

Geochemical characterization of gold-bearing iron oxides in soils from the Trevías-San Feliz area (NW Spain)

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The West-Asturian Leonese Zone (NW Spain) is known, since the time of the Roman Empire and from a mining perspective, for its large amount of gold showings. In this work, some preliminary results about the mineralogy and geochemistry of gold-bearing iron oxides found in soils of the Trevías-San Feliz area (northern sector of the Esva River watershed), are presented.

Main geological features in the Trevías district are: i) the presence of a NE-SW trending thick Cambro-Ordovician sequence that comprises three different units (from bottom to top): Cándana sandstones, Vegadeo limestones and Los Cabos slates and quartzites; ii) presence of a regional low-grade metamorphism, which is synorogenic (variscan) and whose intensity corresponds to the chlorite (locally biotite) zone. iii) structures are dominated by NE-SW trending thrusts.

The Vegadeo limestone (about 150 m thick) constitutes a good lithological guide for hydrothermal-type metal mineralizations in this area, but the scarcity of outcrops makes sampling and field observations difficult. In the Trevías-San Feliz area, taking advantage of the construction of new livestock roads, fresh soil some samples were collected and studied (eluvium type; Fig. 1).

In addition to the clayey fraction, several types of iron oxides are present in these soils as individual particles. Those with an idiomorphic shape, generally with a leached core, (Fig. 2) contain a notable enrichment in gold with erratic distribution, detected by EPMA and LA-ICP-MS (up to 5,500 mg kg⁻¹ and an average of 727 mg kg⁻¹ in 50 analyses). These Au values are similar to those reported by Álvarez [1] for the pyrite in the Navelgas Carlin-type deposit (located 13 km SW, in the same host rock), suggesting that intense geochemical alteration in these mineralizations do not mobilize refractory invisible gold.

References:

[1] Alvarez, R., 2003. Mineralogical and geochemical characterization of an epithermal gold deposit in northwestern Spain. *Memórias e Notícias* 2, 195-204.

