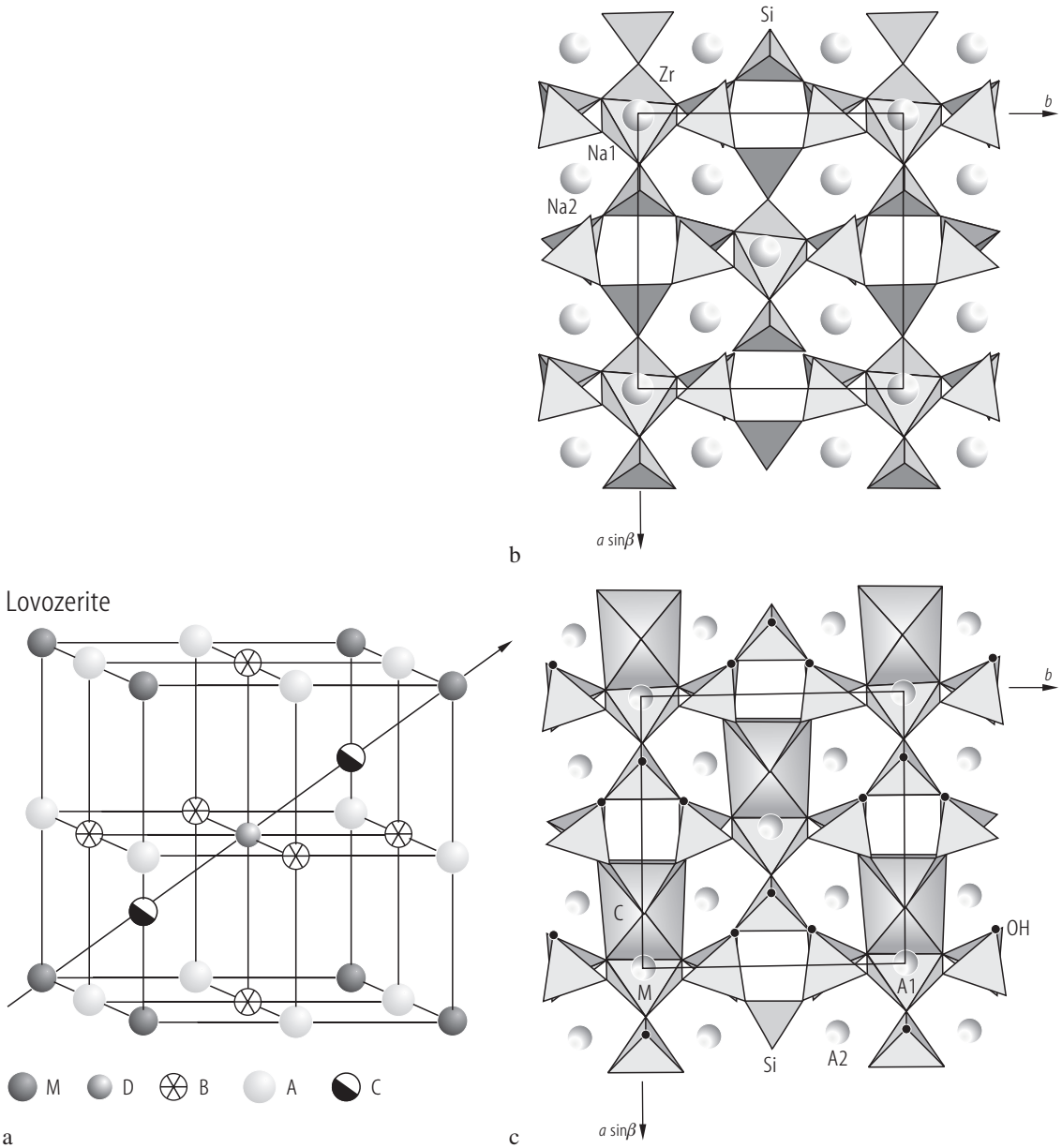


Fig. 1. Lovozerite. **(a)** Pseudocubic block. Of the 16 cation positions six are not shown (at the centers of six octants of a cube), being always occupied by Si atoms of the silicon-oxygen ring [90T1]. Projection on the *xy* plane of the structures of **(b)** lovozerite and **(c)** litvinskite [01Y1]. H positions not mentioned; A1 = Na; A2 = Na, H_2O or K; M = Zr, Ti or Hf; C = Na, Mn, Ca or Fe.

