

HYDROTHERMAL FLUIDS IN THE CARNAÍBA EMERALD DEPOSIT (BAHIA, BRAZIL).

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A classic example of emerald ore deposit, mafic-ultramafic rocks associated to pegmatitic veins, occurs in the Carnaíba Mine (Bahia, Brazil). Located in the northern part of the São Francisco craton, it is linked to the Carnaíba granitic massif that is intruding the Serra da Jacobina volcano-sedimentary sequence (lower Proterozoic), and the Archean gneissic- migmatitic basement. The mineralization is situated in a metassomatized zone along the contacts between the granite and quartzite with ultrabasic rocks. The evolution of this ore deposit has two main hydrothermal infiltration stages: a) hydrothermal fluid circulation in fractures or in pegmatitic veins cutting the ultrabasic rocks. This first metassomatism stage is characterized by phlogopite and plagioclase formation along with emerald and molybdenite formation. b) The second stage is marked by the development of a quartz - muscovite vein system. Emerald (and molybdenite) microthermometric study, in the first hydrothermal stage, have shown the existence of complex and saline fluids (aqueous fluid inclusions - LV- liquid, vapor or SLV- saturated, liquid, vapor, with very low eutectic temperatures) and homogenization temperatures near 300°C. SEM analyses in fluid inclusions from molybdenite have identified carbonate, clay, phlogopite and muscovite crystals. Veins quartz are characterized also by complex gas bearing (CO₂, CH₄, N₂) fluids, with aqueous fluids (L, LV, SLV) and homogenization temperatures up to 370°C. The observed daughter minerals are halite, sylvite, carbonate, muscovite and phlogopite.