Results of IOTA-quartz electron-microscopic study

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IOTA-quartz was studied on the samples prepared directly from the plagio-pegmatito – gneissy rocks, on the quartz grains extracted from this rock and on the fine-crystalline quartz. The following was shown:

1. Quartz (rock) grains had the curved deformed dislocations having distribution density of $3x10^{8}cm^{-2}$. The low-angle borders and strained net were not observed. In accordance with these data the deformed conditions were defined as follows: (i) compression 45% at 650-800°(?)C, P $\geq$ 6-8 kbar; (ii) the deformation rate of 10 sec^{-1}; (iii) the absence of recrystallization.

2. Traces of natural (from the initial substratum) and synthetic chemical (on the fine-crystalline quartz) etching were observed on the surface of the quartz grains. Pits of natural and synthetic etching were pointed but they were different morphologically.

3. The pits distribution density of natural and synthetic etching was approximately the same: $3x10^{-8}cm$. It coincides with the dislocation distribution density. Maybe the etching pits belong to the dislocation outputs on the surface.

4. The division surface between different grains of fraction is very pure in the initial rock consisting mainly of quartz, plagioclases N 10 and N 18, muscovite (+ garnet = Pyr 5-9%, Alm 49,8%, Spes 23,3%, Gros 20,9%; biotite, epidote). Any impurities are practically absent on these surfaces.

For the first time the initial stages of natural etching were revealed in quartz from metamorphic rocks. Very fine pits of 20-30 μm reflect this natural etching . They can be confused with the very small gas-liquid inclusions.