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Antimony-Gold mineralization in Rates (Northern Portugal)

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In the Dúrico-Beirão mining district several paragenetic associations have been described in gold mineralizations, including Sb-Au. The objective of this research was the study of the Sb-Au mineralization in the Rates area, from field reconnaissance of the mineralized structures by soil sampling to the petrographic and mineralogical study of the parageneses associated with this gold mineralization, mined by the Romans.

The portable XRF was used to measure Sb and As in farms and forest soils. The observed Au-Sb-As anomalies in the Rates area must be linked to Lagoa Negra mine by the same north-western trend fault. Historical mining works have been identified both in Lagoa Negra and in Rates, where rock-chip sampling returned results up to 30 g/t Au from the Rates prospect.

Some rock samples from Rates were studied by geochemical and petrographic analyses and were analysed in detail by scanning electron microscopy. The results indicate that the paragenetic association in Rates is Sb-Au, with stibnite as primary Sb sulfide mineral, valentinite as alteration mineral, and gold in native and granular form.

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