

## **LAS TERMAS URANIUM DEPOSIT, CATAMARCA, ARGENTINA**

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Las Termas uranium deposit, located in the Sierra de Fiambalá, province of Catamarca, Argentina, is hosted by cataclastic breccias developed in a metamorphosed basement. It is interpreted as a F-rich open greisen system, genetically related to the granular facies of Los Ratones Granite which is a carboniferous granite with petrological characteristics typical of post-orogenic intrusions. Based on petrographic and mineralogical studies, the evolution of mineralizing fluids is suggested. During the late-magmatic - hydrothermal stage, high  $a_{K^+}$  fluids led to potassic alteration. An increase of  $a_{H^+}$  and  $a_{FH}$ , during the post-magmatic stage, caused greisenization, the main alteration process in the area. It includes the following paragenesis: a) muscovite-zinnwaldite-fluorite-topaz-quartz, b) muscovite and c) fluorite-quartz. Greisenization is followed by a second stage of K-metasomatism that caused microclinization. Finally, higher  $H^+$  metasomatism, produced by an increase of meteoric water influx into the hydrothermal system, led to post-greisenization processes. The following ore mineral sequence, indicative of progressive decrease in  $fO_2$ , has been identified: cassiterite-wolframite; pitchblende-pyrite; chalcopyrite-pyrrhotite-melnikovite-galena-sphalerite-electrum. Intensive oxidation led to uranium oxides (fourmarierite, masuyite and wölsendorfite) and silicates (boltwoodite, coffinite, kasolite, sklodowskite, uranophane and uranophane-beta) pseudomorphic after pitchblende and also phosphates (autunite, chernikovite, coconinoite, metatorbernite, meta-uranocircite, phurcalite and saleeite). Uranium contents of the mineralized breccias range from 0.1 to 9.2  $U_3O_8$  % with several economically significant values. Mo, Au, Pb, Zn, Cu and Ag anomalies were also detected.