

Milarite

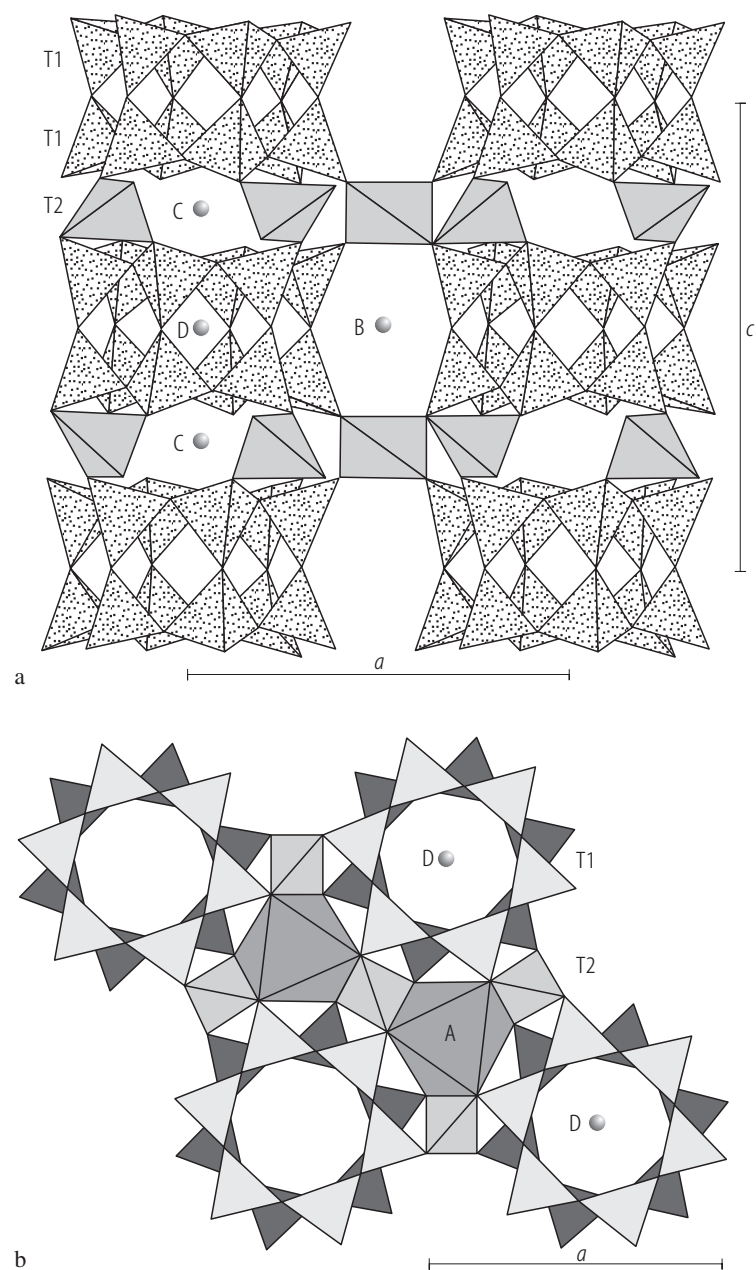


Fig. 1. Milarite. Crystal structure viewed parallel to [101] and [001]. Octahedral A sites located at the level of the T2 octahedra are omitted in the horizontal projection, for clarity [80C1].

