DEFORMATION AND METAMORPHIC TEXTURES IN MASSIVE SULFIDES AT THE PALMEIRÓPOLIS ZN-CU-(PB) DEPOSIT, TOCANTINS, BRAZIL

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The Palmeirópolis Zn-Cu-(Pb) deposit is a 4.3 M. tonne polydeformed volcanogenic massive sulfide deposit, located at the Palmeirópolis volcano-sedimentary sequence, Tocantins State, central Brazil. The Palmeirópolis deposit and its host rocks were affected by penetrative deformation and amphibolite facies metamorphic recrystalization related to the Brasiliano orogeny. Geotermobarometric studies of the host rock mineral assemblages yield temperatures of 550 to 625°C and pressures between 2 and 5.5 kbars for the regional metamorphism. Three small orebodies were identified at the region, all of them are characterized by pyrrhotite, sphalerite, chalcopyrite, pyrite and galena. Arsenopyrite, mackinawite, cubanite, molibdenite, ilmenite, magnetite and sphene are minor phases. A wide variety of ductile deformation, brittle deformation and annealing textures have been identified. Ductile deformation textures include dislocation and dynamic recrystallization textures. Brittle deformation textures include microfractures and cataclasis zones identified mainly in pyrite crystals. Annealing process generated crystal growth displaying 120° triple junctions and development of idioblastic pyrite porphyroblasts. The most spectacular tectonoclastic texture observed at the Palmeirópolis deposit is the durchbewegung texture, where fragments of the wall rocks have been broken, deformed and rotated within the ductile sulfide matrix composed mainly by pyrrhotite and sphalerite. The description and interpretation of the textures and structures related to the metamorphic and deformation event that affected the Palmeirópolis deposit allow a better understanding of the post-depositional evolution of the ore.