

CHARNOCKITE OCCURRENCE IN THE GARZÓN AREA, EASTERN CORDILLERA OF COLOMBIAN ANDES

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Colombian territory are located at NW of South America. To the east, Orinoco and Amazonia are plane regions composed by igneous and metamorphic basement of Meso- to Neoproterozoic ages covered by a basin with sediments of Paleozoic, Mesozoic and Cenozoic ages. To the west, Colombian Andes is an elevated region (until ca. 5.800 m) divided into three ranges or so-named Western, Central and Eastern Cordilleras. Intrusive and metamorphic rocks mark numerous orogenies since Neoproterozoic to Cenozoic times. Jurassic orogeny is maybe one of the most representative events, characterized by generation of the largest igneous massif in Central and Eastern Cordilleras. At southern part of Eastern Cordillera, in the Garzón area, are concentrated several of these igneous massifs, such as the Sombrerillo igneous massif, an elongated segment with ca. 80 Km of length and ca. 15 Km of width, composed by several facies and facies associations, one of the most representative is charnockite facies association. We can identify almost two facies in this charnockite association. The hornblende-biotite quartz-mangerite facies (or hornblende-biotite quartz-monzonite with orthopyroxene facies), and the biotite quartz-jotunite facies (or biotite quartz-monzodiorite with orthopyroxene facies), probably a compositional variation of the first one. Orthopyroxene are always present in both facies, almost in a small percent. Biotite quartz-jotunite facies is a small (a couple of tens of meters) differentiated body inside of the largest quartz-mangerite facies. Biotite quartz-jotunite facies has higher content of orthopyroxene (6%) compared with the quartz-mangerite facies (0.5%). Biotite quartz-jotunite facies is a hypidiomorphic granular rock, medium- to coarse-grained, composed mainly by intermediate plagioclase (An₄₈) with minor quantities of alkali feldspar and quartz. Biotite, orthopyroxene and clinopyroxene are the main accessory minerals, and magnetite-ilmenite, Ca-amphibole, apatite and zircon are other accessories. Hornblende-biotite quartz-mangerite facies has similar textural and compositional characteristics that biotite quartz-jotunite facies. However, orthopyroxene is in a small percent, because other minerals, such as, augite, hornblende and biotite are replacing it almost entirely. Charnockite occurrence has a petrological significance because (ademas de its rare occurrence) orthopyroxene is an indicator of high temperatures (maybe high pressure), and probably a dehydrated source. Geochronological studies of U-Pb dating and Lu-Hf isotopes in situ analysis in zircon on LA-MC-ICP-MS are planning for establishing age of crystallization and source characteristics. Likewise, crystallization conditions such temperature, pressure, oxygen fugacity try to be explained from microbeam analyses of main and accessory mineral phases of this particular parageneses. All of this analysis will be developing at Geoanalítica labs of Geosciences Institute of São Paulo University.

PALAVRAS-CHAVE: Charnockite, Eastern Cordillera, Colombian Andes.