Armenite

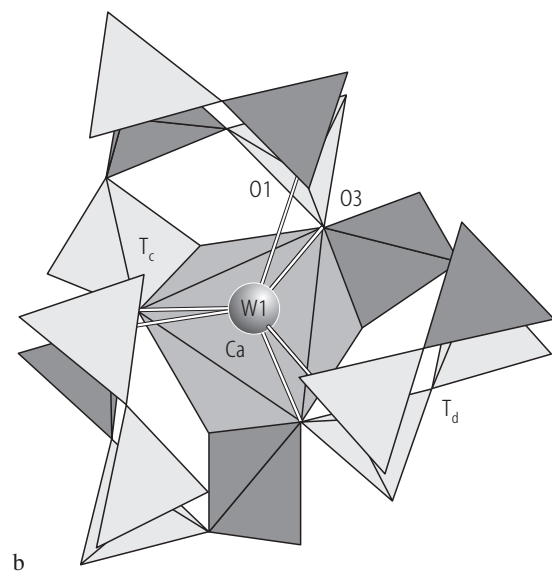
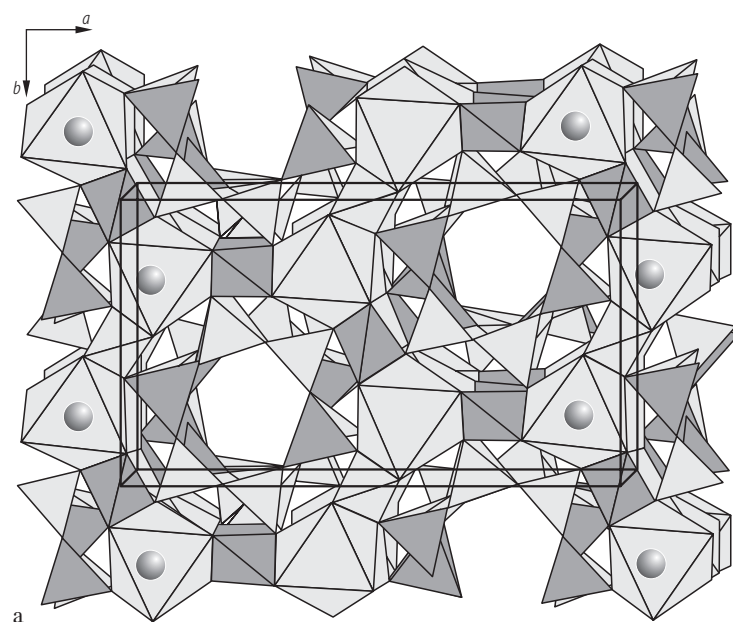
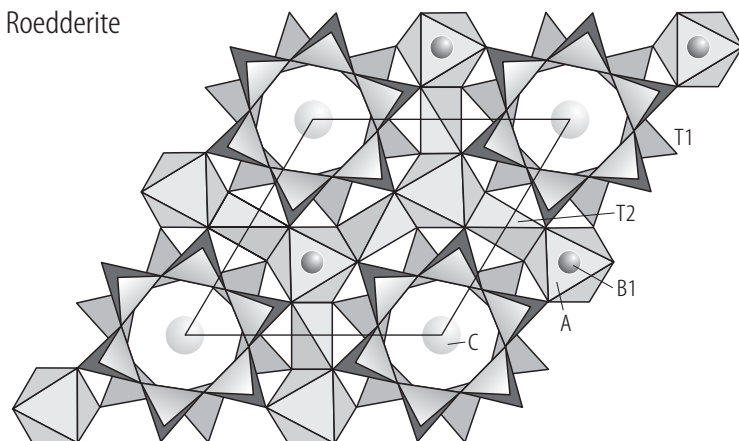


Fig. 2. Armenite. **(a)** Polyhedral representation of the Pnc2 armenite structure projected parallel to c with unit cell outlined. Ba is not shown, small spheres are H_2O molecules completing CaO_6 octahedra to sevenfold Ca coordination. Notice the ordered arrangement of H_2O molecules. Where H_2O is not situated above the CaO_6 octahedron it is hidden below the octahedron. **(b)** Polyhedral representation of the H_2O environment. The sphere represents $W1$ positioned on a pseudo-threefold axis (parallel to c); bonds are drawn to

