]

H₁₈La₂O₂₁S₃

$a = 1.1015$, $c = 0.8091$ nm, $c/a = 0.735$, $V = 0.8502$ nm³, $Z = 2$

site	Wyck.	sym.	x	y	z	occ.	atomic environment
O1	12i	1	0.2249	0.2595	0.0997		single atom S
O2	12i	1	0.5375	0.157	0.0215		single atom La
O3	6h	$m..$	0.1023	0.4373	$\frac{1}{4}$		non-colinear O ₂
O4	6h	$m..$	0.1674	0.0538	$\frac{1}{4}$		single atom S
S5	6h	$m..$	0.26096	0.20988	$\frac{1}{4}$		tetrahedron O ₄
O6	6h	$m..$	0.4064	0.244	$\frac{1}{4}$		single atom S
La7	2d	$-6..$	$\frac{2}{3}$	$\frac{1}{3}$	$\frac{1}{4}$		tricapped trigonal prism O ₉
La8	2b	$-3..$	0	0	0		icosahedron O ₁₂
H9	12i	1	0.136	0.552	0.072		
H10	12i	1	0.341	0.478	0.018		
H11	6h	$m..$	0.049	0.417	$\frac{1}{4}$		
H12	6h	$m..$	0.14	0.37	$\frac{1}{4}$		

Transformation from published data: $y, x, -z$; origin shift $0\ 0\ \frac{1}{2}$

Experimental: single crystal, diffractometer, X-rays, $R = 0.023$

Remarks: Short interatomic distances: $d(\text{O3-H11}) = 0.051$ and $d(\text{O2-H10}) = 0.066$ nm. Hydrogen atoms are not taken into consideration for Pearson symbol, Wyckoff sequence and atomic environments.

References: [1] Junk P.C., Kepert C.J., Skelton B.W., White A.H. (1999), Aust. J. Chem. 52, 601-615. [2] Hunt E.B. Jr., Rundle R.E., Stosick A.J. (1954), Acta Crystallogr. 7, 106-109.