

SEG 100 Conference: Celebrating a Century of Discovery

ST.218

Processes and Mineralogy Involved in the Porphyry-Epithermal System in California Prospect, Tolima (Colombia)

Iván Mateo Espinel Pachón¹, Mónica Á. López¹, Andrés F. González Durán², Juan C. Molano Mendoza², Juan D. Alarcón Rodríguez²

1. University of Geneva, Geneva, Switzerland, 2. Universidad Nacional de Colombia, sede Bogotá, Bogotá, Colombia

California prospect is located 200 km west from Bogotá, Colombia, and 8 km SE from the La Colosa gold-rich porphyry. Within this area, gold was extracted from quartz veins by artisanal miners in the 1960s. In this study, the mineralization and processes were characterized using field work, petrography, metallography, X-Ray diffraction, electron probe microanalyzer (EPMA), Raman spectroscopy, and VNIR-SWIR spectroscopy.

The host rocks in the area are muscovite-quartz-graphite schists of Palaeozoic age, which were mineralized by the emplacement of at least two porphyritic dacites. Phyllic alteration was identified in the area, accompanied by disseminated sulfides (mainly pyrite, and base metals in minor amount). Quartz veins are cutting the disseminated mineralization and contain Fe-rich sphalerite, galena, chalcopyrite, pyrrhotite, marcasite, tetradymite, and pyrite.

There is an important structural control of the mineralization. Most of the veins found in the field are related to extensional structures, which cut the foliation of the schists. Tectonic breccias with clasts of mineralized dacites were also found.

Intermediate product was identified in this area. This texture was associated with the redox change of the fluid generated by the reduced host rock (graphite schists). The GGIMFis thermometer was used in the Fe-rich sphalerite, resulting in temperatures of 250°C. This temperature was corroborated with illite crystallinity analysis.

The tellurides in this area were not reported before, and they are found as micrometric (30 µ) inclusions in pyrite.

This area is an interesting target for exploration and drilling because it can be related to the last stage of the La Colosa porphyry system and could lead to the discovery of new mineralized areas.