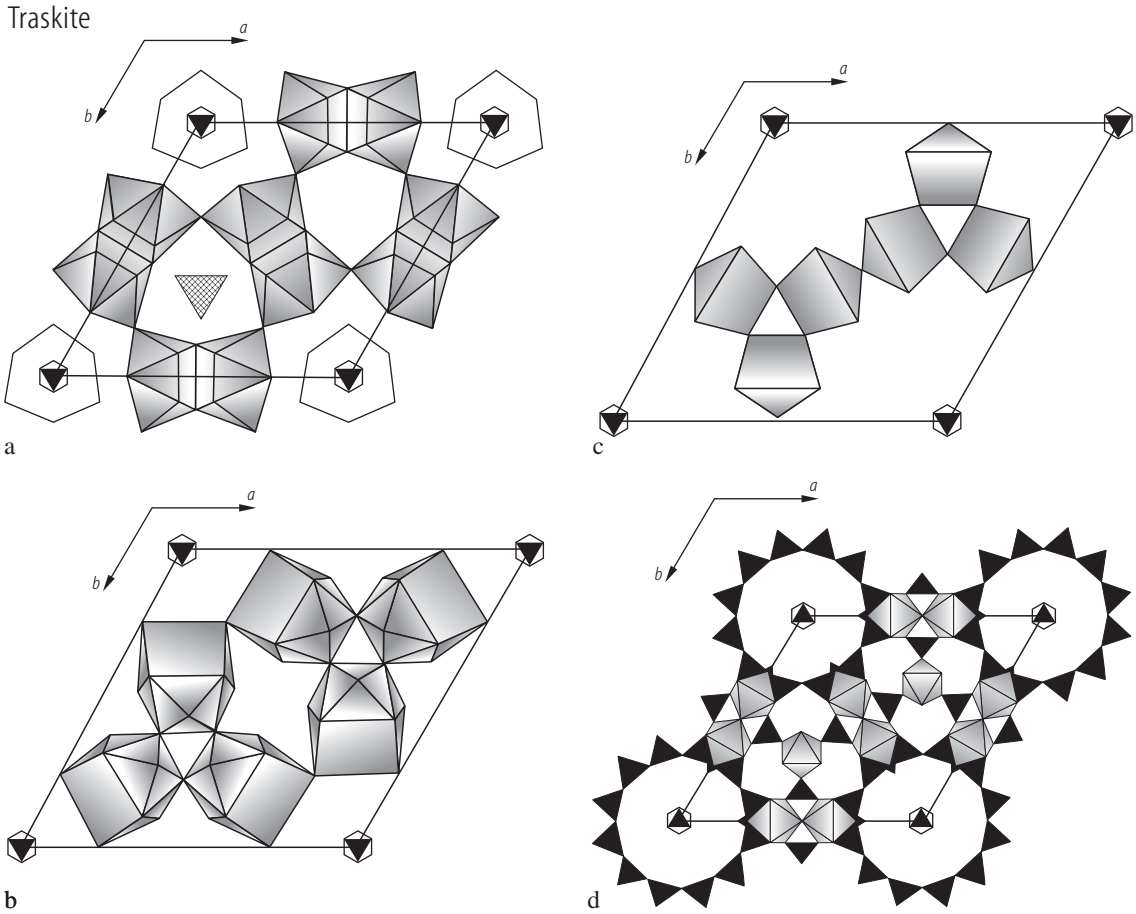


Fig. 2. Traskite. **(a)** Stage of the structure at the level $z = 0$. The shading shows the skeletal layer of Ba3 polyhedra. The cellular shading indicates the top of a trigonal Ca prism. The hexagons around the origin of coordinates are water rings. **(b)** Stage of the structure at the level $z = 0.25$. Almost identical Ba1 and Ba5 polyhedra may be seen. **(c)** Stage of the structure at the level $z = 0.50$. Layer of almost regular pentagonal Ba2 and Ba4 prisms connected to one another by common edges. **(d)** "Small-cation" coupling of the structure. Shown in black is the island silicon-oxygen motif: twelve-membered rings around the origin of coordinates and vertical Si_2O_7 groups around $\bar{6}$ axes in the middle of the cell. The shaded octahedra are filled with cations of groups A, B and D [76M1].

