

## **The Bramram Pb-Zn deposit, Central Jebilet, Morocco: mineralogy and fluid inclusion study.**

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The Bramram Pb-Zn deposit is located around 12km in the North of Marrakesh city, Morocco. The mineralized veins mainly striking E-W are filled by quartz-carbonates and hosted in the Sarhlef schist (Huvelin, 1977). Several hydrothermal stages of mineral deposition have been recognized:

- (i) early zoned quartz (QI) is associated with minor amount of pyrite and followed by feathery quartz (QII), then siderite;
- (ii) ore stage started by the deposition of geodic quartz (QIII), calcite-dolomite, sphalerite, then galena.

Fluid inclusion study has been carried out in QI and QIII, QII does not contain fluid inclusions. In QI, fluid inclusions are two-phase aqueous-carbonic, water dominated. Salinity ranges from 7 to 15 wt % NaCl equiv. and Th from 240° to 309°C (mode around 290°C).

Fluid associated with galena has been studied in fluid inclusion planes crosscutting QIII and fluid inclusions close to galena crystals. It is a brine with salinity ranging from 19 to slightly >24 wt % NaCl equiv. and Th from 70° to 113°C (mode around 90°C).

The mineralizing brine at Bramram Pb-Zn deposit shows similarities with those from the Sarhlef and the Bir N'Has Pb-Zn deposits (19 to 23 wt % NaCl equiv. and Th from 80° to 200°C, mode: 110°C) located in the Central Jebilet few kilometers north of Bramram (Nshimiyimana et al., 2016). For all these Pb-Zn deposits, ores correspond to quartz-carbonate veins that show E-W general orientation and likely have resulted from the circulation of the same base metal mineralizing brine. This brine seems to have its source in the Moroccan Atlasic basins coeval with the pre-Atlasic to Atlasic extension (Triassic). This extension is synchronous with the Central Atlantic Ocean opening (Huvelin, 1977).

[1] Huvelin P. (1977): Notes Mém. Serv. Géol. Maroc, No 232bis. [2] Nshimiyimana F. and al. (2016): 26<sup>th</sup> Goldschmidt conf., 26/06-02/07/2016, Yokohama-Japan.