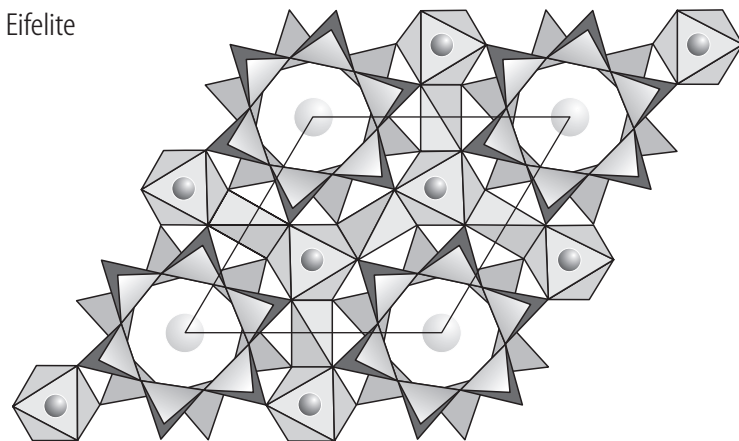
the six closest O neighbours ($3 \times O3$ and $3 \times O1$). The CaO_6 octahedron below shares $O3$ type edges with T_c tetrahedra. Four-membered rings of T_d tetrahedra (seen edge-wise) are fragments of the double-ring units. In figures **(a)** and **(b)**, Si occupies light-shaded tetrahedra and Al occupies dark-shaded tetrahedra. The H_2O molecule is slightly shifted toward the $O1$ -type O atoms connecting an SiO_4 and an AlO_4 T_d tetrahedron [99A1].

Roedderite



a

Eifelite



b

Fig. 3. Roedderite (a) and eifelite (b) structures having $P\bar{6}2c$ and $P6/mcc$ space groups, respectively, projected along the c -axis [89A1]. The major structural difference is the ordered arrangement of Na on a B1' position in roedderite, while Na in eifelite is randomly distributed over almost completely B1'- and B2'-sites which are symmetrically equivalent.

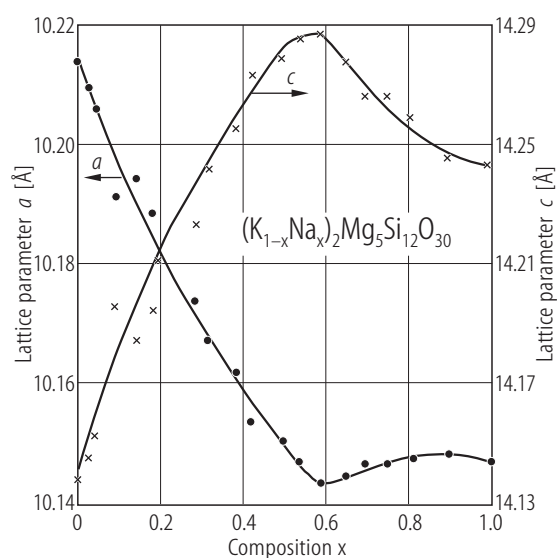


Fig. 4. $(K_{1-x}Na_x)_2Mg_5Si_{12}O_{30}$. Composition dependence of lattice parameters [93B1]. The $P6/mcc$ type structure was considered.

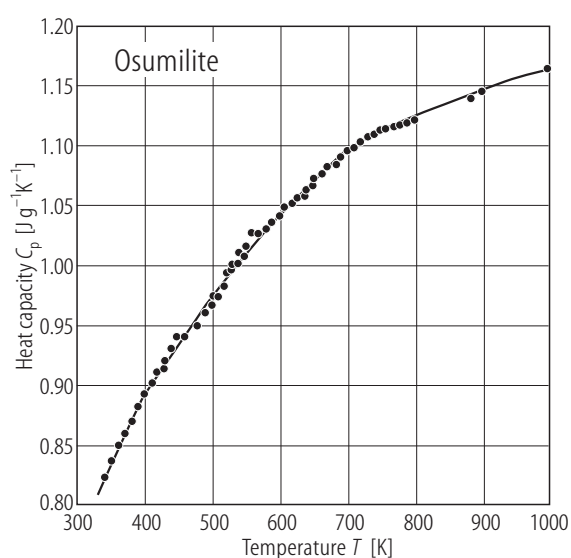


Fig. 6. Osumilite⁴⁵⁾. Temperature dependence of the heat capacity [84H1].

