

The Nature of Mineralizing Fluids in the Hammam Zriba Deposit (F-Ba-Sr-Pb-Zn) in North-eastern Tunisia

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Abstract : The Hammam Zriba (F-Ba-Sr-Pb-Zn) ore deposits of the Zaghouan district are located in northeast Tunisia, 60 Km south of Tunis. The host rocks belong to the Ressay Formation (Tithonian age) and lower Cretaceous layers. Mineralization occurs as stratiform replacement heaps and lenses. The mineral assemblage is composed of fluorite, barite, sphalerite, and galena. Primary fluid inclusions in sphalerite have homogenization temperatures ranging from 83 to 140°C, final melting temperature range from -18 to -7.0, corresponding to salinities of 5 to 21 wt % NaCl equivalent. Fluid inclusions in fluorite homogenize to the liquid phase between 132 and 178°C. Final ice melting temperatures range from -25 to -6.8 °C, corresponding to salinities between 17 and 24 wt% NaCl Equivalent. The LA-ICP-MS analyses of the fluid inclusions in fluorite show that these fluids are dominated by Na>Ca>K>Mg, with the concentration of Fe being equivalent to that of Mg. Microthermometric analyses of the fluid inclusions observed in fluorite and sphalerite show that two distinct fluids were involved in the mineralization deposition: a warmer saline fluid (132-178°C, 17-24 wt % NaCl equivalent) and cooler saline fluid (83°C-140, 5-21 wt %NaCl equivalent). The ore fluid result from highly saline and Na-Ca dominated with lower Mg concentrations come from the leaching of the dolomitic host rocks by the fluids.

Keywords : Hammam Zriba , fluid inclusions, LA-ICP-MS, Zaghouan district

Conference Title : ICGGERS 2022 : International Conference on Geology, Geological Engineering and Regional Setting

Conference Location : Paris, France

Conference Dates : September 20-21, 2022