MATRIX ROCK TEXTURE IN THE PITINGA TOPAZ GRANITE

LENHARO, S.L.R.(1);POLLARD, P.J.(2); BORN,H.(3)-(1)UnB–Brasília–BR;(2)JCU–Townsville–AU; (3)USP–São Paulo-BR

The porphyritic topaz granite of the Água Boa batholith in the Pitinga Mine contains rounded quartz and rectangular white and pink feldspar phenocrysts (0.5 – 3 cm). The fine-grained groundmass is composed of quartz, white and pink feldspar, micas (biotite and Li-siderophylite) and topaz. Accessory minerals include zircon, fluorite, RE-minerals, Fe-Ti oxides, monazite, thorite, columbite-tantalite, cassiterite, xenotime and sulphides. The topaz-granite is peraluminous being similar to low P2O5 topaz granites and shows features resulting from postmagmatic metasomatic processes. Three subtypes of topaz granite have been identified, based on modal composition and petrographic features: 1) end member with around 20% angular phenocrysts; 2) intermediate member with approximately 40% phenocrysts exhibiting dendritic boundaries; and 3) matrix rock containing around 70% aggregates and phenocrysts with irregular and dendritic boundaries. The estimated amount of K-feldspar phenocrysts decreases at the expense of quartz and plagioclase phenocrysts from the matrix rock to the end member type. Petrographically the matrix rock shows relict quartz, K-feldspar and plagioclase aggregates of the medium- to coarse-grained older facies surrounded by irregular and anastomosing films of topaz granite displaying magmatic flow structure. Individual phenocrysts consist of quartz with absorption and subsequent dendritic growth. The presence of the matrix rock, called “two-phase variants”, is related to the crystallisation pattern typical of highly fractionated granites associated with Sn mineralization. This bimodal texture has been attributed to a combination of decompression, disruptive emplacement, microbrecciation and replacement associated with fluidisation, which is in partial agreement with the petrographic features of the Pitinga matrix rock.