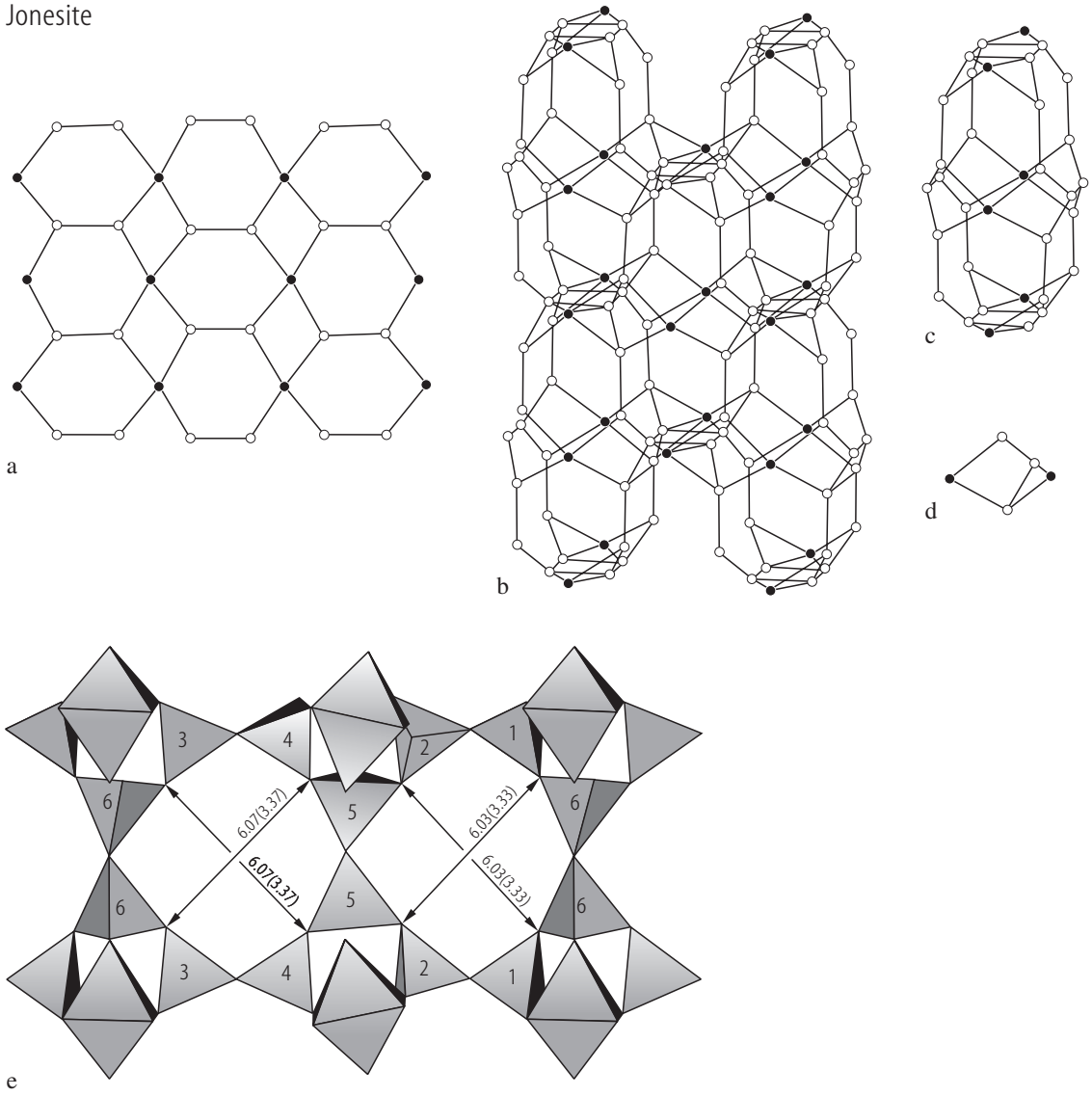


Fig. 3. Jonesite. Graphical representation of the topology of the titanosilicate layer, where open circles represent tetrahedral sites and closed circles octahedral sites which are connected with bonds without O atom bridges. **(a)** The topology of the sheet of Tiø$_6$ octahedra and Si_2O_7 groups; **(b)** the topology of the double porous layers; **(c,d)** two types of cages, $8^4 6^6 4^4 3^8$ and $4^2 3^2$ respectively [04K1]. Face symbol for cages are according to [03L1] where a symbol gives the number of vertices in a face with the number of such faces given as a superscript. The $8^4 6^6 4^4 3^8$ cages have eight-membered rings as windows with the effective pore size of 3.37 × 3.37Å^2. The adjacent cages link through eight membered rings so that a two-dimensional channel system is formed with channels running parallel to [100] and [001]. In **(e)** are shown two adjacent eight-membered rings of SiO_4 tetrahedra and their free diameters (calculated as distance in Å between O atoms across the ring minus 2.7 Å - in paranthese) [04K1].