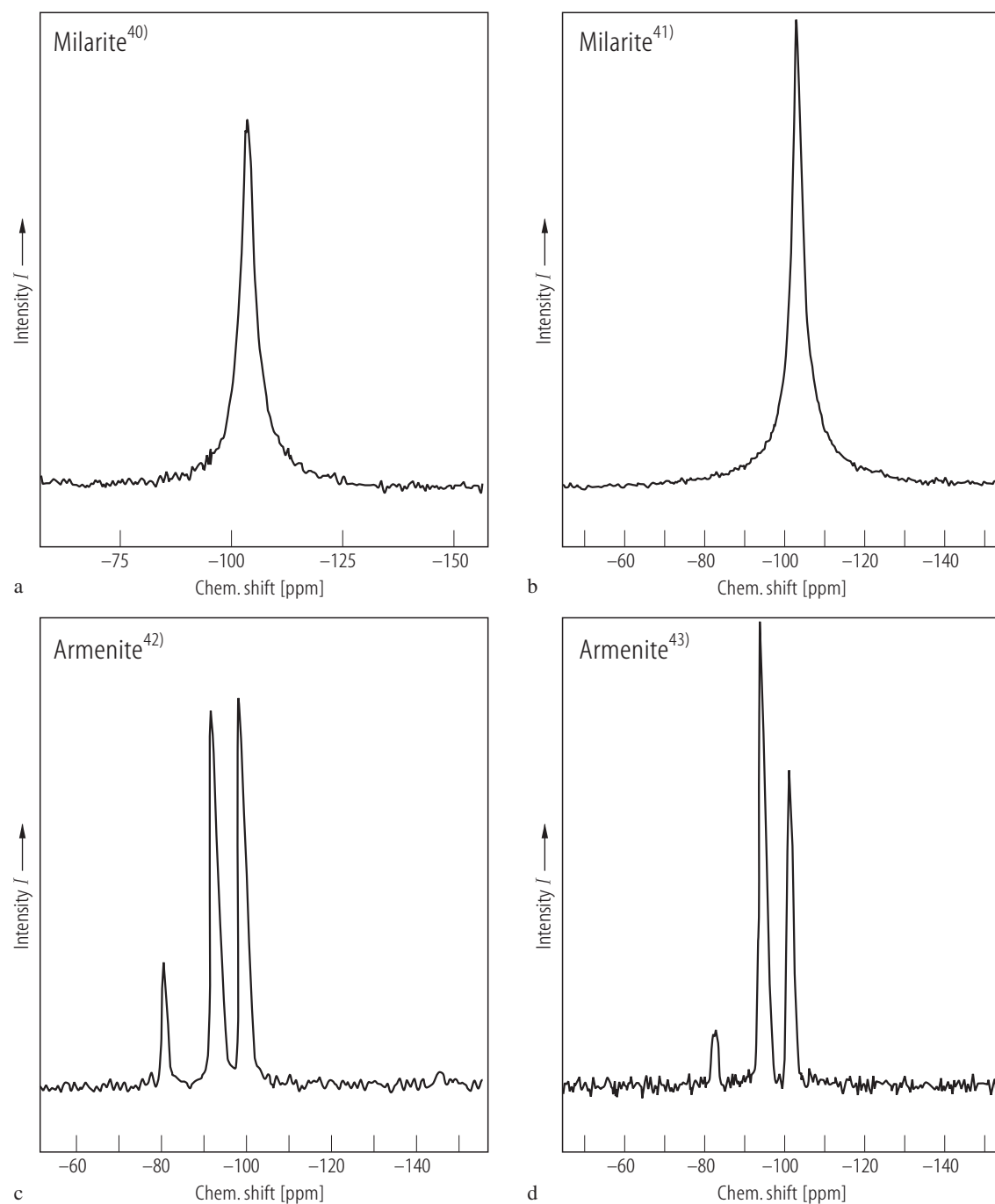


Fig. 5. Milarite⁴⁰⁾(a), milarite⁴¹⁾(b), armenite⁴²⁾(c), armenite⁴³⁾(d). ^{29}Si MAS NMR spectra [99A1]. Chemical shift relative to ^{29}Si in $\text{Si}(\text{CH}_3)_4$.

