

TOURMALINIZATION IN IZERA MTS., SOUTH-WESTERN POLAND

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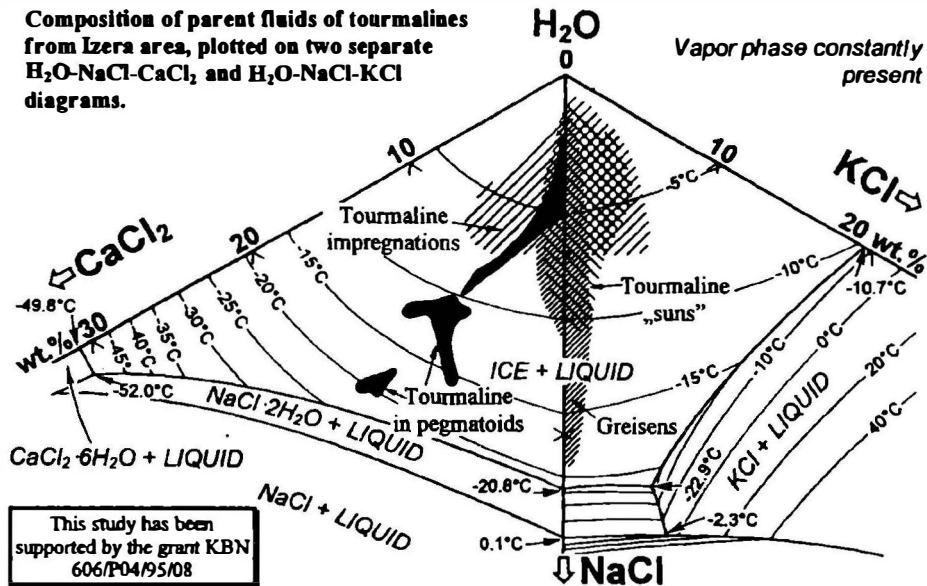
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Metasomatites in the Izera area developed in pre-Variscan gneisses and consist of albitites (leucogranites), tourmaline-topaz-, topaz-quartz- and muscovite greisens with variable amount of fluorite, and quartz metasomatites (KARWOWSKI, 1977; KOZŁOWSKI, 1978). The metasomatites are supposed to be connected with the adjacent Karkonosze (Riesengebirge) Variscan granitoid massif. Fluid inclusions were investigated in the main metasomatic minerals, muscovite exclusively. Inclusion fillings indicated rare activity of pneumatolytic fluid; metasomatites formed mostly from hydrothermal aqueous solutions, containing up to 25 vol. % CO₂. Salinities of the solutions essentially did not exceed 15 wt. % of total salts, except for tourmalines. Freezing determinations, leachate method and electron microprobe analyses yielded mainly the sodium-dominated composition of the metasomatite-forming fluids with participation of calcium and potassium. Metasomatites formed at temperatures of 550 - 110 °C (pressure-corrected homogenization temperatures) and pressures of 0.9 - 0.3 kbar, determined from CO₂-bearing inclusions.

Four main kinds of tourmaline (schörl) metasomatites were distinguished:

- (1) Greisen-type rocks consisting of almost pure tourmaline or with admixtures of quartz or muscovite, homogenization temperature Th 450 - 300 °C (pressure-corrected Th 550 - 390 °C), sodic-potassic and sodic-calcic parent solutions of total concentrations of 2 to 22 wt. % (see Fig. 1).
- (2) Loose radial tourmaline aggregates ("Suns") or lenticular clusters in gneisses or leucogranites, Th 420 - 350 °C (pressure corrected: 510 - 440 °C), solutions rather potassic-sodic with subordinate calcium content, total salts 2 - 15 wt. % (Figure).
- (3) Tourmaline impregnations with replacement of all the components of leptite-type rock but quartz, resulting in quartzose rock of tourmaline cement, Th 390 - 290 °C (pressure-corrected: 480 - 350 °C), very variable composition of the parent fluids of tourmaline with concentrations of salts 1 - 11 wt. % (Fig. 1).
- (4) Tourmaline aggregates in pegmatoid veins in the hornfels-skarn sequence at the Garby Izerskie contact-dislocation zone, Th 440 - 290 °C (pressure-corrected: 530 - 380 °C), evolution of the solutions from calcic-sodic with cation proportion 1:1 by weight and total concentration exceeding 20 wt. % to almost pure sodic of total concentration of 3 to 4 wt. % (Fig. 1).

Composition of parent fluids of tourmalines from Izera area, plotted on two separate H_2O -NaCl-CaCl₂ and H_2O -NaCl-KCl diagrams.



Data on occurrence of fourteen ions in water leachates from fluid inclusions in quartz associated with tourmaline will be presented and discussed.

KARWOWSKI, L. (1977): Geochemical conditions of greisenization in the Izerskie Mts foothills (Lower Silesia). - Arch. Mineralog., **33**, 83-148.

KOZLOWSKI, A. (1978): Pneumatolytic and hydrothermal activity in the Karkonoszelzera block. - Acta Geol. Polon., **28**, 171-222.

FLUID INCLUSIONS IN THE SEDIMENTARY ROCKS FROM THE POLISH LOWLANDS, WESTERN POLAND

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Cements of the Permian sedimentary rocks (Rotliegendes) have been recently studied by means of the fluid inclusion method. The aim of the research in the area west of Poznań (Wielkopolska, Western Poland) is to conduct observations and measurements within the boreholes in the gas field Paproc and to make special