Paper Number: 3709

The Sn, Nb, Ta, F (REE, U, Th) world class deposit and the massive cryolite deposit associated with the albite-enriched facies of the Madeira A-type granite, Pitinga, Amazonas State, Brazil.

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The Madeira deposit is associated with the A-type Madeira granite (~1,820 Ma) which is hosted by A-type volcanic rocks (Mapuera Suite, ~1,880 Ma) formed in a caldera complex. The deposit is characterized by an association of Sn with cryolite, Nb, Ta (Y, REE, Li, Zr, U, and Th) in the same albite-enriched granite that hosts a massive cryolite deposit. In the magmatic stage, the high F content in the melt was buffered by crystallization of cryolite. Sn (cassiterite) and Nb (uranoan plombopyrochlore) mineralizations were homogeneously dispersed throughout the deposit, transported by F-complexes. Zircon crystallization, inhibited in the early magmatic stage by high-F activity, became intensive in the late magmatic stage, due to decreasing alkalinity associated with riebeckite crystallization, forming concentrations, together with xenotime and polythionite, in pegmatitic zones. Y and REE mineralization in the lower portion of the deposit is also represented by gagarinite-(Y) with fluocerite inclusions formed by exsolution of LREE. There is no evidence of silicate-fluoride liquid-liquid immiscibility, or of continuous transition from volatile-rich silicate melts to solute-rich fluids. The abrupt magmatic-hydrothermal transition triggered three processes: (1) albitization accompanied by the crystallization of hydrothermal cryolite in the rock matrix; (2) pyrochlore *columbitization*, characterized by gradual loss of Pb and enrichment in U and Nb, until the pyrochlore structure destabilizes to form columbite; (3) formation of the massive cryolite deposit - comprising twinned cryolite crystals (87%) plus quartz, feldspar, and zircon – from an aqueous saline (1.7 to 22.4 wt % eq. NaCl) hydrothermal fluid (at a minimum starting temperature of 400°C, continued until low temperatures). The evolution of parameters (REE_{total}, La/Lu, LREE/HREE, Y) in cryolite is continuous from the magmatic stage until the lower hydrothermal stage.