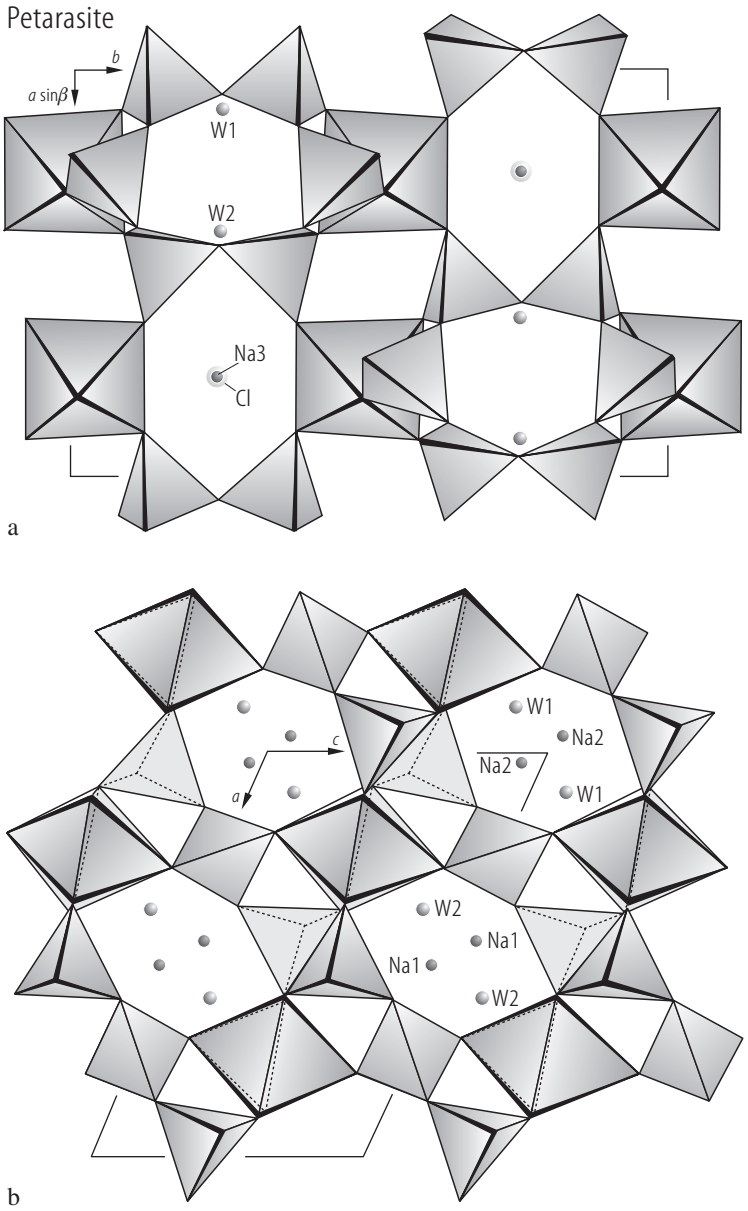
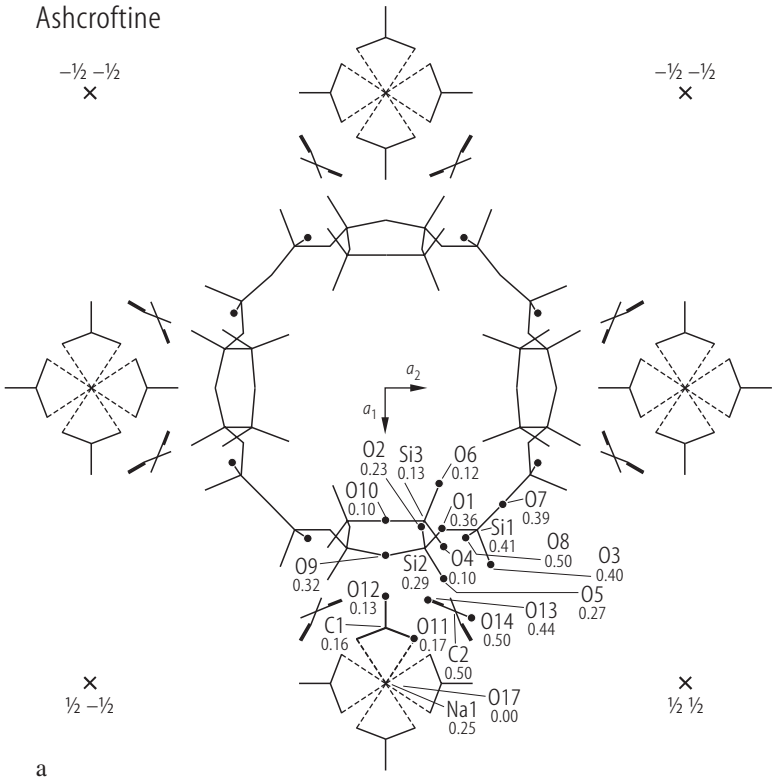
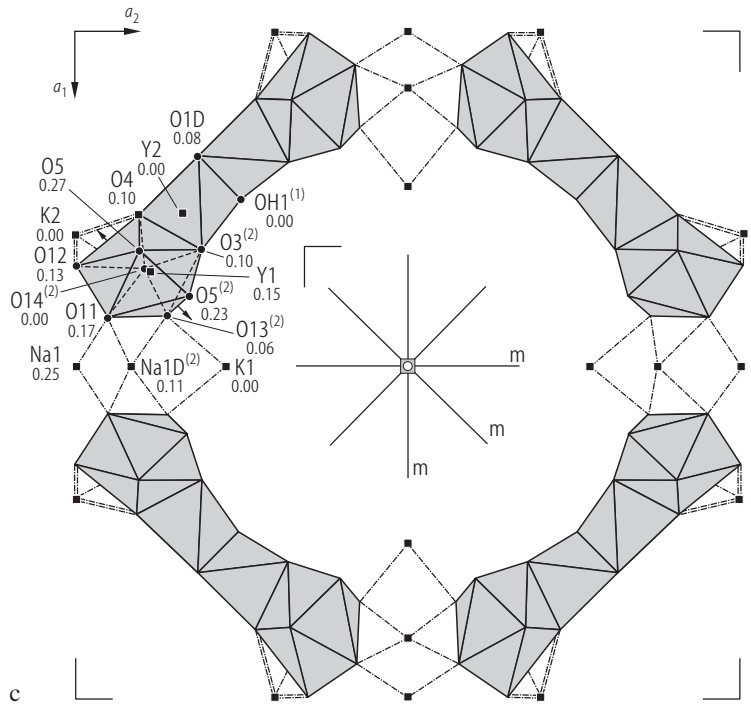


Fig. 4. Petarasite. Partial projection of the structure. **(a)** Down the ***c***-axis, showing the corner-sharing, six-membered silicate rings and ZrO_6 octahedra. Note the elliptical channels parallel to the ***c***-axis, which accommodate Na3 and Cl atoms; **(b)** down the ***b***-axis showing elliptical channels parallel to ***b***, which house the sodium atoms Na1 and Na2 and the water molecules (W1, W2). The six-membered silicate rings and the rest of the structure can be reconstructed by passing mirror planes through vertices of silicate tetrahedra pointing up (or down) [80G1].



