

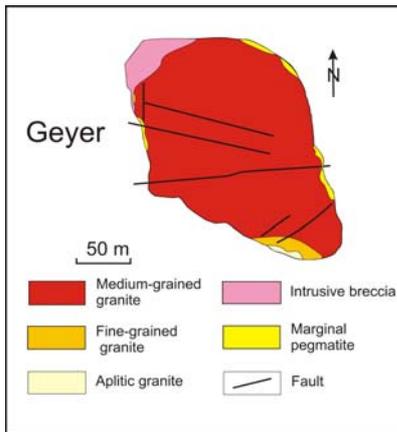


Nb-Ta-Ti oxides in topaz granites of the Geyer granite stock (Erzgebirge Mts., Germany)

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Nb-Ta-Ti-bearing oxide minerals (Nb-Ta-bearing rutile, columbite-group minerals, W-bearing ixiolite) represent the most common host in high-F, high-P Li-mica granites from the Geyersberg granite stock in the Krušné hory/Erzgebirge Mts. batholith. The Geyersberg granite stocks forms a pipe like granite stock composed of fine- to middle-grained, porphyritic to equigranular topaz- Li mica granites, containing up to 6 vol. % of topaz.



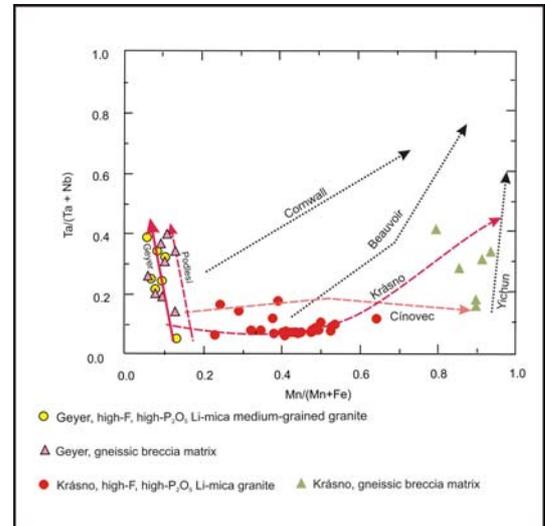
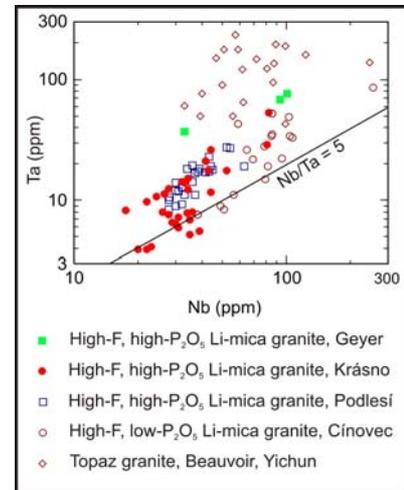
On the NW range of granite stock were found intrusive breccias composed of mica schists and muscovite gneiss fragments within fine-grained aplitic granite.



The high-F, high-P Li-mica granites of the Geyersberg granite stock, which represent the youngest granite intrusions in the Western and Middle Krušné Hory/Erzgebirge plutons, are highly fractionated S-type granites (ASI = 1.2–1.5) with Nb/Ta ratio = 0.9–1.4, enriched in Rb (1190–1660 ppm), Cs (2842 ppm), Nb (33–101 ppm) and Ta (37–76 ppm). These granites are poor in Mg (0.04–0.05 wt. % MgO), Ca (0.5–0.6 wt. % CaO), Sr (50–54 ppm), Ba (12–30 ppm) and Zr (14–121 ppm).

Granites of the Geyersberg granite stock are partly greisenised, mainly along steeply dipping NW-SE, and NE-SW trending faults. Quartz-Li-mica-topaz greisens are mineralised by cassiterite, arsenopyrite, wolframite and molybdenite. The Geyer Sn deposit was mined from 1395 to 1913, with main mining period between 1739 and 1773. In this time, annually 4–10 tons of tin was mined.

Columbite group minerals occur usually as euhedral to subhedral grains that display irregular to patchy zoning. These minerals are represented by columbite-(Fe) with Mn/(Mn+Fe) ratio ranging from 0.07 to 0.15 and low Ta/(Ta+Nb) values (0.06–0.41).



The rare Fe-rich W-bearing ixiolite occurs as small needle-like crystals. The ixiolite is Fe-rich with relatively low Mn/(Mn + Fe) and Ta/(Ta + Nb) values (0.10–0.15 and 0.06–0.20 respectively). Owing to the high W content (19.8–34.9 wt. % WO₃, 0.11–0.20 apfu), the sum of Nb + Ta in the ixiolite does not exceed 0.43 apfu. The Ti content is 1.7–5.7 wt. % TiO₂ and Sn content is relatively low (0.3–4.1 wt. % SnO₂).

