

## **CONTROLS OF FLAKE-TYPE GRAPHITE DEPOSITS IN THE MINAS-BAHIA PROVINCE, BRAZIL**

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Large flake-type graphite deposits are widespread in northeastern Minas Gerais and southeastern Bahia states, eastern Brazil. Such mineralizations are related to the regional tectono-metamorphic evolution of the Neoproterozoic Araçuaí Belt (counterpart of West-Congo Belt). Graphite crystal grain-size is closely related to metamorphic temperature. Shear zones control graphite deposits, because the regional tectonic deformation was concentrated in graphitic layers. The largest deposits and a myriad of graphite occurrences are found in a quartzite-schist unit (Pedra Azul) and a kinzigitic unit (Salto da Divisa-Itamaraju). Metamorphic assemblages of the quartzite-schist unit (graphite, biotite, sillimanite, muscovite and garnet) and anatetic features (quartz-feldspar veins) are evidence of metamorphism in the amphibolite facies (600°-700° C). Graphite concentrates of the quartzite-schist-type mineralization usually show medium grain-size less than 1 mm and carbon contents in the range of 75-90%. In the kinzigitic unit, metamorphic assemblages (biotite, garnet, cordierite, sillimanite, graphite), abundant anatetic veins and lenses of calc-silicate granulite indicate the amphibolite-granulite facies transition (700°-800° C). Graphite concentrates show coarse-grained graphite crystals (1-10 mm) and carbon contents varying in the range 86-95%. In both mineralization types, the main generation of graphite crystals, oriented along the regional ductile foliation, grew during the Brasiliano tectonic-metamorphic event (~600 Ma). A late graphite generation consists of non-deformed, hexagonal graphite flakes, exhibiting the largest crystals (10 mm). It is associated with zones of intense, late to post-tectonic partial melting. The described mineralizations are probably of Neoproterozoic age.