a



c

Fig. 5a,c. For caption see next page

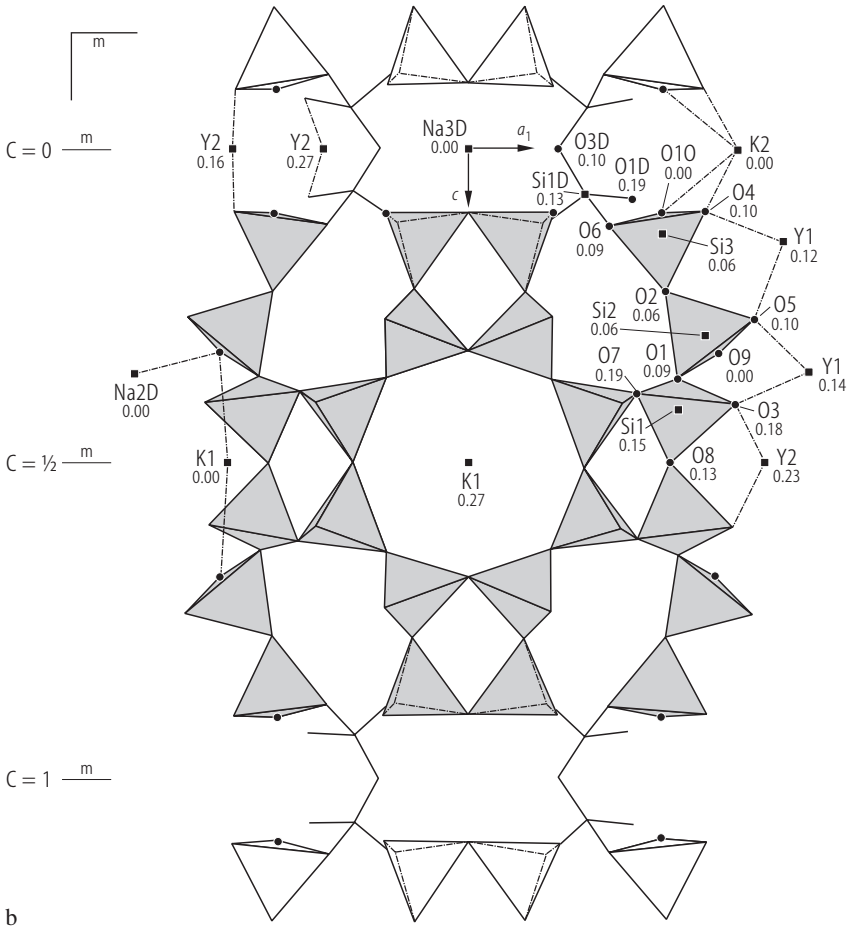


Fig. 5. Ashcroftine. **(a)** The central curd as a spoke diagram showing Si1 to Si3, C1, C2, Na1, O17 = OW2 and O1 to O14. These atoms are ordered. The ball centered at (0 0 1/2) is $[Si_{48}O_{128}]$. Atom sites corresponding to Table 3 are noted, and their heights are given as fractional coordinates in *z*. **(b)** The central $[Si_{48}O_{128}]$ ball drawn as shaded polyhedra projected down [010]. Some cations in the limbus and whey are shown. At least five different $[T_2O_7]$ bridges between the neighboring balls can occur along [001]. One of them - Si1D – O3D – Si1D [= T1D – ϕ4D – T1D noted in text and Table 3e] - is shown. Heights are given as fractional coordinates in *y*. Note that the top and bottom portions of adjacent balls along [001] are drawn in as unshaded polyhedra. **(c)** The limbus that encrusts the central curd. The Y1–O and Y2–O polyhedra are shaded: some Na1–O, Na1D–O, K1–O and K2–O bonds are shown. The laurel wreath shown here is centered at (1/2 1/2 0) and some elements of symmetry are shown. Heights are given in fractional coordinates in *z* [87M1].

