08.4-19 KAOLINITE NUCLEATION AND MACROCRYSTALS GROWTH WHILE IN SUSPENDED TRANSPORT THROUGH QUARTZ SANDSTONE PORE SPACE. By E. Azmon, Department of Geology and Mineralogy, The Ben Gurion University of the Negev, Beer Sheva, Israel.

Nucleation of kaolinite crystallites on surface irregularities of quartz grains, and growth of macrocrystalline kaolinite in sandstone pore space, both obtained in the laboratory conducted suspended-transport experiments, are believed to be of similar nature to that described from the Nubian Sandstone (Azmon, Israel J. Earth Sci., 1983, 32 ,83-92) as epigenetic kaolinite. These proccesses add crystallized kaolinite to that which settles in the pore space from mechanical suspension and that which coagulates from colloidal suspension. Inman'n (Inman, J. Sed. Pet., 1949, 19 , 51-70) roughness velocity and threshold veolcity required to lift the kaolinite back into suspension, may be too low to break the kaolinite - kaolinite crystalline contacts and the pseudomorphic kaolinite - quartz grains contact; it may also be totally inadequate to push the macrocrystalline kaolinite grown in the pore space, through the smaller diameter passages between the pores. Choking and unchoking of the permeability in the sandstone may depend to a great extent on the conditions which allow the generation or the destruction of such crystalls.

08.4-20 CANASITE: THE REFINEMENT OF CRYSTAL STRUCTURE AND COMPARISON WITH THAT OF MISERITE. By I.V.Rozhdestvenskaya, L.V.Nikishova, I.I.Bannova, Yu.D.Lasebnik, Institute of Geology, Yakut Branch, USSR Academy of Sciences; Yakutsk,LNPO"Burevestnik",Leningrad, U.S.S.R.

Rare mineral-canasite, $K_3Na_3Ca_5Si_{12}O_{30}(O,OH,F)_4$ - has been found in association with miserite in charoitic rocks,Yakutia. Unit cell parameters are: a=18,836(4),b=7,244(1),c=12,636(2) Å, β =111,76(2)°, Z=2,space group Cm. The refinement of canasite structure was carried out to R_{aniso}= 0,038, using 1640 reflections collected on $P2_I$ diffractometer (MoKα - radiation). The framework of the mineral is represented by "tubes" of $(Si_{12}O_{30})_\infty$, that connect the "walls" of Ca-Na octahedra. It is found, that one of the Ca positions is statistically occupied by Ca or Na. The general crystal - chemical formula for canasite is suggested. That is $K_3Na_{2+x}Ca_{6-x}Si_{12}O_{30}(O_{1-x}(F,OH)_{3+x})_4$. The chemical composition of investigated crystal corresponds to x=1. While the tube radicals $(Si_{12}O_{30})$ are quite identical for canasite and miserite (Scott, Can. Miner.,1976, 14, 515 - 528), their structures differ in the construction of "walls" from Ca-Na polyhedra. The structural similarity between the two minerals explains their occurence in the above - mentioned rocks.

08.4-21 HIGH RESOLUTION ELECTRON MICROSCOPY STUDY OF TOKKOITE,A NEW MINERAL FROM YAKUTIA. By L.V.Nikishova, I.P.Khaji, Yu.D.Lazebnik, A.L.Shirokov, Institute of Geology, Yakutian Branch, USSR Academy of Sciences, Yakutsk, Research Institute for Synthesis of Mineral Raw Materials, Aleksandrov, U.S.S.R.

Tokkoite,a new mineral- $K_2Ca_4Si_7O_{17}(O,OH,F)_4$- occurs as intergrowths of needle often twinned crystals in charoitites,Yakutia (Lasebnik & al.,Miner. Jour.,1986, 8, no.3, 85-89). The unit cell parameters were determined from TEM selected area diffraction (SAD) patterns and then refined using X-ray single-crystal data: a=10,44(3), b=12,51(5), c=7,11(1) Å, α=89,92(2)° β=99,75(3)°, γ=92,75(2)°, Z=2. Samples were prepared by crushing and deposition on holey carbon TEM grids. TEM study shows those SAD patters that refer to (010)* often display continuos diffuse streaks along a* between sharp reflections in all reciprocal lattice rows, moreover in odd rows the reflections themselves are elongated in this direction . One - dimensional lattice fringe images obtained by using (hoo) reflections allow us to recognize regions with ordered and disordered stacking sequences of unit cells, as well as edge dislocation - like features in tokkoite. The interpretation of two-dimensional contrast on the HRTEM images is yet impossible because the crystal structure of tokkoite remains undetermined, although there is reason to consider it as a ribbon or ribbon - chain silicate.

08.4-22 X-RAY STUDY OF ANTHOPHYLLITE FROM SCHIST IN NE IRAQ. By M.M. Mahmoud, A.J. Al-Shakiry and Y.A. Kettaneh, Department of Geology, College of Science, University of Baghdad, Jadiriyah, Baghdad, Iraq.

Anthophyllite crystals found in schist samples located north of Hero village to the northeast of Qala Dizeh town in the northeastern border zone of Iraq are mostly composed of igneous and metamorphic complexes. Anthophyllite is associated with a very uncommon naturally occurring clinoamphibole called Richterite that was previously studied by the same authors.
The X-ray powder pattern identified the mineral as anthophyllite based on certain peak locations. The mineral is studied on x-ray precession camera that confirmed the orthorhombic symmetry and the space group as Pnma, though certain systematically absent reflections are not necessarily required by the space group. The unit cell dimensions measured from x-ray films are a=18.454 Å, b=17.923 Å, c=5.488 Å and V=1813.5 Å^3. Streaking on the x-ray films in the a* direction may indicate a large number of stacking faults in the a direction. Strong enhancement of certain reflections is explained in terms of structural defects due to the intergrowth of talc with anthophyllite that corresponds to intercalation of lamellae of triple-chain structure. Similar types of structural defects are reported elsewhere as products of retrograde anthophyllite-talc transformation.