

08.4-6 NEW DATA ON CHAROITE. By L.V. Niki-shova, Yu.D. Lazebnik, K.A. Lazebnik. Institute of Geology, Academy of Sciences, Yakutsk Branch, Siberian Department, Yakutsk, 677982

Charoite and its morphological variety charoite-asbestos were studied by various methods (mineralogical, chemical, electron microscopy, SAD-patterns). The obtained crystallographic characteristic ( $a = 19.60(5)$ ,  $b = 32.01(5)$ ,  $c = 7.25(5)\text{\AA}$ ,  $\beta = 94^\circ$ ,  $Z = 4$ , space group one of  $P2/m, P_2, Pm$ ) and crystallochemical formula  $(K, Na)_5(Ca, Ba, Sr)_8[Si_6O_{15}]_2[Si_6O_{16}](OH, F) \cdot nH_2O$  differ from those suggested by the discoverers (Rogova et al., Zap.VMO (1978), N I, p.94).

Taking into account the real relations of minerals in the rock (miserite, charoite, apophyllite, fedorite), a model for the charoite crystal structure has been constructed (space group  $P2/m$ , 87 independent atoms, 237 positional parameters) which inherits the structural peculiarities of miserite-channels formed by rings of  $Si_{12}O_{30}$  along the "c" axis. The construction of a model and its further refinement is probably the only possible way to determine the structure of charoite which is too fine-grained for a X-ray single-crystal study.

08.4-7 THE CRYSTAL STRUCTURES OF IZOKLAKEITE, DADSONITE AND JASKOLSKIITE. By E. Makovicky, Inst. of Mineralogy, Univ. of Copenhagen, Denmark, W.G. Mumme, CSIRO Div. of Mineral Chemistry, Melbourne, Australia, and R. Norrestam, Inst. of Inorganic Chemistry, The Technical Univ. of Denmark, Lyngby, Denmark.

Izoklakeite,  $(Cu, Fe)_2 Pb_{26} (Sb, Bi)_{20} S_{57}$ ,

is orthorhombic,  $a = 37.69\text{\AA}$ ,  $b = 33.95\text{\AA}$ ,  $c = 4.06\text{\AA}$ , space group  $Pnmm$ , with a very weak 2c supercell. Large, complex lozenge-shaped rods of PbS-like arrangement in this structure are 6 atomic layers thick and 6 octahedra wide. They are combined with smaller, lozenge-shaped rods, that are 4 semi-octahedra wide and contain 2Å-shear planes, into a pseudo-hexagonal structure. Izoklakeite is the 4th member of the homologous series based on kobellite ( $N=2$ ). This series also offers a number of derivative structures with truncated or sheared basic elements.

Dadsonite,  $Pb_{10+x} Sb_{14-x} S_{31-x} Cl_x$ , is triclinic,  $a = 17.33\text{\AA}$ ,  $b = 4.11\text{\AA}$ ,  $c = 19.05\text{\AA}$ ,  $\alpha = 90.0^\circ$

$\beta = 96.5^\circ$ ,  $\gamma = 90.4^\circ$ , space group  $P\bar{1}$  (or  $P1$ ). The crystal structure consists of truncated lozenge-shaped rods of SnS-like arrangement, 4 atomic layers thick and three semi-octahedra wide. For packing reasons, in the adjacent layers (100) lateral interconnections of these lozenges differ, taking place either via Sb coordination semi-octahedra or via

Pb coordination prisms. Dadsonite shows relationships to the structures of  $Pb_4 Sb_4 S_{11}$  and  $Pb_4 Sb_6 S_{13}$ .

Jaskolskiite,  $Cu_x Pb_{2+x} (Sb, Bi)_{2-x} S_5$  ( $x=0.2$ )

is orthorhombic,  $a = 11.31\text{\AA}$ ,  $b = 19.83\text{\AA}$ ,  $c = 4.09\text{\AA}$ , space group  $Pbmm$ . The crystal structure is composed of slices (010) of SnS-like motif that are mutually related by n-glide planes. The metal positions facing adjacent slabs are occupied primarily by Pb, those in the slabs by (Sb, Bi). Partially occupied tetrahedral positions of Cu occur between the slabs. Jaskolskiite is the 4th member of a homologous series based on meneghinite ( $N=5$ ) that also contains stibnite, bismuthinite and aikinite (for all  $N=2$ ) and, partly modified, also berthierite ( $N=3$ ).

08.4-8 GEOMETRY OF OCTAHEDRAL COORDINATION IN MICAS - A REVIEW OF REFINED STRUCTURES. By Z. Weiss, M. Rieder, M. Chmielová, and J. Krajiček, Coal Research Institute, Ostrava and Institute of Geological Sciences, Charles University, Praha, Czechoslovakia.

Data for 62 refined crystal structures of micas yielded octahedral bond lengths cation-anion and were used to calculate MEFIR (mean fictive ionic radii) of octahedral cations, octahedral angle  $\psi$ , counter-rotation of anion triads  $\delta$ , and two ratios of octahedral edges  $R_1, R_2$ . All of these were used as variables in a statistical analysis. The most important results are as follows.

All octahedra are flattened, those around larger cations usually more than those around smaller ones. Flattening dominates over counter-rotation in octahedra with large cations and vice versa, apparently because the sheet tends to maintain a uniform thickness.

Mean counter-rotation in a sheet  $\bar{\delta}$  correlates well with the scatter of bond lengths or MEFIR and results from interactions in the whole sheet.

Both counter-rotation and octahedral angle for individual octahedra can be predicted by regression equations from bond lengths or MEFIR for all octahedra in the 1M subcell. The regressions permit one to predict octahedral geometry from chemistry and an assumed cation ordering or, inversely, to check the results obtained.

Multiple linear regressions yielded a set of bond lengths cation-oxygen and effective ionic radii for octahedral cations and the vacancy.