

Mineralisation and Fluid Inclusions Studies of the Fluorite Deposit at Jebel Mecella, North Eastern Tunisia

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Abstract : The Jebel Mecella F (Ba-Pb-Zn) ore deposits of the Zaghouan district are located in northeastern Tunisia, 60 km south of Tunis. The host rocks belong to the Ressay Formation of Kimmeridgian-Tithonian age and lower Cretaceous layers. Mineralisations occur as stratiform lenses and fracture fillings. The ore mineral assemblage is composed of fluorite, barite, sphalerite galena, and quartz. Primary fluid inclusions in sphalerite have homogenization temperatures ranging from 129 to 145°C final melting temperature range from -14.9 to -10.0, corresponding to salinities of 14.0 to 17.7 wt% NaCl equivalent. Fluid inclusions in fluorite homogenize to the liquid phase between 116 and 160°C. The final ice melting temperature ranges from -23 to -15 °C, corresponding to salinities between 17 and 24 wt% NaCl equivalent. The LAICP-MS analyses of the fluid inclusions in fluorite show that these fluids are dominated by Na>K>Mg. Furthermore, the high K/Na values from fluid inclusions suggest the brine interacted with K-rich rocks in the basement or in siliciclastic sediments in the basins. The ore fluids in Jebel Mecella are highly saline and Na-K dominated with lower Mg concentrations, and come from the leaching of the dolomitic host rocks. These results are compatible with Mississippi-Valley-type mineralizing fluids.

Keywords : Jebel Mecella, fluid inclusions, micro thermometry, LA-ICP-MS

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