

## Mineralogy, geochemistry and genesis of a Portuguese Pb-Zn-Ag vein deposit

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The Pb-Zn-Ag quartz vein from Terramonte cuts the Neoproterozoic-Cambrian schist-greywacke complex. The deposit was partially exploited during the 1970 decade. Several grains of arsenopyrite, pyrite, sphalerite, freibergite and semseyite are oscillatory zoned, as shown by backscattered images. Most of the chemical distinctions between darker and lighter zones are due to substitutions in the mineral lattices. However, semseyite has a darker zone with a lower Pb content and a higher Sb content than the lighter zone. Metal and metalloid are not correlated and are the main constituents in the solid solution. The paragenetic sequence consists of four stages. They contain quartz mainly accompanied by arsenopyrite and pyrite in the first stage, sphalerite in the second stage, galena showing many inclusions of several sulphosalts in the third stage and carbonates in the fourth remobilization stage. This quartz vein is probably of Alpine age. Fluids that acquired high salinity either by leaching of salt beds or following seawater evaporation could have leached metals mainly from metasediments and also previous Sb-Au deposits. Remobilization of metals and metalloids will be due to the tectonic evolution of the opening of the Atlantic ocean. The ore deposition resulted from mixing of a hypersaline fluid with up to 26 wt.% NaCl equivalent and occasionally up to 17 wt.% CaCl<sub>2</sub>, carrying the metallic content of the fluid, with an extremely low salinity fluid of meteoric origin that came down into the basement. The mineralization probably occurred between 120 and 230°C.

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