Geology and mineralogy of Ranquel pegmatite, Argentina

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The Ranquel Be-bearing deposit is a beryl-columbite-phosphate subtype, beryl type pegmatite. It is located at 32°56′32″ S, 65°56′53″W in the Totoral pegmatitic field of Sierra de San Luis, Argentina. The basement of the area is formed by schists of medium grade, which are intruded by an orogenic S-type granitoid suite, giving Ordovician radiometric ages. The structural and geochemical studies perfomed suggest that Ranquel pegmatite was formed by fractional crystallization of this fertile granite suite in rare element pegmatites of LCT (Li, Cs, Ta) signature and intruded under directed stress conditions. The pegmatite shows the following internal structure: border, wall, intermediate, internal and a quartz core zones. The primary mineral association comprises quartz, microcline, albite, muscovite, beryl, columbite-group minerals, tourmaline, apatite, garnet and Fe-Mn-Mg-Li phosphate minerals.

Decimeter-sized nodules of primary, interlaminated triphylite-graftonite were hydrotermally reworked into two different paragenetic sequences with different oxidation conditions. The oxidation sequence has a paragenesis with heterosite-phosphosiderite-strengite and autunite. The non-oxidation sequence originates an association with phosphoferrite-reddingite-hureaulite-eosphorite-vivanite, having hydroxilfluorapatite and Mn^{+3}-Fe^{+3} hydroxides as residual products.