

PODIFORM CHROMITITES IN SERPENTINITE BLOCKS FROM THE GOIÁS OPHIOLITIC MÉLANGE, GOIÁS, BRAZIL

1 NILSON, A. A. and 2 MISRA, K.C. 1 Inst. Geociências, UnB, Brasília, Brazil 2 Dept. of Geol. Sci., Knoxville, U.S.A.

Chromitite-bearing serpentinite occurs as small elongate bodies up to 5 km long, in tectonic contact with Neoproterozoic Araxá Group meta-sediments in south-central Goiás, Brazil. This study refers to the Cromínia, Morro Feio and Abadiania bodies. Serpentinite plots in the narrow mantle tectonic peridotite field in AFM diagrams, shows harzburgite normative composition, displays high NiO/Cr₂O₃ ratios and a concave REE pattern with rock/chondrite ratios close to unity. It is interpreted as residual mantle harzburgite that is part of a Neoproterozoic ophiolitic mélange. The ultramafic blocks enclose very small, sub-economic irregular chromitite lenses and pockets, generally 0.5-2.0 m thick and 3.0-6.0 m wide and usually parallel to the S1 schistosity. Chromite exhibits massive, nodular, globular, schlieren and disseminated textures. Primary chromite from massive ore at Cromínia and Morro Feio contains up to 27-28% Al₂O₃ (38% at Abadiania) and up to 40-42% Cr₂O₃ (wt%). It displays Cr/Cr+Al ratios in the 0.48-0.65 range (0.33-0.40 at Abadiania), Mg/Mg+Fe²⁺ within the 0.60-0.75 range, low Fe³⁺ and low TiO₂ (less than 0.4 wt%). However, chromite underwent important chemical changes during upper greenschist facies metamorphism. Primary chromite is clearly of podiform type. A model of sequential olivine and chromite precipitation in magma pockets in the upper mantle is favored for the generation of the chromite orebodies.