

OCCURRENCE OF PYRRHOTITE, CO-PENTLANDITE AND CHALCOPYRITE IN THE HIGH-MG ROCKS OF THE MORUNGAVA INTRUSION, PARANÁ IGNEOUS PROVINCE, SOUTHERNMOST BRAZIL

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The extensive Paraná-Etendeka tholeiitic magmatism is characterized by flows and intrusions of basalt - basaltic andesite (>90%) and rhyodacite. Locally there are ultramafic sills, composed of olivine gabbros, gabbronorites, websterites and anorthosites detected in the southern and southeastern states of Brazil. High-Mg intrusions, in this context, are potential sources of Cu-Ni (EGP); e.g. Noril'sk-Talnakh (Russia) and Panzihua (China). For this work, we selected olivine gabbros and gabbronorites rich in Mg (> 20 % MgO), from the Morungava region (RS) collected from CPRM-PA drill cores. The Morungava region is about 50 km from Porto Alegre, and the ultramafic intrusion were detected during a drilling survey for coal in the eighties, and there is only one outcrop known (Lomba Grande quarry). The goal of this study is the characterization and identification of the sulphides present in magnesian portions of the intrusion. The methodology used was reflected light microscopy (UFPel, UFRGS), SEM (UFRGS) and electron microprobe (UnB). Three sulfides occur in the samples collected from TG-144, TG-135, and TG-162 boreholes. Chalcopyrite is the predominant phase in large grains (~ 50 microns); pyrrhotite rarely occurs in isolated crystals but is common as inclusions and exsolution features with Ni-sulphide; the Ni sulphides occur in small crystals (~10-20 µm) and can be classified in pentlandite group, characterized by the presence of cobalt (5-15% Co), indicating that the crystallization temperature of cobalt-pentlandite should be greater than 650 °C. In these levels the presence of ilmenite and chromite was also detected in two stages of crystallization. The sulphides of Ni and Fe occur in the second phase of chromite crystallization, while the chalcopyrite also occurs in equilibrium with the formation of ilmenite.

Key words: Morungava; ultramafic rocks; Fe-Ni (Co)-Cu sulphides.