# Pegmatite phosphates, Conțu field, Cibin Mountains, Romania

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In this study we try to emphasize the phosphates present in the Conțu pegmatite field, Cibin Mountains, Parâng Mountains Group, Romania. Pegmatites from Conțu are hosted by micaschists and gneisses related to the Sebeș - Lotru Series (Săbău et.al. 1989). The main minerals of the pegmatite are represented by: spodumene, quartz, muscovite, K-feldspar, plagioclase, and accessory minerals by: phosphates of heterosite – purpurite series, lithiophilite – triphylite series, sicklerite – ferrisicklerite series, fluorapatite, vivianite, monazite, beril, cassiterite, columbite, tantalite, lepidolite, rutile, scarce schorl, uraninite, topaz, spessartine, sillimanite, titanite.
The experiments were done in the mineralogical laboratories of the Geological Survey of România. We use three methods of analysis: the X-ray powder diffraction (Bruker Advance D8, CuKα, γ= 1.54056 Å); the scanning electron microscopy analyses (JEOL JSM-5200, Scanning electron microscope = SEM); the infrared absorption spectrometry (TENSOR 27 FT-IR spectrometer). Phosphates in the triphylite- lithiophilite series generally occur as nests in the spodumene and feldspar mass. They form granular masses of greenish gray color that turns locally into dark brown or black, due to the weathering. The mean unit cell parameters, obtained as average of those refined by least-squares from the X-ray powder datasets obtained for six representative samples are: a= 4.715(4) Å, b= 10.374(5) Å, c= 6.037(6) Å. Phosphates in the heterosite – purpurite series occur as reddish – brown crusts, generally disposed on triphylite – lithiophilite. The unit-cell parameters takes as mean of those refined for twelve samples are: a= 5.583(5) Å, b= 9.76(5) Å, c= 4.774(4) Å. Monazite -(Ce) is a reddish-brown phosphate mineral. The mean unit - cell parameters, obtained as average of those refined by least squares from the X-ray powder datasets obtained for two representative samples are: a= 6.812(2) Å, b= 7.002(8) Å, c= 6.464(8) Å. Phosphates in the sicklerite – ferrisicklerite series occur as yellow brown, dark brown, with a crystallization orthorhombic – dipyramidal. The mean parameters, obtained as average of the four sets of values are: a= 5.944(7)Å, b= 10.064(8) Å, c= 4.794(5) Å. Fluorapatite occurs as prismatic hexagonal crystals up to 5 mm across and 8 mm in length, of white – greenish color. The unit cell parameters, determined as mean of 8 sets of individual values refined by least squares on the basis of X-ray powder data are: a= 9.366(5) Å, c= 6.887(4) Å, V= 523,14(3) $A^3$. The Fourier-transform infrared spectrum recorded for a selected sample shows the presence of the OH and F stretching at 3570 $cm^{-1}$, of the OH libration at 634 $cm^{-1}$ and of bands attributable to the $PO_4$ stretching motions ($\nu_3$ antisymmetric stretching at 1033 $cm^{-1}$, $\nu_1$ symmetric stretching at 971 $cm^{-1}$).This work has shown a new approach for minerals with a giant potential economic. Pegmatites are by nature a source of raw materials.
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References:
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