

ESTIMATION OF ECONOMIC POTENTIAL OF MICA IN AMPHIBOLITE-FACIES ROCKS OF THE KADUGANNAWA COMPLEX, SRI LANKA

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Exploitation of mica in Sri Lanka is low when compared to other industrial minerals that are presently being mined. It is due to the mining out of mica-enriched deposits and the lack of technology to exploit deep-seated deposits. Economically important mica occurs in Sri Lanka as veins in gneissic rocks and as zones or pockets in large granitic pegmatites. At present, mining of mica is confined to lower depths of ores and the mined mica is classed as low-grade. Other common occurrence of mica is as a disseminated mineral in most of gneissic rocks in the island. Biotite is the common mica present in many low-grade amphibolite facies rocks of the country. Although biotite mica is not as useful as other micas they are used in coating or as a filler material in the roofing and building industries. On the other hand, mica can also be used as a K-fertilizer for crops. The objectives of the study were to identify mica-enriched lithologies with the help of field and petrographic studies, and to investigate a suitable method to separate mica from host rocks. The rocks in the Kadugannawa complex were subjected to the study as they are characterized by amphibolite facies assemblages, which contain higher amounts of biotite. Field investigations revealed that the mica-enriched lithologies occur as markedly defined thinner bands (up to 3-4 meters) running parallel to major strike direction and as lenses or pods within hornblende-biotite gneisses. Petrographic studies show that the percentage of biotite in such zones is about 45% by volume.

Using the magnetic properties of minerals, the mica of crushed rock was separated from other minerals. However, the end product has considerable amounts of hornblende as both minerals have almost similar magnetic properties. The mica separation using wind is much more economical and the purity of the yield much higher than that of magnetic separation. Hornblende, quartz and feldspar are by-products of the mechanical separation. They may be used for the construction industry. The presence of inclusions within mica grains degrades the quality of them. However, it may not be effective when biotite mica is used as fertilizer.