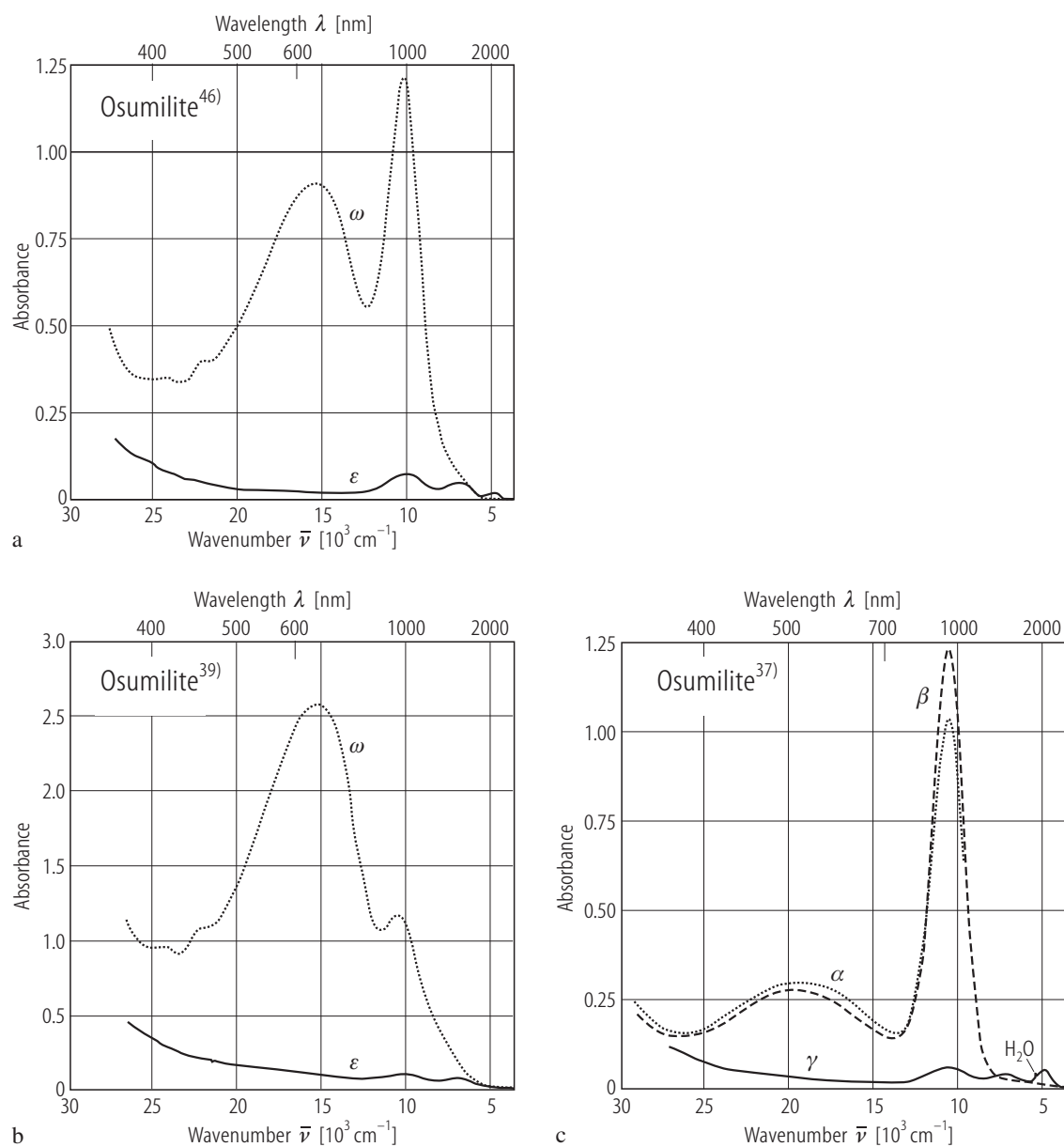


Fig. 7. Osumilite⁴⁶⁾ (a), osumilite³⁹⁾ (b) and osumilite³⁷⁾ (c). Room-temperature electronic spectra. In (a), (b) and (c) the crystal thickness was 0.10 mm. For Fig. (c) optic orientation: $\gamma = c$; α and β occur in the plane normal to the c -axis. [78G1].