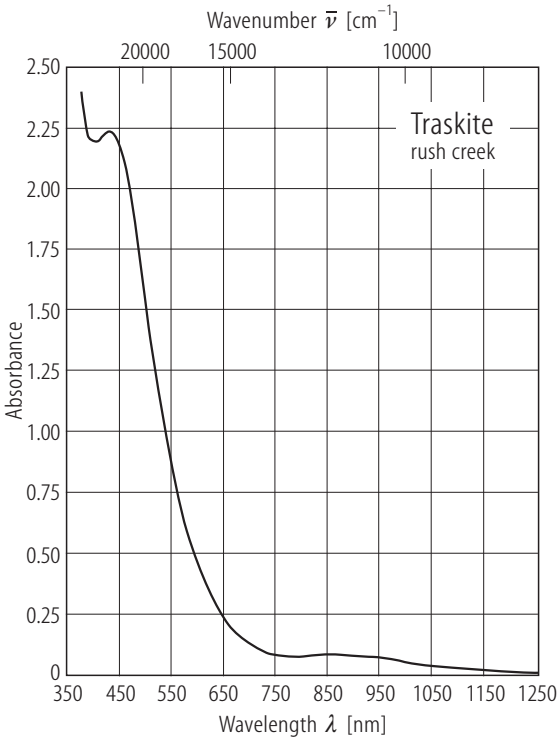


Fig. 6. Traskite[26]. $\boldsymbol{E} \perp \boldsymbol{c}$ polarized absorption spectrum [88M1]. Sample thickness 0.075 mm, $T = 296$ K.

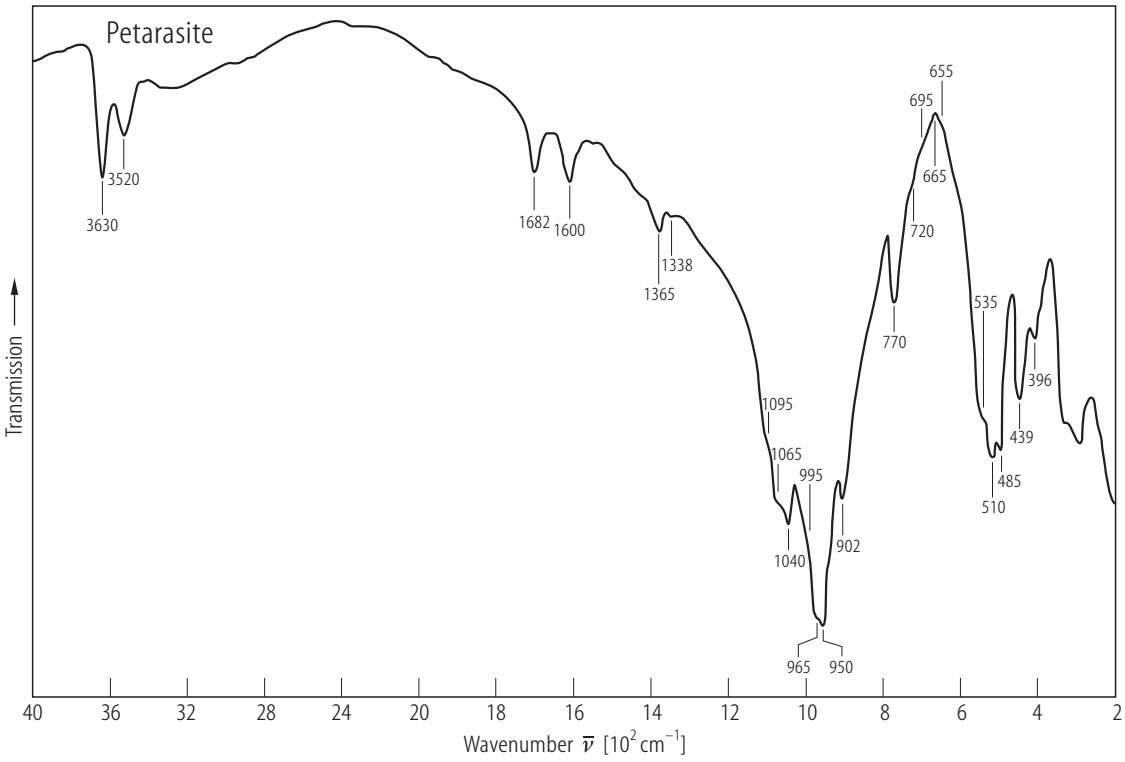


Fig. 7. Petarasite[22]. Infrared absorption spectrum [80C1].