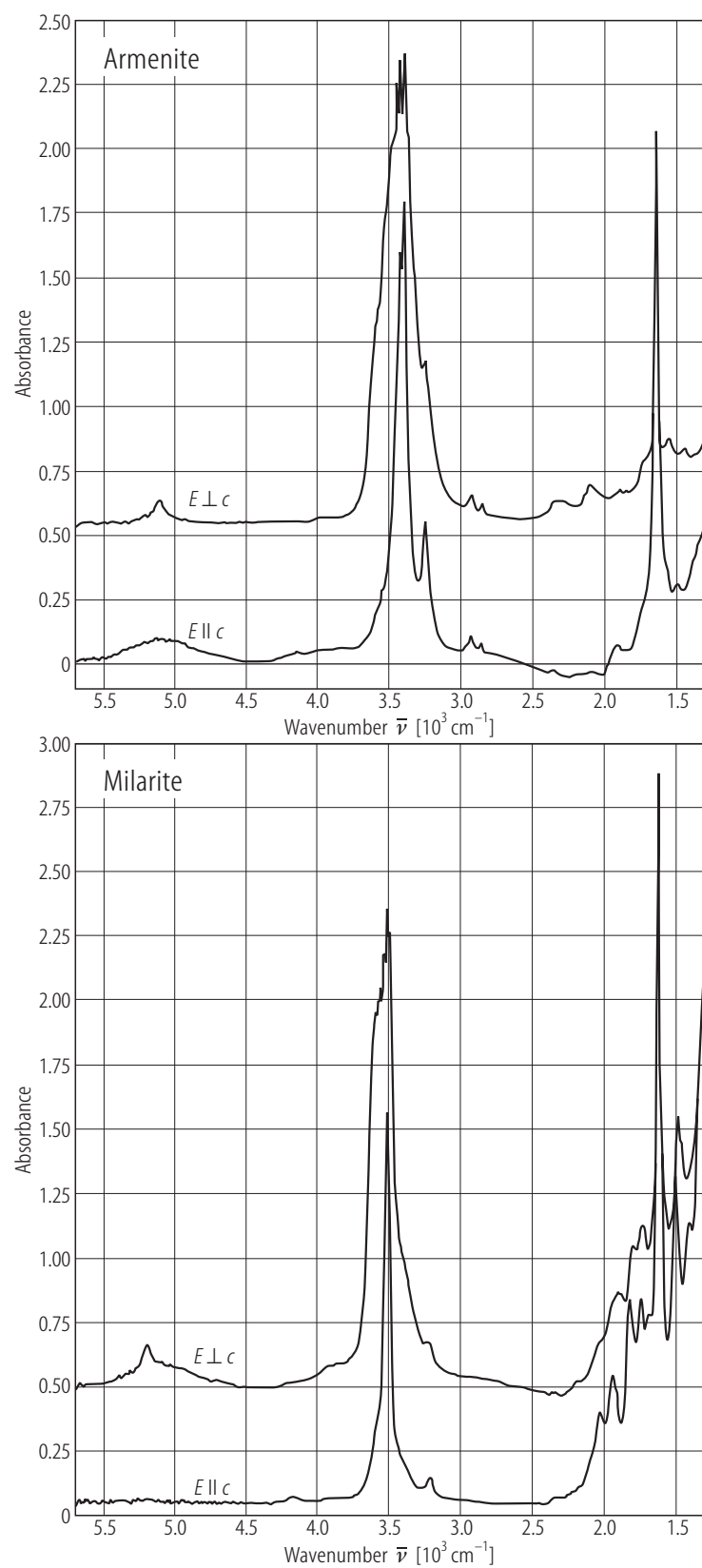


Fig. 8. Armenite⁴²⁾ and milarite⁴⁰⁾. Polarised FTIR absorption spectra. The $E \perp c$ spectra were vertically offset by 0.5. Due to very strong absorption, bands around 3500 and 1600 cm^{-1} were truncated [99A1].